WAMBO COAL PTY LIMITED

SOUTH BATES EXTENSION UNDERGROUND MINE

EXTRACTION PLAN
LONGWALLS 21 TO 24

APPENDIX I
REHABILITATION MANAGEMENT PLAN

Peabody

WAMBO COAL MINE
PHASE 2 – REHABILITATION MANAGEMENT PLAN
DECEMBER 2020 – DECEMBER 2023

Prepared by Wambo Coal Pty Ltd
Document No. WA-ENV-MP-513

Document Control

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Name of Mine	Wambo Coal Mine
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Environmental Representative Details

Name	Peter Jaeger
Number	(02) 6570 2206
Title	Manager: Environment and Community
Email	pjaeger@peabodyenergy.com

Authorisation/Title Details

Mining Lease(s)/Licence No	CL 397, CCL 743, CL 374, CL 365, ML 1402, ML 1594, ML 1572, ML 1806
Name of Lease Holder	Wambo Coal Pty Limited
Name of Operator	Wambo Coal Pty Limited
Representative of Lease Holder	Peter Jaeger, Manager: Environment and Community
Phone	(02) 6570 2206
Email	pjaeger@peabodyenergy.com
Certification	I, Peter Jaeger, hereby certify that the information provided in this document is true and correct.
Signature	

Revisions

Rev No	Date	Description	By	Checked
0	August 2020	Draft for Consultation	WCPL	
1	September 2020	Revised to address BCD's comments and include stakeholder consultation on draft	WCPL	
2	November 2020	Revised to address comments from Singleton Council and further comments from BCD	WCPL	
3		Revised to address comments from DPIE	WCPL	

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1.0 Introduction to Mining Project

This Rehabilitation Management Plan (RMP) for the Wambo Coal Mine (the Mine) has been prepared by Wambo Coal Pty Ltd (WCPL), to satisfy the conditions and requirements of:

- Mining Lease (ML) 1402, ML 1572, ML 1594, ML1806, Coal Lease (CL) 365, CL 374, CL 397 and Consolidated Coal Lease (CCL) 743;
- Development Consents DA 305-7-2003 and DA 177-8-2004; and
- Consultation Draft *Code of Practice: Rehabilitation Management Plan for Large Mines* (July 2018) (herein referred to as the RMP Guidelines).

1.1 History of Operations

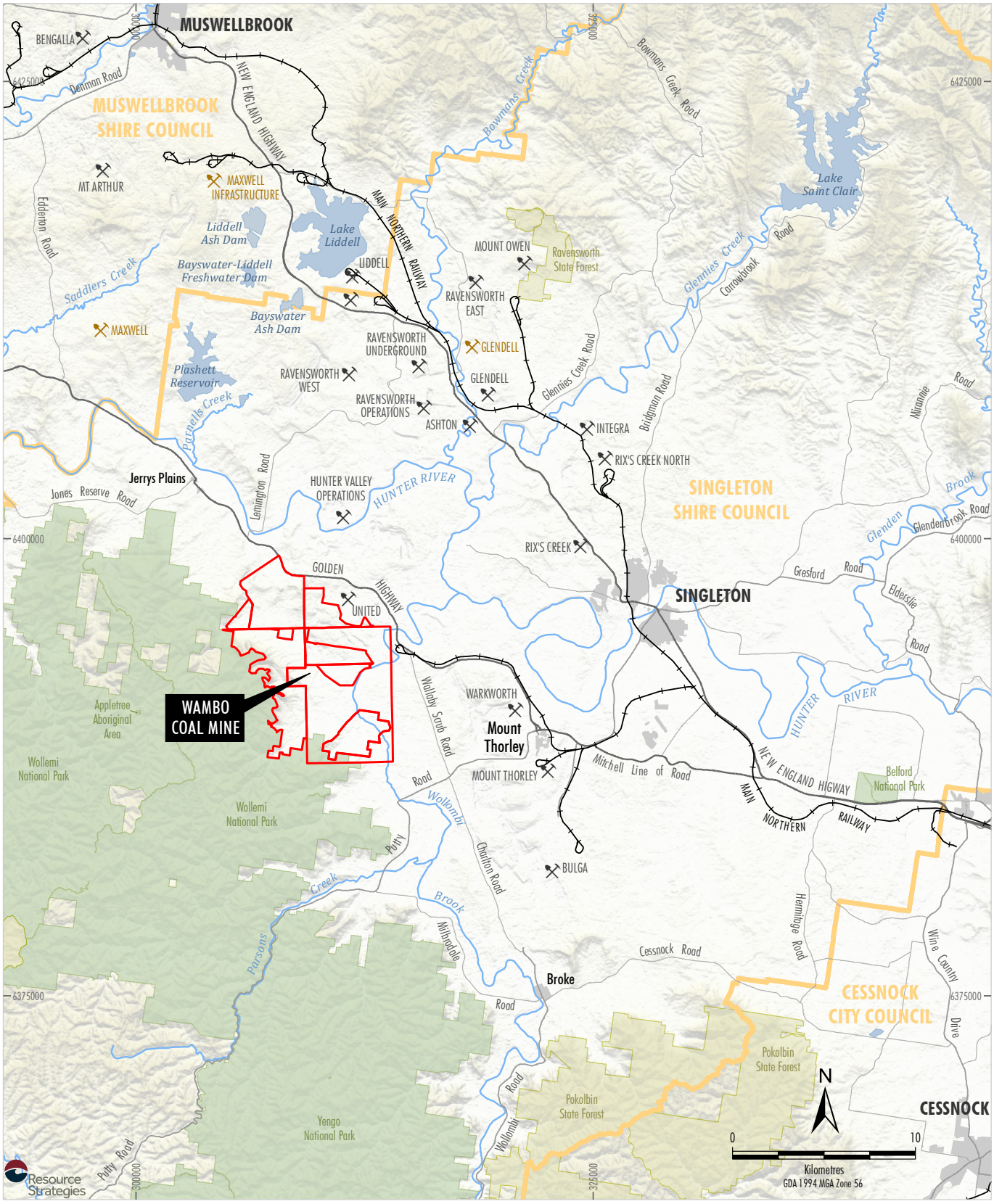
The Mine is an open cut and underground coal mining operation located approximately 15 kilometres (km) west of Singleton, near the village of Warkworth, New South Wales (NSW) (**Figure 1**). The Mine is owned by WCPL, a subsidiary of Peabody Energy Australia Pty Ltd (Peabody). Open cut and underground mining, coal processing and other associated activities at the Mine are undertaken by WCPL. Thermal coal products from the Mine are transported by rail to domestic customers for use in electricity generation and to port for export.

A recent aerial photograph of the Mine illustrating the existing and approved extent of open pits, underground mine plans and infrastructure is shown on **Figure 2**. Land ownership in the vicinity of the Mine is shown on **Plan 1A** (see **Attachment 1**). Land use in the vicinity of the Mine is a combination of coal mining operations, conservation areas, National Parks, agriculture and rural residential development (**Plan 1B**). The Mine is bounded by the Wollombi Brook to the east, coal mining operations to the north and east, grazing land to the south and north-west and the Wollemi National Park to the west and south-west (**Plan 1C** and **Figure 1**).

In November 2014, Glencore and Peabody agreed to form a 50:50 Joint Venture to develop an open cut coal mine project that combined the extraction and exploration rights for a number of mining tenements held by United Collieries Pty Limited (United) (a subsidiary of Glencore) and WCPL. This is the most recent example of a long history of collaboration between these companies, following previous coal lease agreements, shared water management systems, rail loading and rail loop facilities. The Joint Venture proposed that United would manage the combined open cut mining operations utilising the Mine's existing infrastructure. WCPL would continue to operate its underground mining operations, the Coal Handling and Preparation Plant (CHPP) and rail loading facilities.

An application to modify the Development Consent (DA 305-7-2003 MOD 16) was lodged in November 2016 to support the Joint Venture and was approved on 28 August 2019. This RMP has been prepared in consideration of Phase 2 operations of the Mine which includes underground mining, the CHPP and rail loading facilities from 1 December 2020, as described in DA 305-7-2003:

> *The phase of the development that comprises undergrounding mining operations at Wambo underground mine, the operation of Wambo infrastructure within the green operational area identified in Figure 2 of Appendix 2 and associated surface development.*



LEGEND

- Mining and Coal Lease Boundary
- Local Government Area
- National Parks and Wildlife Estate
- State Forest
- Mining Operation
- Proposed Mining Operations (Application Lodged)

Source: NSW Spatial Services (2020)

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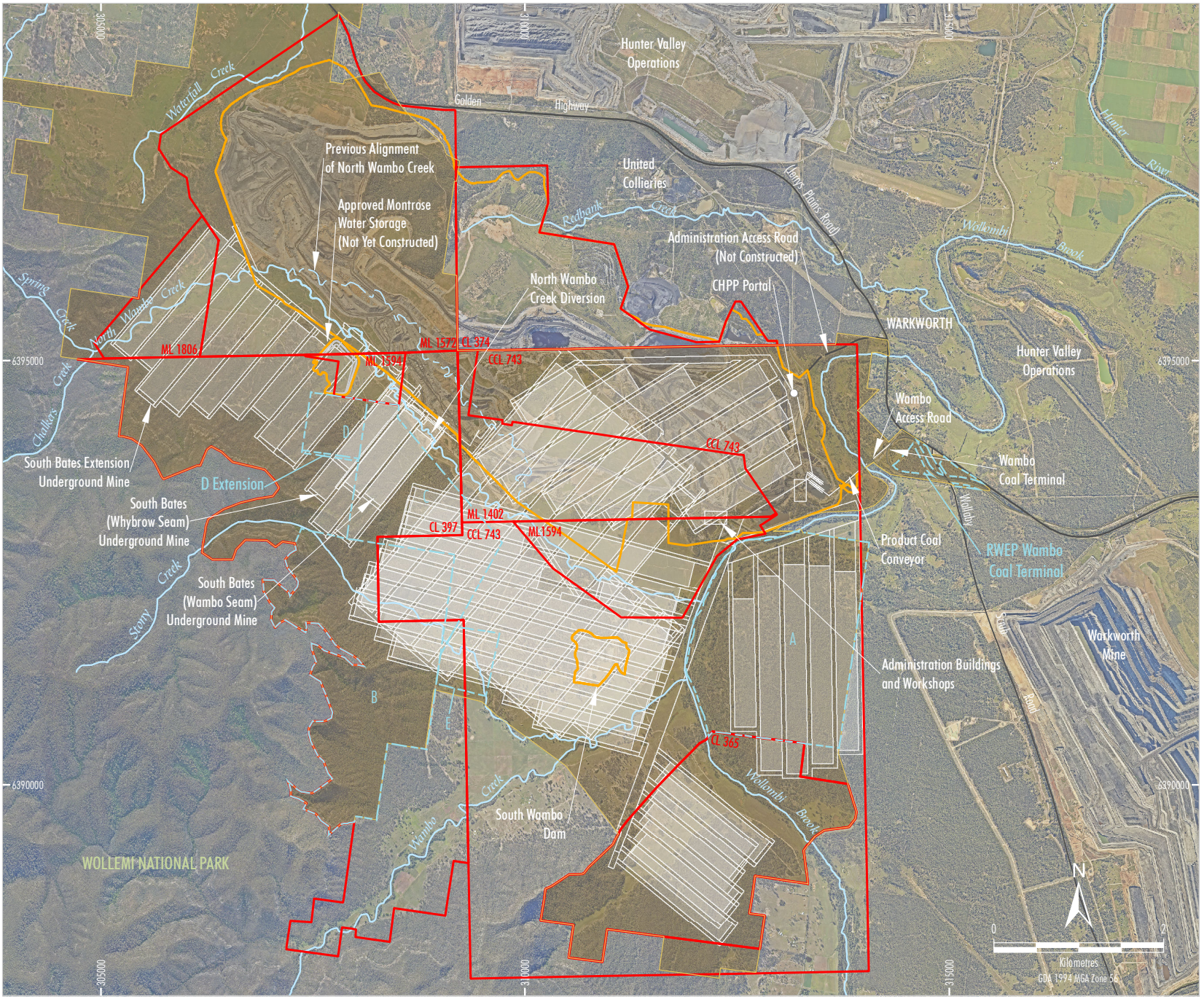
WAMBO COAL MINE

Wambo Coal Mine
General Arrangement

Figure 1



LEGEND

- WCPL Owned Land
- Mining and Coal Lease Boundary
- Existing/Approved Surface Development Area
- Approved Underground Development
- Remnant Woodland Enhancement Program (RWEP) Area

Source: WCPL (2020); NSW Spatial Services (2020)
Orthophoto: WCPL (May 2019)

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WAMBO COAL MINE

Wambo Coal Mine
General Arrangement

Figure 2

1.1.1 Wambo Coal Mine

The Mine was originally granted development consent by Patrick Plains Shire Council in 1969. Subsequent development consents issued in 1972, 1974 and 1977 covered a range of early open cut and underground operations, while activities such as the construction of office buildings, bathhouses, the Homestead Underground Mine coal conveyor, Hales Crossing on Wollombi Brook, extensions to mining operations and modifications to road haulage rates were consented by Singleton Shire Council (SSC) between 1980 and 1991.

In July 1991, DA 108/91 was lodged with the SSC seeking approval for the expansion of open cut and underground mining activities at the WCPL and the consolidation of earlier development consents. Development consent for DA108/91 was granted in February 1992, approving the production of up to 3 million tonnes per annum (Mtpa) of saleable product coal over a 21-year period. Subsequent modifications to DA 108/91 included the Wollemi Underground Mine box cut, coal transportation, tailings deposition, coal conveyor, underground borehole pumps, stockpile area and haul road for coal haulage. Subsequent to the grant of Development Consent DA 108/91, open cut mining operations were conducted from 1993 until closure in March 1999. Open cut operations recommenced in August 2001 at a rate of 1 Mtpa of run-of-mine (ROM) coal.

Underground mining operations at the Homestead Underground Mine commenced in 1979 and ceased in 1999. The Wollemi Underground Mine commenced in 1997 and produced in the order of 3 million tonnes (Mt) of ROM coal during the 2001/2002 financial year, prior to the cessation of mining activities. The Wollemi Underground was placed on care and maintenance in October 2002. Following the cessation of underground operations in 2002, open cut operations were subsequently expanded to maintain an overall production rate of 4 Mtpa of ROM coal.

Following submission of the Wambo Development Project Environmental Impact Statement (the Project EIS) in July 2003, WCPL was granted development consent in February 2004 (DA 305-7-2003) which enabled the expansion of the current open cut operations and development of additional underground mining operations. The approved development described in the Project EIS and subsequent sixteen modifications extends the underground mine life until 31 August 2042 and allows ROM coal production up to 14.7 Mtpa. A summary of all modifications is provided in **Section 1.2**.

A copy of DA 305-7-2003 (as modified) is provided in **Appendix A** and on the Peabody website https://www.peabodyenergy.com/Peabody/media/MediaLibrary/Operations/Australia%20Mining/New%20South%20Wales%20Mining/Wambo%20Mine/DA-305-7-2003-MOD-16-Recommended-NoM-FINAL.pdf

The Project EIS also addressed a separate development application (DA) for a rail spur and loop, coal reclaim and rail loading facilities for the Wambo Coal Terminal. Consent for this development (DA 177-8-2004) was granted in December 2004. The Wambo Coal Terminal was commissioned in May 2006 and allows the transport of all product coal from the WCPL by rail to the Port of Newcastle.

ROM coal is either washed at the CHPP or, where in specification, bypassed to the product stockpile, and then loaded onto trains via the train loading infrastructure. All product and domestic coal is transported by rail, with product coal transported to the Port of Newcastle for export markets.

The Mine is currently in Phase 1 of operations. Phase 2 is scheduled to commence on 1 December 2020. The phases (in relation to the Wambo Coal Mine) are defined in DA 305-7-2003 as follows:

> *Phase 1: The phase of the development that comprises open cut mining operations at Wambo open cut mine, underground mining operations at Wambo underground mine and the operation of Wambo mine infrastructure (including minor upgrades to this infrastructure) within the green operation area identified in Figure 1 of Appendix 2.*
>
> *Phase 2: The phase of the development that comprises underground mining operations at Wambo underground mine, the operation of Wambo mine infrastructure within the green operational area identified in Figure 2 of Appendix 2 and associated surface development.*
>
> *Phase 3: The phase of the development following the cessation of underground mining operations that includes mine closure.*

During Phase 2, the Mine will no longer include open cut mining operations. Operations at the Mine will comprise continuation of underground mining operations and coal processing and handling activities. The Mine has the following approved underground mining operations:

- North Wambo Underground (NWU) Mine (commenced in 2005 and now completed);
- South Bates Underground (SBU) Mine, including the South Bates Extension Underground (SBUE) Mine (commenced in 2014 and currently operational); and
- South Wambo Underground (SWU) Mine (not yet commenced).

A summary of the approved the Mine is provided in **Table 1**.

1.1.2 United Mine

Development consent for coal mining at United was originally granted in the early 1980s. From July 1989 until July 1992, United comprised an open cut and auger mining operation extracting from the Whynot and Wambo seams. Underground mining operations at the mine commenced in 1992, continuing until March 2010 when operations were suspended with the mine entering a period of care and maintenance. At the time mining ceased, underground longwall mining operations at United were approved to provide up to 2.95 Mtpa of product coal. Exploration and pre-feasibility works were commenced to determine the potential for future mining activities within United's mining tenements. Ongoing exploration has identified substantial reserves of coal suitable for open cut mining.

Prior to the demolition occurring in March 2020, United had a CHPP at the site which was capable of washing ROM coal from the underground operation for delivery to the export market. From 1989 until 2006, product coal was transported from United by road along the Golden Highway to the Mount Thorley Coal Loader. Following the construction of the Wambo rail spur and loop in 2006, product coal from United was transported via the Wambo train loading facility, which subsequently allowed for the removal of United's coal haulage trucks from the Golden Highway.

Prior to entering a period of care and maintenance, United operated up to 24 hours per day, seven days per week. This schedule (i.e. 24 hours per day, seven days per week) will resume during Phase 2 operations.

In January 2020, United commenced construction activities for Phase 1 of the United Wambo Open Cut. Open cut coal extraction is anticipated to commence in the United Wambo Open Cut in December 2020, with first coal delivery to the Wambo CHPP also expected in December.

Table 1: Summary of the Approved Wambo Coal Mine

Component	Approved WCPL[1]
Life of Mine	• 38 years (until 31 August 2042).
Open Cut Mining	• Open cut mining operations only during Phase 1 activities.
	• A maximum of 8 Mt of ROM coal may be extracted from Wambo Open Cut in an any calendar year (during Phase 1)
	• An estimated total open cut ROM coal reserve of 98 Mt.
Underground Mining	• Underground mining of up to 9.75 Mtpa of ROM coal in any calendar year.
	• Underground ROM coal reserves are estimated at 161.3 Mt.
Subsidence commitments and management.	• The subsidence impact performance measures listed in Conditions B1 and B4, Schedule 2, Part B of the Development Consent (DA 305-7-2003).
ROM Coal Production Rate	• Up to 14.7 Mtpa of ROM coal from the Wambo Mining Complex and United Wambo open cut coal may be processed at the Wambo CHPP in any calendar year.
Total ROM Coal Mined	• 259.3 Mt.
Waste Rock Management	• Waste rock deposited in open cut voids and in waste rock emplacements adjacent open cut operations.
Total Waste Rock	• 640 million bank cubic metres.
Coal Washing	• CHPP capable of processing approximately 1,800 tonnes per hour.
Product Coal	• Production of up to 11.3 Mtpa of thermal coal predominantly for export.
Coal Handling and Preparation Plant Reject Management	• Coarse rejects and tailings would be incorporated, encapsulated and/or capped within open cut voids (that would comprise part of United's operations during Phase 2).
Coal Transportation	• Carried out until 31 August 2042.
Total CHPP Rejects	• Approximately 40.3 Mt of coarse rejects and approximately 24.5 Mt of tailings.
Water Supply	• Make-up water demand to be met from runoff recovered from tailings storage areas, operational areas, dewatering, licensed extraction from Wollombi Brook and Hunter River.
Surface Facilities	• Construction of surface facilities within the approved surface development area.
Mining Tenements	• CL 365, CL 374, CL 397, CCL 743, ML 1402, ML 1572, ML 1594, ML1806, Authorisation (A) 444 and Exploration Licence (EL) 7211.

Notes:
1. Development Consent DA 305-7-2003 (as modified).

1.2 Current Development Consents, Leases and Licences

Mining and rail activities at the Mine operate under development consents granted by the NSW Minister for Planning (or delegate) and SSC.

WCPL operates current open cut and underground mining activities under DA 305-7-2003 (as modified) and within the approved boundaries as displayed in **Figure 2**. DA 305-7-2003 was granted under Part 4 of the NSW *Environmental Planning and Assessment Act, 1979* (EP&A Act) in February 2004. Activities under DA 305-7-2003 commenced in March 2004.

The construction of the rail spur, rail loop and train loadout area commenced under DA 177-8-2004 in January 2005.

Table 2 provides a summary of the key approvals, leases and licences that the Mine operates under. WCPL has modified the DA 305-7-2003 on sixteen occasions (**Table 3**). A copy of the modified DA 305-7-2003 is provided in **Appendix A**.

Copies of the DA 305-7-2003, DA 177-8-2004, Environment Protection Licence (EPL) 529 and mining leases are available on the Peabody website: https://www.peabodyenergy.com/Operations/Australia-Mining/New-South-Wales-Mining/Wambo-Approvals,-Plans-Reports.

Table 2: Mine Approvals, Leases and Licences

Relevant Authority	Instrument	Approval/Licence No.	Expiry Date
DPIE	Development Consent	• DA 305-7-2003. • DA 177-8-2004.	31 August 2042
RR	ML	• CL 365 (Coal Mining Act 1973). • CL 374 (Coal Mining Act 1973). • CL 397 (Coal Mining Act 1973). • CCL 743 (Coal Mining Act (1973). • ML 1402 (Mining Act 1992). • ML 1572 (Mining Act 1992). • ML 1594 (Mining Act 1992). • ML 1806 (Mining Act 1992).	Refer to **Table 4**
	Exploration Licence	• Exploration Licence A444. • Exploration Licence EL7211.	Refer to **Table 4**
EPA	EPL	• EPL 529.	Until the licence is surrendered, suspended or revoked. The licence is subject to review every 3 years.

Note**:** DPIE – NSW Department of Planning, Industry and Environment. RR – NSW Resources Regulator. EPA – NSW Environment Protection Authority.

Table 3: Development Consents and Modifications

Approval Name	Number	Approval Authority	Date Granted	Expiry Date
WCPL Mining Operations				
Original consolidated consent for mine operations	DA 108/91	SSC	17/02/1992	21 years from issue of coal lease
Modification to include Wollemi Box Cut and mine	DA 108/91	SSC	16/10/1996	21 years from issue of coal lease
Modification to include Brambles Coal Transport System	DA 108/91	SSC	21/12/1998	21 years from issue of coal lease
Expansion of open cut and underground mining operations	DA 305-7-2003	DPIE	04/02/2004	31 August 2042
(MOD 1) Modification to allow DA 108/91 to remain active	DA 305-7-2003	DPIE	2004	31 August 2042
(MOD 2) Re-orientation of the Wambo seam underground mine longwall panels	DA 305-7-2003	DPIE	04/05/2005	31 August 2042
(MOD 3) Upgrade of open cut workshop and underground surface facilities	DA 305-7-2003	DPIE	10/01/2006	31 August 2042
(MOD 4) Extraction of the Wollemi remnants	DA 305-7-2003	DPIE	19/04/2006	31 August 2042

Table 3: Development Consents and Modifications (Continued)

Approval Name	Number	Approval Authority	Date Granted	Expiry Date
WCPL Mining Operations (Continued)				
(MOD 5) Construction of a temporary by-pass of North Wambo Creek	DA 305-7-2003	DPIE	20/10/2006	31 August 2042
(MOD 6) Construction of the North Wambo Creek Diversion, gas and dewatering wells	DA 305-7-2003	DPIE	25/01/2007	31 August 2042
(MOD 7) Construction of internal water storage dam – Chitter Dam	DA 305-7-2003	DPIE	22/06/2009	31 August 2042
(MOD 8) Construction of internal water storage dam – South Wambo Dam	DA 305-7-2003	DPIE	27/08/2009	31 August 2042
(MOD 9) Preparation of an Extraction Plan rather than a Subsidence Management Plan	DA 305-7-2003	DPIE	28/02/2011	31 August 2042
(MOD 11) Montrose Water Storage Dam	DA 305-7-2003	DPIE	18/01/2013	31 August 2042
(MOD 12) South Wambo Underground Mine Modification	DA 305-7-2003	DPIE	12/12/2016	31 August 2042
(MOD 13) Additional Longwalls LW9-10	DA 305-7-2003	DPIE	08/07/2013	31 August 2042
(MOD 14) Additional Longwall LW10a	DA 305-7-2003	DPIE	10/04/2015	31 August 2042
(MOD 15) South Bates (Wambo Seam) Underground Mine Modification	DA 305-7-2003	DPIE	10/11/2015	31 August 2042
(MOD 17) South Bates Underground Extension (Whybrow Seam)	DA-305-7-2003	DPIE	20/12/2017	31 August 2042
(MOD 16) United Wambo Open Cut Mine	DA-305-7-2003	DPIE	29/08/2019	31 August 2042
WCPL Rail Development				
Jerry's Plains Rail Line	DA 235/97	SSC	16/07/1998	Perpetuity
Modification to DA235/97 to correct residents list and allow the preparation of management plans in a staged manner	DA 235/97	SSC	01/05/2003	Perpetuity
Altered alignment of Jerry's Plains Rail Line	DA 235/97.3	SSC	03/12/2004	Perpetuity
WCPL rail and coal loading infrastructure	DA 305-7-2003	DPIE	01/06/2004	Superseded by DA 177-8-2004
WCPL rail and coal loading infrastructure (altered alignment of rail loop)	DA 177-8-2004	DPIE	16/12/2004	31 August 2042
(MOD 1) Upgrade of Wallaby Scrub Road / Golden Hwy Intersection	DA 177-8-2004	DPIE	15/12/2006	31 August 2042
(MOD 2) Establishment of a locomotive provisioning facility adjacent to the WCPL Rail Loadout Facility	DA 177-8-2004	DPIE	12/02/2012	31 August 2042
(MOD 3) Harmonisation with United Wambo Open Cut Mine	DA 177-8-2004	DPIE	29/08/2019	31 August 2042

Note: MOD10 was withdrawn by WCPL.

1.2.1 Mining Leases & Exploration Licences

The Mine is located within a combination of coal and mining leases. Mining lease conditions as they relate to rehabilitation are discussed further in **Section 2.1**.

The date of grant and duration of key approvals and licences relevant to the WCPL underground operations are provided in **Table 4**.

Table 4: Mining Leases and Authorisations

Lease Reference	Area (ha)	Date Granted	Expiry Date
CL 365 (Coal Mining Act 1973)	530	19/09/1990	19/09/2032
CL 374 (Coal Mining Act 1973)	382	06/12/1991	21/03/2026
CL 397 (Coal Mining Act 1973)	1,480	04/06/1992	4/06/2034
CCL 743 (Coal Mining Act 1973)	3,000	09/03/1990	14/08/2022
ML 1402 (Mining Act 1992)	352	23/09/1996	14/08/2022
ML 1572 (Mining Act 1992)	1,012	21/12/2005	21/12/2026
ML 1594 (Mining Act 1992)	263	01/05/2007	30/04/2028
ML 1806 (Mining Act 1992)	128.8	11/08/2020	11/08/2041
Exploration Licence A444^	3,060	04/10/2007	16/05/2021
Exploration Licence EL7211	967	22/01/2013	29/09/2019*

Notes: United has a strata title lease to the Arrowfield seam in the northern 1.5 km of CCL 743 and CL 397.
ML 1402 covered surface rights to enable development of the Wollemi Mine.
^A 444 is an Authority to Prospect granted under *Coal Mining Act 1973*. Scheduled to be handed over to United Wambo late 2020.
* Application for renewal lodged September 2019.

1.2.2 Environment Protection Licence

The Mine operates under EPL 529, issued by the NSW EPA, under the authority of the *Protection of the Environment Operations Act 1997*. EPL 529 covers WCPL activities at the Mine and rail spur.

1.2.3 Extraction Plan Approvals

An Extraction Plan (EP) was approved on 9 February 2016 to allow for extraction of Longwalls 11 to 13 within the Whybrow Seam at the SBU Mine. This EP was revised to incorporate Longwalls 14 to 16 in the Wambo Seam (for a combined EP for Longwalls 11 to 16). The EP for SBU Longwalls 11 to 16 (*Extraction Plan - South Bates Underground Mine Longwalls 11 to 16)* was conditionally approved by DPIE on 16 May 2017. The approval considered the reduced lengths of Longwalls 13 to 16 would result in similar or less subsidence related impacts to those approved as part of the approved layout and therefore can be generally in accordance with the Development Consent DA 305-7-2003 as modified.

An EP for Longwalls 17 to 20 within the Whybrow Seam at the SBUE Mine (*Extraction Plan – South Bates Underground Extension Mine Longwalls 17 to 20*) was prepared and submitted to DPIE on 27 April 2018. Subsequent to the submission of the Longwalls 17 to 20 EP, WCPL identified geological structures that required changes to the main headings and the finishing ends of Longwalls 18, 19 and 20 and amended the EP for Longwalls 17 to 20 to reflect these changes. DPIE approved the amended Extraction Plan for Longwalls 17 to 20 on 4 June 2019.

An EP for Longwalls 21 to 24 in the Mine has been submitted for approval. It is anticipated that the Longwalls 21 to 24 EP will be approved during the RMP term.

1.2.4 EPBC Approvals

WCPL was granted approval (EPBC 2003/1138) under the *Environment Protection and Biodiversity Conservation Act, 1999* (EPBC Act) for the expansion of the Mine on 23 November 2004. Separate approval (EPBC 2016/7636) under the EPBC Act was granted on 30 April 2017 for portions of the SWU Mine that were not covered by EPBC 2003/1138. Approval for the SBUE Mine was also required under the EPBC Act (EPBC 2016/7816).

In accordance with EPBC 2003/1138, WCPL prepared a Flora and Fauna Management Plan. The Flora and Fauna Management Plan was revised in March 2016 and subsequently renamed as the Biodiversity Management Plan (BMP). The BMP was issued to DPIE on 28 October 2016 after extensive consultation with NSW Office of Environment and Heritage (OEH) (now the Biodiversity and Conservation Division [BCD]) and the Department of the Environment and Energy (DoEE) (now the Commonwealth Department of Agriculture, Water and the Environment [DAWE]). On 17 November 2016, the DoEE approved the BMP. On 1 November 2016, OEH also endorsed the BMP and on 11 October 2017, DPIE approved the BMP.

Since approval of the Joint Venture, the BMP has been updated in consideration of WCPL's reduced responsibilities in relation to the open cut (i.e. as WCPL will be entering Phase 2 which only involves operation of the underground mine and surface infrastructure).

Key elements of the BMP applicable to this RMP include completion criteria, biodiversity management and monitoring programs. These elements have been implemented since late 2016 in accordance with the previous iterations of the BMP. A copy of the currently approved BMP is available at https://www.peabodyenergy.com/Operations/Australia-Mining/New-South-Wales-Mining/Wambo-Approvals,-Plans-Reports. This file will be updated with the new BMP once it has been approved.

1.3 Land Ownership and Land Use

1.3.1 Land Ownership

WCPL owns a significant area of land, including all of the land within the area consented to be disturbed by open cut mining (to be undertaken as part of the United Wambo Open Cut Coal Mine) and all of the land that overlies the SBU mine and SBUE mine. WCPL land ownership is shown on **Plan 1A** (see **Attachment 1**). **Table 5** identifies the schedule of land ownership.

Table 5: Schedule of Land Ownership*

Lot Sec DP	Status	Lot Sec DP	Status
1/110084	Freehold	4/542226	Freehold
1/1089682	Freehold	4/720705	Freehold
1/114970	Freehold	45/753792	Freehold
1/709722	Freehold	46/753792	Freehold
1/720705	Freehold	49/753792	Freehold
1/241316	Freehold	5/542226	Freehold
1/616303	Freehold	5/1085145	Freehold
1/1177768	Freehold	50/753792	Freehold
1/1174490	Freehold	51/753792	Freehold
100/753792	Freehold	52/753792	Freehold
101/753792	Freehold	55/753792	Freehold
103/753792	Freehold	57/1074788	Freehold
104/753792	Freehold	58/753792	Freehold
109/753792	Freehold	60/753792	Freehold
110/753792	Freehold	61/753792	Freehold
111/753792	Freehold	62/753792	Freehold
112/753792	Freehold	63/753792	Freehold
113/753817	Freehold	64/753792	Freehold
118/753792	Freehold	66/753817	Freehold
129/755267	Freehold	67/753817	Freehold
131/1089157	Freehold	7/3030	Freehold
160/753817	Freehold	71/753817	Freehold
161/753817	Freehold	79/1074787	Freehold
170/823775	Freehold	79/753821	Freehold
175/823775	Freehold	82/548749	Freehold
18/753817	Freehold	83/548749	Freehold
2/1085145	Freehold	92/548749	Freehold
2/110084	Freehold	95/753792	Freehold
2/709722	Freehold	A/33149	Freehold
2/616303	Freehold	B/33149	Freehold
2/617852	Freehold	C/33149	Freehold
2/720705	Freehold	1/732501	Freehold
2/1174490	Freehold	2/732501	Freehold
208/753817	Freehold	3/732501	Freehold
22/753817	Freehold	4/732501	Freehold
220/1135537	Freehold	5/732501	Freehold
23/3030	Freehold	6/732501	Freehold
3/720705	Freehold	3/753817	Freehold
3/1177768	Freehold	4/753817	Freehold
3/1085145	Freehold	5/753817	Freehold
38/753792	Freehold	6/753817	Freehold
39/753792	Freehold	10/753817	Freehold

Table 5: Schedule of Land Ownership (Continued)*

Lot Sec DP	Status	Lot Sec DP	Status
4/1085145	Freehold	73/753817	Freehold
149/753792	Freehold	Any Unidentified Historical Title Residues located within, between or adjacent to the above Parcels of Land	Freehold/Crown
16/755267	Freehold		
5/1085145	Freehold		
Additional Lot and DPs listed for Roads and Wollombi Brook - Appendix A (DA-305-7-2003).			

Note: *As identified in DA 305-7-2003 (MOD16).

1.3.2 Land Use

Land use in the vicinity of the Mine is characterised by a combination of coal mining operations, agricultural land uses and rural residential development (evident in the local villages of Bulga, Jerrys Plains and, to a lesser extent, Warkworth). WCPL controlled lands that are not subject to mining operations are utilised for the agistment of stock (primarily cattle) and provide a buffer to neighbouring coal operations and private landholders and the adjoining Wollemi National Park.

An aerial photograph of the Mine and surrounds is provided on **Figure 2**. Significant areas of land which overlie SBU mine and SBUE mine have been previously disturbed by historical agricultural uses. Underground access to the SBU and SBUE mine are from highwall entries in the existing open cut. The open cut mining operation is bounded by the United Colliery and the Golden Highway to the north and Wollombi Brook to the east.

It is proposed to progressively rehabilitate the land to a combination of pasture and woodland as mining of individual areas is completed (i.e. rehabilitation will be progressive and on-going during mining operations).

2.0 Final Land Use

2.1 Regulatory Requirements for Final Land Use

Relevant regulatory requirements for rehabilitation that apply to the Land are described in **Table 6**.

Table 6: Regulatory Requirements Relating to Post Mining Land Use and Rehabilitation

<table>
<tr><th>Condition</th><th>Requirement</th><th>Area</th><th>Section Reference</th></tr>
<tr><td colspan="4">DA-305-7-2003</td></tr>
<tr><td>B69</td><td>The Applicant must implement the Biodiversity Offset Strategy set out in Table 9 and shown in Appendix 6, to the satisfaction of the Planning Secretary.</td><td>Entire Site</td><td>Section 2.2.1</td></tr>
<tr><td>B70</td><td>Table 9: Biodiversity Offset Strategy
<table>
<tr><th>Area</th><th>Size</th></tr>
<tr><td>Remnant Woodland Enhancement Area A</td><td>424 ha</td></tr>
<tr><td>Remnant Woodland Enhancement Area B</td><td>454 ha</td></tr>
<tr><td>Remnant Woodland Enhancement Area C</td><td>211 ha</td></tr>
<tr><td>Open Woodland Revegetation</td><td>270 ha</td></tr>
<tr><td>Remnant Woodland Enhancement Area D</td><td>46 ha</td></tr>
<tr><td>Remnant Woodland Enhancement Area D Extension</td><td>2 ha</td></tr>
<tr><td>Remnant Woodland Enhancement Area E</td><td>41.6 ha</td></tr>
<tr><td>Remnant Woodland Enhancement Area for the Wambo Coal Terminal</td><td>As shown in Appendix 6</td></tr>
</table>
Notes:
• The area of Open Woodland Revegetation in Table 9 was previously 1,570 hectares. Under EA (Mod 16) this obligation was reduced to 270 hectares, with the remaining area being taken up by SSD 7142.
• Additional offsets may be required by the Planning Secretary under condition B3.</td><td>Entire Site</td><td>Section 2.2.1</td></tr>
<tr><td>B71</td><td>The land used to satisfy the requirement to establish Open Woodland Revegetation under condition B69 cannot be the same land as land used for Open Woodland Revegetation or Ecological Mine Rehabilitation under SSD 7142. If the United Wambo open cut coal mine does not proceed to Phase 2 (as defined with SSD 7142), then the Applicant must establish an additional 1300 hectares of Open Woodland Revegetation, as otherwise required under SSD 7142.</td><td>Entire Site</td><td>Section 2.2.1</td></tr>
</table>

Table 6: Regulatory Requirements Relating to Post Mining Land Use and Rehabilitation (Continued)

<table>
<tr><th>Condition</th><th>Requirement</th><th>Area</th><th>Section Reference</th></tr>
<tr><td colspan="4">DA-305-7-2003 (Continued)</td></tr>
<tr><td>B105</td><td>The Applicant must rehabilitate the site to the satisfaction of the Resource Regulator. This rehabilitation must be generally consistent with the proposed rehabilitation activities described in the documents listed in condition A2(c) 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.</td></tr>
<tr><td>Areas proposed for native ecosystem re-establishment</td><td>• Establish a minimum of 270 hectares of Open Woodland Revegetation to satisfy condition B69.
• Establish areas of self-sustaining:
– Riparian vegetation, within any diverted and/or re-established creek lines and retained water features;
– Habitat resources for threatened flora and fauna species; and
– Vegetation connectivity and wildlife corridors, as far as is reasonable and feasible.</td></tr>
<tr><td>Final landform</td><td>• Stable and sustainable for the intended post-mining land use/s.
• Consistent with and complement the topography of the surrounding region to minimise the visual prominence of the final landforms in the post mining landscape.
• Maximise surface water drainage to the natural environment (excluding final void catchment).</td></tr>
<tr><td>Rehabilitated 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>Surface infrastructure of the development</td><td>• Decommissioned and removed, unless the RR agrees otherwise.
• All surface infrastructure sites are to be revegetated with suitable local native plant species to a landform consistent with the surrounding environment.</td></tr>
<tr><td>Portals and vent shafts of the development</td><td>• To be decommissioned and made safe and stable.
• Retain habitat for threatened species (e.g. bats), where practicable.</td></tr>
</table></td><td>Entire Site</td><td>Section 3.1</td></tr>
</table>

Table 6: Regulatory Requirements Relating to Post Mining Land Use and Rehabilitation (Continued)

<table>
<tr><th>Condition</th><th>Requirement</th><th>Area</th><th>Section Reference</th></tr>
<tr><td colspan="4">DA-305-7-2003 (Continued)</td></tr>
<tr><td>B105 (cont.)</td><td>Table 10: Rehabilitation Objectives (continued)
<table>
<tr><th>Feature</th><th>Objective</th></tr>
<tr><td>Watercourses subject to mine water discharges and/or subsidence impacts or environmental consequences that are greater than negligible</td><td>• Hydraulically and geomorphologically stable.
• Aquatic ecology and riparian vegetation that is the same or better than prior to commencement of mining.</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>Built features damaged by mining operations</td><td>• Repair to pre-mining condition or equivalent unless the:
– owner agrees otherwise; or
– damage is fully restored, repaired or compensated for under the Coal Mine Subsidence Compensation Act 2017.</td></tr>
<tr><td>Cliffs, minor cliffs, rock face features and steep slopes</td><td>• No additional risk to public safety compared to prior to mining.</td></tr>
<tr><td>Community</td><td>• Ensure public safety.
• Minimise adverse socio-economic effects associated with mine closure.</td></tr>
</table></td><td>Entire Site</td><td>Section 3.1</td></tr>
<tr><td>B106</td><td>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.</td><td>Entire Site</td><td>-</td></tr>
<tr><td>B107</td><td>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.</td><td>Entire Site</td><td>Sections 3.1 and 6.3</td></tr>
</table>

Table 6: Regulatory Requirements Relating to Post Mining Land Use and Rehabilitation (Continued)

Condition	Requirement	Area	Section Reference
DA-305-7-2003 (Continued)			
B108	**Rehabilitation Management Plan**	Entire Site	This RMP
	The Applicant must prepare a Rehabilitation Management Plan for all land disturbed by the development to the satisfaction of the Resources Regulator. This plan must:		
	(a) be prepared by a suitably qualified and experienced person/s;		Section 2.1
	(b) be prepared in consultation with the Department, DPIE Water, BCD and Council;		Section 3.2
	(c) be prepared in accordance with any relevant DRG Guideline;		Section 2.1
	(d) describe how the rehabilitation of the site would achieve the objectives identified in Table 10 and be integrated with the measures in the Biodiversity Management Plan referred to in condition B74 [sic];		Sections 6.3 and 10
	(e) describe how the rehabilitation of the site would be integrated with rehabilitation of the Wambo train loading facility and SSD 7142 United Wambo open cut coal mine;		Section 6.3.2
	(f) include detailed performance and completion criteria for evaluating the performance of the rehabilitation of the site, and for triggering remedial action (if necessary);		Section 3.1
	(g) describe the measures to be implemented to ensure compliance with the relevant conditions of this consent, and address all aspects of rehabilitation including mine closure, final landform, final land use/s and water management in the final landform;		Section 3
	(h) include a detailed tailings management strategy that includes:		Section 6.3.1 and the United Wambo Phase 2 RMP (2020-2022)
	(i) a strategy for treating and/or emplacing all tailings material generated by the Wambo CHPP; and		
	(ii) timing for rehabilitation of all tailings storage facilities, in order that final landform and land use objectives can be achieved in a timely manner;		
	(i) include procedures for the use of interim stabilisation and temporary vegetation strategies, where reasonable to minimise the area exposed for dust generation;		Section 6.3
	(j) include a program to monitor, independently audit and report on the effectiveness of the measures in paragraph (g), and progress against the detailed performance and completion criteria in paragraph (f);		Sections 3, 8, 10 and 11
	(k) to the maximum extent practicable build on and integrate with the other management plans required under this consent; and		This RMP
	(l) include detailed scheduling for progressive rehabilitation to be initiated, undertaken and/or completed over the next three years.		Section 6.1
B109	The Applicant must not commence Phase 2 until the Rehabilitation Management Plan is approved by the Resources Regulator.	Entire Site	This RMP
B110	The Applicant must implement the Rehabilitation Management Plan as approved by the Resources Regulator. *Note:* • *The Resources Regulator may permit the Rehabilitation Management Plan to be combined with a Mining Operation Plan, or similar plan under any mining lease granted for the development.*	Entire Site	This RMP

Table 6: Regulatory Requirements Relating to Post Mining Land Use and Rehabilitation (Continued)

Condition	Requirement	Area	Section Reference
CL374, ML1572, ML1594			
13 a)	Land disturbed must be rehabilitated to a stable and permanent form suitable for a subsequent land use acceptable to the Director-General and in accordance with the Mining Operations Plan so that:	CL374, ML1572, ML1594	This RMP
	• There is no adverse environmental effect outside the disturbed area and that the land is properly drained and protected from soil erosion.	CL374, ML1572, ML1594	Section 3
	• The state of the land is compatible with the surrounding land and land use requirements.	CL374, ML1572, ML1594	Section 2.2
	• The landforms, soils, hydrology and flora require no greater maintenance than that in the surrounding land.	CL374, ML1572, ML1594	Section 2
	• In cases where revegetation is required and native vegetation has been removed or damaged, the original species must be re-established with close reference to the flora survey included in the Mining Operations Plan. If the original vegetation was not native, any re-established vegetation must be appropriate to the area at an acceptable density.	CL374, ML1572, ML1594	Section 3
	• The land does not pose a threat to public safety.	CL374, ML1572, ML1594	Section 3
13 b)	Any topsoil that is removed must be stored and maintained in a manner acceptable to the Director-General.	CL374, ML1572, ML1594	Section 6.3.1
14	The lease holder must comply with any direction given by the Director-General regarding the stabilisation of and revegetation of any mine residues, tailings or overburden dumps situated on the lease area.	CL374, ML1572, ML1594	-
CL397			
2	Any disturbance resulting from the activities carried out under this mining lease must be rehabilitated to the satisfaction of the Minister.	CL397	This RMP
3(f)	The lease holder must prepare a Rehabilitation Report to the satisfaction of the Minister. The report must: i) provide a detailed review of the progress of rehabilitation against the performance measures and criteria established in the approved MOP; ii) be submitted annually on the grant anniversary date (or at such other times as agreed by the Minister); and iii) be prepared in accordance with any relevant annual reporting guidelines published on the Department's website at www.resourcesandenergy.nsw.gov.au/miners-and-explorers/rules-and-forms/pgf/environmental-guidelines. *Note: The Rehabilitation Report replaces the Annual Environmental Management Report.*	CL397	This RMP
CCL743, ML1402			
4	The lease holder must lodge Environmental Management Reports (EMR) with the Director-General annually or at dates otherwise directed by the Director-General.	CCL743, ML1402	Section 8.2
5(b)	The EMR must report on progress in respect of rehabilitation completion criteria.	CCL743, ML1402	Section 8.2
7	Disturbed land must be rehabilitated to a sustainable/agreed end land use to the satisfaction of the Director-General	CCL743, ML1402	This RMP

Table 6: Regulatory Requirements Relating to Post Mining Land Use and Rehabilitation (Continued)

Condition	Requirement	Area	Section Reference
A444			
6	The licence holder must carry out rehabilitation of all disturbance caused by activities carried out under this licence in accordance with the requirements in Part B of the *Exploration Code of Practice – Rehabilitation* (NSW Department of Planning and Environment) to the satisfaction of the Minister.	A444	This RMP

This RMP has been prepared by qualified and experienced onsite environmental and mining personnel, with assistance from suitably qualified experts (Resource Strategies and Eco Logical Australia) where required.

2.2 Final Land Use Statement

As described in the EIS, final rehabilitation requirements are to be formulated in consultation with key government authorities and other relevant stakeholders and reported in the RMP to the satisfaction of the Secretary prior to the commencement of operations. Final land use will comprise of:

- remnant woodland vegetation;
- native open woodland vegetation; and
- agricultural pastureland.

2.2.1 Remnant Woodland Enhancement Programme

The Remnant Woodland Enhancement Programme (RWEP) implements strategies for the conservation and enhancement of areas of remnant woodland adjacent to Wollemi National Park and Warkworth Sands. Conservation and enhancement of these areas will strengthen linkages between Wollemi National Park, existing remnant vegetation and woodland rehabilitation areas.

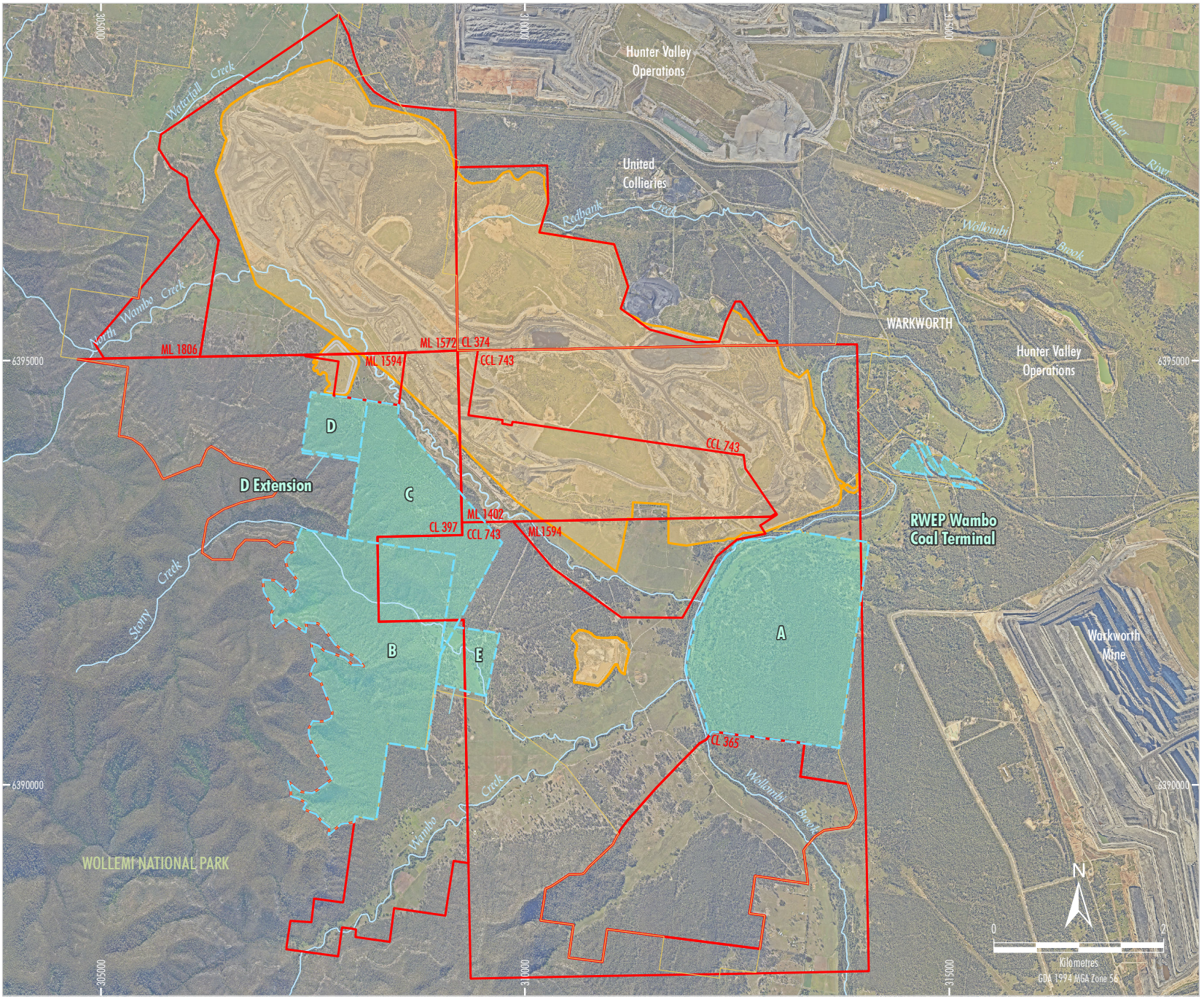
As part of the Biodiversity Offset Strategy (Condition B69, Schedule 2 of DA 305-7-2003), the rehabilitation will comprise of remnant woodland areas and open woodland revegetation as detailed in Appendix 6 of DA 305-7-2003 and shown in **Figure 3**. The approximate extent of the open woodland and remnant woodland areas are described in **Table 7**.

Table 7: Ecological Rehabilitation

Area	Size (ha)
Remnant Woodland Enhancement Area A	424
Remnant Woodland Enhancement Area B	454
Remnant Woodland Enhancement Area C	211
Open Woodland Revegetation	270
Remnant Woodland Enhancement Area D	46
Remnant Woodland Enhancement Area D Extension	2
Remnant Woodland Enhancement Area E	41.6
Remnant Woodland Enhancement Area for the Wambo Coal Terminal	Figure 3

Notes:

- The area of Open Woodland Revegetation was previously 1,570 hectares. Under EA (Mod 16) this obligation was reduced to 270 hectares, with the remaining area being taken up by SSD 7142.
- Additional offsets may be required by the Planning Secretary under condition B3.



LEGEND

- WCPL Owned Land
- Mining and Coal Lease Boundary
- Existing/Approved Surface Development Area
- Approved Underground Development
- Remnant Woodland Enhancement Program (RWEP) Area

Source: WCPL (2020); NSW Spatial Services (2020)
Orthophoto: WCPL (May 2019)

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WAMBO COAL MINE

Remnant Woodland Revegetation Areas

Figure 3

2.2.2 Open Woodland Revegetation Areas

Revegetation of woodland areas includes the use of endemic plant species which are characteristic of the vegetation communities to be disturbed within the project boundaries of DA-305-7-2003. Where possible, seed collection and propagation activities will contribute to revegetation associated with the rehabilitation of disturbance areas.

Condition B71, Schedule 2 of DA-305-7-2003 states:

> *The land used to satisfy the requirement to establish Open Woodland Revegetation under condition B69 cannot be the same land as land used for Open Woodland Revegetation or Ecological Mine Rehabilitation under SSD 7142. If the United Wambo open cut coal mine does not proceed to Phase 2 (as defined within SSD 7142) then the Applicant must establish an additional 1,300 hectares of Open Woodland Revegetation, as otherwise required under SSD 7142.*

The Open Woodland Vegetation is to be native woodland ecosystems characteristic of vegetation communities found in the local area and must complement the areas proposed for rehabilitation. The Open Woodland Revegetation areas will target the Plant Community Types (PCTs) described in the BMP (i.e. PCT 1603, PCT 1604 and PCT 1176).

2.3 Justification for the Proposed Final Land Use

As required by Condition B105, Schedule 2 of DA-305-2003, the final land use and rehabilitation objectives outlined in **Section 3** are generally in accordance with the final landform proposed in the Project EIS and associated documentation.

The proposed final landform and final land use are shown in **Figures 4 and 5**. This is in accordance with the proposed final landform detailed in the Project EIS and the Synoptic Plan for integrated landscape rehabilitation across the Upper Hunter Valley (NSW Department of Mineral Resources, 1999).

Notwithstanding the above, the preferred final landform concepts for the Mine will be revised and refined throughout the life of the Mine, utilising the outcomes of ongoing consultation with relevant authorities, stakeholders and the results of rehabilitation trials.

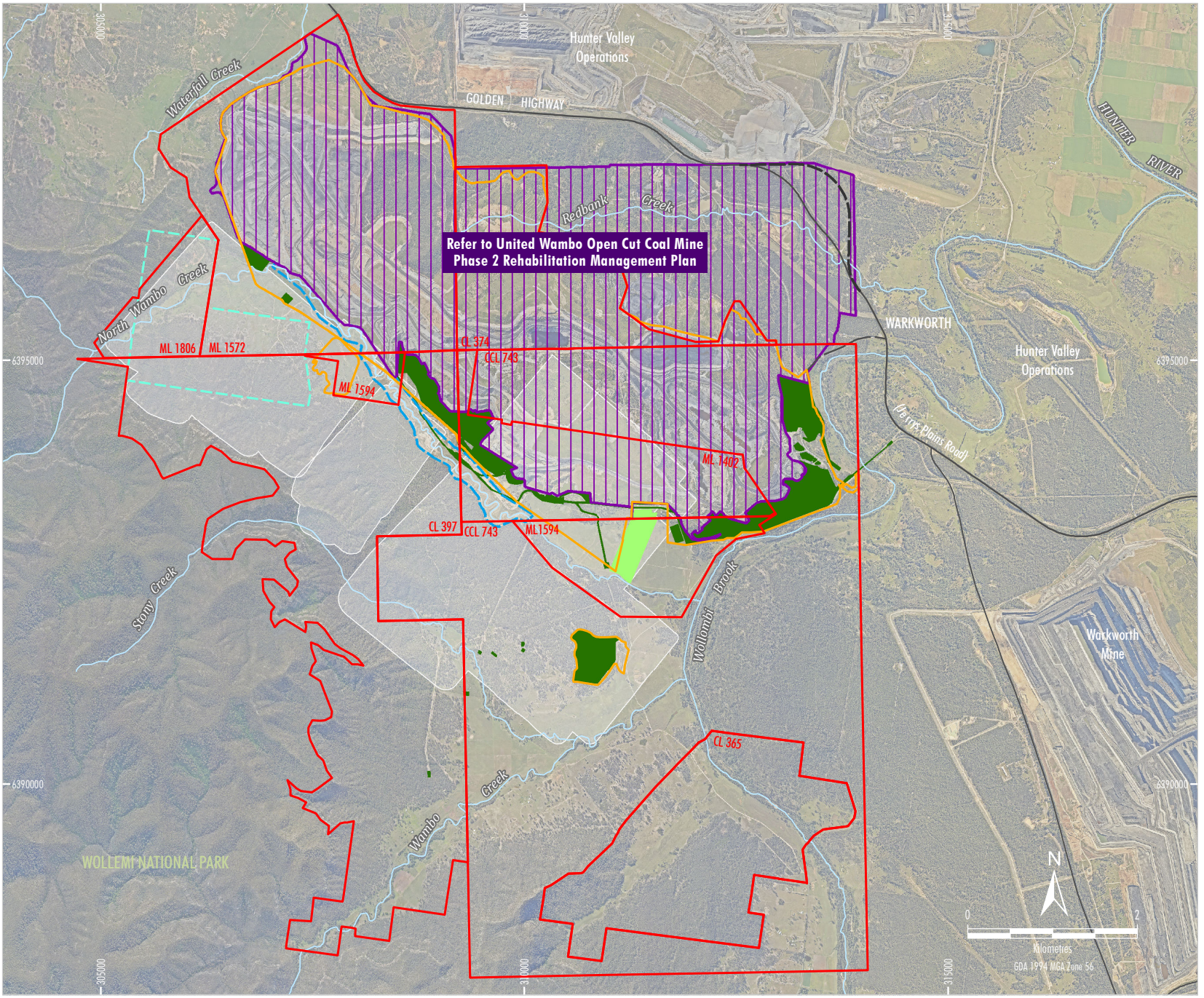
2.4 Stakeholder Consultation

2.4.1 Wambo Coal Mine

During the preparation of the EIS (WPCL, 2003), consultation was undertaken with the following:

- SSC;
- State Government authorities;
- Commonwealth Government authorities;
- local community groups;
- the Upper Hunter Wonnarua Council; and
- other Registered Aboriginal Parties (RAPs).

This consultation included the opportunity to review and comment on the proposed final land uses outlined in the EIS.



LEGEND

- Mining and Coal Lease Boundary
- SSD 7142 Operational Area
- Existing/Approved Surface Development Area
- North Wambo Creek Diversion
- Underground Mining Area
- Proposed Golden Highway Realignment

Final Land Use Domains

- A Water Management Areas
- B Existing Native Vegetation
- C Existing Pasture
- D Rehabilitation (Mixed Pasture/Woodland)
- E Rehabilitation (Woodland Corridors)
- F Mine Infrastructure Areas (to be retained)
- G Rehabilitation (Pasture)
- H Biodiversity Offset Area

NOTES

1. Water Management Areas and Mine Infrastructure Areas to be retained as part of the final landform will be confirmed through consultation to be undertaken during final mine closure planning.
2. The North Wambo Creek Diversion will be rehabilitated to Pasture or Mixed Pasture/Woodland with riparian vegetation and woodland species established along the creek line (riparian in areas where the creek profile slows water flow).
3. Rehabilitation of subsidence impacts in underground mining areas will be undertaken on a case by case basis to match the existing environment.

Source: WCPL (2020); NSW Spatial Services (2020)
Orthophoto: WCPL (May 2019)

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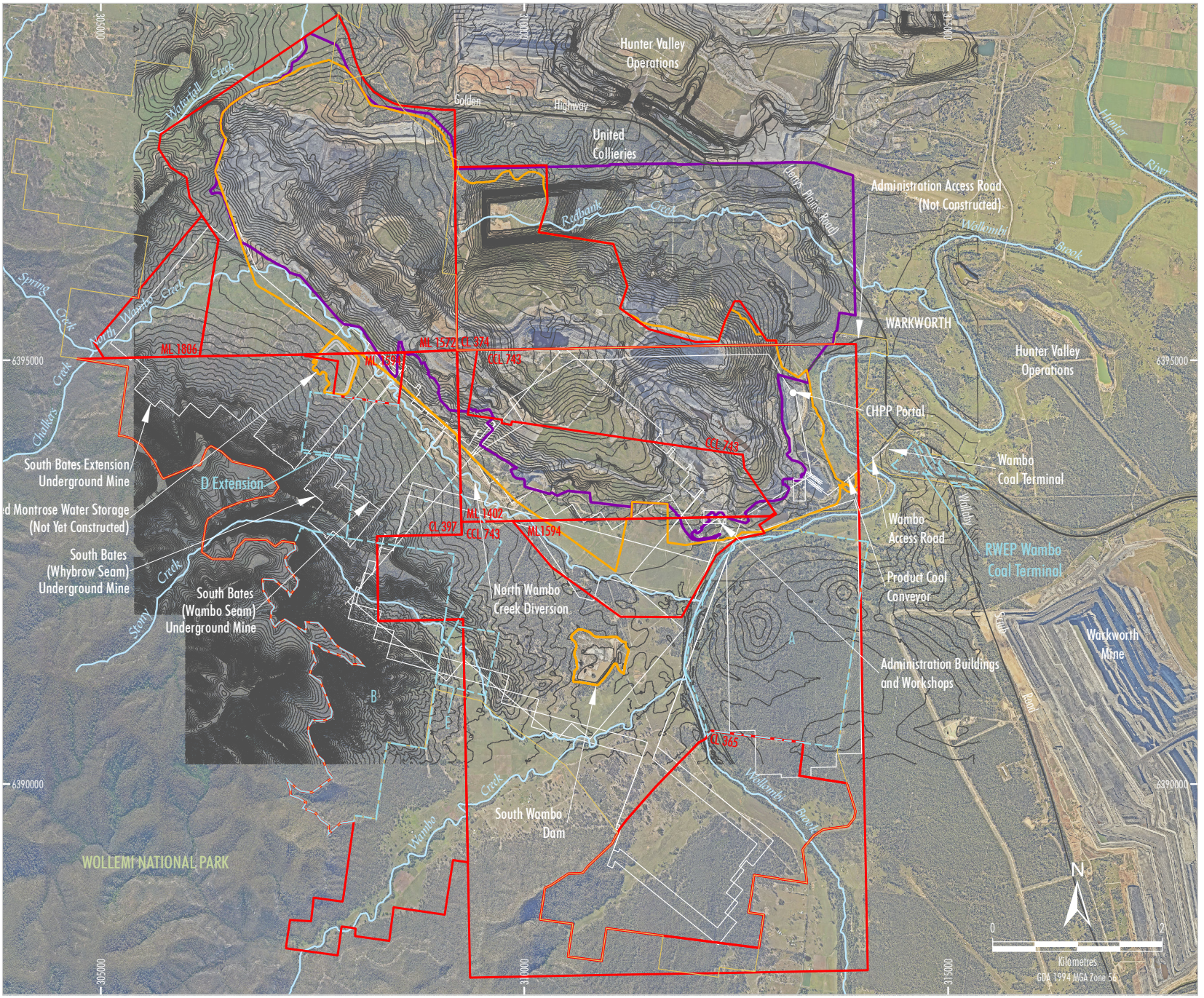
WAMBO COAL MINE

Final Land Use Domains and Landform Features

Figure 4



LEGEND

- WCPL Owned Land
- Mining and Coal Lease Boundary
- SSD 7142 Operational Area
- Existing/Approved Surface Development Area
- Approved Underground Development
- Remnant Woodland Enhancement Program (RWEP) Area
- Final Landform Contour (5 m interval)

Source: WCPL (2020); NSW Spatial Services (2020)
Orthophoto: WCPL (May 2019)

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WAMBO COAL MINE

Final Landform Contours

Figure 5

As described in **Section 1.2**, a number of Modifications to the Development Consent (DA 305-7-2003) have been approved since the original approval was granted in 2004. Where significant changes were proposed, the community and other relevant stakeholders were provided with the opportunity to submit comments on any relevant components of the proposed Modification.

All issues raised in the consultation process with regard to the final landform or final land use were addressed in the assessment processes and are reflected in the DA 305-7-2003 conditions.

WCPL acknowledges that Singleton Council has prepared a Local Strategic Planning Statement (LSPS), as required under the provisions of Part 3 of the EP&A Act. The LSPS identifies the following opportunities for Singleton to grow and innovate of relevance to the Wambo Coal Mine:

- Delivery of leading practice outcomes for post-mined land, which would involve collaborative pre-planning and investigation.
- Protecting, conserving and better utilisation of the natural, historic and cultural landscapes of the LGA in a manner that is sustainable and respectful and does not detract from significance and meaning associated with the landscapes.

To ensure the post-mining landform and land-use is consistent with community expectations, WCPL will continue to consult with Singleton Council and the community.

2.4.2 United Wambo Open Cut Coal Mine

Consultation undertaken by United in relation to the final landform and final land use for the United Wambo open cut coal mine is described in the United Wambo Phase 2 Rehabilitation Management Plan.

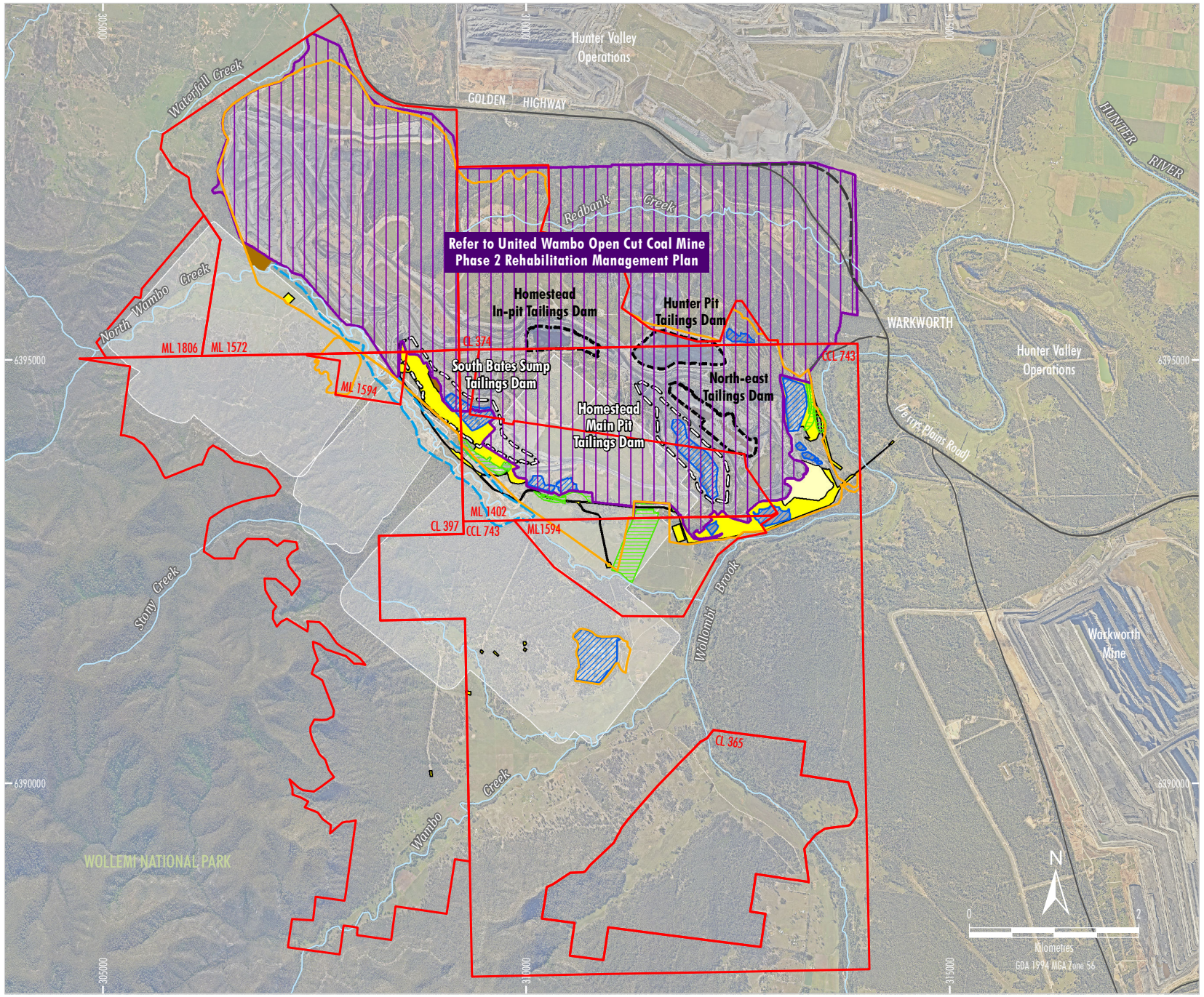
2.5 Final Land Use and Mining Domains

2.5.1 Final Land Use and Mining Domains

Mining domains for Phase 2 of the Mine are listed in **Table 8** and displayed on **Figure 6**. These mining domains can be defined as land management units within the Mine boundary, which have been delineated based on operational and functional purpose and therefore similar geophysical characteristics.

Table 8: Mining and Final Land Use Domains

Mining Domains	Code	Final Land Use Domains	Code
Mine Infrastructure Areas	1	Water Management Areas	A
Water Management Areas	2	Existing Native Vegetation	B
Tailings Emplacement Areas	3	Existing Pasture	C
Waste Rock Emplacement Areas	4	Rehabilitation (Mixed Pasture/Woodland)	D
Underground Mining Areas	5	Rehabilitation (Woodland Corridors)	E
Rehabilitation (Pre RMP)	6	Mine Infrastructure Areas (to be retained)	F
North Wambo Creek Diversion	7	Rehabilitation (Pasture)	G
Coal Handling and Preparation Plant	8	Biodiversity Offset Areas	H



LEGEND

- Mining and Coal Lease Boundary
- SSD 7142 Operational Area
- Existing/Approved Surface Development Area
- Waste Rock Emplacement Area
- Mine Infrastructure Area
- Coal Handling and Preparation Plant
- Tailings Emplacement Area
- Proposed Tailings Emplacement Area
- Water Management Area
- North Wambo Creek Diversion
- Rehabilitation Area (Pre-RMP)
- Underground Mining Area
- Proposed Golden Highway Realignment

Source: WCPL (2020); NSW Spatial Services (2020)
Orthophoto: WCPL (May 2019)

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WAMBO COAL MINE

Existing Mining Domains

Figure 6

Final land use domains are land management units characterised by a similar post mining land use objective. Final land use domains for the Mine are listed in **Table 8** and displayed on **Figure 4**. There are some small areas of Mining Domain 1 (i.e. Mine Infrastructure Areas) that are outside the limits of the underground mining operations and operational area as a result of exploration activities and development of the North Wambo Creek Diversion. These areas have been included for completeness and will be rehabilitated to Final Land Use Domain D (i.e. Rehabilitation [Mixed Pasture/Woodland]).

Table 9 summarises the final land use domains for each mining domain.

Table 9: Target Final Land Use Domains for Each Mining Domain

Mining Domains	Code	Final Land Use Domains	Code	Combined Code
Mine Infrastructure Areas	1	Rehabilitation (Mixed Pasture/Woodland)	D	1D
Water Management Areas	2	Water Management Areas	A	2A
		Rehabilitation (Mixed Pasture/Woodland)	D	2D
Tailings Emplacement Areas	3	Rehabilitation (Mixed Pasture/Woodland)	D	3D
Waste Rock Emplacement Areas	4	Rehabilitation (Mixed Pasture/Woodland)	D	4D
		Rehabilitation (Woodland Corridors)	E	4E
Underground Mining Area	5	Existing Native Vegetation	B	5B
		Existing Pasture	C	5C
		Rehabilitation (Pasture)	G	5G
		Biodiversity Offset Area	H	5H
Rehabilitation (Pre RMP)	6	Existing Pasture	C	6C
		Rehabilitation (Mixed Pasture/Woodland)	D	6D
North Wambo Creek Diversion	7	Rehabilitation (Mixed Pasture/Woodland)	D	7D
		Rehabilitation (Pasture)	G	7G
Coal Handling and Preparation Plant	8	Rehabilitation (Mixed Pasture/Woodland)	D	8D
		Rehabilitation (Woodland Corridors)	E	8E
		Mine Infrastructure Areas (to be retained)	F	8F

2.5.2 Asset Register

Table 10 defines the area of each mining domain and provides an overview of the major infrastructure assets within each domain.

Table 10: Mining Domain Area and Asset Register

Mining Domains	Domain Area (ha)	Major Infrastructure Assets
Mine Infrastructure Areas (Domain 1)	94.3	Rail loop
		Small buildings (main workshop area)
		Industrial buildings (main workshop area)
		Overhead powerlines
		Concrete pads, footings and bitumen (car park) for dumping in a void on the site (main workshop area)
		Concrete pads, footings and bitumen (car park) (admin)
		Small buildings (admin)
		Industrial buildings (admin)
		Small buildings tanks (sewerage)
		Roadways
Water Management (Domain 2)	84.1	Dewatering bores
		Mine water dams
		Clean water dams
		Pumps and water pipelines
Tailings Emplacement Areas (Domain 3)	9.7	South Bates Sump
		Hunter Pit Tailings Dam, North East Tailings Dam, Homestead In-Pit Tailings Dam and Homestead Main Pit Tailings storage facilities are included in the United RMP – Phase 2 (2020 -2022)
Waste Rock Emplacement Areas (Domain 4)	6.8	-
Underground Mining Area (Domain 5)	1820.2	Services
		Ventilation shafts
Rehabilitation (Pre RMP) (Domain 6)	38.6	-
North Wambo Creek Diversion (Domain 7)	83.3	Creek Diversion
		Batter chutes
Coal Handling and Preparation Plant (Domain 8)	16.1	CHPP
		Conveyors & gantries (includes overland conveyors)
		Concrete pads and footings
		Large tanks
		Small buildings
		Industrial buildings
		Carbonaceous material (spillage or otherwise) within footprint of the CHPP, product stockpiles, conveyors and workshops

3.0 Rehabilitation Objectives and Completion Criteria

3.1 Rehabilitation Objectives and 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 addition, detailed domain rehabilitation objectives are further outlined in **Table 11**. This will incorporate selective vegetation communities determined by beneficial post closure land uses, to be defined and agreed in consultation with relevant stakeholders, the community and government.

Final rehabilitation requirements would ultimately be refined and developed in consultation with key government authorities and other relevant stakeholders and reported in consecutive RMPs for approval prior to implementation.

Table 11: Domain Rehabilitation Objectives

Domain	Rehabilitation Objectives
Mining Domains	
Domain 1: **Mine Infrastructure Areas**	• All infrastructure removed that is not required post closure. • All hazardous materials and contaminated materials removed. • Entrances to underground mine workings sealed and made safe. • Rehabilitated land will be geotechnically stable and will not present a greater safety hazard than surrounding land. • Mined land will be re-contoured to a landform compatible with the surrounding natural landscape. • Land capability returned to a class similar to that existing prior to the commencement of mining (i.e. Class V and/or VI). • Woodland Corridor and Mixed Woodland/Pasture Areas established consistent with revegetation strategy. • Sections of the original proposed woodland corridor areas will be designed to complement the adjoining United-Wambo open-cut rehabilitation and link remnant vegetation to the north and east of the open-cut mine with the eastern borders of Wollemi National Park. • Rehabilitated landforms will be designed to maximise surface water drainage to the natural environment and shed water safely without causing excessive erosion, jeopardising landform geotechnical integrity or increasing pollution of downstream watercourses. • Final landforms are consistent with and complement the topography of the surrounding region to minimise the visual prominence of the final landforms in the post mining landscape.
Domain 2: **Water Management Areas**	• All hazardous materials and contaminated materials removed. • All infrastructure removed that is not required post closure. • Preservation of existing beneficial use of water resources. • Provide a self-sustaining land form post mine closure. • Rehabilitated landforms will be designed to maximise surface water drainage to the natural environment and shed water safely without causing excessive erosion, jeopardising landform geotechnical integrity or increasing pollution of downstream watercourses. • Water quality non-polluting and appropriate for conservation end land use. • 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 in accordance with the EPL water quality criteria.

Table 11: Domain Rehabilitation Objectives (Continued)

Domain	Rehabilitation Objectives
Mining Domains (Continued)	
Domain 3: **Tailings Emplacement Areas**	• All hazardous materials and contaminated materials removed. • Design of capping to prevent soil erosion and exposure to tailings material beneath. • Rehabilitated land will be geotechnically stable and will not present a greater safety hazard than surrounding land. • Mined land will be re-contoured to a landform compatible with the surrounding natural landscape. • Land capability returned to a class similar to that existing prior to the commencement of mining (i.e. Class V and/or VI). • Woodland Corridor and Mixed Woodland/Pasture Areas established consistent with revegetation strategy. • Sections of the original proposed woodland corridor areas will be designed to complement the adjoining United-Wambo open-cut rehabilitation and link remnant vegetation to the north and east of the open-cut mine with the eastern borders of Wollemi National Park. • Rehabilitated landforms will be designed to maximise surface water drainage to the natural environment and shed water safely without causing excessive erosion, jeopardising landform geotechnical integrity or increasing pollution of downstream watercourses. • Final landforms are consistent with and complement the topography of the surrounding region to minimise the visual prominence of the final landforms in the post mining landscape.
Domain 4: **Waste Rock Emplacement Areas**	• All hazardous materials and contaminated materials removed. • Rehabilitated land will be geotechnically stable and will not present a greater safety hazard than surrounding land. • Mined land will be re-contoured to a landform compatible with the surrounding natural landscape. • Land capability returned to a class similar to that existing prior to the commencement of mining (i.e. Class V and/or VI). • Woodland Corridor and Mixed Woodland/Pasture Areas established consistent with revegetation strategy. • Sections of the original proposed woodland corridor areas will be designed to complement the adjoining United-Wambo open-cut rehabilitation and link remnant vegetation to the north and east of the open-cut mine with the eastern borders of Wollemi National Park. • Rehabilitated landforms will be designed to maximise surface water drainage to the natural environment and shed water safely without causing excessive erosion, jeopardising landform geotechnical integrity or increasing pollution of downstream watercourses. • Final landforms are consistent with and complement the topography of the surrounding region to minimise the visual prominence of the final landforms in the post mining landscape.
Domain 5: **Underground Mining Area**	• Land affected by subsidence will be stable and will not present a greater safety or environmental hazard than surrounding land or present a risk to future final land use options. • All watercourses subject to subsidence impacts shall be hydraulically and geomorphologically stable. • Establish areas of self-sustaining riparian vegetation and woodland species within any diverted and/or re-established creek lines and retained water features (riparian in areas where the creek profile slows water flow). • Portals and vent shafts will be retained as habitat for threatened species (e.g. bats), where practicable.

Table 11: Domain Rehabilitation Objectives (Continued)

Domain	Rehabilitation Objectives
Mining Domains (Continued)	
Domain 6: **Rehabilitation (Pre RMP)**	• Rehabilitated land will be geotechnically stable and will not present a greater safety hazard than surrounding land. • Mined land will be re-contoured to a landform compatible with the surrounding natural landscape. • Land capability returned to a class similar to that existing prior to the commencement of mining (i.e. Class V and/or VI). • Woodland Corridor and Mixed Woodland/Pasture Areas established consistent with revegetation strategy. • Sections of the original proposed woodland corridor areas will be designed to complement the adjoining United-Wambo open-cut rehabilitation and link remnant vegetation to the north and east of the open-cut mine with the eastern borders of Wollemi National Park. • Rehabilitated landforms will be designed to maximise surface water drainage to the natural environment and shed water safely without causing excessive erosion, jeopardising landform geotechnical integrity or increasing pollution of downstream watercourses. • Final landforms are consistent with and complement the topography of the surrounding region to minimise the visual prominence of the final landforms in the post mining landscape.
Domain 7: **North Wambo Creek Diversion**	• Pasture species established consistent with revegetation strategy. • Creek diversion stable and will not present a greater safety hazard than surrounding land. • Creek diversion able to shed water safely without causing excessive erosion, jeopardising landform integrity or increasing pollution of downstream watercourses. • All watercourses subject to subsidence impacts shall be hydraulically and geomorphologically stable and have aquatic ecology and riparian vegetation that is the same or better than prior to commencement of mining. • Establish areas of self-sustaining riparian vegetation and woodland species within any diverted and/or re-established creek lines and retained water features (riparian in areas where the creek profile slows water flow). •
Domain 8: **Coal Handling and Preparation Plant**	• All infrastructure removed that is not required post closure. • All hazardous materials and contaminated materials removed. • Rehabilitated land will be geotechnically stable and will not present a greater safety hazard than surrounding land. • Mined land will be re-contoured to a landform compatible with the surrounding natural landscape. • Land capability returned to a class similar to that existing prior to the commencement of mining (i.e. Class V and/or VI). • Woodland Corridor and Mixed Woodland/Pasture Areas established consistent with revegetation strategy. • Sections of the original proposed woodland corridor areas will be designed to complement the adjoining United-Wambo open-cut rehabilitation and link remnant vegetation to the north and east of the open-cut mine with the eastern borders of Wollemi National Park. • Rehabilitated landforms will be designed to maximise surface water drainage to the natural environment and shed water safely without causing excessive erosion, jeopardising landform geotechnical integrity or increasing pollution of downstream watercourses. • Final landforms are consistent with and complement the topography of the surrounding region to minimise the visual prominence of the final landforms in the post mining landscape.

Table 11: Domain Rehabilitation Objectives (Continued)

Domain	Rehabilitation Objectives
Final Land Use Domains	
Domain A: **Water Management Areas**	• Objectives as outlined for Domain 2.
Domain B: **Existing Native Vegetation**	• Conserve regional biodiversity, whilst enhancing the habitat available to flora and fauna. • Existing remnant vegetation to be preserved wherever possible. • Land affected by subsidence will be stable and will not present a greater safety or environmental hazard than surrounding land or present a risk to future final land use options.
Domain C: **Existing Pasture**	• Conserve and maintain existing pasture, wherever possible, to support sustainable land use (e.g. grazing activities). • Land affected by subsidence will be stable and will not present a greater safety or environmental hazard than surrounding land or present a risk to future final land use options.
Domain D: **Rehabilitation (Mixed Pasture/ Woodland)**	• Establish 270 hectares of Open Woodland Revegetation. • Rehabilitated land will be geotechnically stable and will not present a greater safety hazard than surrounding land. • Mined land will be re-contoured to a landform compatible with the surrounding natural landscape. • Land capability returned to a class similar to that existing prior to the commencement of mining (i.e. Class V). • Mixed Woodland/Pasture Areas established consistent with revegetation strategy and analogue vegetation communities. • Establish areas of self-sustaining: – riparian vegetation and woodland species, within any diverted and/or re-established creek lines and retained water features (riparian in areas where the creek profile slows water flow); – habitat resources for threatened flora and fauna species; and – vegetation connectivity and wildlife corridors, as far as is reasonable and feasible. • 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. • Rehabilitated landforms will be designed to maximise surface water drainage to the natural environment and shed water safely without causing excessive erosion, jeopardising landform geotechnical integrity or increasing pollution of downstream watercourses. • Final landforms are consistent with and complement the topography of the surrounding region to minimise the visual prominence of the final landforms in the post mining landscape.

Table 11: Domain Rehabilitation Objectives (Continued)

Domain	Rehabilitation Objectives
Final Land Use Domains (Continued)	
Domain E: **Rehabilitation (Woodland Corridors)**	• Establish 270 hectares of Open Woodland Revegetation. • Rehabilitated land will be geotechnically stable and will not present a greater safety hazard than surrounding land. • Mined land will be re-contoured to a landform compatible with the surrounding natural landscape. • Land capability returned to a class similar to that existing prior to the commencement of mining (i.e. Class VI). • Woodland Corridor Areas established consistent with revegetation strategy and analogue vegetation communities. • Establish areas of self-sustaining: – habitat resources for threatened flora and fauna species; and – vegetation connectivity and wildlife corridors, as far as is reasonable and feasible. • 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. • Sections of the original proposed woodland corridor areas will be designed to complement the adjoining United-Wambo open-cut rehabilitation and link remnant vegetation to the north and east of the open-cut mine with the eastern borders of Wollemi National Park. • Rehabilitated landforms will be designed to maximise surface water drainage to the natural environment and shed water safely without causing excessive erosion, jeopardising landform geotechnical integrity or increasing pollution of downstream watercourses. • Final landforms are consistent with and complement the topography of the surrounding region to minimise the visual prominence of the final landforms in the post mining landscape.
Domain F: **Mine Infrastructure Areas**	• All infrastructure removed that is not required post closure. • All hazardous materials and contaminated materials removed. • Safe, stable and non-polluting.
Domain G: **Rehabilitation (Pasture)**	• Land capability returned to a class similar to that existing prior to disturbance (i.e. Class III). • Pasture areas established consistent with analogue pasture communities. • Land affected by subsidence will be stable and will not present a greater safety or environmental hazard than surrounding land or present a risk to future final land use options. • 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.
Domain H: **Biodiversity Offset Area**	• Negligible reduction to previously identified biodiversity credits. • Land affected by subsidence will be stable and will not present a greater safety or environmental hazard than surrounding land or present a risk to future final land use options.

The rehabilitation objectives in **Table 11** are considered to be broader objectives that cover specific aspects of rehabilitation. To complement these objectives, WCPL have developed performance indicators and preliminary completion criteria for each domain and rehabilitation phase based on the SMART principle. The objectives, indicators and completion criteria for each of the final land use and mining domains during the rehabilitation phases are specified in **Tables 12 to 16**. Further detail on the rehabilitation phases is provided in **Section 6.2**.

In addition to the rehabilitation objectives outlined in **Table 11** above, where any built features have been damaged by WCPL's mining operations, WCPL would repair the feature to pre-mining condition or equivalent unless the owner agrees otherwise or damage is fully restored, repaired or compensated for under the *Coal Mine Subsidence Compensation Act 2017*.

WCPL would also ensure that there is no additional risk to public safety (compared to prior to mining) from cliffs, minor cliffs, rock face features and steep slopes in the operational areas.

Site security measures will be implemented for the duration of the Mine. These measures will be maintained during closure, decommissioning and demolition activities to prevent unauthorised access and to ensure public safety. Security measures will include:

- fencing and signposting of the site;
- security patrols;
- all personnel, contractors and visitors will be required to undertake a relevant site induction and sign in and out of the site; and
- all visitors will be required to be accompanied by a site representative at all times.

Where relevant, the performance indicators and preliminary completion criteria have been based on monitoring results collected from selected reference sites representative of the proposed post-mining land use for that domain (e.g. woodland corridors and pasture areas).

In consultation with the relevant stakeholders, the preliminary completion criteria and associated rehabilitation tables will be reviewed and refined. The refinement of the criteria will involve, but not be limited to, using the results from research and rehabilitation trials and monitoring results from the various existing and proposed monitoring programs as outlined in **Sections 8 and 9**. The refinement of the completion criteria will be utilised to quantitatively demonstrate the progress and ultimate rehabilitation success throughout the life of the Mine.

To minimise the adverse socio-economic effects associated with mine closure, WCPL would:

- Notify the community and workforce of upcoming closure and provide regular updates on the status of the mine.
- Reduce the mine work force progressively as closure approaches (if possible).
- Where possible, WCPL would work with other Peabody sites to provide employment opportunities to workers.

As operations approach completion at the Mine (i.e. within five years of closure), this RMP will be updated to provide further detail on measures to be taken to minimise the potential adverse socio-economic effects associated with mine closure.

Table 12: Rehabilitation Performance Indicators and Completion Criteria – Decommissioning

Mining Domain	Final Land Use Domains	Rehabilitation Objectives	Indicator	Completion Criteria	Justification or Validation Method	Complete (Y/N)	TARP Reference Number	Progress at Start of RMP
Mine Infrastructure Areas (1). Coal Handling and Preparation Plant (8).	Rehabilitation (Mixed Pasture/ Woodland) (1D, 8D). Rehabilitation (Woodland Corridors) (8E). Mine Infrastructure Areas (to be retained) (8F).	• All infrastructure is removed that is not required post closure. • All hazardous materials and contaminated materials removed. • Entrances and shafts to underground mine workings sealed and made safe. • Domain does not present a greater safety hazard than surrounding land. • Domain is safe, stable and non-polluting.	Removal of services.	All redundant services (including electrical, water and communication services) have been disconnected and removed.	Record of activities and statement of completion provided. Photographic record of decommissioned sites.	No	17	Ongoing Operations
			Removal of infrastructure.	All redundant infrastructure (including all buildings, fixed plant and other infrastructure with no beneficial use at mine closure) has been demolished and removed from site.		No		Ongoing Operations
			Removal of roads and car parks.	Removal of hardstand areas, car parks, concrete footings and roadways (with no beneficial use) at post mining has been completed.		No		Ongoing Operations
			Removal of carbonaceous material.	All carbonaceous material on the surface has been removed and disposed on-site within appropriate coarse reject emplacement areas.		No		Ongoing Operations
			Removal of hazardous materials.	All hazardous materials have been classified in accordance with the EPA's *Waste Classification Guidelines* and removed from site.		No		Ongoing Operations
			Removal of wastes.	All wastes generated during decommissioning have been classified in accordance with the EPA's *Waste Classification Guidelines*, and have been disposed and/or removed from site.		No		Ongoing Operations
			Land contamination.	All land contamination assessments have been completed and all identified contaminated sites have been successfully remediated and verified by contamination specialists' reports.	Copies of assessments undertaken made available. Record of activities and statement of completion provided.	No		Ongoing Operations
			Seal underground portals.	All underground portals have been sealed in accordance with the requirements of *Mine Design Guideline (MDG) 6001 (Guidelines for the Permanent Filling and Capping of Surface Entries to Coal Seams).*	Sealing complete in accordance with *MDG6001 Guidelines for the Permanent Filling and Capping of Surface Entries to Coal Seams*. Record of activities and statement of completion provided.	No		Ongoing operations
			Seal ventilation shafts.	All underground mine ventilation shafts have been sealed in accordance with *MDG6001 (Guidelines for the Permanent Filling and Capping of Surface Entries to Coal Seams).*		No		Ongoing operations
			Management of mine water.	All water discharged from site meets relevant volumes and quality as specified by EPL 529.	Monitoring of water quality and quantity in accordance with Water Management Plan.	No	14	Ongoing Operations
			Signs of spontaneous combustion.	No spontaneous combustion evident at mine closure and during decommissioning.	Monitoring for events in accordance with Spontaneous Combustion Management Plan.	No	5	Ongoing Operations

Table 12: Rehabilitation Performance Indicators and Completion Criteria – Decommissioning (Continued)

Mining Domain	Final Land Use Domains	Rehabilitation Objectives	Indicator	Completion Criteria	Justification or Validation Method	Complete (Y/N)	TARP Reference Number	Progress at Start of RMP
Water Management Areas (2).	Water Management Areas (2A). Rehabilitation (Mixed Pasture/ Woodland) (2D).	• All infrastructure is removed that is not required post closure. • All hazardous materials and contaminated materials removed. • Domain does not present a greater safety hazard than surrounding land. • Domain is safe, stable and non-polluting. • 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 in accordance with the EPL water quality criteria.	Removal of all services.	All redundant services have been disconnected and removed.	Record of activities and statement of completion provided. Photographic record of decommissioned sites.	No	17	Ongoing Operations
			Removal of infrastructure.	All redundant infrastructure (including pumps, pontoons and pipelines) have been removed.		No		Ongoing Operations
			Dewater mine water dams.	All mine water dams that are not required at post-closure have been completely dewatered.	Record of pumping activities.	No		Ongoing Operations
			Removal of contaminants.	Removal of contaminated sediments from mine water dams has been completed. Removal of contaminated sediments verified in contamination specialist's reports.	Copies of assessments undertaken made available. Record of activities and statement of completion provided.	No		Ongoing Operations
			Reshape mine water dam.	Reshaping of mine water dams to their intended post mining use has been completed.	Photographic record. Record of activities and statement of completion provided.	No		Ongoing Operations
			Management of mine water.	All water discharged from site meets relevant volumes and quality as specified by EPL 529.	Monitoring of water quality and quantity in accordance with Water Management Plan.	No	14	Ongoing Operations
Tailings Emplacement Areas (3).	Rehabilitation (Mixed Pasture/ Woodland) (3D).	• All infrastructure is removed that is not required post closure. • All hazardous materials and contaminated materials removed. • Domain does not present a greater safety hazard than surrounding land. • Domain is safe, stable and non-polluting.	Removal of services.	All redundant services have been disconnected and removed.	Record of activities and statement of completion provided. Photographic record of decommissioned sites.	No	17	Ongoing Operations
			Removal of infrastructure.	All redundant infrastructure has been removed.		No		Ongoing Operations
			Removal of supernatant water.	Dewatering (where necessary) of remaining surface water above tailings has been completed.		No		Ongoing Operations
			Desiccation of tailings.	Desiccation of tailings completed and permits a trafficable surface. Confirmation of trafficable surface verified in geotechnical reports.	*Work Health and Safety (Mines) Regulation 2014 [NSW] Schedule 3 High risk activities.*	No		Ongoing Operations
			Signs of spontaneous combustion.	No spontaneous combustion evident during decommissioning.	Monitoring for events in accordance with Spontaneous Combustion Management Plan.	No	5	Ongoing Operations
			Management of mine water.	All water discharged from site meets relevant volumes and quality as specified by EPL 529.	Monitoring of water quality and quantity in accordance with Water Management Plan.	No	14	Ongoing Operations

Table 12: Rehabilitation Performance Indicators and Completion Criteria – Decommissioning (Continued)

Mining Domain	Final Land Use Domains	Rehabilitation Objectives	Indicator	Completion Criteria	Justification or Validation Method	Complete (Y/N)	TARP Reference Number	Progress at Start of RMP
Waste Rock Emplacement Areas (4). Underground Mining Area (5). Rehabilitation (Pre RMP) (6).	Rehabilitation (Mixed Pasture/ Woodland) (4D, 6D). Rehabilitation (Woodland Corridors) (4E). Existing Native Vegetation (5B). Existing Pasture (5C, 6C). Rehabilitation (Pasture) (5G). Biodiversity Offset Area (5H).	• All infrastructure is removed that is not required post closure. • All hazardous materials and contaminated materials removed. • Domain does not present a greater safety hazard than surrounding land. • Portals and vent shafts will be retained as habitat for threatened species (e.g. bats), where practicable. • Domain is safe, stable and non-polluting.	Removal of services.	All redundant services have been disconnected and removed.	Record of activities and statement of completion provided. Photographic record of decommissioned sites.	No	17	Ongoing Operations
			Sealing of portals and vent shafts.	All portals and vent shafts have been sealed unless they are to be retained as habitat for threatened species (e.g. bats).		No		Ongoing Operations
			Removal of infrastructure.	All redundant infrastructure has been removed.		No		Ongoing Operations
			Removal of carbonaceous material.	All carbonaceous material on the surface has been removed and disposed on-site within appropriate coarse reject emplacement areas.		No		Ongoing Operations
			Signs of spontaneous combustion.	No spontaneous combustion evident during decommissioning.	Monitoring for events in accordance with Spontaneous Combustion Management Plan.	No	5	Ongoing Operations
			Subsidence cracking.	No subsidence surface cracks remaining that present a risk to the environment, safety and the final land use objectives.	Subsidence inspections as per relevant Extraction Plan(s). Record of activities and statement of completion provided. Photographic record.	No	16	Ongoing Operations
			Management of mine water.	All water discharged from site meets relevant volumes and quality as specified by EPL 529.	Monitoring of water quality and quantity in accordance with Water Management Plan.	No	14	Ongoing Operations
North Wambo Creek Diversion (7).	Rehabilitation (Mixed Pasture/ Woodland) (7D). Rehabilitation (Pasture) (7G).	• All infrastructure is removed that is not required post closure. • All hazardous materials and contaminated materials removed. • Domain does not present a greater safety hazard than surrounding land. • Domain is safe, stable and non-polluting.	Removal of services.	All redundant services have been disconnected and removed.	Record of activities and statement of completion provided. Photographic record of decommissioned sites.	No	17	Ongoing Operations
			Removal of infrastructure.	All redundant infrastructure has been removed.		No		Ongoing Operations
			Management of surface water.	Water discharged from diversion meets water quality trigger values for North Wambo Creek, under normal flow conditions, as provided in the Water Management Plan.	Monitoring of water quality and quantity in accordance with Water Management Plan.	No	14	Ongoing Operations

Table 13: Rehabilitation Performance Indicators and Completion Criteria – Landform Establishment

Mining Domain	Final Land Use Domains	Rehabilitation Objectives	Indicator	Completion Criteria	Justification or Validation Method	Complete (Y/N)	TARP Reference Number	Progress at Start of RMP
Mine Infrastructure Areas (1). Waste Rock Emplacement Areas (4). Coal Handling and Preparation Plant (8).	Rehabilitation (Mixed Pasture/ Woodland) (1D, 4D, 8D). Rehabilitation (Woodland Corridors) (4E, 8E).	• All hazardous materials and contaminated materials removed. • Rehabilitated land will be geotechnically stable and will not present a greater safety hazard than surrounding land. • Mined land will be re-contoured to a landform compatible with the surrounding natural landscape. • Rehabilitated landforms will be designed to maximise surface water drainage to the natural environment and shed water safely without causing excessive erosion, jeopardising landform geotechnical integrity or increasing pollution of downstream watercourses. • Final landforms are consistent with and complement the topography of the surrounding region to minimise the visual prominence of the final landforms in the post mining landscape. • Domain is safe, stable and non-polluting.	Waste rock material characterisation.	Material characterisation of the final land form surface (to identify appropriate soil ameliorants and application rates) has been completed.	Testing of waste rock material. Separation of appropriate material during mining. Supported by "as constructed" final landform plan. Photographic record.	No	1, 2, 3	Ongoing Operations
			Application of ameliorants.	Application of appropriate soil ameliorants applied (at specified rates) has been completed.		No		Ongoing Operations
			pH.	Soil pH (H_2O) range: pH 5.5 – pH 7.8.		No		Ongoing Operations
			Electrical conductivity (EC).	Soil EC (H_2O) 1200 micro Siemens per centimetre (µS/cm).		No		Ongoing Operations
			Coarse rejects capped.	Coarse rejects capped with a minimum of 2 metres (m) of inert overburden material.		No	7, 8, 9	Ongoing Operations
			Coarse rejects on surface.	No coarse rejects within the waste rock emplacement areas to be within 2 m of the final landform surface Reference Level (RL).		No		Ongoing Operations
			Large rocks on surface.	Rock raking of the final landform completed to remove rocks >200 millimetres (mm) in diameter.		No		Ongoing Operations
			Slope gradients.	No greater than 1:6 (10 degrees or 17%) across the entire ML area (unless otherwise agreed by RR).	Supported by "as constructed" final landform plan. LiDAR scans of final landform. Photographic record. Final landform inspections.	No	9	Ongoing Operations
			Slope lengths.	Slope length within range of 50 m – 80 m (subject to slope gradient).		No	8	Ongoing Operations
			Landform stability.	No slumping evident.		No	6	Ongoing Operations
			Final landform height.	Final landform height 160 m Australian Height Datum (AHD).		No	9	Ongoing Operations
			Slope shape (Preferred Profile).	Mine waste rock emplacement slopes constructed to form an 'S' shape with the upper nominally at 20 to 30% being convex and the lower 70 to 80% being concave.		No	8	Ongoing Operations
			Slope shape (Profile design when external features limit the Preferred Profile).	Mine waste rock emplacement slopes constructed with a "back-sloped bench', approximately 4 m wide, constructed on the contour approximately mid-point of the slope.		No	9	Ongoing Operations
			Drainage designs.	Drainage lines with <3% fall have been appropriately armoured.		No	6	Ongoing Operations
			Landform drainage.	Reinstatement of natural drainage patterns (where possible).		No	6	Ongoing Operations
			Signs of spontaneous combustion.	No spontaneous combustion evident during decommissioning.	Monitoring for events in accordance with Spontaneous Combustion Management Plan.	No	5	Ongoing Operations
			Acid mine drainage (AMD).	No evidence of AMD.	Monitoring of water quality in accordance with Water Management Plan. Testing of overburden material to confirm minimal AMD potential.	No	4	Ongoing Operations
			Erosion control.	No tunnel erosion evident. No gully erosion evident. No rill erosion >200 mm deep and/or >200 mm wide. Appropriate erosion controls are in place and effective.	Rehabilitation monitoring. Final landform inspections. Photographic record.	No	15	Ongoing Operations
			Management of mine water.	Water runoff is contained and managed within internal water management system. No water discharged from site, unless relevant volumes and quality as specified by EPL 529 can be achieved.	Monitoring of water quality and quantity in accordance with Water Management Plan.	No	14	Ongoing Operations

Table 13: Rehabilitation Performance Indicators and Completion Criteria – Landform Establishment (Continued)

Mining Domain	Final Land Use Domains	Rehabilitation Objectives	Indicator	Completion Criteria	Justification or Validation Method	Complete (Y/N)	TARP Reference Number	Progress at Start of RMP
Water Management Areas (2).	Water Management Areas (2A). Rehabilitation (Mixed Pasture/ Woodland) (2D).	• Preservation of existing beneficial use of water resources. • Provide a self-sustaining landform post mine closure. • Rehabilitated landforms will be designed to maximise surface water drainage to the natural environment and shed water safely without causing excessive erosion, jeopardising landform geotechnical integrity or increasing pollution of downstream watercourses. • Domain is safe, stable and non-polluting. • 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 in accordance with the EPL water quality criteria.	Dam dewatering.	Mine water from dam returned to mine water system.	Water Management Plan.	No	17	Ongoing Operations
			Contaminant removal.	Contaminants removed from dam and placed within open cut voids.	Copies of assessments undertaken made available. Record of activities and statement of completion provided.	No		Ongoing Operations
			Dam reshaping.	Re-shaping dams (where required) in accordance with their intended use.	Photographic record. Record of activities and statement of completion provided.	No		Ongoing Operations
			Material characterisation.	Material characterisation of the final land form surface (to identify appropriate soil ameliorants and application rates).	Testing of waste rock material. Separation of appropriate material during mining. Supported by “as constructed” final landform plan.	No	4	Ongoing Operations
			Application of ameliorants.	Application of appropriate soil ameliorants applied (at specified rates) has been completed.	Managed in accordance with Topsoil Management Procedure. Record of activities and statement of completion provided.	No	3	Ongoing Operations
			Erosion control.	No tunnel erosion evident. No gully erosion evident. No rill erosion >200 mm deep and/or >200 mm wide. Appropriate erosion controls are in place and effective.	Rehabilitation monitoring. Final landform inspections. Photographic record.	No	15	Ongoing Operations
			Management of mine water.	Water runoff is contained and managed within internal water management system. No water discharged from site, unless relevant volumes and quality as specified by EPL 529 can be achieved.	Monitoring of water quality and quantity in accordance with Water Management Plan.	No	14	Ongoing Operations

Table 13: Rehabilitation Performance Indicators and Completion Criteria – Landform Establishment (Continued)

Mining Domain	Final Land Use Domains	Rehabilitation Objectives	Indicator	Completion Criteria	Justification or Validation Method	Complete (Y/N)	TARP Reference Number	Progress at Start of RMP
Tailings Emplacement Areas (3).	Rehabilitation (Mixed Pasture/ Woodland) (3D).	• All hazardous materials and contaminated materials removed. • Design of capping to prevent soil erosion and exposure to tailings material beneath. • Rehabilitated land will be geotechnically stable and will not present a greater safety hazard than surrounding land. • Mined land will be re-contoured to a landform compatible with the surrounding natural landscape. • Domain is safe, stable and non-polluting.	Tailings capping.	Tailings capped with 2 m to 5 m (subject to final design requirements) of inert overburden material.	Testing of waste rock material. Separation of appropriate material during mining. Supported by "as constructed" final landform plan.	No	5	Ongoing Operations
			Capping drainage.	Capping layer has been designed to allow for surface water runoff, with slope grades of <1%.		No	5	Ongoing Operations
			Capping landform.	Capping layer has been re-profiled and is compatible with the local surrounding landscape.		No	5	Ongoing Operations
			Material characterisation.	Material characterisation of the final land form surface (to identify appropriate soil ameliorants and application rates) has been completed.	Managed in accordance with Topsoil Management Procedure. Record of activities and statement of completion provided.	No	3	Ongoing Operations
			Application of ameliorants.	Application of appropriate soil ameliorants applied (at specified rate) has been completed.		No		Ongoing Operations
			pH.	Soil pH (H_2O) range: pH 5.5 – pH 7.8.		No		Ongoing Operations
			EC.	Soil EC (H_2O) 1200 µS/cm.		No		Ongoing Operations
			Spontaneous combustion.	No spontaneous combustion evident at mine closure and during landform establishment.	Monitoring for events in accordance with Spontaneous Combustion Management Plan.	No	5	Ongoing Operations
			Erosion control.	No tunnel erosion evident. No gully erosion evident. No rill erosion >200 mm deep and/or >200 mm wide. Appropriate erosion controls are in place and effective.	Rehabilitation monitoring. Final landform inspections. Photographic record.	No	15	Ongoing Operations
			Management of mine water.	Water runoff is contained and managed within internal water management system. No water discharged from site, unless relevant volumes and quality as specified by EPL 529 can be achieved.	Monitoring of water quality and quantity in accordance with Water Management Plan.	No	14	Ongoing Operations
Underground Mining Area (5).	Existing Native Vegetation (5B). Existing Pasture (5C). Rehabilitation (Pasture) (5G). Biodiversity Offset Area (5H).	• Land affected by subsidence will be stable and will not present a greater safety or environmental hazard than surrounding land or present a risk to future final land use options. • All watercourses subject to subsidence impacts shall be hydraulically and geomorphologically stable and have aquatic ecology and riparian vegetation that is the same or better than prior to commencement of mining. • Domain is safe, stable and non-polluting.	Subsidence cracking.	No subsidence surface cracks remaining that present a risk to the environment, safety and the final land use objectives. Remediation of surface cracks >50 mm.	Subsidence inspections as per relevant Extraction Plan(s). Record of activities and statement of completion provided. Photographic record.	No	16	Ongoing Operations
			Creek stability.	Creeks affected by subsidence have been repaired and their functionality and stability has been confirmed by a hydrological engineer (or equivalent).	Hydrological engineer's report (or equivalent).	No	16	Ongoing Operations
			Erosion control.	No tunnel erosion evident. No gully erosion evident. No rill erosion >200 mm deep and/or >200 mm wide. Groundcover is >60%. Appropriate erosion controls are in place and effective.	Rehabilitation monitoring. Final landform inspections. Photographic record.	No	15	Ongoing Operations

Table 13: Rehabilitation Performance Indicators and Completion Criteria – Landform Establishment (Continued)

Mining Domain	Final Land Use Domains	Rehabilitation Objectives	Indicator	Completion Criteria	Justification or Validation Method	Complete (Y/N)	TARP Reference Number	Progress at Start of RMP
Rehabilitation (Pre RMP) (6).	Existing Pasture (6C). Rehabilitation (Mixed Pasture/ Woodland) (6D).	• Land capability returned to a class similar to that existing prior to disturbance (i.e. Class III). • Land affected by subsidence will be stable and will not present a greater safety or environmental hazard than surrounding land or present a risk to future final land use options. • Domain is safe, stable and non-polluting.	Subsidence cracking.	No subsidence surface cracks remaining that present a risk to the environment, safety and the final land use objectives.	Subsidence inspections as per relevant Extraction Plan(s). Record of activities and statement of completion provided. Photographic record.	No	16	Ongoing Operations
North Wambo Creek Diversion (7).	Rehabilitation (Mixed Pasture/ Woodland) (7D). Rehabilitation (Pasture) (7G).	• Land affected by subsidence will be stable and will not present a greater safety or environmental hazard than surrounding land or present a risk to future final land use options. • All watercourses subject to subsidence impacts shall be hydraulically and geomorphologically stable and have aquatic ecology and riparian vegetation that is the same or better than prior to commencement of mining. • Rehabilitated land will be geotechnically stable and will not present a greater safety hazard than surrounding land • Rehabilitated landforms will be designed to maximise surface water drainage to the natural environment and shed water safely without causing excessive erosion, jeopardising landform geotechnical integrity or increasing pollution of downstream watercourses. • Domain is safe, stable and non-polluting.	Management of surface water.	Water discharged from diversion meets water quality trigger values for North Wambo Creek under normal flow conditions, as provided in the Water Management Plan.	Monitoring of water quality and quantity in accordance with Water Management Plan.	No	14	Ongoing Operations
			Subsidence cracking.	No subsidence surface cracks remaining that present a risk to the environment, safety and the final land use objectives. Remediation of surface cracks >50 mm.	Subsidence inspections as per relevant Extraction Plan(s). Record of activities and statement of completion provided. Photographic record.	No	16	Ongoing Operations
			Creek stability.	Creeks affected by subsidence have been repaired and their functionality and stability has been confirmed by a hydrological engineer (or equivalent). Remediation of all visible surface cracks in the low flow channel as soon as practicable.	Hydrological engineer's report (or equivalent).	No	16	Ongoing Operations
			Erosion control.	No tunnel erosion evident. No gully erosion evident. No rill erosion >200 mm deep and/or >200 mm wide. Groundcover is >60%. Appropriate erosion controls are in place and effective.	Rehabilitation monitoring. Final landform inspections. Photographic record.	No	15	Ongoing Operations

Table 13: Rehabilitation Performance Indicators and Completion Criteria – Landform Establishment (Continued)

Mining Domain	Final Land Use Domains	Rehabilitation Objectives	Indicator	Completion Criteria	Justification or Validation Method	Complete (Y/N)	TARP Reference Number	Progress at Start of RMP
Coal Handling and Preparation Plant (8).	Mine Infrastructure Areas (to be retained) (8F).	• No rehabilitation objectives exist for this final land use domain during this phase of rehabilitation (i.e. as the infrastructure will be retained, there is no landform establishment).	N/A	N/A	N/A	N/A	N/A	N/A

Table 14: Rehabilitation Performance Indicators and Completion Criteria – Growth Medium Development

Mining Domain	Final Land Use Domains	Rehabilitation Objectives	Indicator	Completion Criteria	Justification or Validation Method	Complete (Y/N)	TARP Reference Number	Progress at Start of RMP
Mine Infrastructure Areas (1). Water Management Areas (2). Waste Rock Emplacement Areas (4). Underground Mining Areas (5). Rehabilitation (Pre RMP) (6). North Wambo Creek Diversion (7). Coal Handling and Preparation Plant (8).	Rehabilitation (Mixed Pasture/ Woodland) (1D, 2D, 4D, 6D, 7D, 8D). Rehabilitation (Woodland Corridors) (4E, 8E). Rehabilitation (Pasture) (5G, 7G).	• All hazardous materials and contaminated materials removed. • Provide a growth medium that is suitable for the establishment and maintenance of the selected revegetation species to achieve the final land use. • Provide a growth medium that has physical and chemical properties comparable with reference sites. • Land capability returned to a class similar to that existing prior to the commencement of mining (i.e. Class V and/or VI). • Domain is safe, stable and non-polluting.	Topsoil depth.	Topsoil has been applied at a minimum of approximately 100mm thickness in all areas and/or otherwise been achieved with the addition of humus/compost material to form a topsoil/composite mix.	Managed in accordance with Topsoil Management Procedure. Record of activities and statement of completion provided.	No	1, 2, 3	Ongoing operations
			Topsoil characterisation.	Topsoil characterisation of the final land form surface (to identify appropriate soil ameliorants and application rates) has been completed.		No		Ongoing operations
			Topsoil (pH).	Soil pH (H_2O) range: pH 5.5 – pH 7.8.		No		Ongoing operations
			Topsoil EC.	Soil EC (H_2O) 1200 µS/cm.		No		Ongoing operations
			Topsoil (Phosphorous).	<table><tr><th>Phosphate Test Method</th><th>Productive Pasture</th><th>Native Vegetation</th></tr><tr><td>Colwell</td><td>20-40 mg/kg</td><td>10-20 mg/kg</td></tr><tr><td>Bray</td><td>12-22 mg/kg</td><td>6-12 mg/kg</td></tr></table>		No		Ongoing operations
			Topsoil (Organic Carbon).	Organic Matter % (grams/100 grams) >3%.		No		Ongoing operations
			Application of ameliorants.	Application of appropriate soil ameliorants (at specified rate) has been completed.		No		Ongoing operations
			Topsoil ripping.	Ripping has been carried out to an approximate depth of 300 mm to 500 mm on the contour. Full and continuous ripping has been undertaken between rip lines.		No		Ongoing operations
			Topsoil stockpile.	Stockpiles which are to be inactive for extended periods have been fertilised and seeded with annual cover crop and/or preferred native pasture species.		No		Ongoing operations
			Topsoil stockpile signage.	Once constructed, the topsoil stockpiles have been signposted. Barriers constructed if necessary.		No		Ongoing operations
			Topsoil stockpile location.	No topsoil stockpiles are to be placed in the invert of drainage lines or drainage works.		No		Ongoing operations
			Exotic cover.	Biometric monitoring confirms exotic cover < 10% in woodland rehabilitation areas. Non-native aggressive colonising grass and shrub species will be managed in adjacent pasture areas so they do not pose a threat to nearby woodland rehabilitation areas.	Rehabilitation monitoring.	No	12	Ongoing operations
			Management of mine water.	Water runoff is contained and managed within internal water management system. No water discharged from site, unless relevant volumes and quality as specified by EPL 529 can be achieved.	Monitoring of water quality and quantity in accordance with Water Management Plan.	No	14	Ongoing operations
			Water quality.	Water discharged from diversion meets water quality trigger values for North Wambo Creek under normal flow conditions, as provided in the Water Management Plan.		No		Ongoing operations
			Spontaneous combustion.	No spontaneous combustion evident.	Monitoring for events in accordance with Spontaneous Combustion Management Plan.	No	5	Ongoing operations
			Erosion control.	No tunnel erosion evident. No gully erosion evident. No rill erosion >200 mm deep and/or >200 mm wide. Appropriate erosion controls are in place and effective.	Rehabilitation monitoring. Final landform inspections. Photographic record.	No	15	Ongoing operations

Table 14: Rehabilitation Performance Indicators and Completion Criteria – Growth Medium Development (Continued)

Mining Domain	Final Land Use Domains	Rehabilitation Objectives	Indicator	Completion Criteria	Justification or Validation Method	Complete (Y/N)	TARP Reference Number	Progress at Start of RMP
Water Management Areas (2). Underground Mining Areas (5). Rehabilitation (Pre RMP) (6). Coal Handling and Preparation Plant (8).	Water Management Areas (2A). Existing Native Vegetation (5B). Existing Pasture (5C, 6C). Biodiversity Offset Area (5H). Mine Infrastructure Areas (to be retained) (8F).	• No rehabilitation objectives exist for these final land use domains during this phase of rehabilitation (i.e. as they will not undergo growth medium development).	N/A	N/A	N/A	N/A	N/A	N/A
Tailings Emplacement Areas (3).	Rehabilitation (Mixed Pasture/ Woodland) (3D).	Refer to United Wambo Phase 2 Rehabilitation Management Plan.						

Table 15: Rehabilitation Performance Indicators and Completion Criteria – Ecosystem and Land Use Establishment

<table>
<tr><th>Mining Domain</th><th>Final Land Use Domains</th><th>Rehabilitation Objectives</th><th>Indicator</th><th>Completion Criteria</th><th>Justification or Validation Method</th><th>Complete (Y/N)</th><th>TARP Reference Number</th><th>Progress at Start of RMP</th></tr>
<tr><td rowspan="6">Mine Infrastructure Areas (1).
Water Management Areas (2).
Waste Rock Emplacement Areas (4).
Underground Mining Areas (5).
Rehabilitation (Pre RMP) (6).
North Wambo Creek Diversion (7).
Coal Handling and Preparation Plant (8).</td><td rowspan="6">Rehabilitation (Mixed Pasture/ Woodland) (1D, 2D, 4D, 6D, 7D, 8D).
Rehabilitation (Woodland Corridors) (4E, 8E).
Rehabilitation (Pasture) (5G, 7G).</td><td rowspan="6">• Establish a minimum of 270 hectares of open woodland revegetation.
• Land capability returned to a class similar to that existing prior to the commencement of mining (i.e. Class V and Class VI).
• Mixed Woodland/Pasture Areas established consistent with revegetation strategy.
• Woodland Corridor Areas established consistent with revegetation strategy.
• Establish areas of self-sustaining:
– riparian vegetation and woodland species, within any diverted and/or re-established creek lines and retained water features (riparian in areas where the creek profile slows water flow);
– habitat resources for threatened flora and fauna species; and
– vegetation connectivity and wildlife corridors, as far as is reasonable and feasible.
• 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.
• Rehabilitated landforms will be designed to maximise surface water drainage to the natural environment and shed water safely without causing excessive erosion, jeopardising landform geotechnical integrity or increasing pollution of downstream watercourses.
• Soil properties are suitable for the establishment and maintenance of selected vegetation species.</td><td>Ground cover.</td><td>Minimum 70% of area has a vegetative cover.
No single bare area >20 square metres (m^2).</td><td rowspan="3">BMP.
Results of rehabilitation monitoring program.</td><td>No</td><td>10</td><td>Ongoing operations</td></tr>
<tr><td>Habitat augmentation.</td><td>Where appropriate and practical salvaged tree hollows, timber logs, large rocks etc. will be incorporated into the final landform to augment the habitat value.</td><td>No</td><td>18</td><td>Ongoing operations</td></tr>
<tr><td>Landscape Function Analysis (LFA) (Woodland Rehabilitation).
LFA (Pasture/ Woodland).
LFA (Riparian).
Biometric flora plots.</td><td>A colour system in the BMP highlights the performance of each LFA site within each rehabilitation area.
<table>
<tr><th>Green</th><th>Yellow</th><th>Orange</th><th>Red</th></tr>
<tr><td>Area is generally meeting or exceeding target values and values do not show trend of decline over time – where monitoring sites are meeting targets and values are relatively consistent, reduce monitoring to infrequent LFA when changes in landscape or management practices occur i.e. fire or grazing)</td><td>Area generally falls below target values but within 75% of targets or appears to be on a trajectory of improvement without the need for management intervention – further monitoring required</td><td>Area generally falls between 75% and 50% of target values or shows little sign of improvement over several monitoring events – further monitoring and possibly management actions required</td><td>Area falls below 50% of target and is unlikely to improve without management actions or shows trend of decline which is unlikely to improve without management actions</td></tr>
</table>
Target scores were developed to provide quantitative measures that can be used to compare rehabilitation areas with reference sites throughout the course of the monitoring program. These scores were developed using the baseline data and data from nearby sites within relatively undisturbed riparian habitat. Target scores are provided in below, along with the average scores from the 2015 baseline monitoring program.
<table>
<tr><th colspan="2">Site Type</th><th>LOI</th><th>SI</th><th>INFI</th><th>NI</th></tr>
<tr><td rowspan="3">Woodland Rehabilitation</td><td>Average Score</td><td>0.79</td><td>62.67</td><td>42.77</td><td>38.17</td></tr>
<tr><td>Range</td><td>0.68-0.92</td><td>59.7-63.7</td><td>34.6-55.1</td><td>28.7-47.1</td></tr>
<tr><td>Target Score</td><td>>0.87</td><td>>59</td><td>>43</td><td>>36</td></tr>
<tr><td rowspan="3">Pasture Rehabilitation</td><td>Average Score</td><td>0.76</td><td>61.9</td><td>38.43</td><td>30.23</td></tr>
<tr><td>Range</td><td>0.47-0.97</td><td>49.1-68.8</td><td>24.9-46.6</td><td>23.6-38.8</td></tr>
<tr><td>Target Score</td><td>>0.93</td><td>>61</td><td>>29</td><td>>25</td></tr>
<tr><td rowspan="3">North Wambo Creek Diversion</td><td>Average Score</td><td>0.64</td><td>58.5</td><td>29.4</td><td>24.4</td></tr>
<tr><td>Range</td><td>0.45-0.81</td><td>50.3-66.7</td><td>22.1-39.4</td><td>18.7-30.7</td></tr>
<tr><td>Target Score</td><td>>0.84</td><td>>62</td><td>>41</td><td>>37</td></tr>
<tr><td rowspan="2">Wambo Creek (Reference site: 14R)</td><td>Score</td><td>1.0</td><td>52.5</td><td>47.1</td><td>30.7</td></tr>
<tr><td>Target Score</td><td>>0.84</td><td>>62</td><td>>41</td><td>>37</td></tr>
</table>
Over the RMP term, WCPL will review the use of LFA as a monitoring method and transition to alternative monitoring methods for rehabilitated landscape establishment which may include soil monitoring, Biometric Vegetation Assessment and visual assessment as detailed below. The RMP will be updated to reflect any changes to the monitoring methodology.</td><td>No</td><td>10, 11, 12</td><td>Ongoing operations</td></tr>
<tr><td>Exotic cover.</td><td>Biometric monitoring confirms exotic cover < 10% in woodland rehabilitation areas. Non-native aggressive colonising grass and shrub species will be managed in adjacent pasture areas so they do not pose a threat to nearby woodland rehabilitation areas.</td><td>No</td><td>10</td><td>Ongoing operations</td></tr>
<tr><td>Management of mine water.</td><td>Water runoff is contained and managed within internal water management system. No water discharged from site, unless relevant volumes and quality as specified by EPL 529 can be achieved.</td><td rowspan="2">Monitoring of water quality and quantity in accordance with Water Management Plan.</td><td>No</td><td>14</td><td>Ongoing operations</td></tr>
<tr><td>Water quality.</td><td>Water discharged from diversion meets water quality trigger values for North Wambo Creek under normal flow conditions, as provided in the Water Management Plan.</td><td>No</td><td></td><td>Ongoing operations</td></tr>
<tr><td>Spontaneous combustion.</td><td>No spontaneous combustion evident.</td><td>Monitoring for events in accordance with Spontaneous Combustion Management Plan.</td><td>No</td><td>5</td><td>Ongoing Operations</td></tr>
</table>

Table 15: Rehabilitation Performance Indicators and Completion Criteria – Ecosystem and Land Use Establishment (Continued)

Mining Domain	Final Land Use Domains	Rehabilitation Objectives	Indicator	Completion Criteria	Justification or Validation Method	Complete (Y/N)	TARP Reference Number	Progress at Start of RMP
(as above)	(as above)	• Sections of the original proposed woodland corridor will be designed to complement the adjoining United-Wambo open cut rehabilitation and link remnant vegetation to the north and east of the open cut mine with the eastern borders of Wollemi National Park. • Pasture Areas established consistent with analogue pasture communities. • Land affected by subsidence will be stable and will not present a greater safety or environmental hazard than surrounding land or present a risk to future final land use options. • Domain is safe, stable and non-polluting.	Erosion control.	No tunnel erosion evident. No gully erosion evident. No rill erosion >200 mm deep and/or >200 mm wide. Appropriate erosion controls are in place and effective.	Rehabilitation monitoring. Final landform inspections. Photographic record.	No	15	Ongoing operations
Water Management Areas (2). Underground Mining Areas (5). Rehabilitation (Pre RMP) (6). Coal Handling and Preparation Plant (8).	Water Management Areas (2A). Existing Native Vegetation (5B). Existing Pasture (5C, 6C). Biodiversity Offset Area (5H). Mine Infrastructure Areas (to be retained) (8F).	No rehabilitation objectives exist for these final land use domains during this phase of rehabilitation (i.e. as they will not undergo ecosystem and land use establishment).	N/A	N/A	N/A	N/A	N/A	N/A
Tailings Emplacement Areas (3).	Rehabilitation (Mixed Pasture/ Woodland) (3D).	Refer to United Phase 2 Rehabilitation Management Plan.						

Table 16: Rehabilitation Performance Indicators and Completion Criteria – Ecosystem and Land Use Development

<table>
<tr><th>Mining Domain</th><th>Final Land Use Domains</th><th>Rehabilitation Objectives</th><th>Indicator</th><th>Completion Criteria</th><th>Justification or Validation Method</th><th>Complete (Y/N)</th><th>TARP Reference Number</th><th>Progress at Start of RMP</th></tr>
<tr>
<td>Mine Infrastructure Areas (1).
Water Management Areas (2).
Waste Rock Emplacement Areas (4).
Underground Mining Areas (5).
Rehabilitation (Pre RMP) (6).
North Wambo Creek Diversion (7).
Coal Handling and Preparation Plant (8).</td>
<td>Rehabilitation (Mixed Pasture/ Woodland) (1D, 2D, 4D, 6D, 7D, 8D).
Rehabilitation (Woodland Corridors) (4E, 8E).
Rehabilitation (Pasture) (5G, 7G).</td>
<td>• Establish a minimum of 270 hectares of open woodland revegetation.
• Land capability returned to a class similar to that existing prior to the commencement of mining (i.e. Class V and Class VI).
• Mixed Woodland/ Pasture Areas established consistent with revegetation strategy.
• Woodland Corridor Areas established consistent with revegetation strategy.
• Establish areas of self-sustaining:
- habitat resources for threatened flora and fauna species; and
- vegetation connectivity and wildlife corridors, as far as is reasonable and feasible.</td>
<td>LFA (Woodland Rehabilitation).
LFA (Pasture/ Woodland).
LFA (Riparian).
Biometric flora plots.</td>
<td>A green, yellow, orange and red colour system has been developed to rank each measured attribute according to the performance and management actions required. The completion criteria below were developed using Table 3 in BioMetric 2.0 Operational Manual assessment methodology (NSW DECC, 2008) which was designed to score Biometric vegetation plots based on the difference between the measured values and the benchmark values for each PCT. Benchmark values were determined by OEH (at the time of development) for each PCT and these were adapted to create aspirational but achievable targets. This colour ranking system is shown below. The number of hollow-bearing trees and length of fallen logs have been presented as a measure of fauna habitat attributes. However, no performance criteria have been set for these attributes in remnant vegetation, as in some cases it may take many years (50+) for a suitable density of hollows and logs to form naturally.
In addition to the completion criteria below, flora species composition of woodland rehabilitation will be compared to the characteristic species in each target plant community type and against the vegetation needs of threatened woodland species known or predicted from the local area to identify the need for additional planting or seeding.
Average values will be used for assessment against completion criteria where multiple sites sample rehabilitation of similar age and treatment. Individual site scores will be reported and investigation initiated at sites where completion criteria are not met to determine if these poor scores are representative of a broader area and additional actions are required.
<table>
<tr><th>Site Attribute</th><th>Red (needs greater improvement)</th><th>Orange (in need of improvement)</th><th>Yellow (Not meeting target but values still may be acceptable)</th><th>Green (Excellent – within target range)</th></tr>
<tr><td>Native Plant Species Richness (NPS)</td><td>0-10%</td><td>>10-<50% of target range</td><td>50-<100% of target range</td><td>target range</td></tr>
<tr><td>Native Overstorey Cover (NOS)</td><td>0-10% or
>200% of target range</td><td>>10-<50% or
>150-200% of target range</td><td>50-<100% or
>100-150% of target range</td><td>Within target range</td></tr>
<tr><td>Native Midstorey Cover (NMS)</td><td>0-10% or
>200% of target range</td><td>>10-<50% or
>150-200% of target range</td><td>50-<100% or
>100-150% of target range</td><td>Within target range</td></tr>
<tr><td>Native Ground Cover – grasses (NGCG)</td><td>0-10% or
>200% of target range</td><td>>10-<50% or
>150-200% of target range</td><td>50-<100% or
>100-150% of target range</td><td>Within target range</td></tr>
<tr><td>Native Ground Cover – shrubs (NGCS)</td><td>0-10% or
>200% of target range</td><td>>10-<50% or
>150-200% of target range</td><td>50-<100% or
>100-150% of target range</td><td>Within target range</td></tr>
<tr><td>Native Ground Cover – other (NGCO)</td><td>0-10% or
>200% of target range</td><td>>10-<50% or
>150-200% of target range</td><td>50-<100% or
>100-150% of target range</td><td>Within target range</td></tr>
<tr><td>Proportion of native overstorey species regenerating (OR) in vegetation zone</td><td>0</td><td>0-0.5</td><td>0.5-1</td><td>1</td></tr>
<tr><td>Exotic plant cover (EPC)</td><td>>66%</td><td>33-66%</td><td>10-33%</td><td>0-10%</td></tr>
</table>
</td>
<td>BMP.
Results of rehabilitation monitoring program.</td>
<td>No</td>
<td>10, 11, 12</td>
<td>Ongoing operations</td>
</tr>
</table>

Table 16: Rehabilitation Performance Indicators and Completion Criteria – Ecosystem and Land Use Development (Continued)

<table>
<tr><th>Mining Domain</th><th>Final Land Use Domains</th><th>Rehabilitation Objectives</th><th>Indicator</th><th>Completion Criteria</th><th>Justification or Validation Method</th><th>Complete (Y/N)</th><th>TARP Reference Number</th><th>Progress at Start of RMP</th></tr>
<tr>
<td>(as above)</td>
<td>(as above)</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.
• Rehabilitated landforms will be designed to maximise surface water drainage to the natural environment and shed water safely without causing excessive erosion, jeopardising landform geotechnical integrity or increasing pollution of downstream watercourses.
• Soil properties are suitable for the establishment and maintenance of selected vegetation species.</td>
<td>(as above)</td>
<td>Completion criteria for seven PCTs within the RWEP areas have been developed considering both the baseline data collected during the 2014/2015 monitoring program and BCD benchmark values for each PCT. This criterion is included below, along with the average value calculated from the site value scores for each monitoring plot within the PCT.
Community condition benchmarks (developed by OEH [now BCD] for each PCT) have been modified to provide realistic, ambitious but achievable performance criteria for each plant community. Monitoring results can then be compared to these performance criteria to determine if management actions are likely to be required.
<table>
<tr><th colspan="2">Plant Community Type (PCT)</th><th>NPS</th><th>NOS (%)</th><th>NMS (%)</th><th>NGC G</th><th>NGC S</th><th>NGC O</th><th>EPC</th><th>OR</th><th>HBT</th><th>FL</th></tr>
<tr><td rowspan="4">PCT 42: River Red Gum / River Oak riparian woodland wetland in the Hunter Valley</td><td>Average Value</td><td>14.3</td><td>15.3</td><td>14.5</td><td>28.9</td><td>1.1</td><td>6.9</td><td>38.3</td><td>1</td><td>0</td><td>14.9</td></tr>
<tr><td>Range</td><td>10-19</td><td>0.5-27</td><td>0-34</td><td>12-64</td><td>0-2</td><td>0-38</td><td>0-54</td><td>1</td><td>0</td><td>0-35</td></tr>
<tr><td>Benchmark Value</td><td>38</td><td>10-50</td><td>10-50</td><td>20-60</td><td>1-5</td><td>10-30</td><td><5</td><td>1</td><td>0.1</td><td>10</td></tr>
<tr><td>Completion Criteria</td><td>>20</td><td>10-50</td><td>10-50</td><td>20-60</td><td>1-5</td><td>5-30</td><td><10</td><td>1</td><td>-</td><td>-</td></tr>
<tr><td rowspan="4">PCT 1658: Rough barked Apple–Narrow leaved Ironbark-Blakely's Red Gum-Bull Oak–Coast Banksia woodland on sands of the Warkworth area</td><td>Average Value</td><td>27</td><td>11.8</td><td>10.8</td><td>19.5</td><td>3.5</td><td>31</td><td>10.4</td><td>1</td><td>1</td><td>13.9</td></tr>
<tr><td>Range</td><td>23-31</td><td>3.5-17</td><td>5.5-17.5</td><td>10-28</td><td>2-4</td><td>14-60</td><td>0-32</td><td>1</td><td>0-2</td><td>4-34</td></tr>
<tr><td>Benchmark Value</td><td>26</td><td>13-40</td><td>10-50</td><td>4-15</td><td>5-30</td><td>5-25</td><td>0</td><td>1</td><td>0.8</td><td>20</td></tr>
<tr><td>Completion Criteria</td><td>>20</td><td>10-40</td><td>10-50</td><td>4-20</td><td>5-30</td><td>5-35</td><td><10</td><td>1</td><td>-</td><td>-</td></tr>
<tr><td rowspan="4">PCT 1603: Narrow leaved Ironbark – Bull Oak - Grey Box shrub- grass open forest of the central and lower Hunter</td><td>Average Value</td><td>29</td><td>13.8</td><td>9.2</td><td>26</td><td>7.4</td><td>4</td><td>0.2</td><td>1</td><td>0.7</td><td>26.35</td></tr>
<tr><td>Range</td><td>12-41</td><td>7-22.5</td><td>0-14</td><td>4-56</td><td>2-30</td><td>0-18</td><td>0-2</td><td>1</td><td>0-3</td><td>4-60</td></tr>
<tr><td>Benchmark Value</td><td>41</td><td>15-40</td><td>5-10</td><td>30-50</td><td>5-10</td><td>20-40</td><td><5</td><td>1</td><td>3</td><td>5</td></tr>
<tr><td>Completion Criteria</td><td>>25</td><td>10-40</td><td>5-10</td><td>15-50</td><td>5-10</td><td>5-40</td><td><5</td><td>1</td><td>-</td><td>-</td></tr>
</table>
</td>
<td>BMP.
Results of rehabilitation monitoring program.</td>
<td>No</td>
<td>10, 11, 12</td>
<td>Ongoing operations</td>
</tr>
</table>

Table 16: Rehabilitation Performance Indicators and Completion Criteria – Ecosystem and Land Use Development (Continued)

<table>
<tr><th>Mining Domain</th><th>Final Land Use Domains</th><th>Rehabilitation Objectives</th><th>Indicator</th><th>Completion Criteria</th><th>Justification or Validation Method</th><th>Complete (Y/N)</th><th>TARP Reference Number</th><th>Progress at Start of RMP</th></tr>
<tr><td>(as above)</td><td>(as above)</td><td>Sections of the original proposed woodland corridor will be designed to complement the adjoining United-Wambo open cut rehabilitation and link remnant vegetation to the north and east of the open cut mine with the eastern borders of Wollemi National Park.
Pasture Areas established consistent with analogue pasture communities.
Land affected by subsidence will be stable and will not present a greater safety or environmental hazard than surrounding land or present a risk to future final land use options.
Domain is safe, stable and non-polluting.</td><td>(as above)</td><td>
<table>
<tr><th>Plant Community Type (PCT)</th><th></th><th>NPS</th><th>NOS (%)</th><th>NMS (%)</th><th>NGCG</th><th>NGCS</th><th>NGCO</th><th>EPC</th><th>OR</th><th>HBT</th><th>FL</th></tr>
<tr><td rowspan="4">PCT1604: Narrow leaved Ironbark – Grey Box - Spotted Gum shrub - grass of the central and lower Hunter</td><td>Average Value</td><td>35</td><td>22.5</td><td>7.2</td><td>34</td><td>8</td><td>5.3</td><td>0</td><td>1</td><td>0</td><td>35.3</td></tr>
<tr><td>Range</td><td>36-42</td><td>14.5-23</td><td>7.5-12</td><td>22-52</td><td>6-16</td><td>0-12</td><td>0</td><td>1</td><td>0</td><td>38-45</td></tr>
<tr><td>Benchmark Value</td><td>41</td><td>15-40</td><td>5-20</td><td>30-50</td><td>5-10</td><td>20-40</td><td><5</td><td>1</td><td>3</td><td>5</td></tr>
<tr><td>Completion Criteria</td><td>>35</td><td>15-40</td><td>5-20</td><td>30-50</td><td>5-15</td><td>5-40</td><td><5</td><td>1</td><td>-</td><td>-</td></tr>
<tr><td rowspan="4">PCT1176: Slaty Box – Grey Gum shrubby woodland on footslopes of the upper Hunter Valley, Sydney Basin Bioregion</td><td>Average Value</td><td>31</td><td>12.1</td><td>11.6</td><td>23.5</td><td>3</td><td>6</td><td>0</td><td>1</td><td>0</td><td>26</td></tr>
<tr><td>Range</td><td>27-33</td><td>12-12.5</td><td>10.5-13.5</td><td>6-36</td><td>0-2</td><td>0-6</td><td>0</td><td>1</td><td>0</td><td>17-40</td></tr>
<tr><td>Benchmark Value</td><td>21</td><td>19-42</td><td>6-24</td><td>5-20</td><td>0-25</td><td>2-10</td><td><5</td><td>1</td><td>1</td><td>30</td></tr>
<tr><td>Completion Criteria</td><td>21</td><td>15-40</td><td>5-30</td><td>5-30</td><td>0-25</td><td>2-10</td><td><5</td><td>1</td><td>-</td><td>-</td></tr>
<tr><td rowspan="3">PCT 1584: White Mahogany – Spotted Gum - Grey Myrtle semi-mesic shrubby open forest of the central and lower Hunter Valley</td><td>Average Value</td><td>50</td><td>10.5</td><td>19</td><td>70</td><td>16</td><td>8</td><td>0</td><td>1</td><td>0</td><td>25</td></tr>
<tr><td>Benchmark Value</td><td>51</td><td>22-45</td><td>5-40</td><td>5-25</td><td>10-20</td><td>5-20</td><td><5</td><td>1</td><td>1</td><td>20</td></tr>
<tr><td>Completion Criteria</td><td>>45</td><td>15-45</td><td>5-40</td><td>5-40</td><td>10-20</td><td>5-20</td><td>0</td><td>1</td><td>-</td><td>-</td></tr>
<tr><td rowspan="4">PCT 1603: Narrow-leaved Ironbark – Bull Oak - Grey Box shrub -grass open forest of the central and lower Hunter</td><td>Average Value</td><td>39</td><td>5.5</td><td>25.7</td><td>40.7</td><td>6.7</td><td>12.6</td><td>4</td><td>1</td><td>0</td><td>12.6</td></tr>
<tr><td>Range</td><td>30-47</td><td>6.5-9</td><td>10.1-17</td><td>46-52</td><td>4-16</td><td>8-22</td><td>0-2</td><td>1</td><td>0</td><td>6-25</td></tr>
<tr><td>Benchmark Value</td><td>41</td><td>15-40</td><td>5-10</td><td>30-50</td><td>5-10</td><td>20-40</td><td><5</td><td>1</td><td>3</td><td>5</td></tr>
<tr><td>Completion Criteria</td><td>>30</td><td>5-40</td><td>5-40</td><td>30-50</td><td>5-10</td><td>10-40</td><td><5</td><td>1</td><td>-</td><td>-</td></tr>
</table>
</td><td>BMP.
Results of rehabilitation monitoring program.</td><td>No</td><td>10, 11, 12</td><td>Ongoing operations</td></tr>
<tr><td></td><td></td><td></td><td></td><td>
<table>
<tr><th></th><th>NPS</th><th>NOS (%)</th><th>NMS (%)</th><th>NGCG</th><th>NGCS</th><th>NGCO</th><th>EPC</th><th>OR</th><th>FL</th></tr>
<tr><td>Average Value (2019)</td><td>10</td><td>16</td><td>0.13</td><td>3.5</td><td>0</td><td>0</td><td>0</td><td>0</td><td>6.38</td></tr>
<tr><td>Range (2019)</td><td>7-17</td><td>8-22.5</td><td>0-0.5</td><td>0-10</td><td>0-0</td><td>0-0</td><td>0-0</td><td>0-0</td><td>0-25.5</td></tr>
<tr><td>Older Woodland Rehabilitation on areas with a canopy of Sugar Gum</td><td>>15</td><td>15-40</td><td>5-40</td><td>5-15</td><td>5-10</td><td>5-15</td><td><20</td><td>1</td><td>5</td></tr>
<tr><td>Rehabilitated areas of Narrow-leaved Ironbark – Bull Oak - Grey Box open forest</td><td>>20</td><td>10-40</td><td>5-10</td><td>15-50</td><td>5-10</td><td>5-40</td><td><20</td><td>1</td><td>-</td></tr>
</table>
</td><td>BMP.
Results of rehabilitation monitoring program.</td><td>No</td><td>10, 11, 12</td><td>Ongoing operations</td></tr>
</table>

Table 16: Rehabilitation Performance Indicators and Completion Criteria – Ecosystem and Land Use Development (Continued)

Mining Domain	Final Land Use Domains	Rehabilitation Objectives	Indicator	Completion Criteria	Justification or Validation Method	Complete (Y/N)	TARP Reference Number	Progress at Start of RMP
(as above)	(as above)	(as above)	Exotic cover.	Biometric monitoring confirms exotic cover < 10% in woodland rehabilitation areas. Non-native aggressive colonising grass and shrub species will be managed in adjacent pasture areas so they do not pose a threat to nearby woodland rehabilitation areas.	BMP. Results of rehabilitation monitoring program.	No	12	Ongoing operations
			Management of mine water.	Water runoff is contained and managed within internal water management system. No water discharged from site, unless relevant volumes and quality as specified by EPL 529 can be achieved.	Monitoring of water quality and quantity in accordance with Water Management Plan.	No	14	Ongoing operations
			Water quality.	Water discharged from diversion meets water quality trigger values for North Wambo Creek under normal flow conditions, as provided in the Water Management Plan.		No	14	Ongoing operations
			Spontaneous combustion.	No spontaneous combustion evident.	Monitoring for events in accordance with Spontaneous Combustion Management Plan.	No	5	Ongoing Operations
			Erosion control.	No tunnel erosion evident. No gully erosion evident. No rill erosion >200 mm deep and/or >200 mm wide. Appropriate erosion controls are in place and effective.	Rehabilitation monitoring. Final landform inspections. Photographic record.	No	15	Ongoing operations
			Terrestrial fauna.	Fauna monitoring will be used to qualitatively validate BioMetric and LFA monitoring results (i.e. self-sustaining stable landforms and vegetation structure have been successfully recreated or reintroduced and are being inhabited or frequented by local fauna).	BMP. Bushfire Management Plan. Pest Control Program. Results of rehabilitation monitoring program.	No	18	Ongoing operations
			Feral animals.	Annual feral animal control program implemented. Ecological monitoring confirms feral animal control program effective.		No	18	Ongoing operations
			Bushfire management.	Mitigation actions have been implemented as required by the Bushfire Management Plan.		No	19	Ongoing operations
			Sustainable grazing.	Monitoring confirms established pasture is able to sustain grazing activities comparable to that of the surrounding remnant pasture areas.		No	N/A	Ongoing operations
Water Management Areas (2). Underground Mining Areas (5). Rehabilitation (Pre RMP) (6). Coal Handling and Preparation Plant (8).	Water Management Areas (2A). Existing Native Vegetation (5B). Existing Pasture (5C, 6C). Biodiversity Offset Area (5I). Mine Infrastructure Areas (to be retained) (8F).	No rehabilitation objectives exist for these final land use domains during this phase of rehabilitation (i.e. as they will not undergo ecosystem and land use development).	N/A	N/A	N/A	N/A	N/A	N/A
Tailings Emplacement Areas (3).	Rehabilitation (Mixed Pasture/ Woodland) (3D).	Refer to United Wambo Phase 2 Rehabilitation Management Plan.						

3.2 Stakeholder Consultation

As discussed in **Section 2.4**, key stakeholders were consulted during the preparation of the Project EIS (WCPL, 2003) and have been consulted during subsequent Modifications. Further to this, consultation has been undertaken with key stakeholders during the preparation of each Mining Operations Plan that WCPL has prepared. It should be noted that this RMP has been based on the latest approved Mining Operations Plan.

As required by Condition B108, Schedule 2 of DA-305-7-2003, WCPL has consulted with the RR, DPIE, Department of Planning, Industry and Environment – Water Division (DPIE-Water), BCD and SSC during the development and preparation of this RMP. A summary of the consultation completed for this RMP and records of correspondence are provided in **Attachment 2**.

Table 17: Stakeholder Consultation for the Rehabilitation Management Plan

Stakeholder	Consultation Method	Summary of Consultation
DPIE Water	DPIE - Major Projects Planning Portal Email then direct email	Version 0 provided to the DPIE Water 27 August 2020 for consultation. No comments were received.
BCD	Via the DPIE - Major Projects Planning Portal	BCD provided comments on the previous version of the RMP (Mining Operations Plan September 2019 to December 2020) requesting: *..that Table 28 and Table 29 include the minimum and maximum values measured in each zone as well as the average value*. Minimum and maximum (range) values have been added to Table 15 and Table 16 (previously Tables 28 and 29). A copy of draft Version 0 of the RMP was provided to BCD 27 August 2020. Comments were received 20 October 2020. A summary of the comments and how they have been addressed is provided in Attachment 2.
Singleton Shire Council	Via the DPIE - Major Projects Planning Portal	Version 0 provided to SSC 27 August 2020 for consultation. Comments were received 23 October 2020. A summary of the comments and how they have been addressed is provided in Attachment 2.
RR	Via the DPIE - Major Projects Planning Portal	Copy of draft Version 0 was provided to the RR 27 August 2020 for consultation. No comments were received.
	Meetings	Meetings were held 14 October and 2 November 2020 (via video) with United, Wambo and the RR to discuss key changes in the RMPs and Rehabilitation Cost Estimate (RCE) methodology for the two sites.
United (Glencore)	Meeting/Email	Internal discussions to ensure consistency between the Wambo United RMP and Wambo Coal Mine RMP documents.
DPIE	Email	Copy of draft Version 0 was provided to the DPIE for consultation via email on 27 August 2020. Comments were received on 20 November 2020 and are addressed in Version 3 of the RMP.

3.2.1 Community Consultation

WCPL consults with the local community via the Community Consultative Committee (CCC). The CCC is made up of residents from the surrounding district, a representative of SSC and WCPL management. The CCC is chaired by an independent chairperson.

4.0 Final Landform and Rehabilitation Plan

As required by the RMP Guidelines, a Final Land Use and Rehabilitation Plan (**Plan 2, Attachment 1**) has been prepared to show the proposed final land use and final landform at the end of the mine life. The final landform cross sections are provided in **Plan 3** (**Attachment 1**). These plans are generally in accordance with the details of the EIS and subsequent assessments.

A simplified version of the Final Land Use and Rehabilitation Plan has been developed and included in the body of this RMP as **Figures 4 and 5**. These figures include the following:

- Figure 4:
  - Final Land Use Domains.
  - Final Landform Features.
  - Project Approval Boundary.
  - Current Titles.
  - Mine Operations Area (including subsidence areas).
- Figure 5:
  - Final Landform Contours.
  - Project Approval Boundary.
  - Current Titles.
  - Mine Operations Area (including subsidence areas).

5.0 Rehabilitation Risk Assessment

The key risks associated with rehabilitation have been identified and assessed in a risk assessment undertaken in July 2020 in accordance with the requirements of the mining lease conditions, and in consideration of *Guideline 1: Rehabilitation Risk* Assessment and the *Joint Australian and New Zealand Standard AS/NZS 31000:2009 Risk Management – Principles and Guidelines*. A copy of the Rehabilitation Risk Assessment is provided in **Attachment 3**.

The method used for the risk assessment encompassed the following key steps:

- identifying the related risks, including what could happen, when and where;
- analysing the risks using a qualitative risk approach (i.e. identifying existing controls, determining specific consequences/likelihoods and then determining the residual level of risk);
- making decisions based on the outcomes of the risk assessment about which of the risks need controls or the implementation of a mitigation strategy; and
- establishing controls to mitigate/treat the risks identified as part of the process.

A total of 87 risks were identified and considered during the risk assessment. Of these risks, 60 were ranked as low, 22 were ranked as low to medium and five were ranked as medium. No risks were ranked as high.

Note, some risks were duplicated during different rehabilitation phases, for example potential weather impacts was ranked as a low to moderate risk during ecosystem establishment and also during ecosystem and land use development.

In addition to the above, WCPL has reviewed the AdaptNSW climate change modelling (and in particular, the snapshot provided for the Hunter region) and acknowledges that, of relevance to the Wambo Coal Mine, in the near future (2020 – 2039) (OEH, 2014):

- Maximum temperatures are projected to increase by 0.4 – 1.0°C.
- Minimum temperatures are projected to increase by 0.5 – 0.9°C.
- Rainfall is projected to decrease in spring and winter.
- Average fire weather risk is projected to increase in summer, spring and winter.

WCPL notes that the key risk to rehabilitation associated with the above changes is the increase in fire weather risk. WCPL has an existing Bushfire Management Plan prepared in consultation with the Rural Fire Service and Singleton Council to manage this risk throughout the life of the mine.

6.0 Rehabilitation Implementation

6.1 Life of Mine Progressive Rehabilitation Schedule

Areas that are disturbed by the Mine will be progressively rehabilitated following mining activities in accordance with DA 305-7-2003. Revegetation will be progressive, commencing soon after the completion of landform shaping. Species to be planted in the rehabilitated landforms will be a mixture of native and introduced locally successful tree, native and exotic grasses and legume species. Locally collected tree and shrub seed will be used where practical.

In previously rehabilitated areas, ongoing maintenance activities will include controlling weeds and pests, repairing landforms, re-seeding and application of maintenance fertilisers as required. The requirement of these activities will be based on the annual rehabilitation monitoring program (**Section 8**) and opportunistic inspections of rehabilitated areas.

In RWEP areas, ongoing activities will include controlling weeds and animal pests as required. The requirement of these activities will be based on the annual monitoring program (**Section 8**), opportunistic inspections and as required by the BMP.

Table 18 outlines the proposed rehabilitation activities within mining and final land use domains during the RMP term. Shaded cells indicate rehabilitation phases are not applicable during the RMP term.

Table 18: Summary of Rehabilitation Proposed during the Rehabilitation Management Plan Term

Mining Domain	Final Land Use Domain	Code	Rehabilitation Phase	Area (ha) at start of RMP Term	Area (ha) at end of RMP Term
Mine Infrastructure Area (Domain 1)	Rehabilitation (Mixed Pasture/Woodland)	1D	Active	94.31	94.31
			Decommissioning		
			Landform Establishment		
			Growth Medium Development		
			Ecosystem Establishment		
			Ecosystem Development		
			Relinquished Lands		
Water Management (Domain 2)	Water Management Rehabilitation (Mixed Pasture/Woodland)	2A/2D	Active	84.1	66.0
			Decommissioning		
			Landform Establishment		
			Growth Medium Development		
			Ecosystem Establishment		
			Ecosystem Development		
			Relinquished Lands		

Table 18: Summary of Rehabilitation Proposed during the Rehabilitation Management Plan Term (Continued)

Mining Domain	Final Land Use Domain	Code	Rehabilitation Phase	Area (ha) at start of RMP Term	Area (ha) at end of RMP Term
Tailings Emplacement Areas (Domain 3)	Rehabilitation (Mixed Pasture/Woodland)	3D	Active	0	9.7
			Decommissioning	0	0
			Landform Establishment	-	0
			Growth Medium Development		
			Ecosystem Establishment		
			Ecosystem Development		
			Relinquished Lands		
Waste Rock Emplacement Area (Domain 4)	Rehabilitation (Mixed Pasture/Woodland) Rehabilitation (Woodland Corridors)	4D/4E	Active	6.8	0
			Decommissioning	-	5.4
			Landform Establishment	-	1.4
			Growth Medium Development		
			Ecosystem Establishment		
			Ecosystem Development		
			Relinquished Lands		
Underground Mining Area (Domain 5)	Existing Native Existing Pasture Rehabilitation (Pasture) Biodiversity Offset Area	5B/5C/5G/ 5H	Active	1820.2	1820.2
			Decommissioning		
			Landform Establishment		
			Growth Medium Development		
			Ecosystem Establishment		
			Ecosystem Development		
			Relinquished Lands		
Rehabilitation Area (Domain 6)	Existing Pasture Rehabilitation (Mixed Pasture/Woodland)	6C/6D	Active		
			Decommissioning		
			Landform Establishment		
			Growth Medium Development		
			Ecosystem Establishment		
			Ecosystem Development	38.6	38.6
			Relinquished Lands		
North Wambo Creek Diversion (Domain 7)	Rehabilitation (Mixed Pasture/Woodland) Rehabilitation (Pasture)	7D/7G	Active		
			Decommissioning		
			Landform Establishment		
			Growth Medium Development		
			Ecosystem Establishment	83.3	83.3
			Ecosystem Development		
			Relinquished Lands		

Table 18: Summary of Rehabilitation Proposed during the Rehabilitation Management Plan Term (Continued)

Mining Domain	Final Land Use Domain	Code	Rehabilitation Phase	Area (ha) at start of RMP	Area (ha) at end of RMP
Coal Handling and Preparation Plant (Domain 8)	Rehabilitation (Mixed Pasture/Woodland) Rehabilitation (Woodland Corridors) Mine Infrastructure Area (to be retained)	8D/8E/8F	Active	16.1	16.1
			Decommissioning		
			Landform Establishment		
			Growth Medium Development		
			Ecosystem Establishment		
			Ecosystem Development		
			Relinquished Lands		

Note: The mining process at WCPL does not provide for areas of landform establishment at the year end or at the end of the RMP term. However, the mining process continually transitions from active mining, overburden emplacement, landform establishment, to growth medium establishment through the year.

6.2 Rehabilitation Phases

The overarching rehabilitation objective is to establish a safe, stable, non-polluting and sustainable landform that is compatible with the surrounding landscape and that meets the requirements of the post mining land use. The following phases of rehabilitation will be undertaken in each of the mining domains to demonstrate progress towards the overarching rehabilitation objective:

- **Active Mining**. Includes activities undertaken during operations to enhance rehabilitation, such as salvaging and managing soil resources, salvaging habitat resources and native seed collection.
- **Decommissioning**. The process of removing mining infrastructure and removing contaminants and hazardous materials. Includes all studies, assessments and activities associated with the decommissioning and demolition (or removal) of infrastructure and services. Includes contamination, remediation and removal of hazardous materials, encapsulation of materials such as tailings, and any works to make safe or “fit for purpose” any retained infrastructure, including heritage buildings.
- **Landform Establishment**. The process of constructing the final landform surface profile. This phase includes all earthworks to construct the final landform into the desired surface profile. This phase includes works to construct surface water drainage features and prepare a substrate with the desired physical and chemical characteristics (e.g. rock raking or ameliorating sodic materials).
- **Growth Medium Development**. The establishment of the physical, chemical and biological components of the substrate required to establish the desired vegetation community (including short lived pioneer species) (e.g. development of a productive, self-sustaining soil profile). Includes 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.

- **Ecosystem and Land Use Establishment**. The process of establishing the Final Land Use following construction of the final landform. For vegetated Final Land Uses, this phase comprises establishing the desired vegetation community (including short lived pioneer species). This phase also incorporates habitat augmentation and land management actions such as pest, animal and weed control. 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 the Final Land Use for the site.
- **Ecosystem and Land Use Development**. The process of managing maturing rehabilitation areas on a trajectory toward meeting the approved Rehabilitation Objectives and Completion Criteria. For vegetated land uses, this phase incorporates the processes to develop characteristics of functional self-sustaining ecosystems, such as nutrient recycling, vegetation flowering and reproduction, and increasing habitat complexity.
- **Rehabilitation Completion**. Land in this phase has satisfied all approved Rehabilitation Objectives and Completion Criteria for the intended Final Land Use.

The status of the Mining Domains (in relation to their current rehabilitation phase) as at the time of writing the RMP is outlined in **Table 18**.

6.3 General Rehabilitation Methodologies

This section provides a more detailed description of the general rehabilitation methodologies (including the risks and opportunities) that will be adopted during the various rehabilitation phases (as described above).

6.3.1 Active Mining

Topsoil Resource

Soil landscapes in the vicinity of the Mine were classified and mapped in accordance with descriptions in the Soil Landscapes of the Singleton 1:250,000 Sheet (Kovac and Lawrie, 1991) and the Project EIS (WCPL, 2003). Major soil types identified include alluvial soils along major drainage lines, siliceous sands to the east of Wollombi Brook, yellow podzolics and yellow solodic intergrades adjacent to the alluvials on lower slopes and undulating plains, soloths on moderately elevated slopes and lithosols along the eastern boundary of the Wollemi National Park.

Due to the known variability and distribution of the soils at the Mine, the concept of soil complex units is used to identify the soil types, and provide guidance on appropriate stripping depth. The different soil complex units found at the Mine, as identified in the Project EIS (WCPL, 2003), include:

- Red Podzolic – found on the ridges and middle to upper slope position of the site. The upper 0.10 m of the profile of each soil type is suitable for use as topsoil.
- Yellow Podzolic / Solodic – found on the mid to lower slopes of the hills within the site. The upper 0.20 m of the profile of each soil type is suitable for topsoil.
- Lithosols – Stony or gravelly soils generally occurring on upper slope and hill top areas. No depth of the profile is suitable for topsoil.
- Alluvials – found around North Wambo Creek. The depth suitable for topsoil recovery is highly variable, ranging from 0.30 m to limited areas of 1.0 m depth.

Table 19 provides a summary of the soil resource strategies undertaken at the Mine. In areas of significant earthworks, topsoil and subsoil resources will be identified, stripped and, wherever practicable, spread directly onto areas prepared for rehabilitation to make use of the potential seed bank.

Table 19: Soil Resource Management Strategies

Prior to Soil Stripping	During Soil Stripping and Stockpiling	Stockpiled Soil Awaiting Use in Rehabilitation Works

• Quantification of soil resources.
• Characterisation of the suitability of soil resources for rehabilitation works.
• Topsoil will be stripped prior to any land disturbance.
• Recommended stripping depths[1] as provided by the soil survey in the WCPL EIS:
  – Red Podzolic (100 mm).
  – Yellow Podzolic (200 mm).
  – Alluvial (300 mm).
• Topsoil will be placed directly onto reshaped areas where possible.
 	
Note:[1] Subject to quantification of soils.
	• Minimisation of vegetation clearance.
	• Mulching of vegetation prior to topsoil stripping, where possible, to provide additional organic matter.
	• Selective stockpiling of soil according to soil type and chemical characteristics.
	• Stockpiling of soils in a manner that does not compromise the long-term viability of the soil resource.
	• Maximum height for stockpiles will be 3 m.
		• Implementation of measures to ensure long-term viability of soil resources and manage soil salinity, including:
		  – soil stockpiles to be located outside of active mining areas;
		  – stockpiles to be constructed with a rough surface to reduce erosion hazard, improve drainage and promote vegetation;
		  – stockpiles which are to be inactive for extended periods to be fertilised and seeded with cover crop and/or preferred native pasture species mix to maintain soil structure, organic matter, and microbial activity;
		  – silt fencing to be installed around soil stockpiles to control potential loss of soil where necessary;
		  – soil stockpiles to be deep ripped to establish aerobic conditions, prior to re-application for rehabilitation;
		  – annual (or as required) weed control and maintenance program of topsoil stockpiles; and
		  – sign posted to clearly identify topsoil stockpile areas.

Prior to soil stripping, soil resources will be quantified. Where a deficit of topsoil is identified, investigations will be undertaken to determine the viability of the use of subsoils and to identify the need for treatment measures to be applied (e.g. use of fertilisers). Where direct spreading is not practicable, the stripped soil will be stockpiled and seeded with grasses, as outlined below, to maintain soil viability prior to being re-spread.

A Topsoil Stripping Permit must be completed and signed off by the Manager: Environment and Community and the Open Cut Manager. The Topsoil Stripping Permit is to be completed by a member of the Environmental Department and the topsoil stripping supervisor during a site inspection. During this inspection, soil types will be identified, with the supervisor briefed on the target soil horizon to be stripped as well as the stripping depth for varying soils.

The Topsoil Stockpile Register (and site soil balance) will be revised/updated as soon as practicable following the placement of soil on an available rehabilitation area. The register will also be reviewed annually to track soil availability and soil demand.

Topsoil Stripping and Handling

During topsoil stripping operations, direct placement of excavated topsoil onto re-shaped areas is preferred to stockpiling, to avoid rehandling and reduce the potential for topsoil degradation or loss. If a re-shaped surface is not available, the topsoil will be stockpiled.

The following management measures shall be observed during topsoil stripping and handling:

- Stripping depths and limits (including areas of no recovery), as pegged or taped, are to be adhered to during stripping operations.
- Topsoil stripping must be adequately supervised by a member of the Environmental Department (or delegate), with operations being checked to ensure continued suitability of stripping methods and topsoil management.
- Topsoil stripping should be limited to daylight hours where possible.
- Stripping operators shall be experienced in topsoil work, or otherwise be closely supervised, to ensure topsoil stripping depths are adhered to.
- Care is to be taken during topsoil stripping to avoid structural degradation of soils – taking particular care to avoid excessive compaction (i.e. avoiding re-handling and limit stripping activities in wet conditions).
- Potential generation of dust will be considered in planning of topsoil stripping, with weather conditions, water truck availability, potential downtime and alternate standby tasks being key planning considerations.
- Preferably, soils should be stripped in a slightly moist condition and should not be stripped in either a dry or wet condition, thus reducing deterioration in topsoil quality and dust generation.
- Grading or pushing topsoil into windrows with graders or dozers for later collection for loading into rear dump trucks by front-end loaders, is the preferred soil stripping method, as it minimises compression effects of the heavy equipment generally used for the transport of soil material.
- Work must be stopped if any Aboriginal heritage artefacts, or other items of archaeological interest are uncovered during stripping activities. Any such items will be inspected and cleared by a member of the Environmental Department before stripping activities continue.

Topsoil Stockpile Management

Where direct placement of topsoil is not possible, the period of stockpiling should be minimised to reduce the detrimental effects of storage on topsoil quality, especially topsoil structure, aeration and permeability, native seed bank viability, and biological activity levels in material stockpiled greater than one metre deep. Where the stockpiling duration is likely to exceed three months, the following measures should be followed.

Location of Topsoil Stockpiles

- Topsoil stockpiles should not be located in the path of planned, or potential, projects or operations. A long-term perspective should be adopted during this planning (preferably life-of-mine) and organisation-wide consultation should be undertaken during this process. Rehandling of topsoil is expensive and detrimental to topsoil quality.
- The planned final rehabilitation location for the topsoil should be considered when locating the stockpile (i.e. where it is to be used for rehabilitation). Haulage requirements (distance and volume) to get it to the stockpile location and how it will be recovered from the stockpiled location and transported to the final destination should also be considered.
- Stockpiles should:
    - not be placed on excessively steep landforms, that will increase erosion and potentially hamper recovery;
    - not be placed adjacent to, or amongst, existing woodland vegetation, that will potentially cause topsoil loss or damage to remnant vegetation;
    - be located away from the edges of dumps, ramps, dams, drains and pits, where future recovery may be constrained, increasing cost or planning complexity;
    - be shaped to reduce their susceptibility to wind erosion, especially if placed on top of overburden dumps;
    - not be located in, across or adjacent to watercourses or drainage lines with potential to flow; and
    - not be located on flat and/or low-lying areas susceptible to flooding.

Stockpile Construction

- If soil is to be stored in a stockpile for more than three months, the proposed stockpile pad should be cleared of large surface rocks, vegetation and isolated from local drainage.
- Materials of different quality, source location or vegetation type should not be stockpiled together (i.e. subsoil with topsoil, exotic pasture with native woodland), and should be clearly distinguished if co-located in the same vicinity.
- Preferably, topsoil stockpiles shall be no greater than three metres in height.
- Topsoil will be block tipped. Under no circumstances will topsoil be tipped over a tip head or a second lift of block tip be used.
- Stockpiles should be trimmed and graded to ensure they shed water, to avoid pooling or waterlogging.
- Stockpile surfaces should be left coarsely textured to minimise erosion until vegetation is established, and avoid surface compaction and surface sealing.
- The working face of the stockpile should be battered down to approximately 30°.
- Every effort will be made to avoid equipment trafficking over topsoil. Stockpiles should be isolated from adjacent operations and accidental vehicle access (by berm, ditch, substantial fence, bollards, old electricity poles, etc.), and clearly identified by a sign to reduce the likelihood of interference.

- Following construction, stockpiles will be surveyed and recorded on mine plans. This information will be recorded on the topsoil stockpile register, along with other relevant data pertaining to each stockpile.

Guidance on Temporary Rehabilitation

- If long-term stockpiling is planned (i.e. greater than three months), stockpiles should be ripped, fertilized and sown with pasture cover to provide sufficient erosion control, weed suppression and promote biological activity in the stockpiled soil.
- Sterile cover crop species should be selected in consideration of secondary pasture/woodland species.

Maintenance of Existing Stockpiles

- Vegetation establishment will be regularly monitored for the first three months (or until a cover crop has been successfully established), with remedial works undertaken immediately, as required, until vegetation establishment.
- On an annual basis, the stockpiles will be inspected for erosion, vegetation cover health, weed infestation and other general degradation or interference.
- Maintenance and remedial works will be scheduled, as needed. Such maintenance or remedial works may include:
    - repair of erosion (i.e. re-grading of eroded areas), diversion of drainage paths and de-silting of sediment control structures;
    - slashing, re-seeding or supplementary planting;
    - application of fertiliser to address nutrient deficiency;
    - application of ameliorants;
    - replacing signage and access barriers; and
    - weed and pest animal control measures.
- If stockpiles are borrowed from, but not completely removed, the excavated face will need to be re-shaped to ensure water shedding and stockpile stability, and re-sown with a protective cover crop. Those stockpiles will also need to be ear-marked for re-survey as part of the annual topsoil survey.
- For long-term stockpiles, weed control and maintenance fertilising are required as part of the stockpile management program.

Stockpile Management

- All records pertaining to the assessment, inspection, management and maintenance of stockpiles will be recorded on the topsoil stockpile register.
- At the beginning of each planning/reporting year, topsoil requirements should be estimated for rehabilitation programs in the upcoming year, and adequate stockpiled topsoil allocated to meet that requirement.
- Considerations for selection of appropriate material include proximity of stockpiles to rehabilitation area, age and quality of topsoil, topsoil source vegetation type compared to selected rehabilitation outcomes, and direct placement opportunities.

- If the stockpiled topsoil is old (greater than five years) an assessment of topsoil quality should be undertaken. Such an assessment should include visual inspection, soil sampling and analytical testing to determine whether the material is still usable, or whether application of supplements and/ or ameliorants may be required.
- Sufficient evidence of a stockpile's complete loss of inherent value would need to be recorded, and approved by the Environment and Community Manager, before a stockpile was entirely written off and spoiled or abandoned.

Topsoil Placement and Treatment

- Prior to recovery and re-spreading of stockpiled topsoil, an assessment of weed infestation on stockpiles should be undertaken to determine if individual stockpiles require herbicide application and / or "scalping" of weed species prior to topsoil spreading.
- A pre-rehabilitation topsoil stockpile inspection and testing program to characterise stockpiled material, identify suitability for the proposed rehabilitation and identify any requirement for soil ameliorants.
- Topsoil should be spread to the depth nominated.
- Preferably, topsoil should be spread, treated with fertiliser and seeded in one consecutive operation to reduce the potential for topsoil loss to wind and water erosion.
- All topsoiled areas should be contour ripped (after topsoil spreading) to create a "key" between the soil and the spoil. Ripping should be undertaken on the contour. Best results will be obtained by ripping when soil is moist and when undertaken immediately prior to sowing.
- The respread topsoil surface should be scarified prior to, or during seeding, to reduce runoff and increase infiltration. This can be undertaken by contour tilling with a fine-tined plough or disc harrow for example.

Ameliorant Application

- If the pre-rehabilitation assessment determines the stockpiled material is sodic, gypsum should be applied at a standard rate of 5 to 10 tonnes per hectare (t/ha), depending on material sodicity.
- Preferably gypsum should be mixed in with the topsoil as part of the stripping operation (ameliorants applied to topsoil surface prior to stripping), irrespective of whether the topsoil is to be placed in storage or directly applied to a rehabilitation area.
- Application of ameliorants as part of the topsoil stripping process is cost effective, and, in the case of gypsum in particular, gives the ameliorants additional time to react and modify the soil to ensure it is a stable growing medium.
- Although low pH soil has not historically been a concern, a lime requirement test should be undertaken to determine the lime application rate, if low pH material is identified during the pre-rehabilitation assessment.
- Addition of organic supplements is recommended for high and low pH, sodic (dispersive) and low fertility soils. Such supplements can also assist in returning favourable soil microorganisms to sterile long-stockpiled material.
- Organic material application will also be considered, if sub-optimal (sterile, low fertility, poorly structured) material is identified in stockpiles.

Flora and Fauna

WCPL have developed a detailed management strategy which identifies the short, medium and long term measures to be undertaken to manage vegetation and fauna habitat at the site. The management strategy aligns to the requirements of WCPL's Conservation Agreements for the Remnant Woodland Enhancement Areas (RWEAs). The management strategy includes measures for weed and pest control, fire hazard reduction burns, vehicle access, fencing and annual reporting on the monitoring program.

The management strategy is included in the BMP, and an overview of the key management strategies is provided below.

Surface Disturbance Permit

WCPL has implemented a Surface Disturbance Permit (SDP) procedure and checklist. The SDP is implemented and approved by WCPL's Environmental Department prior to any land disturbance activities on undisturbed or rehabilitated land taking place. The SDP applies to WCPL-owned land, mining leases and privately owned land where an agreement with the landowner is in place.

The SDP aims to identify and manage any environmental restraints such as cultural heritage sites, flora and fauna communities, surface drainage, threatened species and permitting required prior to disturbance. Examples of management measures are:

- Erosion and sediment controls.
- Cultural heritage salvage.
- Disturbance delineation.
- Timing of activities.

WCPL manages the SDP procedure in accordance with the BMP and generally in accordance with the activities approved by the Development Consent (DA 305-7-2003).

Vegetation and Burrow Clearance Protocol

A Vegetation and Burrow Clearance Protocol (VBCP) has been developed to minimise impacts on both non-threatened and threatened flora and fauna (as listed under the *Biodiversity Conservation Act, 2000* or the EPBC Act). The VBCP is applicable across all WCPL managed land. The key components of the VBCP are:

- Delineation of disturbance areas.
- Pre-clearance surveys.
- Clearing process and fauna management strategies:
  - vegetation clearing; and
  - wombat burrow clearing.
- Habitat feature salvage.

Procedures in relation to the salvage of Aboriginal sites prior to vegetation clearance are detailed in the Wambo Development Project – Aboriginal Heritage Research Design and Study Plan (incorporating Salvage Programme) (Navin Officer Heritage Consultants, 2005).

Threatened Species Management Protocol

A Threatened Species Management Protocol has been developed to facilitate implementation of threatened species management strategies to minimise the potential impacts on threatened flora and fauna species. The key components of the Threatened Species Management Protocol are:

- Site observations/surveys.
- Threatened species management strategies, including:
  - avoiding RWEAs;
  - threat abatement;
  - capture and release;
  - relocation; and
  - reuse and provision of habitat resources.
- Consulting and reporting.

Seed Collection and Propagation

WCPL has implemented a native seed collection and propagation program, to ensure that the genetic integrity, structure and composition of local vegetation types are maintained.

The collection of locally sourced native seed will be carried out annually by a licensed provider with the Florabank guidelines (Florabank, 1999 and 2000) used to guide the seed collection process.

The seed collection program will take into account seasonality of seed availability and the specific target seed lists required to establish the various vegetation classes onsite.

Weed Management

WCPL's weed management program utilises an adaptive management approach with an overarching weed treatment plan which is updated annually. The annual weed treatment plan is updated based on the management actions undertaken and results of monitoring and inspections from the previous year. The key aspects of the program include:

- Weed control activities undertaken by a qualified and experienced bush regeneration contractor in accordance with the annual weed treatment plan.
- Annual inspections and floristic monitoring of the RWEAs and Revegetation Areas during biodiversity monitoring.
- An annual weed survey (if required).
- An annual weed management report documenting the weed control activities undertaken during that year, prepared by a qualified bush regeneration contractor.

- Updates to the annual weed treatment plan based on the results of monitoring, inspections and surveys.

Treatment of all weeds will be undertaken by suitably qualified and experienced personnel.

Assisted Natural Regeneration

Natural regeneration is reliant upon seedlings germinating from seed naturally distributed from existing remnant vegetation. This approach will be utilised in areas where there is a viable seed bank of native species present within the topsoil of cleared areas.

Direct Seeding

Direct seeding will be utilised on freshly shaped or existing rehabilitation areas that are not believed to have an adequate natural seed bank within disturbed topsoil to meet LFA completion criteria.

Application of seed by hand or machinery will follow preparation of the surface which may consist of scarification and ameliorates to allow successful establishment of applied seed.

Tubestock Planting

Tubestock planting will be utilised where it is considered natural regeneration of native species is unlikely to occur in a timely manner. This will be determined on a case by case basis. Species composition and rates for tubestock planting will be reflective of the adjacent and pre-clearing vegetation community type with seedlings propagated from local provenance seed stock where possible.

Grazing and Stock Management

Domestic stock may be introduced to rehabilitation areas dependent on future monitoring results showing achievement of relevant completion criteria. In this instance, ongoing monitoring and management will occur to ensure sustainable grazing practices are implemented.

The following mitigation measures will be undertaken to manage the impacts of grazing by domestic stock:

- Stock grazing will not be undertaken in areas of high biodiversity value.
- Where livestock are being used to remove vegetation by crash grazing, the following principles will be considered:
  - allow the stock to feed intensively in a defined area only for short periods;
  - undertake crash grazing between autumn and mid-spring;
  - manage the movement of livestock using fencing (temporary or permanent); and
  - monitor feed levels so that overgrazing does not occur.
- Where possible ground cover will be maintained towards 100%.
- The grazing pressure from other herbivores (e.g. kangaroos, wallabies, rabbits and hares) is to be reviewed in the context of the domestic stocking rate that can be utilised.

Fencing

Boundary fence integrity will be inspected during a fenceline audit completed every three years (next audit scheduled for 2022). Periodic fence line inspections will continue and maintenance will be conducted as required.

New fencing erected within or on the boundary (including repairs to existing fence lines where required) of the RWEAs or revegetation areas will use post and two or three strand non-barbed (plain) wire only. If required boundary fences to these areas may use a top barbed wire (or electric fencing) to protect the fence from neighbouring grazing cattle.

In order to reduce the risk of injury to native fauna, existing fencing within the boundaries of the Final Land Use Domains will be removed in areas where it is providing no benefit to revegetation outcomes.

Habitat Augmentation

Habitat augmentation involves the establishment of habitat structures within Management Domains. This includes the relocation of surplus trees and rocks removed from the Mine footprint for relocation as habitat structures within the Management Domains.

Procedures and recording requirements will be developed for the re-establishment of logs and rock within Management Domains.

Vertebrate Pest Management

A variety of vertebrate pest species have been identified within WCPL's RWEAs and rehabilitation areas. These have primarily consisted of feral pigs, rabbits, foxes and dogs.

The WCPL-operated pest control program, is complemented by a year-round agister-managed pest control program. The agister-managed program primarily targets feral pigs on grazing and buffer lands surrounding the Mine.

The agister-managed program utilises WCPL-owned night vision cameras to monitor the movement of pest species. Humane trapping and shooting practices are employed to capture and euthanize targeted feral species.

Nest Boxes

In response to recommendations made in the 2015 Independent Environmental Audit (Umwelt, 2015), a total of 50 nest boxes were installed across five locations across the Mine site in December 2018.

Nest boxes will be monitored every second year (commencing 2020) to record data on their usage and identify any maintenance required to ensure they continue to provide potential habitat.

Waste Management

Waste management at the Mine is undertaken by a licensed waste management company under the basic principles of the Total Waste Management System. Significant benefits of the Total Waste Management System include:

- segregation of waste at the source;
- expansion of recycling capabilities;
- reduction in the risk of contaminating non-hazardous waste;
- comprehensive monthly reports detailing volumes, recycling, disposal and transportation of waste; and
- improved data capture to increase efficiency and accuracy when reporting.

Routine inspections of the RWEAs and revegetation areas will include monitoring of potential waste management issues, including illegal dumping of waste, and removal of waste if/when required. To date, there have been no issues with illegal waste dumping.

Ore Beneficiation Waste Management (Rejects and Tailings Disposal)

ROM coal is crushed and washed in the CHPP which operates at a rate of up to approximately 1,800 tph of ROM coal feed. A product coal stockpile with an approximate capacity of 500,000 t is used to stockpile product coal, prior to reclaim and loading to trains for transport off-site. The CHPP operates up to 24 hours per day, 7 days per week.

Coarse reject material and tailings produced by the CHPP require management at the Mine.

Coarse reject material is produced by the CHPP as a result of washing of open cut and underground ROM coal and primarily comprises minor quantities of coal as well as sandstone, siltstones, shales, conglomerates and mudstone (as predominantly gravel and cobble sized fragments). It is hauled back to the mining operation and is dispersed throughout the mine waste rock emplacements to manage its geochemical characteristics.

Further detail on the management of coarse rejects is provided in the United Phase 2 Rehabilitation Management Plan.

Approximately 80-85% of the CHPP reject is in the form of coarse reject. The remainder is fine reject (tailings). The tailings are a slurry with 18 to 20% solids, the solids comprising very fine stone and clay material. Approximately 24.5 Mt of tailings (dry basis) are expected to be produced over the life of the Mine (WCPL, 2017). The tailings management procedures developed for the Mine to address the physical characteristics of tailings generated to date will continue to be used during the RMP term.

Tailings are pumped as a slurry to approved purpose-built tailings dams constructed within mined out voids from where supernatant waters will be recovered to the mine water management system for dust suppression or reuse in the CHPP.

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.

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.

The engineered cover design would consider site topography, prevailing climatic conditions and the availability of suitable fine textures material (i.e. highly weathered mine waste rock) as a cover material. The capping process creates a final landform that is stable and can be rehabilitated using the same rehabilitation concepts and methods as for the mine waste rock emplacements. Final rehabilitation of the tailings emplacement areas will occur when the dams have been capped and deemed stable and suitable for rehabilitation to occur.

Details of capping and the final rehabilitation processes (i.e. after decommissioning has been completed) for the North East Tailings Dam, Hunter Pit Tailings Dam and Homestead in-pit tailings dam is provided in the United Phase 2 Rehabilitation Management Plan.

The current status of the tailings storage facilities at the Mine is summarised below:

- North East Tailings Dam. Active tailings disposal ceased in 2004. Capping method trials commenced in 2019 and are anticipated to be finalised in Q3 2020, with capping to be commenced in Q4 2020.
- Hunter Pit Tailings Dam. Active tailings disposal ceased in February 2019. Capping method trials commenced in 2019 and are anticipated to be finalised in Q3 2020, with capping to be commenced in Q4 2020.
- Homestead In-Pit Tailings Dam. Active tailings disposal commenced in February 2019 and is expected to cease in Q4 2020.
- Homestead Main Pit Tailings Dam. Once approved, tailings disposal is expected to commence in Q1 2021.

During the RMP period tailings deposition is proposed to commence in the South Bates Sump and Homestead Main Pit (as shown on **Figure 6**).

Specific WCPL personnel have completed training to undertake inspection of all tailings facilities. These routine inspections are completed weekly. Other routine inspections include annual independent inspections as required by the relevant Dams Safety Committee approval.

Rock/Overburden Emplacement

No rock/overburden management will be undertaken by WCPL during Phase 2 operations at the Mine. Refer to United Phase 2 Rehabilitation Management Plan for a description of the proposed activities.

Geology and Geochemistry

The Mine is situated within the Hunter Coalfield, a subdivision of the Sydney Basin, which forms the southern part of the Sydney-Gunnedah-Bowen Basin. The coal bearing rocks of the Sydney Basin are Permian in age (i.e. approximately 225 to 270 million years old) and are typically associated with low-lying gentle topography. The overlying rocks of Triassic age (i.e. approximately 180 to 225 million years old) cover large parts of the Sydney Basin and tend to form prominent escarpments where they outcrop.

The Wittingham Coal Measures are divided into the Jerrys Plains Subgroup, Vane Subgroup, Denman Formation and Archerfield Sandstone. The upper part of the Wittingham Coal Measures, the Jerrys Plains Subgroup, contains some 15 formally named coal seams. Seam structure is relatively simple with the seams dipping gently to the south-west at approximately 2-3 degrees. Minor local variations do occur around fault zones that are well known, having been mapped in previous open cut and underground operations. Previous longwalls and pillar extraction workings exist within the Whybrow Seam above the completed NWU Mine.

The SBU Mine extracted the Whybrow Seam and Wambo Seam. The SBUE Mine is currently extracting the Whybrow Seam.

The waste rock materials generated by the Mine are typically alkaline and slightly sodic which are common geochemical characteristics of coal mine waste rock material in the Hunter Valley (Project EIS). If inappropriately managed, the sodicity of the soils and waste rock materials has the potential to impede revegetation success due to typical sodicity-related problems such as poor soil structure, surface crusting, low infiltration and increased erosion potential.

Appropriate application of ameliorants will be undertaken where necessary. These ameliorative measures include the use of lime, gypsum and/or fertiliser to improve the chemical and/or nutrient properties of the soil. WCPL will continue to use these types of soil management strategies where appropriate to optimise the potential for achieving rehabilitation objectives and maintaining a stable, sustaining vegetation cover.

Material Prone to Spontaneous Combustion

Spontaneous combustion is oxidation at exposed coal surfaces which occurs at or near ambient temperature producing heat energy. No major incidents of spontaneous combustion within rehabilitation areas have been reported at the Mine during the past 30 years of operation, even though laboratory testing results indicate a moderated to high propensity for spontaneous combustion. Minor spontaneous combustion events at the Mine have historically been rare and associated with heating events in long term coal stockpiles.

In consideration of the above, the risk to rehabilitation as a direct result of possible spontaneous combustion events is considered low to medium at the Mine.

With respect to rehabilitation, material that has the potential to have spontaneous combustion risks will not be used in rehabilitation works. This material, if identified, will be covered to a depth of at least 5 m below the final landform RL using inert waste rock material. Likewise, reject emplacements integrated into the landform will be covered to a depth of at least 2 m below the final landform RL using inert waste rock material.

Details of spontaneous combustion management for the open cut operation are provided in the United Phase 2 Rehabilitation Management Plan.

Material Prone to Generating Acid Mine Drainage

Waste rock samples were taken from exploration drill holes within the Project open cut area and were assessed for AMD potential and element leaching (WCPL, 2003). Results of the testwork undertaken classified the waste rock samples as non-acid forming (NAF) and unlikely to generate environmentally harmful leachate when exposed to surface oxidation processes. These results are consistent with the observed behaviour of waste rock at the Mine (i.e. acidity has not historically been a problem with the Mine waste rock material). The pH of the tested overburden material and interburden materials range from pH 6.8 to pH 9.6, which is typical of unweathered rocks in the Singleton Coal Measures (WCPL, 2003). Therefore, the risk to rehabilitation, as a direct result of possible AMD events, is considered low at the Mine.

Coal reject samples (coarse reject and tailings) taken from the CHPP were classified as indeterminate (IND) and potentially acid forming (PAF), respectively. However, AMD has not been identified at the Mine and is not expected to occur during the life of the Mine provided appropriate CHPP reject management practices are implemented, whereby tailings are incorporated and encapsulated and/or capped with bulk NAF waste rock.

Characterisation of soil and waste rock material during future mine planning phases will be undertaken by United. Further details are provided in the United Phase 2 Rehabilitation Management Plan.

WCPL routinely monitors surface water quality, groundwater quality and rehabilitation aspects to track the water levels, EC and pH in site water storages. Historical surface water monitoring of sediment dams around the CHPP, coal stockpile areas and other mine water dams typically returns a pH range between pH 8 and pH 9.

Erosion and Sediment Control

An Erosion and Sediment Control Plan (ESCP) has been developed to satisfy Condition B66, Schedule 2 (previously Condition 32, Schedule 4) of the Development Consent (DA 305-7-2003) and details erosion and sediment control methods. The control measures described in the ESCP aim to:

- Minimise soil erosion and sediment generation in disturbed areas.
- Minimise the potential for mining activities to adversely affect the water quality of the Wollombi Brook or the Hunter River.

The ESCP includes:

- Identification of activities that have the potential to cause soil erosion and sediment generation.
- A description of the location and capacity of erosion and sediment control structures.
- A description of measures to minimise soil erosion and the potential for the migration of sediments to downstream waters.
- A program to monitor the effectiveness of control measures.

The ESCP will be reviewed as required by DA 305-7-2003 and in consultation with the relevant authorities and updated where necessary. The following control measures are identified in the ESCP for land disturbance, land rehabilitation, topsoil management and monitoring:

- Subsidence Management:
  - Regular monitoring for surface cracking and ponding sites is carried out in accordance with the relevant Extraction Plan(s). Should surface cracking and/or ponding sites be identified as presenting an immediate safety, environmental hazard (e.g. an erosion hazard) or risk to final land use, the area will be repaired and rehabilitated.
  - As required by the ESCP, appropriate sediment controls must be in place during any repair works until the area is considered suitably stable.
- Land Disturbance:
  - Land disturbance will be minimised and limited to those areas outlined in this RMP. Prior to any disturbance of land, a SDP must be completed by the operational manager (or delegate), in consultation with the Environmental Department.
  - The SDP process identifies potential erosion and sediment risks associated with proposed disturbance projects, and requires appropriate erosion and sediment control measures to be implemented prior to disturbance commencing.
- Land Rehabilitation:
  - Progressive rehabilitation is a key element for erosion and sediment control. Mining disturbed land (with altered topography, surface conditions and increased catchment sizes) represents a high potential for erosion and sediment impacts. The potential for erosion and sedimentation impacts decreases substantially as disturbed land is reshaped and revegetated as part of the land rehabilitation process. In order to minimise erosion and sedimentation impacts until the rehabilitated area is suitably stable, sediment control structures (such as contour drains, drop structures and sediment control ponds) will be designed and constructed.
- Topsoil Management:
  - Topsoil will be stripped and handled in accordance with the requirements of the SDP and Topsoil Management Procedure. Erosion and sediment control measures, as identified in the completed SDP, will be implemented prior to topsoil removal.
  - Once topsoil is stripped, it will either be placed directly onto shaped overburden (where possible) and seeded or will be stockpiled for later use. If stockpiling is required, stockpiles will be managed as outlined in the Topsoil Management Procedure.
- Inspections and Monitoring:
  - Sediment control structures and tailings dams under WCPL control will be inspected on a frequency as specified in the ESCP. The sediment control structures and tailings dams will be inspected for capacity and visual integrity by the Environmental Department (or delegate).

Ongoing Management of Biological Resources for Use in Rehabilitation

Materials from areas disturbed under this consent (including topsoils [discussed in detail above], substrates and seeds) are to be recovered, managed and used as rehabilitation resources, to the greatest extent practicable. Where practicable, clearing operations will be managed to maximise the re-use of cleared vegetative material. Any seed or timber resources that can be salvaged will be identified as part of the SDP procedure. Unsuitable vegetative material will be mulched and stockpiled.

Cleared vegetation suitable for fence posts and habitat for fauna will be set aside and salvaged. Habitat features such as logs and hollows collected during a clearance campaign may be utilised in WCPL's existing rehabilitated areas or to augment habitat features for fauna in the RWEP areas.

Mine Subsidence

The overriding objective for subsidence management is to minimise the potential for, or extent of, the predicted subsidence impacts. The key issues relating to subsidence impacts on rehabilitation, surface water and groundwater resources, land resources and agricultural activities, biodiversity, built features, heritage sites and values and public safety are described in detail in the relevant Extraction Plan(s). The Extraction Plan(s) also detail relevant monitoring and management measures that will be undertaken relevant to each identified impact.

As required by the Extraction Plan(s), remediation of subsidence impacts or environmental consequences detected by subsidence monitoring will be conducted where required in consideration of the unmitigated impact (including potential risks to safety and the potential for self-healing or long-term degradation) and the potential impacts of the remediation (including site accessibility).

A number of potential management measures are available to mitigate/remediate subsidence impacts on land in general resulting from underground mining 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 mm to 50 mm, but up to approximately 150 mm) will be undertaken using conventional earthmoving equipment (e.g. a backhoe) 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. If the remediation work requires clearing of remnant vegetation to an extent that would exceed the benefit of the remediation, the requirement for remediation will be reviewed. Vegetation that requires clearance will be subject to WCPL's VBCP.

The need for further remediation works will be assessed against the completion criteria outlined in **Section 3**, and in accordance with the Trigger Action Response Plan (TARP) (Ref # 16) outlined in **Section 10**.

Contingency plans will be implemented where a potential exceedance of a subsidence impact performance measure or an unexpected impact is detected including consideration of identified potential contingency measures.

In accordance with the relevant Extraction Plan(s), if subsidence impacts result in greater than predicted impacts, exceedance of the performance criteria or requires greater than expected remediation activities (as described in the relevant Extraction Plan(s)), WCPL will notify and consult with the RR.

If required, a revision of this RMP will be undertaken to ensure rehabilitation activities are consistent with the revised subsidence predictions and mitigation measures outlined in the Extraction Plan(s).

Subsidence on Steeper Slopes and NWC Diversion

All longwall panels associated with the SBU Mine and SBUE Mine are offset a minimum of 26.5° from the base of the Wollemi National Park escarpment. Subsidence monitoring to date (July 2020) has determined no significant deviations from subsidence modelling predictions.

Potential impacts and the relevant mitigation and management measures on steep slopes in the Wollemi National Park escarpment resulting from the proposed extraction of longwalls, associated with the SBU Mine, are provided in *Extraction Plan - South Bates (Whybrow Seam) Underground Mine Longwalls 11 to 16*.

Potential impacts and the relevant mitigation and management measures on steep slopes in the Wollemi National Park escarpment resulting from the proposed extraction of longwalls, associated with the SBUE Mine, are provided in *Extraction Plan - South Bates (Whybrow Seam) Underground Mine Longwalls 17 to 20* and in *Extraction Plan - South Bates (Whybrow Seam) Underground Mine Longwalls 21 to 24*.

The remediation measures and implementation of additional measures if required, regarding subsidence impacts on sections of the North Wambo Creek Diversion, are outlined in the approved *Extraction Plan - South Bates Underground Mine Longwalls 11 to 16* and *Extraction Plan - South Bates (Whybrow Seam) Underground Mine Longwalls 17 to 20*. All subsidence remediation measures to be undertaken by WCPL, in regards to the North Wambo Creek Diversion, will be in consultation with the RR.

Historical Subsidence

In February 2018, a section 240 Notice was issued to WCPL by the RR to prepare a Subsidence Remediation Plan (SRP) for impacted areas of the neighbouring "*Kharlibe*" property. The property was undermined between 1991 and 2000 as part of the Homestead Underground Mine, within CL397 and CCL743 (**Plan 2**). A second section 240 Notice was issued by the RR on 19 September 2019, requiring WCPL to implement subsidence remediation works and associated works in accordance with the SRP and to provide quarterly Subsidence Remediation Reports. To date, the following works have been undertaken:

- Phase 1 remediation works undertaken in May 2019 which included an isolated sinkhole, a close spaced row of sink holes and five small depressions.
- Phase 2 remediation works were undertaken from 17 – 21 June 2019 as they were considered high priority works. These works included the remediation of 20 sites as outlined in Appendix E of the SRP.
- Phase 3 remediation works undertaken from 15 July – 20 December 2019 which included landform design and remediation works at 51 sites.
- Remediation of Stony Creek was undertaken in March 2020.
- Additional Phase 4 works undertaken throughout Q2 2020 at 16 sites and maintenance works completed at 14 sites.

Monitoring of remediated areas will continue until completion criteria outlined within the SRP has been met.

Other subsidence events are associated with the NWU Mine on WCPL-owned land. Subsidence monitoring has identified surface cracking typically in the predicted range of 20 mm to 100 mm wide, however some surface cracking within the range of 150 mm to 200 mm wide has been identified on land overlying Longwall 8a. In general, as the depth of cover decreases to the north, subsidence cracking widths tend to increase.

Remedial actions of subsidence impacts from the NWU Mine have, to date, included repairs to internal roads (i.e. filling in cracks to reduce safety risks). WCPL will also be recommissioning South Dam in consultation with the Dams Safety Committee (before water is returned to the dam) during the RMP term.

Subsidence Management and Extraction Plans

A subsidence impact assessment was undertaken by G.E. Holt and Associates for the EIS (WCPL, 2003). Following the modification of Development Consent (DA 305-7-2003), G.E. Holt and Associates re-assessed the potential subsidence impacts of the re-orientation of the longwall panels in the NWU Mine as part of the *Wambo Development Project Wambo Seam Underground Mine Modification*. Further subsidence impact assessments have been completed including:

- Ditton Geotechnical Services (2012) *NWU Mine Subsidence Assessment for LW 7 and 8*.
- Mine Subsidence Engineering Consultants (MSEC) (January 2014) *NWU Mine Subsidence Assessment for LW7 to 10*.
- MSEC (August 2014) *NWU Mine Subsidence Assessment for LW10a*.
- MSEC (July 2015) *SBU MOD15 and EP LW11 to LW13*.

- MSEC (December 2016) *Extraction Plan for WYLW11 to WYLW13 in the Whybrow Seam and WMLW14 to WMLW16 in the Wambo Seam*.
- MSEC (January 2017) *South Bates Extension Modification Subsidence Assessment*.
- MSEC (April 2018) *Extraction Plan for WYLW17 to WYLW20 in the Whybrow Seam*.
- MSEC (July 2020) *Extraction Plan for WYLW21 to WYLW24 in the Whybrow Seam*.

The various Extraction Plan approvals are summarised below, and include:

- NWU Subsidence Management Plan (SMP) for Longwalls 1 to 6:
  - The NWU previously operated under an approved SMP for LW1 – 6.
  - The SMP for First Workings was approved in October 2005 with mining commencing in November 2005.
  - The SMP for Second Workings was lodged in March 2006 and was approved on 11 December 2006. This SMP covered underground mining activities until 1 November 2013 which included Longwalls 1 to 6.
- NWU Extraction Plan for Longwalls 7 to 10a:
  - The approved NWU Extraction Plan for Longwalls 7 to 10a was revised to include the approved LW10a. The revised Extraction Plan for Longwalls 7 to 10a was approved on 24 June 2015.
- SBU Extraction Plan for Longwalls 11 to 13:
  - The Extraction Plan for Longwalls 11 to 13 for the SBU Mine in the Whybrow Seam was approved by DPIE on 9 February 2016.
- SBU Extraction Plan for Longwalls 11 to 16:
  - The Extraction Plan for Longwalls 13 to 16 (*Extraction Plan - South Bates Underground Mine Longwalls 11 to 16)* was conditionally approved by DPIE on 16 May 2017.
  - The approval considered the reduced lengths of Longwalls 13 to 16 would result in similar or less subsidence related impacts to those approved as part of the approved layout and therefore could be generally in accordance with the Development Consent (DA 305-7-2003) as modified.
- SBUE Extraction Plan for Longwalls 17 to 20:
  - An Extraction Plan for Longwalls 17 to 20 within the Whybrow Seam at the SBUE Mine (*Extraction Plan – South Bates Underground Extension Mine Longwalls 17 to 20*) was prepared and submitted to DPIE on 27 April 2018.
  - Subsequent to the submission of the Extraction Plan for Longwalls 17 to 20, WCPL identified geological structures that required changes to the main headings and the finishing ends of Longwalls 18, 19 and 20.
  - On 7 September 2018, DPIE approved the Extraction Plan for Longwalls 17 to 20 for the extraction of Longwall 17 only.
  - On 4 June 2019, DPIE approved the amended Extraction Plan for Longwalls 17 to 20.
- SBUE Extraction Plan for Longwalls 21 to 24:
  - An Extraction Plan for Longwalls 21 to 24 has been prepared and was submitted for approval on 28 July 2020.

Subsidence Monitoring and Remediation Program

Details of subsidence impacts observed are logged with a GPS and photographically recorded in the Subsidence Impact Register, maintained by WCPL's Chief Surveyor. Visual inspections will be undertaken in accordance with inspection checklists as provided in the relevant Extraction Plan(s).

Suitably experienced consultants conduct biannual subsidence monitoring of the WCPL subsidence areas. These inspections identify subsidence impacts and record subsidence location, length, width, depth, fill required, recommendations and risk ranking. Subsidence locations are also photographed to monitor visual changes. This monitoring forms the bases of subsidence remediation and repair work.

On an annual basis, WCPL will prepare a subsidence remediation action plan to remediate areas of subsidence that require action based on recommendations of the biannual monitoring. Areas will be prioritised based on the risk ranking. Visual monitoring of remediated subsidence areas will be conducted monthly to identify any requirement for maintenance measures and/or remedial works.

The 2018 biannual monitoring identified 46 new subsidence locations for remediation. A number of these will be remediated in 2019 once the SBU Mine longwalls have been completed. Significant creek remediation works scheduled for the North Wambo Creek Diversion in 2019 will incorporate subsidence remediation works. Subsidence repairs required in RWEP areas will be conducted in consultation with BCD to ensure compliance with the current conservation agreement.

In 2019, WCPL commissioned an audit to document historical subsidence impacts and add areas requiring further monitoring or remediation to the subsidence remediation action plan.

Any installed sediment control structures around subsidence remediation areas will be inspected on a monthly basis, or following rainfall events of equal to or greater than 20 mm/day (midnight to midnight) as recorded by the Wambo Meteorological Station. The sediment control structures will be inspected for capacity, structural integrity and effectiveness.

Subsidence monitoring and remediation undertaken each year will be reported in the Annual Review.

Management of Potential Cultural and Heritage Issues

WCPL's Heritage Management Plan outlines the management of potential environmental consequences of the proposed secondary workings described in the Extraction Plans on heritage sites or values. The Heritage Management Plan has been prepared in accordance with Condition B7, Schedule 2 (previously Condition 22C(h) of Schedule 4) of the Development Consent (DA 305-7-2003). The Heritage Management Plan describes the management and mitigation measures for both the Wambo Homestead Complex and Aboriginal heritage sites.

Aboriginal Heritage

The *NSW National Parks and Wildlife Act, 1974* (NPW Act) provides the primary basis for the legal protection and management of Aboriginal heritage in NSW. Implementation of the Aboriginal heritage provisions of the NPW Act is the responsibility of Heritage NSW.

The aim of the NPW Act is to prevent unnecessary or unwarranted destruction of Aboriginal objects and to protect and conserve objects where such action is considered warranted. Under section 86(4) of the NPW Act it is an offence for a person to harm or desecrate an Aboriginal place. Consents regarding impacts to Aboriginal objects are authorised under section 90 of the NPW Act and clauses 80D and 80E of the *National Parks and Wildlife Regulation*, 2009.

WCPL have been issued with the following consents regarding impacts to Aboriginal objects:

- On 20 June 2005, Aboriginal Heritage Impact Permit (AHIP) #2222 was issued to WCPL allowing for the disturbance and/or salvage of all known and unknown Aboriginal objects within the 'Application Area'. AHIP #2222 is scheduled to expire on 1 March 2025.
- On 19 November 2015, AHIP #C0001474 was issued for the development of the SBU Mine and is valid until 19 November 2025.
- On 16 January 2017, AHIP #C0002000 was issued for the development of the SWU Mine Modification and is valid until 16 June 2033.
- On 27 February 2018, an AHIP #C0003213 was issued for the development of the SBUE Mine and is valid until 27 February 2040.

An additional AHIP #2085 was granted to WCPL on 14 December 2004. Aboriginal heritage sites were salvaged under AHIP #2085 in advance of the construction of the rail loop. AHIP #2085 has since expired, however all salvaged materials are still managed in accordance with Care and Control Permit #3130 until they can be replaced on the post-mining rehabilitated landscape.

Further details on monitoring and management of Aboriginal heritage items are provided in the Heritage Management Plan.

Historic Heritage

A number of historic heritage surveys and assessments have been previously undertaken across the Wambo area and surrounds. The most recent large-scale historic heritage survey and assessment was conducted by EJE Town Planning (2003) as part of the Wambo Development Project EIS, which included surveys of lands in the vicinity of Wambo and an assessment of the heritage significance of sites identified during these surveys.

In addition to the EJE Town Planning (2003) survey and assessment, other previous investigations undertaken at Wambo and the immediate surrounds include (but are not limited to):

- Various archaeological assessments and surveys undertaken for the Modifications to Wambo (RPS, 2011; 2012a; 2012b; 2014; 2015; 2016).
- Historic heritage assessment undertaken for the United Wambo Open Cut Coal Mine Project (Umwelt, 2016).
- Historic heritage assessment undertaken for the SBUE Modification (EJE Heritage, 2017).
- On-going heritage management activities at the Mine.

The assessment undertaken by EJE Town Planning (2003) identified the Wambo Homestead Complex as the only item of non-Aboriginal heritage significance in the Wambo area. The Wambo Homestead Complex is located on the western side of Wollombi Brook and comprises eight distinct buildings and the remnants of barns with many fences to mounting yards and paddocks still in existence. The Wambo Homestead Complex curtilage is the boundary of the State Heritage Register of NSW listing.

In addition to the Wambo Homestead Complex, a number of other historic heritage items were recorded within the Wambo area and surrounds. The remaining sites are summarised in **Table 20**.

Table 20: Items of Historic Heritage Previously Recorded at Wambo and Surrounds

Site Number	Site Name	Description	Significance	Mitigation and Management
Site 3	Abandoned Homestead A	Located adjacent to Stony Creek within the underground mining footprint. The site consists of the remains of a cottage, four outbuildings and a pit mine. A number of moveable items are located at the site. The remains are ruins and therefore in very poor physical condition.	Minor Local Significance	WCPL will compile the photographic record of the Abandoned Stony Creek Cottage Site from 2003 and recent photos from 2015 and submit these to the Heritage Council and a local historic society for their records.
Site 4	Whynot Homestead	Located to the southwest of the open cut footprint. The site is a federation period small farm site consisting of a weatherboard cottage and outbuildings. Overall, the buildings are in sound condition.	Limited Local Significance	WCPL has completed an archival recording of the Whynot Homestead and outbuildings in accordance with the Development Consent. In accordance with recommendations made by EJE Heritage (2017) and MSEC (2020), the Whynot Homestead will be fenced to prevent access prior to subsidence occurring, with demolition to be considered in the future if the structure(s) present an ongoing safety concern.
Site 5	Abandoned Homestead B	Located adjacent to Wollombi Brook in the vicinity of the Project rail loop. Homestead B consists of an abandoned cottage and shed. The physical condition of the buildings is poor.	Local Significance	This item will be unaffected by Wambo.
Site 6	Piggery and Butcher's Hut	Located within the footprint of the Project rail loop. The Piggery and Butcher's Hut are dilapidated and beginning to fall apart.	Minor Local Significance	The piggery and butcher's shed will be clearly identified during construction activities to prevent accidental damage. No other measures are considered necessary.
Site 7	Aerial Footing	Located 200 m north of Site 6. Site 7 consists of a base plate and four stay points for an aerial or other tall, thin structure.	No Significance	No measures are considered necessary.

Table 20: Items of Historic Heritage Previously Recorded at Wambo and Surrounds (Continued)

Site Number	Site Name	Description	Significance	Mitigation and Management
Site 8	"Montrose" Homestead	Located 400 m northwest of the open cut mine footprint. It consists of a brick and weatherboard homestead and a number of outbuildings including an old wool shed. The buildings are in good condition.	Slightly Significant	No specific mitigation measures are considered necessary.
Site 10	Roman Catholic Cemetery	Old Roman Catholic Cemetery is located at Jerrys Plains.	Local Significance	No measures are considered necessary.
Site 11	Old Anglican Cemetery	Old Anglican Cemetery is located at Jerrys Plains.	Regional Significance	No measures are considered necessary.
Site 12	St Philips Anglican Church and Cemetery	St Philips Anglican Church and Cemetery are located at Warkworth. The buildings and cemetery are in good condition.	Regional Significance	No measures are considered necessary.

Source: After EJE Town Planning (2003); EJE Heritage (2017).

In accordance with Condition B7, Schedule 2 of DA 305-7-2003, assessments of the potential environmental consequences to historic heritage are included in the relevant Extraction Plan(s).

Exploration Activities

The exploration drilling program will continue during the RMP term to update gas and coal quality data for WCPL. In general, all land preparation required will be in accordance with the SDP process. Mitigation measures relevant to exploration and land clearing activities at the Mine include the following:

- Drilling sites and access will be located to avoid areas of remnant vegetation, other sensitive areas and minimise the requirement for vegetation clearance.
- A VBCP and SDP process have been developed. The SDP requires the approval of the Environmental Manager (or delegate) prior to any land clearing activities taking place. The VBCP and SDP aim to minimise environmental impacts, including minimising the area required for disturbance for drill sites and access tracks, identify environmental issues such as Aboriginal and European heritage sites, identify sensitive flora and fauna communities, outline erosion and sediment control measures, provide topsoil management and limiting soil disturbance measures, avoiding threatened species, and the identification of any seed or timber resources that can be salvaged. In accordance with SDP process, follow up inspections are completed by WCPL's Environmental Department to ensure the SDP is carried out and each drill site is rehabilitated to the appropriate standard.
- Additionally, an Exploration Drilling Permit has been developed that details the requirements and controls to be in place before the commencement of exploration activities. The Exploration Drilling Permit must be completed and signed off by the relevant departmental manager for all exploration activities.

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. All disturbance activities and site-specific controls are detailed in the SDP.

Small scale earth moving machinery, water carts and track/tyred drill rigs will be utilised during site commissioning, operation and decommissioning. Where large scale equipment is proposed to be utilised for disturbance activities, the potential environmental impacts will be assessed as part of the SDP process.

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) which was approved by the RR in May 2020. Decommissioning of exploration sites consists of the disposal of all waste from site, sealing of borehole to surface and removal of drill casing from one meter below surface. Drill sites are stabilised, decompacted, topsoil replaced and seed applied as necessary to facilitate the sites' return to its former land use.

WCPL operates under an approved Groundwater Management Plan. WCPL may expand its existing groundwater monitoring network by utilising specific exploration boreholes. The requirement to convert any exploration hole over to a groundwater monitoring bore will be subject to further determination from WCPL's groundwater specialist and consultation with DPIE-Water in regards to licensing (where required).

An exploration report will be provided to the RR annually as part of the Annual Review process.

6.3.2 Decommissioning

Train Loading Facility

Subject to consultation with relevant stakeholders at the time of decommissioning (e.g. DPIE), rehabilitation of the train loading facility would be integrated and undertaken in concert with rehabilitation of the key Mine Infrastructure Areas that are required for the life of the mine (e.g. CHPP). Areas in the vicinity of the rail loop will be revegetated with native species characteristic of the Warkworth Sands Woodland (such as *Angophora floribunda* and *Banksia integrifolia*) to compensate for the removal of a small portion of Warkworth Sands Woodland.

Decommissioning and Demolition Activities

Infrastructure with no ongoing beneficial use will be removed from the site at the completion of the Mine. Foundation slabs of certain buildings may be retained for suitable end-use goals in agreement with the relevant authorities and stakeholders. Alternatively, they would be excavated for disposal or buried in a void in an approved manner.

Process reagents and fuels unused at the completion of mining will be returned to the supplier in accordance with relevant safety and handling procedures.

Foundation soils will be chemically tested, contour ripped and chemically ameliorated, as required and in accordance with relevant regulatory requirements. Stockpiled soils will then be applied as necessary and stabilised. Revegetation would be undertaken with suitable endemic tree species or pastures, consistent with the revegetation strategy.

Roads that have no specific post-mining use will be ripped, topsoiled and revegetated. Some access roads may be retained post-mining to enable access and for use in bushfire and other land management activities.

Other decommissioning activities will generally involve consolidation and capping of the tailings dams under WCPL control, once the storage capacity of each respective tailings dam has been reached.

Note, this section of the RMP will be updated with more detail as operations approach the cessation of mining or production.

Site Security

All efforts will be made to ensure the safety of the public, both as visitors to the Mine and off the Mine site. Measures to minimise risks to the public include:

- Induction programmes for employees, contractors and visitors.
- Signage and communication protocols for visitors and suppliers.
- Identification systems for visitor access to the site.
- First aid training requirements for employees and contractors.
- Maintenance of fire trails and implementation of fire management measures in accordance with the Bushfire Management Plan.
- Fence lines maintained in an operational condition.
- Right of way accesses to neighbours are maintained.
- Speed control signs have been installed on roads on WCPL-owned land.
- Maintenance of locked gates around the site for security purposes.

Public and employee safety are fundamental considerations in the design and operation of the Mine and will be addressed through site procedures and work methods.

Site security measures will be implemented for the duration of the Mine. These measures will be maintained during closure, decommissioning and demolition activities to prevent unauthorised access and to ensure public safety. Security measures will include:

- fencing and signposting of the site;
- security patrols;
- all personnel, contractors and visitors will be required to undertake a relevant site induction and sign in and out of the site; and
- all visitors will be required to be accompanied by a site representative at all times.

Site Services

Services will be removed unless they are of use in the post-mining land use. Electricity services to any remaining infrastructure will be removed prior to the commencement of any associated building demolition works. Telecommunications, water supply and other services will also be disconnected and removed where practical.

Where services are buried (i.e. pipelines, cables, etc.) and their retrieval may lead to further disturbance, the infrastructure may be left in situ, provided they do not pose constraints to the post-mining land use. In this situation, the location of the services will be surveyed and marked on the record tracings and a suitable caveat developed to ensure that they are readily identifiable for future landholders.

Buildings, Structures and Fixed Plant to be Retained

Foundation slabs of certain buildings may be retained for suitable end-use goals in agreement with the relevant authorities and stakeholders. Alternatively, they would be excavated for disposal or buried in a void in an approved manner.

Some access roads may be retained post-mining to enable access and for use in bushfire and other land management activities.

Some infrastructure (e.g. site access roads, water storages) may be retained for alternate post-mining uses (where agreed in consultation with relevant authorities and local landholders).

Management of Carbonaceous Material

Management of the ROM coal stockpiles is the responsibility of United and is described in the United Phase 2 Rehabilitation Management Plan. Management of the product coal stockpiles is the responsibility of Wambo.

Excess coal material remaining at closure will be scraped up and either reprocessed or disposed of within the tailings/coarse reject emplacement areas on site.

Management of Contaminated Material

Where there is the potential that contamination may have occurred as a result of site activities (e.g. refuelling areas, workshops, etc), investigations will be undertaken to determine the presence and extent of any contamination. Where identified, contaminated material will be bioremediated on site or disposed of offsite at an authorised waste facility.

If applicable, a suitably qualified contamination expert will be engaged to verify that any contamination has been adequately managed.

Hazardous Materials Management

All remaining hydrocarbons such as diesel and lubricants and other hazardous materials will be either utilised or disposed of at an authorised facility.

The storage tanks will be removed and, depending on their condition, either sold or disposed of at an authorised facility.

It is envisaged that the majority of dangerous goods remaining onsite at the end of the mining operations will include gas bottles and cleaning agents, which will be utilised during decommissioning activities or disposed of offsite in accordance with the regulatory arrangements in force at the time.

Underground Infrastructure

At the completion of underground mining operations, all underground infrastructure (e.g. conveyors and dewatering systems) that can be recycled or reused will be removed. The various drift accesses and portals will be sealed to prevent discharge of waters from the workings as they become flooded by groundwater.

Portals will be sealed (or access restricted) in accordance with RR requirements (*MDG6001 Guideline for the Permanent Filling and Capping of Surface Entries to Coal Seams* [Department of Trade and Investment, Regional Infrastructure and Services – Mine Safety Operations, 2012]). Box cut areas will be regraded, where necessary, and revegetated using appropriate plant species.

Ventilation infrastructure, including fans and vents, will be removed. A detailed plan of each ventilation shaft will be prepared and the sealing/capping procedure determined in consultation with the relevant authorities and other stakeholders. Post-mining, ventilation shafts will be backfilled and sealed in accordance with RR requirements (currently the *MDG6001 Guideline for the Permanent Filling and Capping of Surface Entries to Coal Seams* [Department of Trade and Investment, Regional Infrastructure and Services – Mine Safety Operations, 2012]).

Ongoing Environmental Management and Monitoring

Ongoing monitoring and management activities are discussed in detail in **Section 8**.

6.3.3 Landform Establishment

Water Management Infrastructure

At mine closure, selected dams may be retained and transferred to regional landholders for use following mine closure, where agreed in consultation with relevant authorities and local landholders.

Reject Emplacement Areas and Tailings Dams

United is responsible for the decommissioning of the North East Tailings Dam, Hunter Pit Tailings Dam and Homestead in-pit tailings dams. Once decommissioned, United also assumes responsibility for landform establishment and subsequent rehabilitation phases. Details of the activities proposed by United are provided in the United Phase 2 Rehabilitation Management Plan.

WCPL is responsible for the decommissioning, landform establishment and subsequent rehabilitation phases of the South Bates Sump and Homestead Main Pit

Landform Design / Shape

The final landform design and shape are the responsibility of United and are detailed in the United Phase 2 Rehabilitation Management Plan.

Final Voids, Highwalls and Lowwalls

The final voids, highwalls and lowwalls are the responsibility of United and are detailed in the United Phase 2 Rehabilitation Management Plan.

Construction of Creek / River Diversion Works

A section of the North Wambo Creek has been diverted to avoid the open cut mine. The North Wambo Creek Diversion was constructed in accordance with the approved North Wambo Creek Diversion Plan.

Rehabilitation of the North Wambo Creek Diversion is described in detail in the North Wambo Creek Diversion Management Plan, a component of the WCPL Surface Water Management Plan.

6.3.4 Growth Medium Development

Once the final landform has been established, topsoil will be applied to the reshaped surface in an even layer generally not less than 100 mm.

Prior to application of topsoil, a pre-rehabilitation assessment will be undertaken. If the assessment determines the stockpiled topsoil material has:

- High sodicity, gypsum should be applied at a standard rate of 5 to 10 t/ha, depending on material sodicity.
- A significant weed infestation, the top layer of the stockpile may require scalping before underlying material can be used for topdressing.
- Low pH, lime should be applied at a rate determined by a lime requirement test.

Addition of organic supplements is also recommended for high and low pH, sodic (dispersive) and low fertility soils. Such supplements can also assist in returning favourable soil micro-organisms to sterile long-stockpiled material.

Topsoil will be placed using rear dump haul trucks and spread with dozers or graders. Once spread, the topsoil surface will be disc or chisel cultivated to create a textured surface which assists in trapping surface runoff, provides seed entrapments and creates microclimates favourable for seed germination.

Following topsoil establishment, erosion and sediment controls will be implemented in accordance with the ESCP.

Where appropriate and practical, stockpiled biological resources (e.g. tree hollows, logs and other woody debris) will be incorporated into the landform to augment habitat values.

6.3.5 Ecosystem and Land Use Establishment

The revegetation strategy includes the revegetation of disturbance areas with areas of woodland (corridors) species, areas which contain a mixture of woodland and pasture species and riparian species.

Vegetation may be established by the following methods:

- Sowing or direct seeding.
- Propagules (seeds, lignotubers, corms, bulbs, rhizomes and roots) stored in the topsoil.
- Spreading harvested plants with bradysporous seed (seed retained on the plant in persistent woody capsules) onto areas being rehabilitated.
- Planting nursery-raised seedlings (tubestock).
- Invasion from surrounding areas through vectors including birds, animals and wind.

The most common method of vegetation establishment at the Mine is broadcast direct seeding of selected pasture or tree seed mixes.

Seed sowing is usually supplemented by the concurrent application of granulated fertiliser. Sowing is undertaken shortly after topsoil spreading to avoid loss of topsoil due to wind and rain action. Tubestock is generally only used to establish vegetation where rapid growth or specific species establishment is required, such as remedial revegetation, erosion control or visual bunding.

Fertiliser application is beneficial to vegetation establishment to replenish any nutrient deficiencies. The type of fertiliser and application rate varies according to the specific site, soil type and post-mining use of the area. When applying any additional chemical or organic products to the soil, the effects of runoff and leaching will be considered, as rapid leaching from organic wastes are known to provide ideal conditions for algal blooms and exacerbate weed growth and infestation.

Timing for initial vegetation establishment is an important factor for successful revegetation. Where possible, sowing and planting are planned to occur as soon as possible prior to the expected onset of reliable rains or after a break of the season (i.e. Autumn and Spring).

Following the changes in topography, drainage and soil conditions that results from open cut mining, some local provenance species may not be suitable for revegetation and seed sourced from outside the immediate district may be required. The most appropriate species to use to rehabilitate the area are those most suited to the soil types, drainage status, aspect and climate of the site. The biodiversity values of the surrounding native vegetation communities will be considered during rehabilitation planning.

Distribution of vegetation type and species selection will be designed to enhance these values, whilst ensuring that weed and fire hazards are not increased for surrounding local agricultural areas. In recognition of the importance of vegetation corridors to regional biodiversity, rehabilitation initiatives aim to increase the connectivity of vegetation in the region through the establishment of woodland corridors. Accordingly, the rehabilitation program has been designed to establish linkages between the rehabilitation areas, existing remnant vegetation and Wollemi National Park. In doing so, WCPL will address the issue of discontinuity in remnant vegetation across the Hunter Valley floor.

Revegetation will include the use of native species with the potential to offer habitat resources for native wildlife (e.g. breeding, roosting/nesting or foraging resources), including threatened fauna species. The revegetation program will include the use of food tree species for the Glossy Black-cockatoo (e.g. *Allocasuarina sp*.) and consider providing for the food and habitat needs of other threatened woodland species.

6.3.6 Ecosystem and Land Use Development

At the ecosystem and land use development phase, rehabilitation monitoring results would be used to confirm rehabilitation areas are on a trajectory towards a self-sustaining ecosystem and meeting the rehabilitation completion criteria. Monitoring results would also be used to determine the requirement for maintenance and/or contingency measures (e.g. supplementary plantings) to improve rehabilitation performance. Contingency measures are described further in **Section 10.2**.

It is expected that at this phase, the need for maintenance/intervention would be no greater than that required for the surrounding lands whether it be for grazed lands or for existing remnant vegetation areas such as the RWEP areas.

Notwithstanding the above, potential rehabilitation maintenance requirements include (but are not necessarily limited to):

- Weed and feral animal control of rehabilitation.
- Erosion control works.
- Re-seeding/planting of rehabilitation areas that may have failed.
- Maintenance fertilising.
- Repair of fence lines, access tracks and other general related land management activities.

The requirement of these rehabilitation maintenance activities will be based on the annual rehabilitation monitoring program and opportunistic inspections of rehabilitated areas as described in the BMP.

6.4 Rehabilitation of Areas Affected by Subsidence

All areas affected by subsidence at the Mine are covered by an associated Extraction Plan. Where relevant, these Extraction Plans describe the proposed subsidence remediation processes that would be undertaken if required.

A summary of subsidence management and/or remediation measures is provided in **Section 6.3.1**, including an outline of the relevant Extraction Plan(s) and the Subsidence Monitoring and Remediation Program.

7.0 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 Mine as outlined in **Table 21**. Rehabilitation validation monitoring is undertaken as described in **Section 8**.

Table 21: Rehabilitation Quality Assurance Processes

Rehabilitation Quality Assurance Processes	Responsibility	Documenting and Recording Process
Land Clearance		
Establish existing environmental baselines.	Manager: Environment and Community	EIS and Environmental Assessments.
Maximise opportunities for salvage of biological and habitat resources in accordance with the VBCP.	Manager: Environment and Community	SDP.
Undertake pre-clearance surveys and due diligence assessments.	Manager: Environment and Community	SDP.
Undertake topsoil stripping and management in accordance with the Topsoil Management Procedure.	Manager: Environment and Community	Topsoil Management Procedure.
Forward mine planning to provide sufficient time for the implementation of pre-clearance procedures.	Mining Engineering Manager.	Mine Planning.
Identification and collection of local seed in accordance with the Annual Seed Collection Program.	Manager: Environment and Community	Annual Review.
Minimise the extent of clearing and disturbed land to the greatest extent practicable at any given time.	Mining Engineering Manager.	SDP.
Minimise ground disturbance during exploration activities.	Manager: Environment and Community	SDP.
Active Mining and Production		
Develop and maintain a topsoil balance and database with details of stockpile sizes, treatments and future topsoil requirements.	Manager: Environment and Community	Topsoil Management Procedure. Annual Review.
Locate and manage soil stockpiles in accordance with the Topsoil Management Procedure.	Manager: Environment and Community	Topsoil Management Procedure. Annual Review.
Regular sampling and testing of CHPP rejects and tailings.	CHPP Manager	Dam Management System.
Tailings capping method investigations.	CHPP Manager	Dam Management System.
Specialist advice on effective managing and mitigation of potential interference to rehabilitation establishment or downstream pollution as a result of exposure to adverse geochemical material.	Manager: Environment and Community	Mine Planning.

Table 21: Rehabilitation Quality Assurance Processes (Continued)

Rehabilitation Quality Assurance Processes	Responsibility	Documenting and Recording Process
Decommissioning		
Develop and maintain a register of contaminated sites, waste landfill sites and bioremediation areas.	Manager: Environment and Community	Land Contamination Register.
Erosion and sediment control practices in accordance with the ESCP.	Manager: Environment and Community	Annual Review.
Environmental monitoring programs regularly undertaken and improved.	Manager: Environment and Community	Annual Review.
Prior to demolition activities, ensure appropriate heritage approvals and or management measures are in place (e.g. archival recording, restoration of building etc.).	Manager: Environment and Community	Heritage Management Plan.
Remove electrical services to any infrastructure scheduled for demolition prior to commencement of works.	Infrastructure Coordinator	Work Order. (Proposed) Decommissioning Plan.
Remove telecommunications, water supply and other services where practical.	Infrastructure Coordinator	Work Order. (Proposed) Decommissioning Plan.
Where services are buried and retrieval may lead to further disturbance, infrastructure to be left *in situ*, provided this does not compromise the Final Land Use.	Infrastructure Coordinator	Work Order. (Proposed) Decommissioning Plan.
Location of services to be left *in situ* will be surveyed and marked on site plan to ensure they are readily identifiable for future land holders.	Mine Surveyor	Survey Database.
Prior to demolition, infrastructure would be evaluated for potential hazardous substances (e.g. asbestos, radiation sources etc.) and appropriate strategies developed to protect employees, the public and the environment.	Infrastructure Coordinator	(Proposed) Contractor inspection report and management strategy. Asbestos Management Plan.
All buildings, fixed plant and other infrastructure not to be retained as part of the Final Land Use will be demolished and removed. Demolition will be carried out in accordance with *AS 2601-2001: The Demolition of Structures* (or its latest version).	Infrastructure Coordinator	Photographs and Contractor demolition reports.
Concrete footings and pads (along with other potential inert building waste) will be broken up and buried in the pit area or used in rehabilitation where appropriate.	Infrastructure Coordinator	Photographs.
Where infrastructure is approved to remain as part of the Final Land Use, a structural assessment will be prepared by a suitably qualified person to determine the structural integrity of the structure and identify the associated short and long-term risks to public safety and the environment.	Infrastructure Coordinator	(Proposed) Contractor structural assessment report.
Any ore spillages or hazardous materials will be removed.	Manager: Environment and Community	Photographs.

Table 21: Rehabilitation Quality Assurance Processes (Continued)

Rehabilitation Quality Assurance Processes	Responsibility	Documenting and Recording Process
Decommissioning (continued)		
Potentially contaminated areas will be assessed and remediation undertaken as required.	Manager: Environment and Community	(Proposed) Contractor assessment report and remediation plan.
Decommissioning and removal of underground infrastructure.	Technical Services Manager	Annual Review.
Seal all mine openings, boreholes, gas wells etc.	Technical Services Manager	Annual Review.
Final Landform Establishment		
Water management areas (where retained as part of the Final Land Use) should have excess sediment removed, be reshaped for their intended use, have drainage structures to capture runoff from sufficient catchment area to ensure the dam can be used for its intended use, have appropriate sediment and erosion control measures, and be appropriately licensed in perpetuity.	Manager: Environment and Community	(Proposed) ESCP/s for proposed facilities to be retained. (Proposed) Contractor reports.
Reject emplacement areas and tailings dams under WCPL control are to be rehabilitated to a capability that supports the Final Land Use and are safe, stable and non-polluting.	Manager: Environment and Community	RMP.
Final landform design will consider the surrounding landforms, suitable drainage, erosion and sediment control structures, geochemical constraints and geotechnical issues.	Manager: Environment and Community	RMP.
The stability and revegetation of the North Wambo Creek Diversion will be reviewed to inform remediation/rehabilitation works.	Manager: Environment and Community	Annual NWCD Monitoring report.
Subsidence monitoring of affected areas will continue until it is demonstrated that all measurable subsidence has ceased.	Technical Services Manager	Subsidence Monitoring and Impacts Register.
Subsidence monitoring pegs will either be removed or cut-off below ground level once monitoring is complete and approval to remove the pegs has been granted.	Technical Services Manager	Subsidence Monitoring and Impacts Register.
Rehabilitation of subsidence affected areas will be undertaken in accordance with the relevant Extraction Plans.	Manager: Environment and Community	Annual Review.
Growth Medium Development		
Rehabilitation methodologies to be developed to achieve nominated Rehabilitation Objectives and Completion Criteria in consideration of site-specific constraints.	Manager: Environment and Community	This RMP.
Undertake topsoil application and management in accordance with the Topsoil Management Procedure, including application of ameliorants or organic matter.	Manager: Environment and Community	Topsoil Management Procedure.
Erosion and sediment control practices in accordance with the ESCP.	Manager: Environment and Community	Annual Review.
Schedule and undertake revegetation activities according to weather and climatic conditions.	Manager: Environment and Community	Annual Review.
Avoid compaction of rehabilitation substrate.	Manager: Environment and Community	Topsoil Management Procedure.

Table 21: Rehabilitation Quality Assurance Processes (Continued)

Rehabilitation Quality Assurance Processes	Responsibility	Documenting and Recording Process
Growth Medium Development (continued)		
Restore soil structure by ripping in parallel with contours.	Manager: Environment and Community	Topsoil Management Procedure.
Where supplementary topsoil shortages with suitable alternatives (e.g. biosolids, organic growth medium or other substitutes) consider the risk of introducing hazards to the establishment of the preferred PCT.	Manager: Environment and Community	Topsoil Management Procedure. Rehabilitation Risk Assessment
Use structures such as tree hollows, logs and other woody debris, rock material to augment the habitat value of rehabilitation.	Manager: Environment and Community	Photographs and Annual Biodiversity Monitoring
Ecosystem and Land Use Establishment		
Preference locally sourced seed materials for revegetation activities (where available).	Manager: Environment and Community	Order records and Invoicing
Consider implementing techniques such as brush matting where disturbed areas are directly adjacent to mature ecosystems to stabilise the site while natural recruitment occurs.	Manager: Environment and Community	RMP. BMP.
If revegetation is delayed due to unsuitable seasonal conditions, undertake temporary stabilisation measures (e.g. sterile cover crops, erosion and sediment controls) to avoid erosion and further land degradation.	Manager: Environment and Community	ESCP. RMP. Topsoil Management Procedure.
Spread seed as soon as possible following ripping. If delayed, assess whether re-ripping is required.	Manager: Environment and Community	RMP.
Undertake bushfire management activities in accordance with the Bushfire Management Plan.	Manager: Environment and Community	Annual Review.
Use appropriate earthmoving equipment.	Manager: Environment and Community	RMP.
Engage suitably qualified contractors to undertake all works.	Manager: Environment and Community	Tender process and experience
Record seed germination and seeding success rates to assess against target densities.	Manager: Environment and Community	Results of seed germination testing. Certificates for all seed collected or supplied by an external contractor are obtained.
Maximise the number of target species within the first round of revegetation activities to facilitate species richness.	Manager: Environment and Community	Annual Biodiversity Monitoring.
Augment habitat to encourage initial colonisation of target fauna species (e.g. nest boxes, salvaged hollows, den sites, habitat ponds, etc.)	Manager: Environment and Community	Annual Biodiversity Monitoring.
Maintain stock control fencing to prevent access to revegetation areas.	Manager: Environment and Community	BMP.
Conduct regular site inspections (at least quarterly) to assess revegetation establishment and site conditions until vegetation has become well established and the site can be considered stable.	Manager: Environment and Community	BMP.

Table 21: Rehabilitation Quality Assurance Processes (Continued)

Rehabilitation Quality Assurance Processes	Responsibility	Documenting and Recording Process
Ecosystem and Land Use Establishment (continued)		
Consider implementation of LiDAR or drones to conduct additional inspection and analysis of rehabilitation.	Manager: Environment and Community	Video and photographic records.
Implement a long-term monitoring program to evaluate trajectory of rehabilitation against Rehabilitation Objectives and Completion Criteria.	Manager: Environment and Community	BMP and annual biodiversity monitoring.
Develop a Rehabilitation Management and Maintenance Program based on the needs identified in the rehabilitation monitoring program. The objective of this program is to facilitate progress towards the Rehabilitation Objectives and Completion Criteria.	Manager: Environment and Community	BMP and annual biodiversity monitoring.
Ecosystem and Land Use Development		
Continue Rehabilitation Management and Maintenance Program.	Manager: Environment and Community	BMP and annual biodiversity monitoring.
Continue rehabilitation monitoring programs.	Manager: Environment and Community	BMP and annual biodiversity monitoring.
Actively manage rehabilitated lands in accordance with the Final Land Use(s).	Manager: Environment and Community	Annual Review.

8.0 Rehabilitation Monitoring Program

Rehabilitation performance is currently monitored in accordance with the BMP to ensure vegetation is establishing and to determine the need for any maintenance and/or contingency measures. The BMP (including the monitoring program) was issued to DPIE on 28 October 2016 after extensive consultation with OEH (now BCD) and DoEE (now DAWE). The BMP was endorsed or approved by DoEE on 17 November 2016, OEH on 1 November 2016 and DPIE on 11 October 2017. Key elements of the BMP have been implemented since late 2016.

The two main monitoring components of the BMP are:

- monitoring of mine rehabilitation areas; and
- monitoring of the RWEP areas.

The monitoring methodologies employed for mine rehabilitation areas are explained in further detail in the subsections below. Monitoring of the RWEP areas is undertaken in accordance with the BMP.

8.1 Rehabilitation Establishment Monitoring

A summary of the monitoring in the BMP (where relevant to rehabilitation) is provided in **Table 22**. Details on the monitoring program requirements and timing are provided in the following sections.

Table 22: Rehabilitation Monitoring Program

Monitoring	Area	Timing
LFA	Woodland Rehabilitation	Annually (Autumn or Spring)
Biometric	Woodland Rehabilitation	Annually (Spring)
	North Wambo Creek Diversion	
	Pasture Rehabilitation	
Visual Monitoring	All Rehabilitation Areas	Annually
Subsidence Inspection	Areas overlying existing underground workings or proposed underground mining areas	Annually
Mine Closure	All rehabilitation works.	As required.

8.1.1 Landscape Function Analysis

Landscape Function Analysis has previously been widely used across rehabilitated landscapes at the Mine. The LFA component of the WCPL monitoring program focuses on monitoring and providing quantitative assessment of the success of newly rehabilitated landscape establishment. Two separate assessments consisting of a variety of measured site attributes contribute to LFA as provided in Tongway and Hindley (2004). These assessments are:

- Landscape Organisation Index (LOI); and
- Soil Surface Assessment.

LOI Index is the initial LFA data acquisition step and collects information at the hill slope scale. It relates to the proportion of the transect occupied by patches of landscape elements that are relatively permanent and provide stable, resource accumulating structures, such as grassy tussocks and other ground cover, leaf litter and logs. LOI can vary from 0.0 (a totally bare site) to 1.0 (a site totally covered by vegetation).

Soil Surface Assessment results provide an index on stability, infiltration and nutrient cycling for all patch and inter-patch types for the whole of landscape (transect). The combined score from each patch type provides a stability, infiltration and nutrient cycling index.

Eleven Soil Surface Condition Indicators (**Table 23**), each focusing on specific biological and/or physical processes, are used to develop three LFA indices: Stability Index (SI), Soil Infiltration (INFI) and Nutrient Cycling (NI).

LFA consists of a number of permanent transects being established in areas of revegetation, along with corresponding transects in adjacent undisturbed areas to provide reference/ analogue sites. LFA transects are monitored annually either in autumn or spring following the commencement of revegetation.

Table 23: Soil Surface Condition Indicators

Soil Surface Condition Indicators	Description	Relevant LFA Index		
		SI	INFI	NI
Soil Cover	Percentage cover of perennial vegetation to a height of 0.5 m. plus rocks > 2 cm and woody material > 1 cm in diameter or other long-lived, immoveable objects.	X		
Perennial Vegetation Cover	Percentage perennial vegetation cover.		X	X
Litter Cover	Percentage cover of annual grasses and ephemeral herbage (both standing and detached) as well as detached leaves, stems, twigs, fruit, dung, etc.	X	X	X
Cryptogam Cover	Percentage cover of algae, fungi, lichens, mosses, liverworts and fruiting bodies of mycorrhizas.	X		X
Crust Brokenness	Categorises soil crusts from 0-4 where 0 refers to ‘no crust present’ and 4 refers to an ‘intact and smooth’ soil crust.	X		
Erosion Type and Severity	Categorises the aerial extent and severity of various erosion types from ‘Insignificant’ to ‘Severe’.	X		
Deposited Materials	Categorises the extent and depth of deposited alluvial material.			
Surface Roughness	Categorises the depth of surface depressions from ‘smooth’ to ‘deep depressions’.	X	X	X
Surface Resistance to Disturbance	Categorises the soils capacity to resist disturbance based on the soils ‘hardness’ or ‘brittleness’.	X	X	
Slake Test	Categorises the soils stability when exposed to water.		X	
Soil Texture	Categorises the soils water infiltration capacity from ‘very slow’ to ‘high’.		X	

Over the RMP term, WCPL will review the use of LFA as a monitoring method and transition to alternative monitoring methods for rehabilitated landscape establishment which may include soil monitoring, Biometric Vegetation Assessment and visual assessment as detailed below. The RMP will be updated to reflect any changes to the monitoring methodology.

8.1.2 Biometric Vegetation Assessment

The BioMetric method (Gibbons *et al.*, 2009) is proposed as the model for determining meaningful, quantitative, biodiversity focused completion criteria. BioMetric, a NSW Government endorsed biodiversity assessment method (developed for the NSW BioBanking Assessment Methodology), provides a useful decision making framework founded on a standardised repeatable measurement method readily applicable to a monitoring program.

Management measures can be performance tested through the BioMetric process, thereby providing an appropriate evidence-based mechanism for optimising future management decisions. Evidence-based adjustments made to a predefined management regime are central to maximising the likelihood of a successful outcome.

BioMetric is a quantitative method developed to comparatively assess the condition of vegetation and habitat values of native vegetation against pre-defined benchmarks (i.e. pre-European settlement). Vegetation and habitat condition is quantitatively evaluated by ten readily measurable 'site attributes' considered to reflect the relative health or level of disturbance of a specific vegetation class. These site attributes when measured against relative performance criteria provide meaningful ecological information used to inform management decisions. Site attributes measured in a BioMetric assessment are listed in **Table 24**.

Table 24: Biometric Site Attributes and Measurement Parameters

Site Attribute	Measurement Parameter
Native Plant Species Richness (NPS)	Number of native plant species within 400 m^2 plot (count).
Native Over-storey Cover (NOS)	Projected foliage cover above 10 m height along a 50 m transect (%) – measured every 5 m.
Native Mid-storey Cover (NMS)	Projected foliage cover between 1 and 10 m height along a 50 m transect (%) – measured every 5 m.
Native Ground Cover (grasses) (NGCG)	Cover below 1 m along a 50 m transect (%) – measured every 1 m.
Native Ground Cover (shrubs) (NGCS)	Cover below 1 m along a 50 m transect (%) – measured every 1 m.
Native Ground Cover (other) (NGCO)	Cover below 1 m along a 50 m transect (%) – measured every 1 m.
Exotic Plant Cover (EPC)	Cover along a 50 m transect (%) – measured every 1 m.
Overstorey Regeneration (OR) within vegetation zone	Overstorey canopy species <5 cm diameter at breast height (DBH) within a 1,000 m^2 plot (score 0 to 1).
Number of Trees With Hollows (HBT)	Number of trees containing hollows within a 1,000 m^2 plot (count).
Total Length of Fallen Logs (FL)	Log length touching ground >10 cm diameter and >0.5 m in length within a 1,000 m^2 plot (metres).

Permanent flora survey quadrats will be established in woodland rehabilitation areas to obtain quantitative data on plant species diversity and abundance. Quadrat data will be collected at each of the floristic quadrat monitoring sites. Permanent quadrats will also be established along the North Wambo Creek Diversion.

Biometric monitoring will be undertaken at the same time as the LFA monitoring.

8.1.3 Visual Monitoring

Visual monitoring of revegetation will be undertaken to ensure vegetation is establishing and to determine the need for any maintenance and/or contingency measures (such as the requirement for supplementary plantings, erosion control and weed and animal pest control). Visual assessments allow for the rapid application of remedial actions where necessary.

LFA and Biometric Monitoring will be adopted as the primary monitoring methodologies to assess revegetated landscape stability and progress towards quantitative completion criteria targets.

8.1.4 Subsidence Inspections

Areas overlying existing underground workings or proposed underground mining areas are subject to annual subsidence monitoring inspections. These inspections:

- identify any isolated surface disturbances;
- assess the level of disturbance to native vegetation and the condition of the vegetation (e.g. health and vigour of species and communities); and
- assess any changes in drainage lines or watercourses (that may be attributable to subsidence).

Details regarding the remediation of subsidence impacts are provided in the relevant Extraction Plans.

8.1.5 Mine Closure Monitoring

Mine closure concepts and management measures will be developed in consultation with the RR and other relevant regulatory agencies.

At mine closure, the existing environmental monitoring program will be maintained until all decommissioning and rehabilitation works have been completed in accordance with the relevant rehabilitation criteria and objectives. In consultation with regulatory authorities, there may be the need to remove redundant and/or establish additional monitoring sites to complement existing programs at mine closure.

Capped tailings dams will be monitored during the life of the Mine and post mining to determine the success of the capping and rehabilitation process.

Approaching mine closure, contaminated assessments will be carried out to identify areas of potential contamination and develop appropriate remedial measures and monitoring requirements as the Mine transfers into the closure phase.

The post closure monitoring and measurement program will be similar to that undertaken during the active mining operation, however the monitoring program may be prioritised to focus on potential environmental aspects that are likely to cause pollution and/or verify the success or failure of the rehabilitated post mining landforms.

Post closure monitoring will be conducted for up to five years after decommissioning and final rehabilitation has been completed, or until such time as monitoring records demonstrate that the site is no longer contributing, nor has the potential to contribute, pollutants to the surrounding environment, and that rehabilitation has achieved in accordance with the relevant rehabilitation criteria. Monitoring and reporting of biodiversity areas post mine closure will continue in accordance with the requirements of the BMP.

8.2 Measuring Performance against Rehabilitation Objectives and Completion Criteria

The results of rehabilitation monitoring will be compared against the completion criteria described in **Section 3.1**. Details of rehabilitation monitoring will be provided in subsequent Annual Reviews (or the Annual Rehabilitation Report and Forward Program).

Summaries of the monitoring results and performance against rehabilitation objectives and completion criteria will be included in this section when the RMP is updated or revised.

9.0 Research, Rehabilitation Trials and Use of Analogue Sites

9.1 Research and Rehabilitation Trials

A number of rehabilitation trials and studies have been conducted at WCPL to date and include:

- Capping studies on the North East Tailings Dam to identify a safe and viable method of capping the tailings dam surface.
- Large scale biosolid application trials to improve soil structure and effectiveness of the soil as plant growth medium (**Plate 1**).
- Trialling the application of tree mulch on the surface of rehabilitation areas to assist with dust suppression and erosion control, as well as providing a source of organic matter in the stripped topsoil.
- Incorporation of Organic Growth Medium with topsoil material.
- A trial to assess tree establishment and development on waste rock emplacements.
- Undertake detailed soil characterisation program of waste rock emplacement areas and topsoil.
- Rationalise and improve LFA monitoring program.
- Revise rehabilitation monitoring program to address knowledge gaps, develop appropriate quantifiable criteria and revise triggers and responses in TARP.

WCPL is committed to researching collaborative opportunities with external research institutions to partner in possible rehabilitation trials and studies conducted at WCPL to enable continued improvements in the rehabilitation practice.

Updates on research and rehabilitation trials are provided annually in the Annual Review. Once trials are finalised, the results will be incorporated into this RMP.

Plate 1 – Biosolid Application on Re-profiled Waste Rock Emplacement

9.2 Analogue Sites

As described in **Section 3.1**, completion criteria for rehabilitation have been developed using BCD benchmarked values for each applicable PCT.

10.0 Intervention and Adaptive Management

10.1 Threats to Rehabilitation

As described in **Section 5**, the Rehabilitation Risk Assessment identified a total of 87 risks. Of these risks, 60 were ranked as low, 22 were ranked as low to medium and five were ranked as medium. No risks were ranked as high. Note, some risks were duplicated during different rehabilitation phases (e.g. potential weather impacts to rehabilitation was ranked as a low to moderate risk during ecosystem establishment and also during ecosystem and land use development).

Table 25 outlines potential threats and consequences associated with rehabilitation activities. A TARP has been developed (**Section 10.2**) to identify appropriate response measures to manage the potential rehabilitation threats that were identified as low to medium or medium risk.

Table 25: Summary of Potential Threats to Successful Rehabilitation

Rehabilitation Threat	Potential Consequence/Hazard
Topsoil	• Insufficient topsoil depths/volume. • Topsoil management methods not effective resulting in compromised topsoil stockpiles. • Loss of topsoil material due to erosion, poor vegetation establishment and interaction with vehicles. • Topsoil characterisation determines soil parameters not within the preferred range for pH, sodicity, salinity ranges resulting in limited plant growth.
Hazardous Materials	• Waste rock characterisation determines soil parameters not within preferred range (i.e. hazardous waste rock material in final landform). • Spontaneous combustion event underground or at stockpile.
Final Landform Surface	• Tailings emplacement area capping fails resulting in discharge to environment/watercourse. • Large rocks on surface.
Landform and Land Use	• Excessive slope lengths. • Steep slope gradients. • Maximum height of final landforms greater than RL 160 m AHD.
Vegetation	• Poor establishment, excessive weeds, low species composition, mono-culture. • Low LFA scores. • Low ground cover or high cover of exotic species. • Native tree and shrub seed not available to complete revegetation. • Native pasture seed not available to complete revegetation.
Discharges to Environment	• Pollution of downstream watercourses. • Impacts to other water users.
Erosion and Sediment Control	• Landform not stable. • Failure of water management structures and ability to freely drain.
Subsidence	• Presenting an immediate safety or environmental hazard. • Preventing attainment of final land use. • Creek instability and/or hydraulic losses. • Extensive water ponding impacting rehabilitation.

Table 25: Summary of Potential Threats to Successful Rehabilitation (Continued)

Rehabilitation Threat	Potential Consequence/Hazard
Decommissioning	• Decommissioning has not removed all redundant services, infrastructure, carbonaceous material, wastes hazardous materials, sealing of mine and ventilation shafts etc. post mine closure. • Unauthorised access to underground workings.
Terrestrial Fauna	• Native species diversity is low in rehabilitation areas. • High numbers of feral animals are identified in rehabilitation areas.
Weather and Climatic Influences	• Weather conditions not appropriate for establishing rehabilitation, resulting in delays to ecosystem establishment. • Weather conditions (e.g. bushfire, drought, flooding, etc.) result in damage to rehabilitation.
Performance Criteria	• Current rehabilitation monitoring program and available data (to date) insufficient to develop quantifiable criteria for mine closure and relinquishment. • Rehabilitation standards advance significantly during mine operation resulting in increased requirements for rehabilitation relinquishment.

The processes outlined in this RMP will be implemented to control or eliminate these rehabilitation risks. Where necessary, rehabilitation procedures will be amended accordingly during the RMP term with the aim of continually improving rehabilitation standards.

10.2 Trigger Action Response Plan

WCPL have prepared a TARP for rehabilitation to identify appropriate response measures in the event rehabilitation outcomes are not achieved.

Table 26 illustrates how the various rehabilitation risks, management measures and responsibilities are structured to achieve compliance with the relevant statutory requirements, and the framework for management and contingency actions.

A revision of the TARP will be undertaken as a result of the revised rehabilitation monitoring program and capping trials proposed to allow for the development of appropriate criteria and triggers. A revised TARP will be provided in consecutive RMP amendments as soon as the data is available from the respective programs.

Table 26: Rehabilitation Trigger Action Response Plan

Ref # No.	Rehabilitation Risk	Consequence/Hazard	TARP Code	Contingency Reponses
1	Topsoil	Insufficient topsoil depths/volume. Topsoil management methods not effective resulting in compromised topsoil stockpiles.	**Trigger**	• Monitoring confirms average topsoil replacement at depths <100 mm. • Monitoring confirms topsoil has not been ripped appropriately.
			Action	• Topsoil is to be re-applied at a minimum depth of 100 mm. • Topsoil ripped to a depth of 300 mm to 500 mm. • Review topsoil application procedure and topsoil balance. • Review topsoil stripping methods. • Increase application of topsoil (and/or application with appropriate humus material) to achieve average minimum depth of 100 mm. • Review Topsoil Management Procedure and ensure adequate training for rehabilitation staff/contractors.
			Responsible Persons	Manager: Environment and Community
2		Loss of topsoil due to erosion, poor vegetation establishment and interaction with vehicles.	**Trigger**	• Monitoring of topsoil stockpiles identifies significant erosion and loss of topsoil resource. • Establishment of stabilising cover crop has failed. • No signage to identify topsoil stockpiles. • Evidence of unauthorised removal of material or access of topsoil material.
			Action	• Remediate affected areas, fertilise and re-seed to stabilise as necessary. • Install/repair silt fencing as required. • Installation of signage. • Continue to monitor. • Reshape stockpile with a rough surface to reduce erosion hazard, improve drainage and promote vegetation. • Re-seed and fertiliser as necessary.
			Responsible Persons	Manager: Environment and Community

Table 26: Rehabilitation Trigger Action Response Plan (Continued)

Ref # No.	Rehabilitation Risk	Consequence/ Hazard	TARP Code	Contingency Reponses
3	Topsoil (continued)	Topsoil characterisation determines soil parameters not within the preferred range for pH, sodicity, salinity ranges resulting in limited plant growth.	**Trigger**	• Topsoil characterisation confirms: - Soil pH (H_2O) range is outside the preferred range of pH 5.5 – pH 7.8; - Soil EC (H_2O) is greater than 1200 µS/cm; and - Soil Phosphorus. • Colwell Method (Pasture: 20-40 mg/kg) (Native: 10-20 mg/kg). • Bray Method (Pasture: 12-22 mg/kg) (Native: 6-12 mg/kg): - Soil Organic Matter <3%.
			Action	• Application of appropriate soil ameliorants at rates per hectare as specified by laboratory results. • Undertake further investigations to determine potential factors contributing to conditions. • Consider removing unsuitable material and replace with suitable material and retest to determine soil within preferred ranges.
			Responsible Persons	Manager: Environment and Community
4	Hazardous Materials	Waste rock characterisation determines soil parameters not within preferred range (i.e. hazardous waste rock material in final landform).	**Trigger**	• Representative sampling of final surface material characterisation confirms: - Soil pH (H_2O) range is outside pH 5.5 – pH 7.8; and - Soil EC (H_2O) is greater than 1200 µS/cm.
			Action	• Application of appropriate soil ameliorants at rates per hectare as specified by laboratory results. • Undertake further investigations to determine potential factors contributing to conditions. • Consider removing unsuitable material and replace with suitable material and retest to determine soil within preferred ranges.
			Responsible Persons	Manager: Environment and Community and Open Cut Mine Manager

Table 26: Rehabilitation Trigger Action Response Plan (Continued)

Ref # No.	Rehabilitation Risk	Consequence/ Hazard	TARP Code	Contingency Reponses
5	Hazardous Materials (continued)	Spontaneous combustion event underground or at stockpile.	**Trigger**	• Spontaneous combustion events identified at either the ROM/product stockpile or underground.
			Action	• Implement Spontaneous Combustion Management Plan. • Activate emergency sealing systems if underground. • Continue reviewing real time monitoring. • Remove and/or isolate spontaneous combustion event if possible. • Review results of spontaneous combustion propensity testing.
			Responsible Persons	Manager: Environment and Community, Open Cut Mine Manager, Technical Services Manager, Mining Engineering Manager, General Manager
6	Final Landform Surface	Tailings emplacement area capping fails resulting in discharge to environment/watercourse.	**Trigger**	• Monitoring confirms inert material of >2 m coverage over tailings is not being achieved. • Final landform slope grades are >1%. • Capping layer final landform shape is not compatible with surrounding landscape. • Surface water or groundwater monitoring identifies adverse results which are attributed to discharge of tailings. • Differential flow meter identifies a leak in tailings pipeline.
			Action	• Increase volume of compacted inert minimum coverage of 2 m when creating final landform (or greater if required by final capping design specifications). • Continue monitoring to confirm compacted inert material coverage of 2 m (or greater) is being achieved. • Re-profile final landform to achieve drainage grades of <1% and compatibility with surrounding landscape. • Increase surface water and/or groundwater monitoring frequency. • Implement remediation strategies in consultation with relevant stakeholders. • Review tailings capping application procedure.
			Responsible Persons	Manager: Environment and Community, Project Capital Engineer and Open Cut Mine Manager

Table 26: Rehabilitation Trigger Action Response Plan (Continued)

Ref # No.	Rehabilitation Risk	Consequence/ Hazard	TARP Code	Contingency Reponses
7	Final Landform Surface (continued)	Large rocks on surface.	**Trigger**	• Rock > 200 mm in diameter identified on surface of final landform.
			Action	• Rock raking of the final landform completed to remove rocks >200 mm in diameter.
			Responsible Persons	Manager: Environment and Community
8	Landform and Land Use	Excessive slope lengths.	**Trigger**	• Slope lengths >80 m limit at slope angles of 10°.
			Action	• If possible, undertake rectification works to reduce average slope lengths to approximately 50 m to 70 m when slope angles are 10°. • Seek further advice from WCPL rehabilitation specialist to: - review final landform design and stability performance; and - determine if additional measures are necessary to manage surface water flows to ensure slope stability can be maintained.
			Responsible Persons	Manager: Environment and Community and Open Cut Mine Manager
9		Steep slope gradients. Maximum height of final landforms greater than RL 160 m AHD.	**Trigger**	• Final slope angle above >10° and may be considered inconsistent with pre-mining topography. • Final dump height survey greater than RL 160 m AHD.
			Action	• Regrade slopes to achieve <10°. • Reduce dump height to RL 160 m AHD. • Resurvey to confirm correct slope angle and dump height. • Seek further advice from WCPL rehabilitation specialist to review final landform design and performance if slope grades cannot be achieved; and • Seek consultation with RR if landform is at risk of not achieving pre-mining topography as identified within the EIS.
			Responsible Persons	Manager: Environment and Community and Open Cut Mine Manager

Table 26: Rehabilitation Trigger Action Response Plan (Continued)

Ref # No.	Rehabilitation Risk	Consequence/ Hazard	TARP Code	Contingency Reponses
10	Vegetation	Poor establishment, excessive weeds, low species composition, mono-culture.	**Trigger**	• Score obtained during annual monitoring round is less than Interim Performance Targets.
			Action	• Check and validate the data to ensure correct/accurate. • Review site attribute scores to determine which attributes are contributing to the lower than expected score. • Review management actions undertaken during previous 12 months (applicable to relevant management period) to determine if actions have contributed to the lower than expected score. • Review previous monitoring scores and climatic conditions to establish whether external factors could be contributing to the lower than expected score. • Develop remedial actions to address declining biodiversity values. • Review LFA monitoring to examine for potential casual factors or start LFA monitoring if landform instability is detected. • Expand monitoring program to include additional treatment and reference sites.
			Responsible Persons	Manager: Environment and Community

Table 26: Rehabilitation Trigger Action Response Plan (Continued)

Ref # No.	Rehabilitation Risk	Consequence/ Hazard	TARP Code	Contingency Reponses
11	Vegetation (continued)	Low LFA scores.	**Trigger**	• <5% annual improvement or significant decline in LFA Score (from previous monitoring round).
			Action	• Check and validate the data to ensure correct/accurate. Review individual LFA Index results to determine which index result is contributing to the lower than expected score. • Review management actions undertaken during previous 12 months (applicable to relevant Management Period) to determine if actions have contributed to the lower than expected score. • Review previous monitoring scores and climatic conditions to establish whether external factors could be contributing to the lower than expected score. • Develop remedial actions to address stagnant or declining landscape stability, if stagnant or declining score not caused by external factors. • Maintain monitoring of affected site until first LFA score 50 (i.e. stable landform) and review monitoring program and consider expanding to include additional treatment and reference sites.
			Responsible Persons	Manager: Environment and Community
12		Low ground cover. High exotic cover.	**Trigger**	• Monitoring identifies vegetative coverage <70% and/or individual bare areas >20 m^2. • Biometric monitoring confirms exotic cover >10%.
			Action	• Review seed viability, seasonal conditions and other influences (e.g. soil preparation, seed application procedures etc.). Re-test soil chemistry and ameliorate as necessary. • Re-seed affected areas. • Maintain monitoring program for presence of weeds in accordance with the BMP. • Maintain seasonal weed spraying control measures as required by BMP. • Review BMP to determine if existing weed control measures are adequate. • Increase monitoring frequency for presence of weeds.
			Responsible Persons	Manager: Environment and Community

Table 26: Rehabilitation Trigger Action Response Plan (Continued)

Ref # No.	Rehabilitation Risk	Consequence/ Hazard	TARP Code	Contingency Reponses
13	Vegetation (continued)	Native tree and shrub seed not available to complete revegetation. Native pasture seed not available to complete revegetation.	**Trigger**	• Insufficient or inadequate seed resource available to undertake revegetation.
			Action	• Review available seed resource. • Undertake Annual Seed Collection Program. • Source additional seed from reputable local provider.
			Responsible Persons	Manager: Environment and Community
14	Discharges to Environment	Pollution of downstream watercourses. Impacts to other water users.	**Trigger**	• Water runoff from rehabilitation areas exceeds EPL water quality limits. • Water quality in the North Wambo Creek Diversion exceeds Water Management Plan trigger values. • Regional surface and/or ground water users affected.
			Action	• Refer to Water Management Plan (for appropriate actions and responses).
			Responsible Persons	Manager: Environment and Community
15	Erosion and Sediment Control	Landform not stable. Failure of water management structures and ability to freely drain.	**Trigger**	• Monitoring indicates gully and tunnel erosion present. • Monitoring identifies rilling erosion >200 mm deep and/or >200 mm wide. • Groundcover is <60%. • No erosion or sediment controls in place. • Erosion and sediment controls in place but are not effective.
			Action	• Undertake appropriate remediation works to address erosion. • Install appropriate erosion and sedimentation controls. • Maintain monitoring program to determine effectives of repairs. • Investigate potential causes contributing to erosion. • Review ESCP for adequacy. • Review existing erosion controls for adequacy.
			Responsible Persons	Manager: Environment and Community

Table 26: Rehabilitation Trigger Action Response Plan (Continued)

Ref # No.	Rehabilitation Risk	Consequence/ Hazard	TARP Code	Contingency Reponses
16	Subsidence	Presenting an immediate safety or environmental hazard. Preventing attainment of final land use. Creek instability and/or hydraulic losses. Extensive water ponding impacting rehabilitation.	**Trigger**	• Surface cracking presents either an immediate safety or environmental hazard (e.g. an erosion hazard or hazard to grazing stock) or risk to final land use. • Visual inspections have identified cracking with widths >50 mm. • Visual inspections have identified increased cracking, scouring and/or ponding in creeks as a result of subsidence (i.e. greater than approved impacts). • Increased leakage into underground workings from watercourses identified.
			Action	• Repair and rehabilitate cracking in accordance with the relevant Extraction Plan(s). • Carry out repairs to the North Wambo Creek Diversion in accordance with the North Wambo Creek Diversion Detailed Rehabilitation Plan (Appendix C of the NWCD Management Plan) and relevant Extraction Plan(s). • Undertake drainage works to reduce ponding in accordance with the relevant Extraction Plan(s). • Repair creeks affected by subsidence and have their functionality and stability confirmed by a hydrological engineer (or equivalent).
			Responsible Persons	Manager: Environment and Community and Project Capital Engineer

Table 26: Rehabilitation Trigger Action Response Plan (Continued)

Ref # No.	Rehabilitation Risk	Consequence/ Hazard	TARP Code	Contingency Reponses
17	Decommissioning	Decommissioning has not removed all redundant services, infrastructure, carbonaceous material, wastes hazardous materials, sealing of mine and ventilation shafts etc. post mine closure. Unauthorised access to underground workings.	**Trigger**	• Removal of all redundant services, infrastructure, carbonaceous material, wastes hazardous materials, sealing of mine and ventilation shafts etc. post mine closure has not been completed. • Identification of possible contaminants at mine closure and either removal or treatment has not been carried out. • Dewatering and removal of possible contaminants from selected mine water dams post mine closure has not been carried out. • Decommissioning of tailings emplacement areas has not been carried out. • The site at post mine closure presents an immediate risk to the environment and public safety.
			Action	• Undertake a review of the closure strategies to ensure the site at post closure does not present an immediate risk to the environment and public safety (e.g. ensure all underground portals sealed, appropriate signage/fencing of the site, etc.). • Refer to asset register and ensure all items have been removed (except where they are to be retained as part of the final land use. • Ensure all decommissioning activities are undertaken appropriately and by suitably qualified contractors.
			Responsible Persons	Manager: Environment and Community and Project Capital Engineer

Table 26: Rehabilitation Trigger Action Response Plan (Continued)

Ref # No.	Rehabilitation Risk	Consequence/ Hazard	TARP Code	Contingency Reponses
18	Terrestrial Fauna	Native species diversity is low in rehabilitation areas. High numbers of feral animals are identified in rehabilitation areas.	**Trigger**	• Fauna monitoring identifies a trend of low native species diversity inhabiting rehabilitated woodland areas. • Fauna monitoring identifies high number of feral animals present within rehabilitation areas.
			Action	• Review biometric scores to consider if management actions are required to improve biodiversity outcomes. • Seek ecologist advice on improving biodiversity outcomes in rehabilitation areas. • Consider further habitat augmentation with hollow logs etc. to improve biodiversity outcomes. • Review feral animal controls in the BMP. • Continue monitoring as required by BMP.
			Responsible Persons	Manager: Environment and Community
19	Weather and Climatic Influences	Weather conditions not appropriate for establishing rehabilitation, resulting in delays to ecosystem establishment. Weather conditions (e.g. bushfire, drought, flooding, etc.) result in damage to rehabilitation.	**Trigger**	• Weather conditions delay rehabilitation establishment. • Weather damage in rehabilitation areas.
			Action	• Review available areas for rehabilitation and consider reprioritising areas unaffected by weather conditions (e.g. flooding). • Review Bushfire Management Plan. • Implement actions as required by Bushfire Management Plan. • Review affected areas to determine bushfire resilience of species. • Seek ecologist advice and monitor for plant rejuvenation. • Re-plant, re-seed affected areas if no plant rejuvenation is evidence (on the advice of ecological specialist). • Monitor re-plantings/seeded areas as required by BMP.
			Responsible Persons	Manager: Environment and Community

Table 26: Rehabilitation Trigger Action Response Plan (Continued)

Ref # No.	Rehabilitation Risk	Consequence/ Hazard	TARP Code	Contingency Reponses
20	Performance Criteria	Current rehabilitation monitoring program and available data (to date) insufficient to develop quantifiable criteria for mine closure and relinquishment. Rehabilitation standards advance significantly during mine operation resulting in increased requirements for rehabilitation relinquishment.	**Trigger**	• The finalised version of the Rehabilitation Guidelines is significantly different to the 2018 draft version. • Completion criteria or BCD benchmarks for rehabilitation are revised.
			Action	• Review RMP. • Review BMP. • Consider adopting revised rehabilitation standards or completion criteria where possible.
			Responsible Persons	Manager: Environment and Community

11.0 Review and Implementation

11.1 Review

Reviews are conducted to assess the effectiveness of the procedures against the objectives of RMP. The RMP may be reviewed and, if necessary, revised, following the submission of the following:

- Annual Review;
- incident report;
- audit;
- updated or additional Management Plans prepared; or
- any modification to the conditions of the Development Consent.

The RMP may also be reviewed and revised due to changes in environmental requirements, risk assessments, monitoring results, completion criteria, technologies and legislation.

Any major amendments to the RMP that affect its application will be undertaken in consultation with the appropriate regulatory authorities and stakeholders.

11.2 Implementation

This RMP (as approved by the RR) will be implemented by WCPL. The personnel who are responsible for the monitoring, review and implementation of this RMP are listed in **Table 27**.

Table 27: Rehabilitation Management Plan Responsibilities

Role	Responsibilities
General Manager	• Ensure adequate resource are available to WCPL personnel to facilitate the completion of responsibilities under this RMP. • Ensure the safety of WCPL employees and the public in relation to WCPL operations. • Approve and instruct implementation of remediation/corrective action/compensation, if necessary.
Mining Engineering Manager (Underground Mine Manager)	• Ensure the safety of WCPL employees and the public in relation to WCPL operations. • Ensure adequate resource are available for the implementation of remediation/corrective actions.
Technical Services Manager	• Liaise with relevant stakeholders regarding subsidence impact management and related public safety hazards.
Manager: Environment and Community	• Liaise with relevant stakeholders regarding environmental management. • Ensure monitoring and reporting required in accordance with the RMP are carried out within specific timeframes, are adequately checked and processed and are prepared to the required standard. • Ensure that any Incident Reports are lodged in accordance with regulatory requirements with all available information. • Ensure that reviews of the RMP and other plans are conducted.

12.0 References

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Department of Trade and Investment, Regional Infrastructure and Services – Mine Safety Operations (2012) *Mine Design Guideline 6001 Guideline for the Permanent Filling and Capping of Surface Entries to Coal Seams*.

EJE Heritage (2017) *Statement of Heritage Impact, Wambo Coal Mine, South Bates Extension Modification, Near Warkworth NSW.*

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Florabank (1999 and 2000) *Guidelines and Code of Practices for seed collection and use*.

Gibbons, P., Briggs, S., Ayers, D. *et al.* (2009) *An operational method to assess impacts of land clearing on terrestrial biodiversity*. Ecological Indicators, vol. 9, pp. 26-40.

Mine Subsidence Engineering Consultants (2020) *South Bates Extension Subsidence Assessment – Subsidence Predictions and Impact Assessments for the Natural and Built Features in Support of the Extraction Plan Application for the South Bates Extension WYLW21 to WYLW24*. Report prepared for Wambo Coal Pty Limited.

Navin Officer Heritage Consultants (2005) *Wambo Development Project – Aboriginal Heritage Research Design and Study Plan (incorporating Salvage Programme)*. Attachment 3 of Wambo Coal Pty Limited, Navin Officer Heritage Consultants (2005) *Application for Permit under Section 87 and Consent under Section 90 of the National Parks and Wildlife Act, 1974 in relation to the Wambo Development Project*.

Office of Environment and Heritage (2014) *Hunter Climate Change Snapshot.*

RPS (2011) *Aboriginal Cultural Heritage Impact Assessment: Montrose East Underground Modification*. Unpublished report to Wambo Coal Pty Ltd.

RPS (2012a) *Cultural Heritage Impact Assessment: North Wambo Underground Mine Modification*. Unpublished report to Wambo Coal Pty Ltd.

RPS (2012b) *Aboriginal Due Diligence Assessment: Montrose Water Storage Modification*. Unpublished report to Wambo Coal Pty Ltd.

RPS (2014) *Cultural Heritage Impact Assessment: North Wambo Underground Mine Longwall 10A Modification*. Unpublished report to Wambo Coal Pty Ltd.

RPS (2015) *Cultural Heritage Impact Assessment: South Bates (Wambo Seam) Underground Mine Modification*. Unpublished report to Wambo Coal Pty Ltd.

RPS (2016) *Cultural Heritage Impact Assessment: South Wambo Underground Mine Modification*. Unpublished report to Wambo Coal Pty Ltd.

Singleton Council (2020) *Local Strategic Planning Statement.*

Tongway, D.J. and Hindley, N.L. (2004) *Landscape function analysis. Procedures for monitoring and assessing landscapes*. CSIRO Sustainable Ecosystems, Canberra.

Umwelt (Australia) Pty Limited (2015) *Wambo Coal Independent Environmental Compliance Audit – EPBC Act Approval, Development Consent Conditions 40 – 50, Flora and Fauna Management Plan*.

Umwelt (Australia) Pty Ltd (2016) *United Wambo Open Cut Coal Mine Project: Heritage Impact Statement.* Report prepared for United Collieries Pty Limited. May 2016.

Wambo Coal Pty Limited (2003) *Wambo Development Project Environmental Impact Statement*.

Wambo Coal Pty Limited (2017) *South Bates Extension Modification Environmental Assessment*.

APPENDIX A

DEVELOPMENT CONSENT DA 305-7-2003

Notice of Modification

Section 75W of the *Environmental Planning and Assessment Act 1979*

The Independent Planning Commission of NSW (the Commission), as delegate of the Minister for Planning and Public Spaces, modifies the development consent referred to in Schedule 1, as set out in Schedule 2.



Tony Pearson (Chair)	Robyn Kruk AO	Dr Peter Williams
Member of the Commission	**Member of the Commission**	**Member of the Commission**

Sydney 29 August 2019

SCHEDULE 1

The development consent (DA 305-7-2003) for the development of open cut and underground mining operations at the Wambo coal mine, granted by the Minister Assisting the Minister for Infrastructure and Planning (Planning Administration) on 4 February 2004.

SCHEDULE 2

1. Delete Schedules 2 to 6, including the Appendices, and replace with the following:

TABLE OF CONTENTS

DEFINITIONS

Aboriginal object	Has the same meaning as the definition of the term in section 5 of the NP&W Act
Aboriginal place	Has the same meaning as the definition of the term in section 5 of the NP&W Act
Annual Review	The review required by condition D10
Applicant	Wambo Coal Pty Limited, or any person carrying out any development under this consent
Approved disturbance area	The area identified as 'approved Wambo surface development' on the Development Layout and any other associated surface development described in the documents listed in condition A2(c)
Approved mine plan	The approved underground mine plan for Wambo underground mine in Appendix 3
ARI	Average Recurrence Interval
ARTC	Australian Rail Track Corporation
Associated surface development	Includes ventilation shafts, dewatering infrastructure, gas drainage and gas flaring infrastructure, pit top facilities, access road, offices, car park, electrical sub-station, and associated services and easements such as powerlines, water supply, fire control, communications and waste water
BCA	Building Code of Australia
BC Act	*Biodiversity Conservation Act 2016*
BCD	Biodiversity & Conservation Division within the Department
BCT	NSW Biodiversity Conservation Trust
Blast misfire	The failure of one or more holes in a blast pattern to initiate
Bore	Any bore or well or excavation or other work connected or proposed to be connected with sources of sub-surface water, and used or proposed to be used or capable of being used to obtain supplies of such water whether the water flows naturally at all times or has to be raised whether wholly or at times by pumping or other artificial means
Built features	Includes any building or work erected or constructed on land, and includes dwellings and infrastructure such as any formed road, street, path, walk, or driveway; any pipeline, water, sewer, telephone, gas or other service main
Calendar year	A period of 12 months from 1 January to 31 December
CCC	Community consultative committee required by condition A20
Conditions of this consent	Conditions contained in Schedule 2
Construction	All physical works to enable mining operations to be carried out, including demolition and removal of buildings or works, and erection of buildings and other infrastructure permitted by this consent
Council	Singleton Council
Date of commencement	The date notified to the Department by the Applicant under condition A77
Day	The period from 7 am to 6 pm on Monday to Saturday, and 8 am to 6 pm on Sundays and Public Holidays
Decommissioning	The deconstruction or demolition and removal of works and buildings installed as part of the development
Demolition	The deconstruction and removal of buildings, sheds and other structures on the site
Department	NSW Department of Planning, Industry and Environment
Development	The development described in the documents listed in condition A2(c), as modified by the conditions of this consent
Development Layout	The figures in Appendix 2

DPIE Water	Water Group within the Department
DRG	Division of Resources and Geoscience within the Department
DSC	Dams Safety Committee
EA	Environmental Assessment
EA (Mod 9)	The modification application DA 305-7-2003 MOD 9 and accompanying letter prepared by Wambo Coal Pty Ltd, dated August 2010
EA (Mod 11)	The modification application DA 305-7-2003 MOD 11 and accompanying documents titled *Wambo Montrose Water Storage Modification Environmental Assessment*, dated June 2012 and *Wambo Montrose Water Storage Modification Response to Submissions* dated 4 September 2012
EA (Mod 13)	The modification application DA 305-7-2003 MOD 13 and accompanying documents titled *North Wambo Mine Modification Environmental Assessment - The addition of North Wambo Underground Mine Longwalls 9 and 10*, dated December 2012 and *North Wambo Underground Mine Modification - Response to Submissions* dated April 2013
EA (Mod 14)	The modification application DA 305-7-2003 MOD 14 and accompanying documents titled *North Wambo Underground Mine Longwall 10A Modification Environmental Assessment - The addition of North Wambo Underground Mine Longwall 10A*, dated September 2014, and associated Response to Submissions dated December 2014
EA (Mod 15)	The modification application DA 305-7-2003 MOD 15 and accompanying documents titled *South Bates (Wambo Seam) Underground Mine Modification Environmental Assessment – The addition of South Bates (Wambo Seam) Underground Mine Longwalls 14 to 16*, dated August 2015, and associated Response to Submissions dated September 2015 and letter from Peabody Energy to the Department titled *Modification 15 to DA 305-7-2003 – Supplementary Request to Include Revised Portal Location*, dated 2 November 2015
EA (Mod 12)	The modification application DA 305-7-2003 MOD 12 and accompanying documents titled *South Wambo Underground Mine Modification Environmental Assessment*, dated April 2016, associated Response to Submissions dated June 2016 and letter from Peabody Energy to the Department titled *Modification 12 to DA 305-7-2003 – Request to Revise First Workings Layout*, dated 13 July 2016
EA (Mod 17)	The modification application DA 305-7-2003 MOD 17 and accompanying documents titled *South Bates Extension Modification Environmental Assessment*, dated March 2017, associated Response to Submissions (Parts A and B) dated June and September 2017
EA (Mod 16)	The modification application DA 305-7-2003 MOD 16 and accompanying documents titled *United Wambo open cut coal mine Project Environmental Impact Statement*, prepared by Umwelt (Australia) Pty Limited, dated August 2016, submitted with the application for consent for the development for SSD-7142, including the Applicant's response to submissions, the Applicant's response to the Independent Planning Commission's review and the additional information responses provided by the Applicant in support of the application dated 20 September 2017, 6 November 2017, 5 December 2017, 11 October 2018, 17 October 2018, 12 April 2019, 14 April 2019 and 27 May 2019
EEC	Endangered ecological community, as defined under the BC Act and/or EPBC Act
EIS	The Environmental Impact Statement titled *Wambo Development Project,* volumes 1-5, dated July 2003, prepared by Resource Strategies Pty. Ltd submitted with the application for consent for the development, including the letter from Holmes Air Sciences to the Department, dated 3 September 2003, and titled Wambo Development Project - Response Air Quality Assessment and any other additional information provided by the Applicant in support of the application

Environment	Includes all aspects of the surroundings of humans, whether affecting any human as an individual or in his or her social groupings
Environmental consequences	The environmental consequences of subsidence impacts, including: damage to infrastructure, buildings and residential dwellings; loss of surface flows to the subsurface; loss of standing pools; adverse water quality impacts; development of iron bacterial mats; cliff falls; rock falls; damage to heritage items; impacts on aquatic ecology; ponding
EPA	NSW Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000*
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
EPL	Environment Protection Licence under the POEO Act
Evening	The period from 6 pm to 10 pm
Feasible	Means what is possible and practical in the circumstances
First workings	Development of main headings, longwall gate roads, related cut throughs and other workings for mine access and ventilation
GPS	Global Positioning System
Heritage Branch	Heritage Branch of the Department of Premier and Cabinet
Heritage item	An Aboriginal object, an Aboriginal place, or a place, building, work, relic, moveable object, tree or precinct of heritage significance, that is listed under any of the following: • the State Heritage Register under the *Heritage Act 1977*; • a state agency heritage and conservation register under section 170 of the *Heritage Act 1977;* • a Local Environmental Plan under the EP&A Act; • the World Heritage List; • the National Heritage List or Commonwealth Heritage List under the EPBC Act; or • anything identified as a heritage item under the conditions of this consent
HVO	Hunter Valley Operations coal mining complex approved under MP 06_0261 (HVO South) and DA 450-10-2003 (HVO North)
Incident	An occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be or cause a non-compliance
Land	Has the same meaning as the definition of the term in section 1.4 the EP&A Act, except for where the term is used in the noise and air quality conditions in PART B of this consent where it is defined to mean the whole of a lot, or contiguous lots owned by the same landowner, in a current plan registered at the Land Titles Office at the date of this consent
Low level cliffs	Low level cliffs as defined in the Subsidence Assessment (Appendix A) of the EA in EA (Mod 17)
Material harm	Is harm that: • involves actual or potential harm to the health or safety of human beings or to the environment that is not trivial, or • results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000 (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment) This definition excludes “harm” that is authorised under either this consent or any other statutory approval’
Mine closure	Decommissioning and final rehabilitation of the site following the cessation of mining operations

Mine water	Water that accumulates within, or drains from, active mining and infrastructure areas and any other areas where runoff may have come into contact with carbonaceous material
Minimise	Implement all reasonable and feasible mitigation measures to reduce the impacts of the development
Minister	NSW Minister for Planning and Public Spaces, or delegate
Minor	Not very large, important or serious
Mitigation	Activities associated with reducing the impacts of the development
Modification 9	The modification to the development as described in EA (Mod 9)
Modification 16	The modification to the development as described in EA (Mod 16)
Modification 17	The modification to the development as described in EA (Mod 17)
MOP	Mining operations plan, or similar, required by a mining lease under the *Mining Act 1992*
MTW	Mount Thorley Warkworth coal mine approved under SSD 6464 and SSD 6465
Negligible	Small and unimportant, such as to be not worth considering
Night	The period from 10 pm to 7 am on Monday to Saturday, and 10 pm to 8 am on Sundays and Public Holidays
Non-compliance	An occurrence, set of circumstances or development that is a breach of this consent
NP&W Act	*National Parks and Wildlife Act 1974*
NRAR	NSW Natural Resources Access Regulator
Open cut mining operations	The carrying out of open cut mining, including the extraction, processing, stockpiling and transportation of coal on the site and the associated removal, storage and/or emplacement of vegetation, topsoil, overburden and coarse/fine reject material resulting from open cut mining
Open woodland	50% woodland within mixed woodland/pasture areas
PA	Planning agreement within the meaning of the term in section 7.4 of the EP&A Act
Phase 1	The phase of the development that comprises open cut mining operations at Wambo open cut mine, underground mining operations at Wambo underground mine and the operation of Wambo mine infrastructure (including minor upgrades to this infrastructure) within the green operational area identified in Figure 1 of Appendix 2
Phase 2	The phase of the development that comprises underground mining operations at Wambo underground mine, the operation of Wambo mine infrastructure within the green operational area identified in Figure 2 of Appendix 2 and associated surface development
Phase 3	The phase of the development following the cessation of underground mining operations that includes mine closure
Planning Secretary	Planning Secretary under the EP&A Act, or nominee
POEO Act	*Protection of the Environment Operations Act 1997*
Privately-owned land	Land that is not owned by a public agency or a mining, petroleum or extractive industry company (or its subsidiary)
Public infrastructure	Linear and related infrastructure that provides services to the general public, such as roads, railways, water supply, drainage, sewerage, gas supply, electricity, telephone, telecommunications, etc.
Reasonable	Means applying judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements
Reasonable costs	The costs agreed between the Department and the Applicant for obtaining independent experts to review the adequacy of any aspects of an Extraction Plan

Registered Aboriginal Parties	As described in the *National Parks and Wildlife Regulation 2009*
Rehabilitation	The restoration of land disturbed by the development to a good condition, to ensure it is safe, stable and non-polluting
Remediation	Activities associated with partially or fully repairing or rehabilitating the impacts of the development or controlling the environmental consequences of this impact
Residence	Existing or approved dwelling at the date of grant of this consent
Resources Regulator	NSW Resources Regulator
RFS	NSW Rural Fire Service
RMS	NSW Roads and Maritime Services
ROM	Run-of-mine
SA NSW	Subsidence Advisory NSW
Safe, serviceable & repairable	Safe means no danger to users who are present, serviceable means available for its intended use, and repairable means damaged components can be repaired economically
Second workings	Extraction of coal from longwall panels, mini-wall panels or pillar extraction
SEE	Statement of Environmental Effects
SEE (Mod 1)	The letter from Wambo Coal Pty. Ltd. to the Department, dated 24 October 2003, and titled *Wambo Development Project – Development Application Amendment (DA 305-7-2003-i)*
SEE (Mod 2)	The SEE titled *Wambo Development project – Wambo Seam Underground Mine Modification*, dated January 2005
SEE (Mod 3)	The document titled *Wambo Development Project – Modification of DA 305-7-2003-I*, dated 24 October 2005
SEE (Mod 4)	The document titled *Wambo Development Project – Modification of DA 305-7-2003-I*, dated 23 January 2006
SEE (Mod 5)	The document titled *Wambo Development Project – Modification of DA 305-7-2003-I*, dated 27 July 2006
SEE (Mod 6)	The document titled *Wambo Coal Mine Modification Statement of Environmental Effects*, dated September 2006
SEE (Mod 7)	The document titled *Wambo Coal Mine Statement of Environmental Effects on Proposed Modification*, dated March 2009
SEE (Mod 8)	The document titled *Wambo Coal Mine Modification Statement of Environmental Effects*, dated June 2009 and the response to submissions dated July 2009
Site	The land defined in Appendix 1
South Bates Extension Area	The longwall mining domain described in EA (Mod 17)
Southern Area	The area described as such in Figure HA-5 in Appendix HA of Volume 4 of the EIS
Subsidence	The totality of subsidence effects, subsidence impacts and environmental consequences of subsidence impacts
Subsidence effects	Deformation of the ground mass due to mining, including all mining-induced ground movements, such as vertical and horizontal displacement, tilt, strain and curvature
Subsidence impacts	Physical changes to the ground and its surface caused by subsidence effects, including tensile and shear cracking of the rock mass, localised buckling of strata caused by valley closure and subsidence and surface depressions or troughs
Underground mining operations	The carrying out of underground mining, including the extraction, processing, stockpiling and transportation of coal on the site and the

	emplacement of coarse/fine reject material resulting from underground mining
United Wambo open cut coal mine	The open cut coal mine approved under SSD 7142, but including Wambo open cut mine during Phase 2 and Phase 3
Wambo CHPP	Wambo Coal Handling and Preparation Plant
Wambo open cut mine	The open cut mine approved under this consent that will be regulated under this consent during Phase 1
Wambo mine infrastructure	The ancillary mine infrastructure and supporting facilities approved under this consent, including the Wambo CHPP and mine infrastructure area
Wambo Mining Complex	The development approved under this consent, together with the development approved under DA 177-8-2004, considered collectively
Wambo train loading facility	The train loading facility and associated facilities approved under DA 177-8-2004
Wambo underground mine	The underground mine and associated surface development approved under DA 305-7-2003

SCHEDULE 2

PART A ADMINISTRATIVE CONDITIONS

OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT

A1. In addition to meeting the specific performance measures and criteria established under this consent, the Applicant must implement all reasonable and feasible measures to prevent, and if prevention is not reasonable and feasible, minimise, any material harm to the environment that may result from the construction and operation of the development, and any rehabilitation required under this consent.

TERMS OF CONSENT

A2. The development may only be carried out:

(a) in compliance with the conditions of this consent;

(b) in accordance with all written directions of the Planning Secretary;

(c) generally in accordance with the EIS, SEE (Mod 1), SEE (Mod 2), SEE (Mod 3), SEE (Mod 4), SEE (Mod 5), SEE (Mod 6), SEE (Mod 7), SEE (Mod 8), EA (Mod 9), EA (Mod 11), EA (Mod 13), EA (Mod 14), EA (Mod 15), EA (Mod 12), EA (Mod 17) and EA (Mod 16); and

(d) generally in accordance with the Development Layout and approved mine plan.

Note: *With the approval of the Planning Secretary, longwall panels may be shortened or narrowed, providing that the proposed variations do not result in increased subsidence impacts or environmental consequences.*

A3. Consistent with the requirements in this consent, the Planning Secretary may make written directions to the Applicant in relation to:

(a) the content of any strategy, study, system, plan, program, review, audit, notification, report or correspondence submitted under or otherwise made in relation to this consent, including those that are required to be, and have been, approved by the Planning Secretary; and

(b) the implementation of any actions or measures contained in any such document referred to in paragraph (a).

A4. The conditions of this consent and directions of the Planning Secretary prevail to the extent of any inconsistency, ambiguity or conflict between them and the documents listed in condition A2(c). In the event of an inconsistency, ambiguity or conflict between any of the documents listed in condition A2(c), the most recent document prevails to the extent of the inconsistency, ambiguity or conflict.

STAGED DEVELOPMENT

A5. Following the determination of Modification 16, the development must be undertaken in the following stages:

(a) Phase 1 (as defined), including open cut mining operations at Wambo open cut mine and underground mining operations at Wambo underground mine;

(b) Phase 2 (as defined), including underground mining operations at Wambo underground mine; and

(c) Phase 3 (as defined), including mine closure.

A6. Phase 1 commences immediately following the determination of Modification 16.

NOTIFICATION OF COMMENCEMENT OR COMPLETION OF A DEVELOPMENT STAGE

A7. The dates of commencement of both Phase 2 and Phase 3 (as set out in condition A5) of the development must be notified to the Department in writing, at least one month before those dates.

A8. The Department must be notified in writing of any period of suspension of open cut or underground mining operations during Phase 1 or Phase 2, immediately following both the commencement and completion of those periods.

LIMITS OF CONSENT

Mining operations

A9. Open cut mining operations may only be carried out at Wambo open cut mine during Phase 1, subject to condition A10.

A10. If, after Phase 2 has commenced, SSD 7142 (or related approval under the EPBC Act) is declared by a Court to be invalid, then the Applicant may seek the agreement of the Planning Secretary for the development to revert to Phase 1 (as defined), but only during any period during which SSD 7142 (or related approval under the EPBC Act) remains invalid.

Note: *During any period in which the development reverts to Phase 1, all conditions of this consent that apply during Phase 1 (including with respect to noise criteria and management plans) must be adhered to by the Applicant.*

A11. Underground mining operations may be carried out at Wambo underground mine, but only within the area covered by the approved mine plan, until 31 August 2042.

Note: *Under this consent, the Applicant is required to decommission and rehabilitate the site and carry out other requirements in relation to mining operations. Consequently, this consent will continue to apply in all respects other*

than to permit the carrying out of mining operations until the rehabilitation of the site and other requirements have been carried out to the required standard.

Coal Extraction and Transportation

A12. A maximum of 9.75 million tonnes of ROM coal may be extracted from Wambo underground mine in any calendar year.

A13. During Phase 1, a maximum of 8 million tonnes of ROM coal may be extracted from Wambo open cut mine in any calendar year.

A14. During Phase 2, ROM coal from United Wambo open cut coal mine may be received, processed and/or stockpiled on the site.

A15. During Phase 2, overburden and coal reject material may be transferred to the United Wambo open cut coal mine for emplacement.

A16. A maximum of 14.7 million tonnes of ROM coal from the Wambo Mining Complex and United Wambo open cut coal mine may be processed at the Wambo CHPP in any calendar year.

Note: *Despatch of product coal is separately approved under DA 177-8-2004.*

A17. The Applicant must ensure that all product coal is transported off site by rail except in an emergency, and as agreed by the Planning Secretary in consultation with Council.

Hours of Operation

A18. The Applicant may undertake approved mining operations 24 hours a day, 7 days a week.

Note*: For limitations on blasting operations see condition B24.*

Identification of Approved Disturbance Area

A19. Within three months of the determination of Modification 16, or other timeframe agreed by the Planning Secretary, the Applicant must provide to the Department a survey plan of the boundaries of the approved disturbance areas.

COMMUNITY CONSULTATIVE COMMITTEE

A20. The Applicant must continue the operation of the Wambo Community Consultative Committee (CCC) for the development, as operating under this consent prior to the approval of Modification 16. The CCC must be operated in accordance with the Department's *Community Consultative Committee Guidelines: State Significant Projects* (2019) for the life of the development, or other timeframe agreed by the Planning Secretary.

Notes:

- *The CCC is an advisory committee only.*
- *In accordance with the Guidelines, the Committee should comprise an independent chair and appropriate representation from the Applicant, Council and the local community.*

A21. With the approval of the Planning Secretary, the Applicant may combine the CCC required by this consent with any similar CCC required by an adjoining mining consent or approval, in common, shared or related ownership or management, including SSD 7142 (United Wambo open cut coal mine).

EVIDENCE OF CONSULTATION

A22. Where conditions of this consent require consultation with an identified party, the Applicant must:

(a) consult with the relevant party prior to submitting the subject document to the Planning Secretary for approval; and

(b) provide details of the consultation undertaken to the Planning Secretary, including:

(i) the outcome of that consultation, matters resolved and unresolved; and

(ii) details of any disagreement remaining between the party consulted and the Applicant and how the Applicant has addressed the matters not resolved.

STAGING, COMBINING AND UPDATING STRATEGIES, PLANS OR PROGRAMS

A23. With the approval of the Planning Secretary, the Applicant may:

(a) prepare and submit any strategy, plan or program required by this consent on a staged basis (if a clear description is provided as to the specific stage and scope of the development to which the strategy, plan or program applies, the relationship of the stage to any future stages and the trigger for updating the strategy, plan or program);

(b) combine any strategy, plan or program required by this consent (if a clear relationship is demonstrated between the strategies, plans or programs that are proposed to be combined);

(c) update any strategy, plan or program required by this consent (to ensure the strategies, plans and programs required under this consent are updated on a regular basis and incorporate additional measures or amendments to improve the environmental performance of the development); and

(d) combine any strategy, plan or program required by this consent with any similar strategy, plan or program required by consent or approval for an adjoining mine subject to common, shared or related ownership or management, including DA 177-8-2004 (Wambo train loading facility) and SSD 7142 (United Wambo open cut coal mine).

A24. If the Planning Secretary agrees, a strategy, plan or program may be staged or updated without consultation being undertaken with all parties required to be consulted in the relevant condition in this consent.

A25. If the Planning Secretary agrees, a strategy, plan or program may be staged without addressing particular requirements of the relevant condition of this consent if those requirements are not applicable to the particular stage.

APPLICATION OF EXISTING STRATEGIES, PLANS OR PROGRAMS

A26. The Applicant must continue to apply all management strategies, plans or monitoring programs required under this consent prior to the approval of Modification 16 and approved by the Planning Secretary prior to the approval of Modification 16, until the approval of a similar plan, strategy or program following the approval of Modification 16.

SUPPLY OF OVERBURDEN

A27. With the approval of the Planning Secretary, the Applicant may supply overburden material to infrastructure developments (for example roadworks and the like) in the vicinity of the site if the use of such material in those developments is the subject of development consent granted under Part 4 of the EP&A Act, an environmental assessment carried out under Division 5.1 of Part 5 of the EP&A Act, or an approval granted under Division 5.2 of Part 5 of the EP&A Act.

PUBLIC INFRASTRUCTURE

Protection of Public Infrastructure

A28. Unless the Applicant and the applicable authority agree otherwise, the Applicant must:

(a) repair, or pay the full costs associated with repairing, any public infrastructure[a] that is damaged by carrying out the development; and

(b) relocate, or pay the full costs associated with relocating, any public infrastructure[a] that needs to be relocated as a result of the development.

[a] *This condition does not apply to damage to roads caused as a result of general road usage or damage subject to compensation under the Mining Act 1992.*

DEMOLITION

A29. All demolition must be carried out in accordance with *Australian Standard AS 2601-2001 The Demolition of Structures* (Standards Australia, 2001).

STRUCTURAL ADEQUACY

A30. All new buildings and structures, and any alterations or additions to existing buildings and structures, that are part of the development, must be constructed in accordance with:

(a) the relevant requirements of the BCA; and

(b) any additional requirements of SA NSW where the building or structure is located on land within a declared Mine Subsidence District.

***Notes**:*

- *Under the EP&A Act, the Applicant is required to obtain construction and occupation certificates for the proposed building works.*
- *Part 8 of the EP&A Regulation sets out the requirements for the certification of the development.*
- *Under the Coal Mine Subsidence Compensation Act 2017, the Applicant is required to obtain the Chief Executive of SA NSW's approval before carrying out certain development in a Mine Subsidence District.*

OPERATION OF PLANT AND EQUIPMENT

A31. All plant and equipment used on site, or to monitor the performance of the development must be:

(a) maintained in a proper and efficient condition; and

(b) operated in a proper and efficient manner.

COMPLIANCE

A32. The Applicant must ensure that all of its employees, contractors (and their sub-contractors) are made aware of, and are instructed to comply with, the conditions of this consent relevant to activities they carry out in respect of the development.

APPLICABILITY OF GUIDELINES

A33. References in the conditions of this consent to any guideline, protocol, Australian Standard or policy are to such guidelines, protocols, Standards or policies in the form they are in as at the date of this consent.

A34. However, consistent with the conditions of this consent and without altering any limits or criteria in this consent, the Planning Secretary may, when issuing directions under this consent in respect of ongoing monitoring and management obligations, require compliance with an updated or revised version of such a guideline, protocol, Standard or policy, or a replacement of them.

PART B SPECIFIC ENVIRONMENTAL CONDITIONS

SUBSIDENCE

Performance Measures – Natural and Heritage Features etc.

B1. The Applicant must ensure that underground mining operations undertaken following the approval of Modification 9 comply with the performance measures in Table 1.

Table 1: *Subsidence impact performance measures – natural and heritage features etc*

Feature	***Performance Measures***
Water	
Wollombi Brook	• Negligible subsidence impacts and environmental consequences • Release of water from the site only in accordance with EPL requirements
Land	
Low level cliffs within the South Bates Extension Area	• Minor environmental consequences (that is occasional rockfalls, displacement or dislodgement of boulders or slabs, or fracturing that in total do not impact more than 5% of the total face area of such features)
Biodiversity	
Wollemi National Park	• Negligible subsidence impacts and environmental consequences
Warkworth Sands Woodland Community	• Minor cracking and ponding of the land surface or other subsidence impacts • Negligible environmental consequences
White Box, Yellow Box, Blakely's Red Gum Woodland/Grassy White Box Woodland Community	• Minor cracking and ponding of the land surface or other subsidence impacts • Negligible environmental consequences
Central Hunter Valley Eucalypt Forest and Woodland Ecological Community	• Minor cracking and ponding of the land surface or other subsidence impacts • Negligible environmental consequences
Conservation Areas (including the proposed Wambo offset area under SSD 7142)	• Negligible reduction to previously identified biodiversity credits
Heritage	
Wambo Homestead Complex	• Negligible impact on heritage values, unless approval has been granted by the Heritage Branch and/or the Minister

Notes:

- *The Applicant will be required to define more detailed performance criteria for each of these performance measures in the Extraction Plan (see condition B7 below).*

B2. Measurement and monitoring of compliance with performance measures and performance criteria in this consent is to be undertaken using generally accepted methods that are appropriate to the environment and circumstances in which the feature or characteristic is located. These methods are to be fully described in the relevant management plans and monitoring programs. In the event of a dispute over the appropriateness of proposed methods is to be settled by the Planning Secretary, following consultation with the relevant agency. Any decision by the Planning Secretary shall be final.

Additional Offsets

B3. If the Applicant exceeds the performance measures in Table 1 and the Planning Secretary determines that:

(a) it is not reasonable or feasible to remediate the subsidence impact or environmental consequence; or

(b) remediation measures implemented by the Applicant have failed to satisfactorily remediate the subsidence impact or environmental consequence,

then the Applicant must provide an offset to compensate for the subsidence impact or environmental consequence that is proportionate to the significance of the subsidence impact or environmental consequence, following consultation with BCD and to the satisfaction of the Planning Secretary.

Performance Measures – Built Features

B4. The Applicant must ensure that underground mining operations undertaken following the approval of Modification 9 comply with the performance measures in Table 2.

Table 2: *Subsidence impact performance measures – built features*

Feature	***Performance Measures***
Built Features	
All built features (including public infrastructure and all structures on privately-owned land)	• Always safe • Serviceability should be maintained wherever practicable • Loss of serviceability must be fully compensated • Damage must be fully repairable, and must be fully repaired or else replaced or fully compensated
Public Safety	
Public safety	• Negligible additional risk

Notes

- *The Applicant is required to define more detailed performance criteria for each of these performance measures in Built Features Management Plans or Public Safety Management Plan (see condition B7 below).*
- *Requirements regarding safety or serviceability do not prevent preventative or mitigatory actions being taken prior to or during mining.*
- *Compensation required under this condition includes any compensation payable under the Coal Mine Subsidence Compensation Act 2017.*

B5. Any dispute between the Applicant and the owner of any built feature over the interpretation, application or implementation of the performance measures in Table 2 is to be settled by the Planning Secretary, following consultation with the Resources Regulator. Any decision by the Planning Secretary shall be final.

First Workings

B6. The Applicant may carry out first workings within the underground mining areas of the approved mine plan, other than in accordance with an approved Extraction Plan, provided that the Resources Regulator is satisfied that the first workings are designed to remain stable and non-subsiding in the long-term, except insofar as they may be impacted by approved second workings.

Note: *The intent of this condition is to ensure that first workings are built to geotechnical and engineering standards sufficient to ensure long term stability, with negligible direct subsidence impacts.*

Extraction Plan

B7. The Applicant must prepare an Extraction Plan for all second workings on the site to the satisfaction of the Planning Secretary. Each Extraction Plan must:

(a) be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;

(b) include detailed plans of existing and proposed first and second workings and any associated surface development;

(c) provide updated predictions of the potential subsidence effects, subsidence impacts and environmental consequences of the proposed mining covered by the Extraction Plan, incorporating any relevant information obtained since this consent;

(d) describe in detail the performance criteria to be implemented to ensure compliance with the performance measures in Table 1 and Table 2, and manage or remediate any impacts and/or environmental consequences to meet the rehabilitation objectives in condition B104, including:

(i) a trigger action response plan to identify risks and specific follow up actions to avoid exceedances of the performance measures; and

(ii) a contingency plan that expressly provides for adaptive management where monitoring indicates that there has been an exceedance of the performance measures, or where any such exceedance appears likely;

(e) include the following to the satisfaction of the Resources Regulator (or DRG, as the case may require):

(i) a coal resource recovery plan that demonstrates effective recovery of the available resource;

(ii) a **Subsidence Monitoring Program** to:

- provide data to assist with the management of the risks associated with subsidence (conventional and non-conventional);
- validate the subsidence predictions; and

- analyse the relationship between the subsidence effects and impacts under the plan against those predicted and any ensuing environmental consequences;

(iii) a **Built Features Management Plan** to manage the potential subsidence impacts and/or environmental consequences of the proposed second workings on built features, and which:

- addresses, in appropriate detail, all items of public infrastructure and all classes of other built features; and
- has been prepared following appropriate consultation with the owner/s of potentially affected feature/s;

(iv) a **Public Safety Management Plan** to ensure public safety in the mining area; and

(v) appropriate revisions to the Rehabilitation Management Plan required under condition B107; and

(f) include a:

(i) **Water Management Plan**, which has been prepared in consultation with EPA, DPIE Water and NRAR, which provides for the management of the potential impacts and/or environmental consequences of the proposed second workings on surface water resources, groundwater resources and flooding, and which includes:

- surface and groundwater impact assessment criteria, including trigger levels for investigating any potentially adverse impacts on water resources (level, yield and quality);
- a program to monitor and report on compliance with the surface and groundwater impact assessment criteria;
- a program to monitor and report on groundwater inflows to underground workings; and
- a program to manage and monitor impacts on privately-owned licensed bores;

(ii) **Biodiversity Management Plan**, which has been prepared in consultation with BCD, which provides for the management of the potential impacts and/or environmental consequences of the proposed second workings on flora and fauna, with a specific focus on threatened species, populations and their habitats, EECs and groundwater dependent ecosystems;

(iii) **Land Management Plan**, which has been prepared in consultation with any affected public authorities, which provides for the management of the potential impacts and/or environmental consequences of the proposed second workings on land in general, with a specific focus on cliffs, minor cliffs, rock face features, steep slopes and agricultural enterprises;

(iv) **Heritage Management Plan**, which has been prepared in consultation with BCD and relevant stakeholders for Aboriginal and non-Aboriginal heritage, to manage the potential impacts and/or environmental consequences of the proposed second workings on heritage items; and

(g) include a program to collect sufficient baseline data for future Extraction Plans.

B8. The Applicant must not undertake second workings until the applicable Extraction Plan is approved by the Planning Secretary.

B9. The Applicant must implement the Extraction Plan as approved by the Planning Secretary.

***Notes**:*

- *Management plans prepared under condition B7(e)&(f) should address all potential impacts of proposed underground coal extraction on the relevant features. Other site-wide management plans required under this consent are not required to duplicate these plans or re-address the specific impacts associated with underground coal extraction.*

B10. Conditions B7 to B9 do not apply to first or second workings which are covered by an Extraction Plan or Subsidence Management Plan approved, or submitted for approval, as at the date of determination of Modification 16.

Payment of Reasonable Costs

B11. The Applicant must pay all reasonable costs incurred by the Department to engage a suitably qualified, experienced and independent person/s to review the adequacy of any aspect of an Extraction Plan.

NOISE

Operational Noise Criteria

B12. During Phase 1, the Applicant must ensure that the noise generated by the Wambo Mining Complex does not exceed the criteria in Table 3 at any residence[a] on privately-owned land.

Table 3: *Operational noise criteria dB(A) for Phase 1*

Noise Assessment Location	***Day*** $L_{Aeq\ (15\ min)}$	***Evening/Night*** $L_{Aeq\ (15\ min)}$	***Night*** $L_{A1\ (1\ min)}$
R019	59	59	N/A
R003	40	40	50
R016			
R025			
R029			
R033			
R039			
R042			
R320 (previously 15B)			
R345 (previously 15B)			
R006	39	39	50
R007			
R048			
R343 (previously 37)			
R017	38	38	50
R030 (previously 38)			
R035			
R049			
R075			
R346			
R348			
R379 (previously 91)			
R043	37	37	50
R163			
R344 (previously 137)			
R380 (previously 246)			
R381 (previously 178)	36	36	50
All other privately-owned residences	35	35	50

[a] *The Noise Assessment Locations referred to in Table 3 are shown in Appendix 4.*

B13. During Phase 2 and Phase 3, the Applicant must ensure that the noise generated by the Wambo Mining Complex does not exceed the criteria in Table 4 at any residence[a] on privately-owned land.

Table 4: *Operational noise criteria dB(A) for Phase 2 and Phase 3*

Noise Assessment Area	***Noise Assessment Location***	***Day*** $L_{Aeq\ (15\ min)}$	***Evening*** $L_{Aeq\ (15\ min)}$	***Night*** $L_{Aeq\ (15\ min)}$	***Night*** $L_{A1\ (1\ min)}$
Area 1 - North Bulga	R003	38	38	38	48
	R007 R379	37	37	37	47
	All other privately-owned residences	35	35	35	45
Area 2 - South Wambo	R025	39	39	39	49
	R035a	37	37	37	47

Noise Assessment Area	Noise Assessment Location	Day $L_{Aeq\ (15\ min)}$	Evening $L_{Aeq\ (15\ min)}$	Night $L_{Aeq\ (15\ min)}$	Night $L_{A1\ (1\ min)}$
	All other privately-owned residences	35	35	35	45
Area 3 - Warkworth Village	R019	59	59	59	69
	All other privately-owned residences	44	44	43	53
All other areas	All privately-owned residences	35	35	35	45

[a] *The Noise Assessment Areas referred to in Table 4 are shown in Appendix 4.*

B14. Noise generated by the Wambo Mining Complex must be measured in accordance with the relevant requirements and exemptions (including certain meteorological conditions) of the *NSW Industrial Noise Policy* (EPA, 2000). Appendix 5 of this consent sets out the meteorological conditions under which these criteria apply and the requirements for evaluating compliance with these criteria.

B15. The noise criteria in Table 3 and Table 4 do not apply if the Applicant has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Noise Operating Conditions

B16. The Applicant must:

(a) take all reasonable steps to minimise all noise from construction and operational activities, including low frequency and other audible characteristics, as well as road noise associated with the development;

(b) monitor and record all major equipment use and make this data readily available at the request of the Department or the EPA;

(c) operate a noise management system commensurate with the risk of impact to ensure compliance with the relevant conditions of this consent;

(d) take all reasonable steps to minimise the noise impacts of the development during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see Appendix 5); and

(e) carry out regular attended noise monitoring (at least once a month, unless otherwise agreed by the Planning Secretary) to determine whether the development is complying with the relevant conditions of this consent.

Noise Management Plan

B17. The Applicant must prepare a Noise Management Plan for the Wambo Mining Complex to the satisfaction of the Planning Secretary. This plan must:

(a) be prepared by a suitably qualified and experienced person/s;

(b) be prepared in consultation with the EPA;

(c) describe the measures to be implemented to ensure:

(i) compliance with the noise criteria and operating conditions in this consent;

(ii) best practice management is being employed; and

(iii) noise impacts of the development are minimised during noise-enhancing meteorological conditions under which the noise criteria in this consent do not apply (see Appendix 5);

(d) seek to minimise road traffic noise generated by employee commuter vehicles on public roads;

(e) describe the noise management system in detail; and

(f) include a monitoring program that:

(i) uses a combination of real-time and supplementary attended monitoring to evaluate the performance of the development;

(ii) includes a program to calibrate and validate the real-time noise monitoring results with the attended monitoring results over time;

(iii) adequately supports the noise management system; and

(iv) includes a protocol for distinguishing noise emissions between the Wambo Mining Complex and United Wambo open cut coal mine; and

(v) includes a protocol for identifying any noise-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of any such event.

B18. The Applicant must not commence Phase 2 until the Noise Management Plan is approved by the Planning Secretary.

B19. The Applicant must implement the Noise Management Plan as approved by the Planning Secretary.

BLASTING

B20. Conditions B22 to B40 have application only during Phase 1.

B21. No blasting associated with open cut operations is allowed on the site during Phase 2.

Blasting Criteria

B22. The Applicant must ensure that blasting on the site does not cause exceedances of the criteria in Table 5.

Table 5: *Blasting criteria*

Location	***Airblast overpressure (dB(Lin Peak))***	***Ground vibration (mm/s)***	***Allowable exceedance***
Residence on privately-owned land	120	10	0%
	115	5	5% of the total number of blasts over a calendar year
Wambo Homestead	120	5	0%
All other heritage items	133	5	0%
Prescribed dams		50 *(unless otherwise directed by the DSC)*	0%
Public roads		100	0%
All other public infrastructure		50 *(or a limit determined by the structural design methodology in AS 2187.2 - 2006, or its latest version, or other alternative limit for public infrastructure, to the satisfaction of the Planning Secretary)*	0%

B23. The blasting criteria in Table 5 do not apply if the Applicant has an agreement with the owner/s of the relevant residence or infrastructure to exceed the blasting criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Blasting Hours

B24. The Applicant must only carry out blasting on the site between 9 am and 5 pm (Monday to Saturday inclusive). No blasting is allowed on Sundays, public holidays or any other time without the prior written approval of the Planning Secretary.

Blasting Frequency

B25. The Applicant may carry out a maximum of:

(a) 3 single blast events[a] a day; and

(b) 15 single blast events[a] a week, averaged over a calendar year.

B26. Condition B25 does not apply to single blast events[a] that generate ground vibration of 0.5 mm/s or less at any residence on privately-owned land, or to blast misfires or blasts required to ensure the safety of the mine, its workers or the general public.

[a] Within conditions B24 and B25, 'single blast event' means a blast which involves either a single detonation or a number of individual blasts fired in quick succession in a discrete area of the development. Should an additional blast be required after a blast misfire, this additional blast and the blast misfire are counted as a single blast event.

Property Investigations

B27. If the owner of any privately-owned land within 2 kilometres radius of the site or any other landowner where the Planning Secretary is satisfied an investigation is warranted, claims in writing that buildings or structures on their land

have been damaged as a result of blasting on the site, then within 2 months of receiving this written claim the Applicant must:

(a) commission a suitably qualified, experienced and independent person, whose appointment is acceptable to both parties to investigate the claim; and

(b) give the landowner a copy of the property investigation report.

B28. If this independent property investigation confirms the landowner's claim, and both parties agree with these findings, then the Applicant must repair the damage to the satisfaction of the Planning Secretary.

B29. If there is a dispute over the selection of the suitably qualified, experienced and independent person, or the Applicant or the landowner disagrees with the findings of the independent property investigation, then either party may refer the matter to the Planning Secretary for resolution.

Blast Operating Conditions

B30. The Applicant must:

(a) take all reasonable steps to:

(i) ensure the safety of people and livestock from blasting impacts of the development;

(ii) protect public and private infrastructure and property in the vicinity of the site from blasting damage associated with the development; and

(iii) minimise the dust and fume emissions of any blasting;

(b) ensure that blasting on the site does not damage heritage items, and develop specific measures to protect heritage items from any blasting damage associated with the development;

(c) minimise the frequency and duration of any public road closures for blasting, and use all reasonable efforts to avoid road closures during peak traffic periods;

(d) operate a suitable system to enable interested members of the public to get up-to-date information on the proposed blasting schedule on the site and associated public road closures, including notification via SMS message of the blasting schedule and associated road closures for that day and any variations to that schedule and closures;

(e) use all reasonable efforts to co-ordinate the timing of blasting at the site with nearby mines to minimise cumulative blasting impacts; and

(f) carry out regular blast monitoring to determine whether the development is complying with the relevant conditions of this consent.

B31. The Applicant must not carry out more than 1 blast a day within 500 metres of Wallaby Scrub Road or the Golden Highway.

B32. The Applicant must not undertake blasting on the site within 500 metres of any public road or any land outside the site not owned by the Applicant, unless the blast generates ground vibration of 0.5 mm/s or less, or the Applicant has:

(a) a written agreement with the relevant infrastructure owner or landowner to allow blasting to be carried out closer to the public road or land, and the Applicant has advised the Department in writing of the terms of this agreement; or

(b) demonstrated, to the satisfaction of the Planning Secretary, that the blasting can be carried out closer to the public road or land without compromising the safety of people or livestock or damaging the road or other buildings and structures, and updated the Blast Management Plan to include specific mitigation measures to be implemented while blasting is being carried out within 500 metres of the road or land.

Wambo Homestead

B33. Ground vibration and airblast levels are to be monitored, using a monitoring station established within the Wambo Homestead Complex, and recorded for each blast conducted by the Applicant within 2 km of the Wambo Homestead Complex.

B34. The Applicant must appoint a structural engineer with expertise and experience in vibration and blast monitoring to examine all monitoring records from the Wambo Homestead Complex blast monitoring station. The appointment of the structural engineer is to be approved in writing by the Heritage Branch.

B35. The structural engineer is to report to the Applicant on the monitoring results each month for blasting within 2 km of the Wambo Homestead Complex and 6 monthly for the remainder of open cut mining operations and make recommendations to ensure the conservation and prevention of damage to the significant heritage structures. Copies of these reports are to be forwarded to the Heritage Branch.

B36. The structural engineer is to inspect the Wambo Homestead Complex structures annually and as soon as practical, but no later than 3 days after blast monitoring which exceeds the criteria in Table 5. During the period between blast monitoring being recorded which exceeds the criteria in Table 5 and the engineer's inspection, ground vibration from

blasting is to be limited to a level which will prevent further blasting damage. The structural engineer is to advise the Applicant and the Heritage Branch of any action required to repair the damage.

B37. The structural engineer is to make an assessment of whether blasting within 2 km of the Wambo Homestead Complex is to cease or be managed in order to stabilise or repair the damage, and so advise the Applicant and the Heritage Branch. If blasting has been required to cease, it is not to resume until the damage has been stabilised or repaired, and the written approval for resumption has been issued by the Heritage Branch.

Blast Management Plan

B38. The Applicant must prepare a Blast Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:

(a) be prepared by a suitably qualified and experienced person/s;

(b) be prepared in consultation with the EPA;

(c) describe the measures that will be implemented to ensure compliance with the blasting criteria and conditions of this consent;

(d) include a Blast Fume Management Strategy for:

(i) minimising blast fume emissions;

(ii) rating and recording blast fume events; and

(iii) reporting significant blast fume events to the Department;

(e) include a Road Closure Management Plan for any blasting within 500 metres of a public road, that has been prepared in consultation with relevant roads authorities and includes provisions for:

(i) minimising the duration of closures, both on a per event basis and weekly basis;

(ii) avoiding peak traffic periods as far as reasonable; and

(iii) co-ordinating closures with nearby mines to minimise the cumulative effect of road closures;

(f) identify any agreed alternative ground vibration limits for public or private infrastructure in the vicinity of the site (if relevant);

(g) include a strategy to manage potential blast interactions with nearby mines;

(h) include a strategy to monitor, mitigate and manage the effects of blasting on heritage items, particularly the Wambo Homestead; and

(i) include a monitoring program for evaluating and reporting on compliance with the relevant conditions of this consent.

B39. The Applicant must submit the Blast Management Plan to the Planning Secretary for approval within three months of the determination of Modification 16.

B40. The Applicant must implement the Blast Management Plan as approved by the Planning Secretary.

AIR QUALITY AND GREENHOUSE GAS

Odour

B41. The Applicant must ensure that no offensive odours, as defined under the POEO Act, are emitted from the site.

Air Quality Criteria

B42. The Applicant must ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the Wambo Mining Complex do not cause exceedances of the criteria listed in Table 6 at any residence on privately-owned land, excluding the land referred to in Table 11.

Table 6: *Air quality criteria*

Pollutant	***Averaging period***	***Criterion***
Particulate matter < 10 µm (PM_{10})	Annual	[a, c] 25 µg/m^3
	24 hour	[b] 50 µg/m^3
Particulate matter < 2.5 µm ($PM_{2.5}$)	Annual	[a, c] 8 µg/m^3
	24 hour	[b] 25 µg/m^3
Total suspended particulate (TSP) matter	Annual	[a, c] 90 µg/m^3

[a] *Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources).*

[b] *Incremental impact (i.e. incremental increase in concentrations due to the development on its own).*

[c] *Excludes extraordinary events such as bushfires, prescribed burning, dust storms, fire incidents or any other activity agreed by the Planning Secretary.*

B43. The air quality criteria in Table 6 do not apply if the Applicant has an agreement with the owner/s of the relevant residence or land to exceed the air quality criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Mine-owned Land

B44. Particulate matter emissions generated by the Wambo Mining Complex must not exceed the criteria listed in Table 6 at any occupied residence on mine-owned land (including land owned by another mining company) unless:

(a) the tenant and landowner (if the residence is owned by another mining company) have been notified of any health risks associated with such exceedances in accordance with the notification requirements under PART C of this consent;

(b) the tenant of any land owned by the Applicant can terminate their tenancy agreement without penalty at any time, subject to giving 14 days' notice;

(c) air quality monitoring is regularly undertaken to inform the tenant and landowner (if the residence is owned by another mining company) of the likely particulate matter emissions at the residence; and

(d) data from this monitoring is presented to the tenant and landowner in an appropriate format for a medical practitioner to assist the tenant and landowner in making informed decisions on the health risks associated with occupying the property.

Air Quality Operating Conditions

B45. The Applicant must:

(a) take all reasonable steps to:

(i) minimise odour, fume, spontaneous combustion, greenhouse gas and particulate matter (including PM_{10} and $PM_{2.5}$) emissions of the development;

(ii) minimise any visible off-site air pollution generated by the development (including methane flares); and

(iii) minimise the extent of potential dust generating surfaces exposed on the site at any given point in time;

(b) operate an air quality management system commensurate with the risk of impact to ensure compliance with the relevant conditions of this consent;

(c) minimise the air quality impacts of the development during adverse meteorological conditions and extraordinary events (see Note c to Table 6 above);

(d) carry out regular air quality monitoring to determine whether the development is complying with the relevant conditions of this consent; and

(e) regularly assess meteorological and air quality monitoring data, and modify operations on the site to ensure compliance with the relevant conditions of this consent.

Air Quality Management Plan

B46. The Applicant must prepare an Air Quality and Greenhouse Gas Management Plan for the Wambo Mining Complex to the satisfaction of the Planning Secretary. This plan must:

(a) be prepared by a suitably qualified and experienced person/s;

(b) be prepared in consultation with the EPA;

(c) describe the measures to be implemented to ensure:

(i) compliance with the air quality criteria and operating conditions in this consent;

(ii) best practice management is being employed (including in respect of minimisation of greenhouse gas emissions from the site and energy efficiency); and

(iii) the air quality impacts of the development are minimised during adverse meteorological conditions and extraordinary events;

(d) describe the air quality management system in detail; and

(e) include an air quality monitoring program undertaken in accordance with the *Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales* (DEC, 2007), that:

(i) uses monitors to evaluate the performance of the development against the air quality criteria in this consent and to guide day to day planning of operations;

(ii) adequately supports the air quality management system; and

(iii) includes a protocol for identifying any air quality-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of these events.

B47. The Applicant must not commence Phase 2 until the Air Quality Management Plan is approved by the Planning Secretary.

B48. The Applicant must implement the Air Quality Management Plan as approved by the Planning Secretary.

Greenhouse Gas

B49. For the life of the development, the Applicant must:

(a) monitor the greenhouse gas emissions generated by the development;

(b) investigate ways to reduce greenhouse gas emissions generated by the development; and

(c) report on greenhouse gas monitoring and abatement measures in the Annual Review,

to the satisfaction of the Planning Secretary.

METEOROLOGICAL MONITORING

B50. For the life of the development, the Applicant must ensure there is a suitable meteorological station operating in the vicinity of the site that:

(a) complies with the requirements in the *Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales* (DEC, 2007);

(b) is capable of continuous real-time measurement of wind speed, wind direction sigma theta and temperature; and

(c) is capable of measuring meteorological conditions in accordance with the *NSW Industrial Noise Policy* (EPA, 2000),

unless a suitable alternative is approved by the Planning Secretary following consultation with the EPA.

WATER

Soil Erosion

B51. The Applicant must install and maintain suitable erosion and sediment control measures on the site, in accordance with the relevant requirements in the guidance series *Managing Urban Stormwater: Soils and Construction – Volume 1 (Landcom, 2004) and 2E Mines and Quarries (DECC, 2008).*

Water Supply

B52. The Applicant must ensure that it has sufficient water for all stages of the development, and if necessary, adjust the scale of the development to match its available water supply.

B53. The Applicant must report on water extracted or discharged from the site each year (direct and indirect) in the Annual Review, including water taken under each water licence.

Note: *Under the Water Act 1912 and/or the Water Management Act 2000, the Applicant is required to obtain all necessary water licences for the development, including during rehabilitation and post mine closure.*

Pollution of Waters

B54. Except as may be expressly provided by an EPL, the Applicant must comply with section 120 of the POEO Act while carrying out the development.

Discharge Limits

B55. Except as may be expressly provided by an EPL or the *Protection of the Environment Operations (Hunter River Salinity Trading Scheme) Regulation 2002,* the Applicant must:

(a) not discharge more than 250 ML/day in total from the licensed discharge point/s at the development; and

(b) ensure that the discharges from licensed discharge point/s comply with the limits in Table 7.

Table 7: *Discharge limits*

Pollutant	***Units of measure***	***100 percentile concentration limit***
pH	pH	6.5 to 9.5
Total suspended solids	mg/litre	120

Note: *This condition does not authorise the pollution of waters by any other pollutants.*

Compensatory Water Supply

B56. The Applicant must provide a compensatory water supply to any landowner of privately-owned land whose rightful water supply is adversely and directly impacted (other than an impact that is minor or negligible) as a result of the development, in consultation with DPIE Water, and to the satisfaction of the Planning Secretary.

B57. The compensatory water supply measures must provide an alternative long term supply of water that is equivalent, in quality and volume, to the loss attributable to the development. Equivalent water supply should be provided (at

least on an interim basis) as soon as practicable after the loss is identified, unless otherwise agreed with the landowner.

B58. If the Applicant and the landowner cannot agree on whether the loss of water is to be attributed to the development or the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Planning Secretary for resolution.

B59. If the Applicant is unable to provide an alternative long term supply of water, then the Applicant must provide compensation, to the satisfaction of the Planning Secretary.

***Note**:*

- *The Water Management Plan (see condition B66) is required to include trigger levels for investigating potentially adverse impacts on water supplies.*

Water Management

B60. The Applicant may receive water from, and transfer water to, neighbouring mines including HVO, MTW and United Wambo open cut coal mine.

B61. The Applicant may integrate the site water management system with water management for the Wambo train loading facility and United Wambo open cut coal mine.

Water Management Performance Measures

B62. The Applicant must ensure that the development complies with the performance measures in Table 8.

***Table 8:** Water management performance measures*

Feature	***Performance Measure***
Water management – General	• Maintain separation between clean, dirty and mine water • Minimise the use of clean and potable water • Maximise water recycling, reuse and sharing opportunities • Minimise the use of make-up water from external sources • Design, install, operate and maintain water management infrastructure in a proper and efficient manner
Alluvial aquifers (including Wollombi Brook alluvium and excluding the North Wambo Creek alluvium)	• Negligible impacts beyond those predicted in the documents listed in condition A2(c), including: - negligible change in groundwater levels; - negligible change in groundwater quality; and - negligible impact to other groundwater users
Erosion and sediment control works	• Design, install and maintain erosion and sediment controls in accordance with the guidance series *Managing Urban Stormwater: Soils and Construction – Volume 1 (Landcom, 2004) and 2E Mines and Quarries (DECC, 2008)* • Design, install and maintain any infrastructure within 40 metres of watercourses in accordance with the guidance series for *Controlled Activities on Waterfront Land* (DPI Water, 2012) • Design, install and maintain any creek crossings generally in accordance with the *Fisheries NSW Policy and Guidelines for Fish Habitat Conservation and Management* (DPI, 2013) and *Why Do Fish Need To Cross The Road*? *Fish Passage Requirements for Waterway Crossings* (NSW Fisheries, 2003)
Clean water diversions and storage infrastructure	• Design, install and maintain the clean water system to capture and convey the 100 year ARI flood event • Maximise, as far as reasonable, the diversion of clean water around disturbed areas on the site, except where clean water is captured for use on the site
Sediment dams	• Design, install and maintain sediment dams in accordance with the guidance series *Managing Urban Stormwater: Soils and Construction – Volume 1 (Landcom, 2004) and 2E Mines and Quarries (DECC, 2008)* and the requirements under the POEO Act or *Protection of the Environment Operations (Hunter River Salinity Trading Scheme) Regulation 2002*
Above-ground mine water storages	• Design, install and maintain mine water storage infrastructure to avoid unlicensed or uncontrolled discharge of mine water
Prescribed dams under the *Dams Safety Act 1978 or Dams Safety Act 2015* (including South Wambo Dam)	• Design, constructed and operated to the satisfaction of DSC • Drained prior to the commencement of secondary workings in underlying longwalls, to the satisfaction of DSC

Feature	*Performance Measure*
Tailings storages	• Design and maintain tailings storage areas to encapsulate and prevent the release of tailings seepage/leachate
Overburden emplacements	• Design, install and maintain emplacements to encapsulate and prevent migration of tailings, acid forming and potentially acid forming materials, and saline and sodic material • Design, install and maintain out-of-pit emplacements to prevent and/or manage long term saline seepage
Chemical and hydrocarbon storage	• Chemical and hydrocarbon products to be stored in bunded areas in accordance with the relevant Australian Standard
Creek diversion and restoration works (including the North Wambo Creek Diversion)	• Diverted creek lines to be hydraulically and geomorphologically stable in the long-term • Incorporate erosion control measures based on vegetation and engineering revetments • Incorporate persistent/permanent pools for aquatic habitat • Revegetate with suitable native species
Aquatic, riparian and groundwater dependent ecosystems	• Negligible environmental consequences beyond those predicted in the documents listed in condition A2(c) • Maintain or improve baseline channel stability • Develop site-specific in-stream water quality objectives in accordance with the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC & ARMCANZ, 2000) and *Using the ANZECC Guidelines and Water Quality Objectives in NSW* (DEC, 2006)

B63. The performance measures in Table 8 do not apply to water management structures constructed prior to the approval of Modification 16.

Groundwater Dependent Ecosystem Study

B64. Within 12 months of the determination of Modification 17, or as otherwise agreed with the Planning Secretary, the Applicant must commission and provide to the Planning Secretary for approval, a Groundwater Dependent Ecosystem Study report. This study must:

(a) be prepared by suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;

(b) be developed in consultation with DPIE Water;

(c) provide advice on the likely level of groundwater dependence of the vegetation in the South Bates Extension Area given current groundwater levels and expert knowledge of the vegetation communities in the region;

(d) in the event it is considered that vegetation communities in the vicinity of the South Bates Extension Area are groundwater dependent (either entirely or partially), provide advice on the likelihood that subsidence associated with the South Bates Extension Area could cause adverse impacts and how any such impacts would manifest;

(e) consider to what degree the cumulative impacts of adjacent mining operations may have already impacted groundwater dependent vegetation across the South Bates Extension Area;

(f) provide any recommendations that would assist in assessing the potential fracture interconnections between surface water resources and hard rock aquifers that may impact on groundwater dependent vegetation; and

(g) include a management and/or remediation program that describes measures that could be implemented to ensure compliance with the performance measures in Table 1 or Table 8 for any groundwater dependent endangered ecological community.

B65. The Applicant must take into account the findings of the Groundwater Dependent Ecosystem Study and not less than 2 years of monitoring results obtained under condition B7 in the preparation of any Extraction Plan for Longwalls 23 – 25.

Water Management Plan

B66. The Applicant must prepare a Water Management Plan for the Wambo Mining Complex to the satisfaction of the Planning Secretary. This plan must:

(a) be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;

(b) be prepared in consultation with DPIE Water and the EPA;

(c) describe the measures to be implemented to ensure that the Applicant complies with the water management performance measures (see Table 8);

(d) include a:

(i) **Site Water Balance** that includes details of:

- predicted annual inflows and outflows on the site;
- sources and security of water supply for the life of the development (including authorised entitlements and licences);
- water storage capacity;
- water use and management on the site, including any water transfers or water sharing with neighbouring mines;
- licensed discharge points and limits; and
- reporting procedures, including the annual preparation of an updated site water balance;

(ii) **Salt Balance** that includes details of:

- sources of saline material on the site;
- saline material and saline water management on the site;
- measures to minimise discharge of saline water from the site; and
- reporting procedures, including the annual preparation of an updated salt balance;

(iii) **Erosion and Sediment Control Plan** that:

- is consistent with the requirements of *Managing Urban Stormwater: Soils and Construction - Volume 1: Blue Book* (Landcom, 2004) and *Volume 2E: Mines and Quarries* (DECC, 2008);
- identifies activities that could cause soil erosion, generate sediment or affect flooding;
- describes measures to minimise soil erosion and the potential for the transport of sediment to downstream waters, and manage flood risk;
- describes the location, function, and capacity of permanent erosion and sediment control structures and flood management structures; and
- describes what measures would be implemented to maintain (and if necessary decommission) the structures over time;

(iv) **Surface Water Management Plan** that includes:

- detailed baseline data of surface water flows and quality of watercourses and/or waterbodies potentially impacted by the development, including:
  - stream and riparian vegetation health;
  - channel stability (geomorphology); and
  - water supply for other surface water users;
- a detailed description of the surface water management system;
- detailed plans, design objectives and performance criteria for water infrastructure, including:
  - any approved creek diversions or restoration works associated with the development;
  - water run-off diversions and catch drains;
  - water storages and sediment dams;
  - emplacement areas and tailings storages; and
  - reinstated drainage networks on rehabilitated areas of the site;
- detailed performance criteria, including trigger levels for identifying and investigating any potentially adverse impacts associated with the development, on:
  - downstream surface water flows and quality (including Wollombi Brook, North Wambo, South Wambo, and Stony Creeks);
  - channel stability;
  - stream and riparian vegetation heath;
  - water supply for other water users; and
  - post-mining water pollution from rehabilitated areas of the site;
- a program to monitor:
  - compliance with the relevant performance measures listed in Table 8 and the performance criteria established above;
  - controlled and uncontrolled discharges and seepage/leachate from the site;
  - impacts on water supply for other water users;
  - surface water inflows, outflows and storage volumes to inform the Site Water Balance; and
  - the effectiveness of the surface water management system and the measures within the Erosion and Sediment Control Plan;
- reporting procedures for the results of the monitoring program; and

- a plan to respond to any exceedances of the surface water performance measures or performance criteria, and repair, mitigate, compensate and/or offset any adverse surface water impacts of the development;

(v) **Groundwater Management Plan**, which is consistent with *Groundwater Monitoring and Modelling Plans – Introduction for prospective mining and petroleum activities* (DPI Water, 2014) and includes:

- detailed baseline data of groundwater levels, yield and quality for groundwater resources and groundwater dependent ecosystems potentially impacted by the development, including groundwater supply for other water users;
- a detailed description of the groundwater management system;
- groundwater performance criteria, including trigger levels for identifying and investigating any potentially adverse groundwater impacts associated with the development, on:
  - regional and local aquifers (alluvial and hardrock);
  - groundwater supply for other water users such as privately-owned licensed groundwater bores; and
  - groundwater dependent ecosystems;
- a program to monitor and evaluate:
  - compliance with the relevant performance measures listed in Table 8, and the performance criteria established above, including monitoring of regional groundwater levels and quality during the life of the development and at least 10 years post-mining;
  - water loss/seepage from water storages into the groundwater system (particularly from South Wambo Dam and Montrose East Dam);
  - groundwater inflows, outflows and storage volumes to inform the Site Water Balance;
  - any hydraulic connectivity between the alluvial and hardrock aquifers;
  - impacts on groundwater dependent ecosystems;
  - impacts on groundwater supply for other water users;
  - the effectiveness of the groundwater management systems; and
- reporting procedures for the results of the monitoring program;
- a plan to respond to any exceedances of the groundwater performance criteria, and repair, mitigate, compensate and/or offset any adverse groundwater impacts of the development; and
- a program to periodically validate the groundwater model for the development, including an independent review of the model every 3 years, and comparison of monitoring results with modelled predictions; and

(vi) a protocol to report on the measures, monitoring results and performance criteria identified above, in the Annual Review referred to in condition D10.

B67. The Applicant must not commence Phase 2 until the Water Management Plan is approved by the Planning Secretary.

B68. The Applicant must implement the Water Management Plan as approved by the Planning Secretary.

BIODIVERSITY

Biodiversity Offset Strategy

B69. The Applicant must implement the Biodiversity Offset Strategy set out in Table 9 and shown in Appendix 6, to the satisfaction of the Planning Secretary.

B70.

Table 9: *Biodiversity Offset Strategy*

Area	***Size***
Remnant Woodland Enhancement Area A	424 ha
Remnant Woodland Enhancement Area B	454 ha
Remnant Woodland Enhancement Area C	211 ha
Open Woodland Revegetation	270 ha
Remnant Woodland Enhancement Area D	46 ha
Remnant Woodland Enhancement Area D Extension	2 ha
Remnant Woodland Enhancement Area E	41.6 ha
Remnant Woodland Enhancement Area for the Wambo Coal Terminal	As shown in Appendix 6

Notes:

- *The area of Open Woodland Revegetation in Table 9 was previously 1,570 hectares. Under EA (Mod 16) this obligation was reduced to 270 hectares, with the remaining area being taken up by SSD 7142.*
- *Additional offsets may be required by the Planning Secretary under condition B3.*

B71. The land used to satisfy the requirement to establish Open Woodland Revegetation under condition B69 cannot be the same land as land used for Open Woodland Revegetation or Ecological Mine Rehabilitation under SSD 7142. If the United Wambo open cut coal mine does not proceed to Phase 2 (as defined within SSD 7142), then the Applicant must establish an additional 1,300 hectares of Open Woodland Revegetation, as otherwise required under SSD 7142.

Long Term Security

B72. The Conservation Agreement/s made under section 69B of the *National Parks and Wildlife Act 1974* for the offset areas listed in Table 9 must remain in force in perpetuity.

Offset Conservation

B73. The Applicant must not undertake any mining operations (except approved underground mining operations) or other activities within the offset areas listed in Table 9, other than:

(a) environmental management, environmental monitoring or other monitoring required under this consent or under an approved management plan or monitoring program;

(b) exploration and ancillary disturbance activities approved under a Biodiversity Management Plan or a Conservation Agreement; or

(c) rehabilitation activities under an approved Extraction Plan.

Strategic Study Contribution

B74. If, during the life of the development, the Department commissions a strategic study into the regional vegetation corridor stretching from the Wollemi National Park to the Barrington Tops National Park, then the Applicant must contribute $20,000 towards the completion of this study.

Biodiversity Management Plan

B75. The Applicant must prepare a Biodiversity Management Plan to the satisfaction of the Planning Secretary. This plan must:

(a) be prepared by a suitably qualified and experienced person/s;

(b) be prepared in consultation with BCD;

(c) describe the short, medium, and long term measures to be undertaken to manage vegetation and fauna habitat on the site and in the offset areas;

(d) describe how biodiversity management would be integrated with similar measures within the Water Management Plan referred to in condition B66 and the Rehabilitation Management Plan referred to in condition B107;

(e) describe the measures to be implemented within approved disturbance areas on the site to:

(i) minimise the amount of clearing and employ temporary vegetation strategies (see condition B106);

(ii) minimise impacts on fauna, including undertaking pre-clearance surveys;

(iii) provide for the salvage, transplanting and/or propagation of any threatened flora found during pre-clearance surveys, in accordance with the *Guidelines for the Translocation of Threatened Plants in Australia* (Vallee et al., 2004);

(iv) minimise impacts on fauna habitat features such as tree hollows and termite mounds where reasonable and feasible; and

(v) maximise the salvage of resources, including bush rocks, tree hollows, fallen timber, vegetation and soil resources, for beneficial reuse, including fauna habitat enhancement;

(f) describe the measures to be implemented on the site to:

(i) enhance the quality of vegetation, vegetation connectivity and fauna habitat including through the assisted regeneration and/or targeted revegetation of appropriate canopy, sub-canopy, understorey and ground strata;

(ii) introduce naturally scarce fauna habitat features such as nest boxes and salvaged tree hollows and promote the use of these introduced habitat features by threatened fauna species;

(iii) manage any potential conflicts between these works and Aboriginal heritage values; and

(iv) enhance riparian vegetation along the North Wambo Creek Diversion;

(v) protect vegetation and fauna habitat outside of the approved disturbance areas;

(vi) manage potential indirect impacts on threatened flora and fauna species;

(vii) manage the collection and propagation of seed from the local area;

(viii) control weeds, including measures to avoid and mitigate the spread of noxious weeds;

(ix) control feral pests with consideration of actions identified in relevant threat abatement plans;

(x) control erosion;

(xi) manage any grazing and agriculture;

(xii) control access to vegetated or revegetated areas; and

(xiii) manage bushfire hazards;

(g) describe the measures to manage the offset areas listed in Table 9 in accordance with any Conservation Agreement/s, including measures to:

(i) enhance the quality of existing remnant vegetation; vegetation connectivity and fauna habitat;

(ii) avoid clearing of Warkworth Sands EEC and minimise vegetation clearing generally for gas drainage infrastructure and exploration activities;

(iii) control weeds and feral pests; and

(iv) limit vehicular traffic;

(h) include a seasonally-based program to monitor and report on:

(i) the effectiveness of the above measures;

(ii) quality of vegetation, vegetation connectivity and fauna habitat through assessment of landscape functionality, species diversity and abundance, vegetation dynamics and habitat complexity; and

(iii) improvements that could be implemented to improve biodiversity outcomes;

(i) identify the potential risks to the successful implementation of the Biodiversity Offset Strategy, and include a description of the contingency measures to be implemented to mitigate against these risks; and

(j) include details of who would be responsible for monitoring, reviewing, and implementing the plan.

B76. The Applicant must not commence Phase 2 until the Biodiversity Management Plan is approved by the Planning Secretary.

B77. The Applicant must implement the Biodiversity Management Plan as approved by the Planning Secretary.

Conservation Bond

B78. Within 6 months of the approval of the Biodiversity Management Plan referred to in condition B74 above, or other timeframe agreed by the Planning Secretary, the Applicant must lodge a Conservation Bond with the Department to ensure that the Biodiversity Offset Strategy is implemented in accordance with the performance and completion criteria in the Biodiversity Management Plan. The sum of the bond must be determined by:

(a) calculating the remaining cost of implementing and managing the Biodiversity Offset Strategy at third party rates; and

(b) employing a suitably qualified, independent and experienced person to verify the calculated costs.

B79. The calculation of the Conservation Bond must be submitted to the Department for approval at least 2 months prior to lodgement of the bond.

B80. The Conservation Bond must be reviewed and, if required, an updated bond must be lodged with the Department within 3 months following:

(a) any update or revision to the Biodiversity Management Plan;

(b) the completion of an Independent Environmental Audit in which recommendations relating to the implementation of the Biodiversity Offset Strategy have been made; or

(c) in response to a request by the Planning Secretary,

B81. If the Biodiversity Offset Strategy is completed generally in accordance with the performance and completion criteria in the Biodiversity Management Plan, to the satisfaction of the Planning Secretary, or if alternate funding arrangements are provided, the Planning Secretary will release the Conservation Bond.

B82. If the Biodiversity Offset Strategy is not completed generally in accordance with the completion criteria in the Biodiversity Management Plan, the Planning Secretary will call in all, or part of, the Conservation Bond, and arrange for the completion of the relevant works.

HERITAGE

Heritage Operating Conditions

Notes:

- *The Applicant is required to obtain consent from BCD under Section 90 of the National Parks Wildlife Act 1974 to destroy Aboriginal objects on the site.*
- *The Applicant must comply with the requirements of any Aboriginal Heritage Impact Permit/s issued for the development, including any approved salvage program.*

B83. The Applicant must ensure that the development does not cause any direct or indirect impact on any identified heritage items located outside the approved disturbance area, beyond those predicted in the document/s listed in condition A2(c) or approved under a permit issued under the *National Parks and Wildlife Act 1974*.

B84. The Applicant must ensure that Aboriginal objects salvaged from the site are housed in a keeping place established for the purpose.

B85. If suspected human remains are discovered on the site, then all work surrounding the area must cease, and the area must be secured. The Applicant must immediately notify NSW Police Force and BCD, and work must not recommence in the area until authorised by NSW Police Force and BCD.

B86. The Applicant must ensure that all workers receive suitable Aboriginal cultural heritage inductions prior to carrying out any activities which may cause impacts to Aboriginal objects or Aboriginal places, and that suitable records are kept of these inductions.

B87. The Applicant must undertake ongoing consultation and involvement of Registered Aboriginal Parties in the conservation and management of Aboriginal cultural heritage on the site.

Aboriginal Cultural Heritage Management Plan for Remnant Woodland Enhancement Area A

B88. The Applicant must develop a management plan to manage Aboriginal cultural heritage in Remnant Woodland Enhancement Area A (referred to in Table 9 above) within 12 months of entering into a Conservation Agreement over that area, or as otherwise agreed by the Planning Secretary. The management plan must be:

(a) prepared by a suitably qualified and experienced person/s;

(b) developed in consultation with BCD and the Registered Aboriginal Parties; and

(c) approved by the Planning Secretary.

B89. The Applicant must implement the Aboriginal Cultural Heritage Management Plan for Remnant Woodland Enhancement Area A approved by the Planning Secretary.

Wambo Homestead

B90. The Applicant must prepare a conservation management plan for the Wambo Homestead Complex in accordance with Heritage Branch guidelines, to the satisfaction of the Heritage Branch. This plan must:

(a) describe the measures to be implemented to conserve, manage and interpret the cultural significance of the Wambo Homestead Complex;

(b) contain a timetable for implementing conservation measures; and

(c) detail ongoing maintenance and inspection programs.

B91. In circumstances where safe access to the Wambo Homestead Complex is able to be provided, opportunities are to be offered to the local community to visit the site during and after its conservation.

B92. The Applicant must undertake annual photographic recording of all structures within the Wambo Homestead Complex. The photographs are to be of archival quality in accordance with the Heritage Branch guidelines, *How to Prepare Archival Records of Heritage Items 1994*, and *Guidelines for Photographic Recording of Heritage Items 1994*. The photographic record is to be lodged with the Heritage Branch, and a copy is to be submitted to the Department and the Council.

Road Rehabilitation

B93. Following the cessation of the use of the coal haulage road which traverses the Wambo Homestead Complex property, the land is to be returned to its former condition (pre-1999) and the half palisade fence on the southern

alignment of the mounting yard is to be reinstated as required by the 1999 approval of the Heritage Branch for construction of the road.

Movable Heritage Items

B94. The Applicant must liaise with the Power House Museum and Museums and Galleries Foundation regarding the significance of movable heritage which would be impacted by open cut mining and identify suitable repositories for the conservation and storage of any significant items, including Site 3 Abandoned Homestead A and Site 9 Abandoned Tractor.

VISUAL

Visual Amenity and Lighting

B95. The Applicant must:

(a) take all reasonable steps to minimise the visual and off-site lighting impacts of the development;

(b) ensure no fixed outdoor lights shine directly above the horizontal or above the building line or any illuminated structure;

(c) ensure mobile lighting does not shine directly above the horizontal (except where required for emergency safety purposes);

(d) ensure that all external lighting associated with the development complies with relevant Australian Standards including the latest version of *Australian Standard AS4282 (INT) 1997 – Control of Obtrusive Effects of Outdoor Lighting*; and

(e) implement measures to mitigate visual impacts including:

(i) design and construction of development infrastructure in a manner that minimises visual contrasts; and

(ii) progressive rehabilitation of mine waste rock emplacements (particularly outer batters), including partial rehabilitation of temporarily inactive areas.

Visual Mitigation

B96. The Applicant must investigate and where feasible implement the following measures at locations assessed in the EIS as having a high potential visual impact:

(a) implement landscaping works in consultation with affected rural residents; and/or

(b) place and maintain visual screens between development infrastructure and the viewing location.

B97. During Phase 1, if a landowner of any dwelling assessed in the EIS as having a high potential visual impact requests the Applicant in writing to investigate ways to minimise the visual impact of the development on his/her dwelling, the Applicant must:

(a) within 28 days of receiving this request, commission a suitably qualified person whose appointment has been approved by the Planning Secretary, to investigate ways to minimise the visual impacts of the development on the landowner's dwelling; and

(b) give the landowner a copy of the visual impact mitigation report within 14 days of receiving this report.

B98. If both parties agree on the measures that should be implemented to minimise the visual impact of the development, then the Applicant must implement these measures to the satisfaction of the Planning Secretary.

B99. If the Applicant and the landowner disagree on the measures that should be implemented to minimise the visual impact of the development, then either party may refer the matter to the Planning Secretary for resolution.

WASTE

B100. The Applicant must:

(a) take all reasonable steps to minimise the waste (including coal rejects and tailings) generated by the development;

(b) dispose of all waste at appropriately licensed waste facilities;

(c) manage on-site sewage treatment and disposal in accordance with the requirements of Council; and

(d) monitor and report on the effectiveness of the waste minimisation and management measures in the Annual Review referred to in condition D10.

B101. Except as expressly permitted in an applicable EPL, specific resource recovery order or exemption under the *Protection of the Environment Operations (Waste) Regulation 2014*, the Applicant must not receive waste at the site for storage, treatment, processing, reprocessing or disposal.

HAZARDS MANAGEMENT

Spontaneous Combustion

B102. The Applicant must:

(a) take the necessary measures to prevent, as far as is practical, spontaneous combustion on the site; and

(b) manage any spontaneous combustion on the site to the satisfaction of the Resources Regulator.

Dangerous Goods

B103. The Applicant must ensure that the storage, handling, and transport of:

(a) dangerous goods is done in accordance with the relevant Australian Standards, particularly *AS1940* and *AS1596*, and the *Dangerous Goods Code*; and

(b) explosives are managed in accordance with the requirements of the Resources Regulator.

BUSHFIRE MANAGEMENT

B104. The Applicant must:

(a) ensure that the development:

(i) provides for asset protection in accordance with the relevant requirements in the *Planning for Bushfire Protection* (RFS, 2006) guideline; and

(ii) ensure that there is suitable equipment to respond to any fires on the site; and

(b) assist the RFS and emergency services to the extent practicable if there is a fire in the vicinity of the site.

REHABILITATION

Rehabilitation Objectives

B105. The Applicant must rehabilitate the site to the satisfaction of the Resources Regulator. This rehabilitation must be generally consistent with the proposed rehabilitation activities described in the documents listed in condition A2(c) and must comply with the objectives in Table 10.

Table 10: *Rehabilitation objectives*

Feature	***Objective***
All areas of the site affected by the development	• Safe, stable and non-polluting • Fit for the intended post-mining land use/s
Areas proposed for native ecosystem re-establishment	• Establish a minimum of 270 hectares of Open Woodland Revegetation to satisfy condition B69 • Establish areas of self-sustaining: - riparian vegetation, within any diverted and/or re-established creek lines and retained water features; - habitat resources for threatened flora and fauna species; and - vegetation connectivity and wildlife corridors, as far as is reasonable and feasible
Final Landform	• Stable and sustainable for the intended post-mining land use/s • Consistent with and complement the topography of the surrounding region to minimise the visual prominence of the final landforms in the post mining landscape • Maximise surface water drainage to the natural environment (excluding final void catchment)
Rehabilitation materials	• 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
Surface infrastructure of the development	• Decommissioned and removed, unless the Resources Regulator agrees otherwise • All surface infrastructure sites are to be revegetated with suitable local native plant species to a landform consistent with the surrounding environment
Portals and vent shafts of the development	• To be decommissioned and made safe and stable • Retain habitat for threatened species (e.g. bats), where practicable
Watercourses subject to mine water discharges and/or subsidence impacts or environmental consequences that are greater than negligible	• Hydraulically and geomorphologically stable • Aquatic ecology and riparian vegetation that is the same or better than prior to commencement of mining
Water quality	• 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

Feature	*Objective*
Built features damaged by mining operations	• Repair to pre-mining condition or equivalent unless the: - owner agrees otherwise; or - damage is fully restored, repaired or compensated for under the *Coal Mine Subsidence Compensation Act 2017*
Cliffs, minor cliffs, rock face features and steep slopes	• No additional risk to public safety compared to prior to mining
Community	• Ensure public safety • Minimise adverse socio-economic effects associated with mine closure

B106. 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.

Progressive Rehabilitation

B107. The Applicant must rehabilitate[a] 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.

[a] *Nothing in this condition prevents further disturbance at some later stage of the development of areas that have been rehabilitated.*

Rehabilitation Management Plan

B108. The Applicant must prepare a Rehabilitation Management Plan for all land disturbed by the development to the satisfaction of the Resources Regulator. This plan must:

(a) be prepared by a suitably qualified and experienced person/s;

(b) be prepared in consultation with the Department, DPIE Water, BCD and Council;

(c) be prepared in accordance with any relevant DRG Guideline;

(d) describe how the rehabilitation of the site would achieve the objectives identified in Table 10 and be integrated with the measures in the Biodiversity Management Plan referred to in condition B74;

(e) describe how the rehabilitation of the site would be integrated with rehabilitation of the Wambo train loading facility and SSD 7142 United Wambo open cut coal mine;

(f) include detailed performance and completion criteria for evaluating the performance of the rehabilitation of the site, and for triggering remedial action (if necessary);

(g) describe the measures to be implemented to ensure compliance with the relevant conditions of this consent, and address all aspects of rehabilitation including mine closure, final landform, final land use/s and water management in the final landform;

(h) include a detailed tailings management strategy that includes:

(i) a strategy for treating and/or emplacing all tailings material generated by the Wambo CHPP; and

(ii) timing for rehabilitation of all tailings storage facilities, in order that final landform and land use objectives can be achieved in a timely manner;

(i) include procedures for the use of interim stabilisation and temporary vegetation strategies, where reasonable to minimise the area exposed for dust generation;

(j) include a program to monitor, independently audit and report on the effectiveness of the measures in paragraph (g), and progress against the detailed performance and completion criteria in paragraph (f);

(k) to the maximum extent practicable build on and integrate with the other management plans required under this consent; and

(l) include detailed scheduling for progressive rehabilitation to be initiated, undertaken and/or completed over the next three years.

B109. The Applicant must not commence Phase 2 until the Rehabilitation Management Plan is approved by the Resources Regulator.

B110. The Applicant must implement the Rehabilitation Management Plan as approved by the Resources Regulator.

Note:

- *The Resources Regulator may permit the Rehabilitation Management Plan to be combined with a Mining Operations Plan, or similar plan, required under any mining lease granted for the development.*

TRANSPORT

Monitoring of Coal Transport

B111. The Applicant must:

(a) keep accurate records of the amount of coal transported from the site (on a daily basis); and

(b) include these records in the Annual Review.

Parking

B112. The Applicant must provide sufficient parking on-site for all mine-related traffic to the satisfaction of the Planning Secretary.

Traffic Management Plan

B113. The Applicant must prepare a Traffic Management Plan for the Wambo Mining Complex, that includes use of the site by traffic approved under SSD 7142, to the satisfaction of the Planning Secretary. This plan must:

(a) be prepared by a suitably qualified and experienced person/s;

(b) be prepared in consultation with RMS and Council;

(c) include details of all transport routes, traffic types and access roads to be used for development-related traffic;

(d) include details of the measures to be implemented to minimise traffic safety issues and disruption to local road users, particularly during shift change periods, including managing over-dimensional vehicles;

(e) include a Drivers' Code of Conduct that includes procedures to ensure that drivers:

(i) adhere to travelling speeds;

(ii) adhere to the designated transport routes, where applicable; and

(iii) implement safe driving practices.

B114. The Applicant must not commence Phase 2 until the Traffic Management Plan is approved by the Planning Secretary.

B115. The Applicant must implement the Traffic Management Plan as approved by the Planning Secretary.

PART C ADDITIONAL PROCEDURES

ACQUISITION UPON REQUEST

C1. Upon receiving a written request for acquisition from the owner of the privately-owned land[a] listed in Table 11, the Applicant must acquire the land in accordance with the procedures in conditions C10 to C17, inclusive.

Table 11: *Land subject to acquisition upon request*

R019

[a] *The location of the land referred to in Table 11 is shown in Appendix 4.*

ADDITIONAL MITIGATION UPON REQUEST

C2. Upon receiving a written request from the owner of any residence on the privately-owned land[a] listed in Table 11 or Table 12, the Applicant must implement additional mitigation measures at or in the vicinity of the residence in consultation with the landowner. These measures must be consistent with the measures outlined in the *Voluntary Land Acquisition and Mitigation Policy for State Significant Mining, Petroleum and Extractive Industry Developments* (NSW Government, 2018). They must also be reasonable and feasible, proportionate to the level of predicted impact and directed towards reducing the relevant noise and/or air quality impacts of the development. The Applicant must also be responsible for the reasonable costs of ongoing maintenance of these additional mitigation measures until the cessation of mining operations.

Table 12: *Land subject to additional mitigation upon request*

Mitigation Basis	***Land***
Noise	R003, R025

[a] *The locations of the land referred to in Table 12 is shown in Appendix 4.*

C3. If within 3 months of receiving this request from the owner, the Applicant and the owner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Planning Secretary for resolution.

NOTIFICATION OF LANDOWNERS/TENANTS

C4. Prior to entering into any tenancy agreement for any land owned by the Applicant that is predicted to experience exceedances of the recommended air quality and/or noise criteria, the Applicant must:

(a) advise the prospective tenants of the potential health and amenity impacts associated with living on the land, and give them a copy of the NSW Health fact sheet entitled *"Mine Dust and You"* (NSW Health, 2017); and

(b) advise the prospective tenants of the rights they would have under this consent,

to the satisfaction of the Planning Secretary.

NOTIFICATION OF EXCEEDANCES

C5. As soon as practicable and no longer than 7 days after obtaining monitoring results showing an exceedance of any noise, blasting or air quality criterion in PART B of this consent, the Applicant must provide the details of the exceedance to any affected landowners, tenants and the CCC.

C6. For any exceedance of any air quality criterion in PART B of this consent, the Applicant must also provide to any affected land owners and tenants a copy of the NSW Health fact sheet entitled "*Mine Dust and You"* (NSW Health, 2017).

INDEPENDENT REVIEW

C7. If a landowner considers the development to be exceeding any relevant air quality, noise or blasting criterion in PART B of this consent, they may ask the Planning Secretary in writing for an independent review of the impacts of the development on their residence or land.

C8. If the Planning Secretary is not satisfied that an independent review is warranted, the Planning Secretary will notify the landowner in writing of that decision, and the reasons for that decision, within 21 days of the request for a review.

C9. If the Planning Secretary is satisfied that an independent review is warranted, within 3 months, or other timeframe agreed by the Planning Secretary and the landowner, of the Planning Secretary's decision, the Applicant must:

(a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Planning Secretary, to:

(i) consult with the landowner to determine their concerns;

(ii) conduct monitoring to determine whether the development is complying with the relevant criterion in PART B of this consent; and

(iii) if the development is not complying with the relevant criterion, identify measures that could be implemented to ensure compliance with the relevant criterion;

(b) give the Planning Secretary and landowner a copy of the independent review; and

(c) comply with any written requests made by the Planning Secretary to implement any findings of the review.

LAND ACQUISITION

C10. Within 3 months of receiving a written request for acquisition from a landowner with acquisition rights, the Applicant must make a binding written offer to the landowner based on:

(a) the current market value of the landowner's interest in the land at the date of this written request, as if the land was unaffected by the development, having regard to the:

(i) existing and permissible use of the land, in accordance with the applicable planning instruments at the date of the written request; and

(ii) presence of improvements on the land and/or any approved building or structure which has been physically commenced at the date of the landowner's written request, and is due to be completed subsequent to that date, but excluding any improvements that have resulted from the implementation of the additional noise and/or air quality mitigation measures in condition C2;

(b) the reasonable costs associated with:

(i) relocating within the Singleton local government area, or to any other local government area determined by the Planning Secretary; and

(ii) obtaining independent legal advice and expert advice for determining the acquisition price of the land, and the terms upon which it is to be acquired; and

(c) reasonable compensation for any disturbance caused by the land acquisition process.

C11. If, within 2 months of the binding written offer being made under condition C10, the Applicant and landowner cannot agree on the acquisition price of the land and/or the terms upon which the land is to be acquired, then either party may refer the matter to the Planning Secretary for resolution.

C12. Upon receiving a request, under condition C11, the Planning Secretary will request the President of the NSW Division of the Australian Property Institute to appoint a qualified independent valuer to:

(a) consider submissions from both parties;

(b) determine a fair and reasonable acquisition price for the land and/or the terms upon which the land is to be acquired, having regard to the matters referred to in condition C10;

(c) prepare a detailed report setting out the reasons for any determination; and

(d) provide a copy of the report to both parties.

C13. Within 14 days of receiving the independent valuer's report, the Applicant must make a binding written offer to the landowner to purchase the land at a price not less than the independent valuer's determination.

C14. However, if either party disputes the independent valuer's determination, then within 14 days of receiving the independent valuer's report, either party may refer the matter to the Planning Secretary for review. Any request for a review must be accompanied by a detailed report setting out the reasons why the party disputes the independent valuer's determination. Following consultation with the independent valuer and both parties, the Planning Secretary will determine a fair and reasonable acquisition price for the land, having regard to the matters referred to in condition C10, the independent valuer's report, the detailed report of the party that disputes the independent valuer's determination and any other relevant submissions.

C15. Within 14 days of this determination, the Applicant must make a binding written offer to the landowner to purchase the land at a price not less than the Planning Secretary's determination.

C16. If the landowner refuses to accept the Applicant's binding written offer under this condition within 6 months of the offer being made, then the Applicant's obligations to acquire the land shall cease, unless the Planning Secretary determines otherwise.

C17. The Applicant must pay all reasonable costs associated with the land acquisition process described in conditions C10 to C16 inclusive, including the costs associated with obtaining Council approval for any plan of subdivision (where permissible), and registration of this plan at the Office of the Registrar-General.

PART D ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING

ENVIRONMENTAL MANAGEMENT

Environmental Management Strategy

D1. The Applicant must prepare an Environmental Management Strategy for the development to the satisfaction of the Planning Secretary. This strategy must:

(a) provide the strategic framework for environmental management of the development;

(b) identify the statutory approvals that apply to the development;

(c) set out the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the development;

(d) set out the procedures to be implemented to:

(i) keep the local community and relevant agencies informed about the operation and environmental performance of the development;

(ii) receive record, handle and respond to complaints;

(iii) resolve any disputes that may arise during the course of the development;

(iv) respond to any non-compliance and any incident; and

(v) respond to emergencies; and

(e) include:

(i) references to any strategies, plans and programs approved under the conditions of this consent; and

(ii) a clear plan depicting all the monitoring to be carried out under the conditions of this consent.

D2. The Applicant must not commence Phase 2 until the Environmental Management Strategy is approved by the Planning Secretary.

D3. The Applicant must implement the Environmental Management Strategy as approved by the Planning Secretary.

Adaptive Management

D4. The Applicant must assess and manage development-related risks to ensure that there are no exceedances of the criteria and performance measures in this consent. Any exceedance of these criteria or performance measures constitutes a breach of this consent and may be subject to penalty or offence provisions under the EP&A Act or EP&A Regulation.

Where any exceedance of these criteria or performance measures has occurred, the Applicant must, at the earliest opportunity:

(a) take all reasonable and feasible steps to ensure that the exceedance ceases and does not recur;

(b) consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and

(c) implement reasonable remediation measures as directed by the Planning Secretary.

Management Plan Requirements

D5. Management plans required under this consent must be prepared in accordance with relevant guidelines, and include where relevant:

(a) summary of relevant background or baseline data;

(b) details of:

(i) the relevant statutory requirements (including any relevant approval, licence or lease conditions);

(ii) any relevant limits or performance measures and criteria; and

(iii) the specific indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;

(c) any relevant commitments or recommendations identified in the documents listed in condition A2(c);

(d) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;

(e) a program to monitor and report on the:

(i) impacts and environmental performance of the development; and

(ii) effectiveness of the management measures set out pursuant to paragraph (d);

(f) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;

(g) a program to investigate and implement ways to improve the environmental performance of the development over time;

(h) a protocol for managing and reporting any:

(i) incident, non-compliance or exceedance of any impact assessment criterion and performance criterion);

(ii) complaint; or

(iii) failure to comply with other statutory requirements; and

(i) a protocol for periodic review of the plan.

Note: *The Planning Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.*

REVISION OF STRATEGIES, PLANS AND PROGRAMS

D6. Within three months of:

(a) the submission of an incident report under condition D8;

(b) the submission of an Annual Review under condition D10;

(c) the submission of an Independent Environmental Audit under condition D11; or

(d) the approval of any modification (excluding Modification 16) of the conditions of this consent,

the suitability of existing strategies, plans and programs required under this consent must be reviewed by the Applicant.

D7. If necessary, to either improve the environmental performance of the development, cater for a modification or comply with a direction, the strategies, plans and programs required under this consent must be revised, to the satisfaction of the Planning Secretary. Where revisions are required, the revised document must be submitted to the Planning Secretary for approval within six weeks of the review.

Note: *This is to ensure strategies, plans and programs are updated on a regular basis and to incorporate any recommended measures to improve the environmental performance of the development.*

REPORTING AND AUDITING

Incident Notification

D8. The Applicant must immediately notify the Department and any other relevant agencies immediately after it becomes aware of an incident. The notification must be in writing to compliance@planning.nsw.gov.au and identify the development (including the development application number and name) and set out the location and nature of the incident.

Non-Compliance Notification

D9. Within seven days of becoming aware of a non-compliance, the Applicant must notify the Department of the non-compliance. The notification must be in writing to compliance@planning.nsw.gov.au and identify the development (including the development application number and name), set out the condition of this consent that the development is non-compliant with, why it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.

Note*: A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.*

Annual Review

D10. By the end of March each year or other timeframe agreed by the Planning Secretary, a report must be submitted to the Department reviewing the environmental performance of the development, to the satisfaction of the Planning Secretary. This review must:

(a) describe the development (including any rehabilitation) that was carried out in the previous calendar year, and the development that is proposed to be carried out over the current calendar year;

(b) include a comprehensive review of the monitoring results and complaints records of the development over the previous calendar year, including a comparison of these results against the:

(i) relevant statutory requirements, limits or performance measures/criteria;

(ii) requirements of any plan or program required under this consent;

(iii) monitoring results of previous years; and

(iv) relevant predictions in the documents listed in condition A2(c);

(c) identify any non-compliance or incident which occurred in the previous calendar year, and describe what actions were (or are being) taken to rectify the non-compliance and avoid reoccurrence;

(d) evaluate and report on:

(i) the effectiveness of the noise and air quality management systems; and

(ii) compliance with the performance measures, criteria and operating conditions in this consent;

(e) identify any trends in the monitoring data over the life of the development;

(f) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and

(g) describe what measures will be implemented over the next calendar year to improve the environmental performance of the development.

Independent Environmental Audit

D11. By the end of October 2020, and every three years after, unless the Planning Secretary directs otherwise, the Applicant must commission and pay the full cost of an Independent Environmental Audit of the development. The audit must:

(a) be led by a suitably qualified, experienced and independent auditor whose appointment has been endorsed by the Planning Secretary;

(b) be conducted by a suitably qualified, experienced and independent team of experts (including any expert in field/s specified by the Planning Secretary) whose appointment has been endorsed by the Planning Secretary;

(c) be carried out in consultation with the relevant agencies and the CCC;

(d) assess the environmental performance of the development and whether it is complying with the relevant requirements in this consent, water licences and mining leases for the development (including any assessment, strategy, plan or program required under these approvals);

(e) review the adequacy of any approved strategy, plan or program required under the abovementioned approvals and this consent;

(f) recommend appropriate measures or actions to improve the environmental performance of the development and any assessment, strategy, plan or program required under the abovementioned approvals and this consent; and

(g) be conducted and reported to the satisfaction of the Planning Secretary.

D12. Within three months of commencing an Independent Environmental Audit, or other timeframe agreed by the Planning Secretary, the Applicant must submit a copy of the audit report to the Planning Secretary, and any other NSW agency that requests it, together with its response to any recommendations contained in the audit report, and a timetable for the implementation of the recommendations. The recommendations must be implemented to the satisfaction of the Planning Secretary.

Monitoring and Environmental Audits

D13. Any condition of this consent that requires the carrying out of monitoring or an environmental audit, whether directly or by way of a plan, strategy or program, is taken to be a condition requiring monitoring or an environmental audit under Division 9.4 of Part 9 of the EP&A Act. This includes conditions in respect of incident notification, reporting and response, non-compliance notification, compliance report and independent audit.

For the purposes of this condition, as set out in the EP&A Act, "monitoring" means monitoring of the development to provide data on compliance with the consent or on the environmental impact of the development, and an "environmental audit" means a periodic or particular documented evaluation of the development to provide information on compliance with the consent or the environmental management or impact of the development.

D14. Noise, blast and/or air quality monitoring under this consent may be undertaken at suitable representative monitoring locations instead of at privately-owned residences or other locations listed in Part B, providing that these representative monitoring locations are set out in the respective management plan/s.

ACCESS TO INFORMATION

D15. Within three months of the determination of Modification 16, until the completion of all rehabilitation required under this consent, the Applicant must:

(a) make the following information and documents (as they are obtained, approved or as otherwise stipulated within the conditions of this consent) publicly available on its website:

(i) the documents listed in condition A2(c);

(ii) all current statutory approvals for the development;

(iii) all approved strategies, plans and programs required under the conditions of this consent;

(iv) detailed plans for the Phases of the development;

(v) minutes of CCC meetings;

(vi) regular reporting on the environmental performance of the development in accordance with the reporting requirements in any plans or programs approved under the conditions of this consent;

(vii) a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs;

(viii) a summary of the current phase and progress of the development;

(ix) contact details to enquire about the development or to make a complaint;

(x) a complaints register, updated monthly;

(xi) the Annual Reviews of the development;

(xii) audit reports prepared as part of any Independent Environmental Audit of the development and the Applicant's response to the recommendations in any audit report; and

(xiii) any other matter required by the Planning Secretary; and

(b) keep such information up to date, to the satisfaction of the Planning Secretary.

APPENDIX 1 SCHEDULE OF LAND

Wambo Mine Development Consent			
Lot Sec DP	Status	Lot Sec DP	Status
1//110084	Freehold	4//542226	Freehold
1//1089682	Freehold	4//720705	Freehold
1//114970	Freehold	45//753792	Freehold
1//709722	Freehold	46//753792	Freehold
1//720705	Freehold	49//753792	Freehold
1//241316	Freehold	5//542226	Freehold
1//616303	Freehold	5//1085145	Freehold
1//1177768	Freehold	50//753792	Freehold
1//1174490	Freehold	51//753792	Freehold
100//753792	Freehold	52//753792	Freehold
101//753792	Freehold	55//753792	Freehold
103//753792	Freehold	57//1074788	Freehold
104//753792	Freehold	58//753792	Freehold
109//753792	Freehold	60//753792	Freehold
110//753792	Freehold	61//753792	Freehold
111//753792	Freehold	62//753792	Freehold
112//753792	Freehold	63//753792	Freehold
113//753817	Freehold	64//753792	Freehold
118//753792	Freehold	66//753817	Freehold
129//755267	Freehold	67//753817	Freehold
131//1089157	Freehold	7//3030	Freehold
160//753817	Freehold	71//753817	Freehold
161//753817	Freehold	79//1074787	Freehold
170//823775	Crown	79//753821	Freehold
175//823775	Crown	82//548749	Freehold
18//753817	Freehold	83//548749	Freehold
2//1085145	Freehold	92//548749	Freehold
2//110084	Freehold	95//753792	Freehold
2//709722	Freehold	A//33149	Freehold
2//616303	Freehold	B//33149	Freehold
2//617852	Freehold	C//33149	Freehold
2//720705	Freehold	1//732501	Freehold
2//1174490	Freehold	2//732501	Freehold
208//753817	Freehold	3//732501	Freehold
22//753817	Freehold	4//732501	Freehold
220//1135537	Freehold	5//732501	Freehold
23//3030	Freehold	6//732501	Freehold

Wambo Mine Development Consent			
Lot Sec DP	Status	Lot Sec DP	Status
3//720705	Freehold	3//753817	Freehold
3//1177768	Freehold	4//753817	Freehold
3//1085145	Freehold	5//753817	Freehold
38//753792	Freehold	6//753817	Freehold
39//753792	Freehold	10//753817	Freehold
4//1085145	Freehold	73//753817	Freehold
149//753792	Freehold	Any Unidentified Historical Title Residues located within, between or adjacent to the above Parcels of Land	Freehold/Crown
16//755267	Freehold		
5//1085145	Freehold		

Roads

1. Wambo Mine Road.
2. Road within Lot 1 DP 616303.
3. Road bounded by Lot 220 DP1135537, Lot 83 DP548749, Lot 23 DP3030, Lot 129 DP 755267, Lot 1 DP110084, Lot 1089682 and Lot 1 DP114970.
4. Bounded by Lots 92 & 129 DP 755267.
5. Bounded by Lots 4 & 5 DP542226, Lot 2 DP616303, Lots 2 & 3 DP720705 and Lot 3 1177768.
6. Bounded by Lot 2 DP616303, Lot 5 DP542226, Lot 4 DP720705 and Lots 45 & 46 DP753792.
7. Bounded by Lot 1 DP1174490, Lots 2, 3 & 4 DP1085145 and Lot 175 DP823775.
8. Bounded by Lots 62, 63, 64, 95 & 118 DP753792, Lot 1 DP 1177768 and Lot 2 DP1174490.
9. Bounded by Lot 79 DP1074487, Lot 170 DP823775, Lots 49-51, 58, 118 DP753792, Lot 2 DP1085145 and Lot 2 DP1174490.
10. Bounded by Lot 79 DP1074487, Lots 18, 160 &161 DP753817 and Lots 49, 50 & 52 DP753792.
11. Bounded by Lot A DP33149, Lots 22, 66 & 71 DP753817 and Lot 2 DP 1174490.
12. Adjoining to the East and North of Lot 79 DP753821.
13. Wambo Road.
14. Road within Lot 208 DP753817.
15. Bounded by Lot A DP33149 and Lots 3, 4, 5, 6 & 113 DP753817.
16. Adjoining to the West and South of Lot 22 DP753817.

Wollombi Brook

1. Bounded by Lot 220 DP1135537, Lot 83 DP548749, Lot1 DP110084, Lot 1 DP241316 and Lot 7 DP3030.
2. Bounded by Lot 1 DP1089682 and Lots 1, 2, 3, 4, 5 & 6 DP732501.

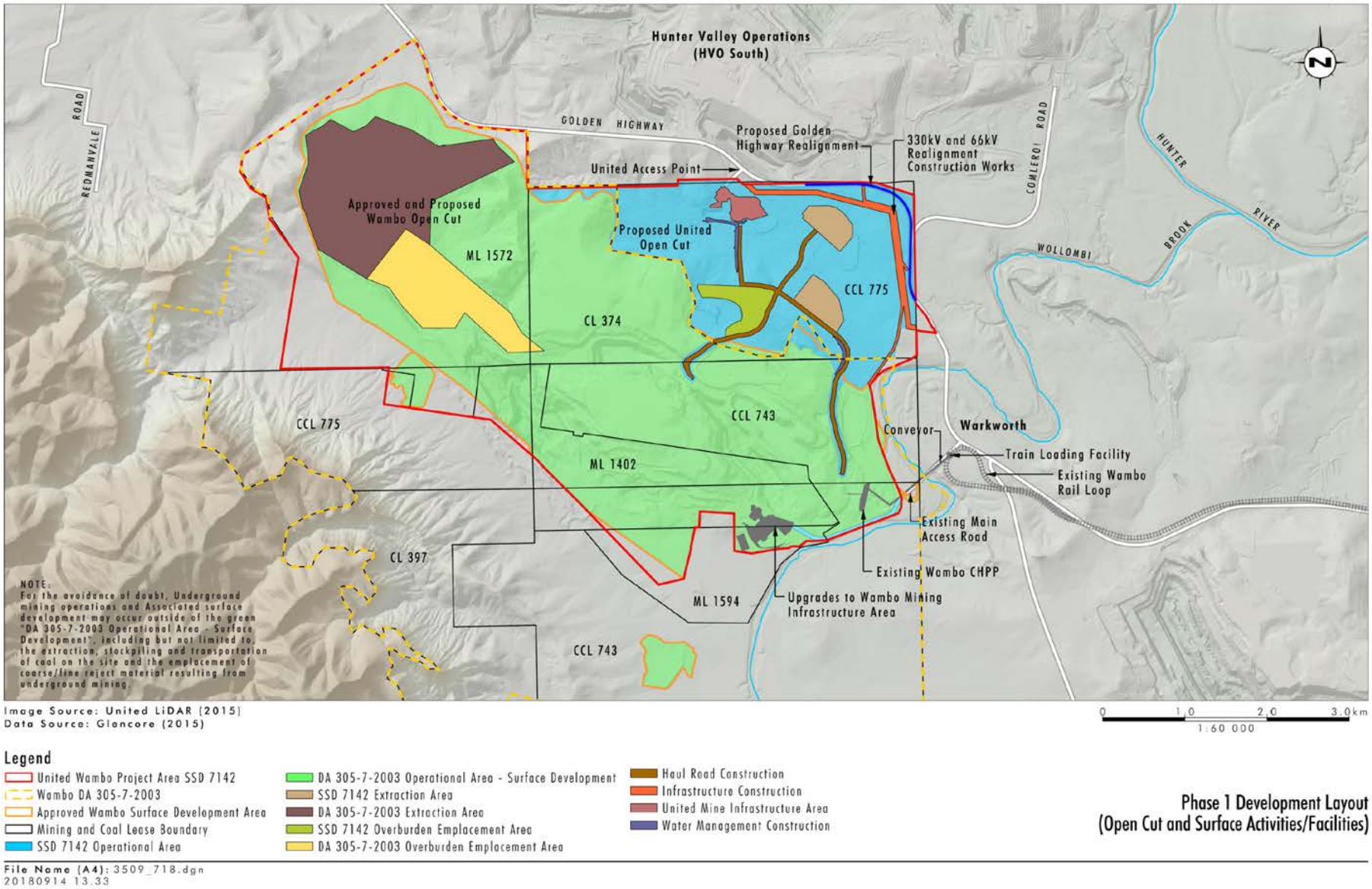

Figure 1: Development Layout – Phase 1

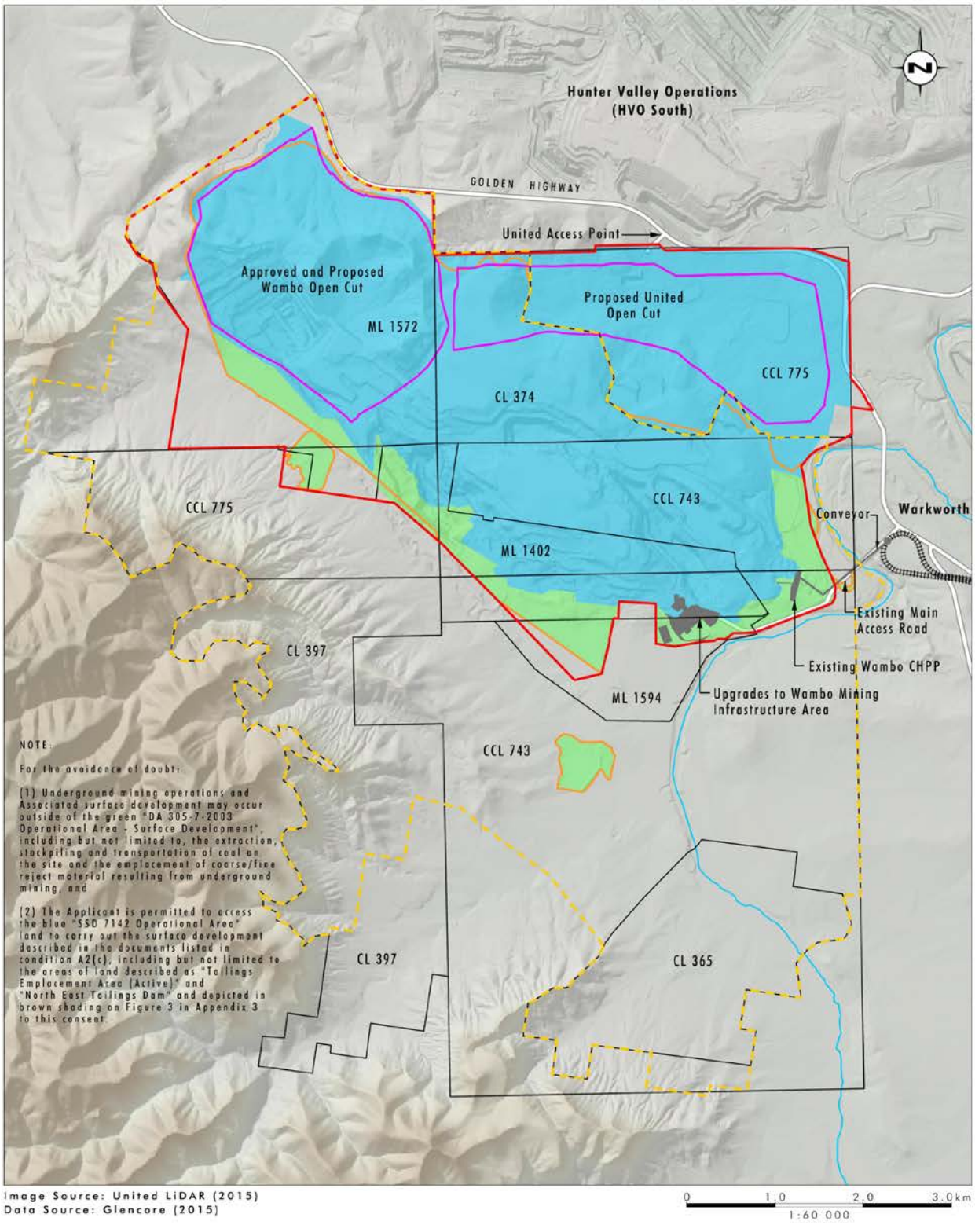

Figure 2: Development Layout – Phase 2 – Surface infrastructure

APPENDIX 3 APPROVED UNDERGROUND MINE PLAN

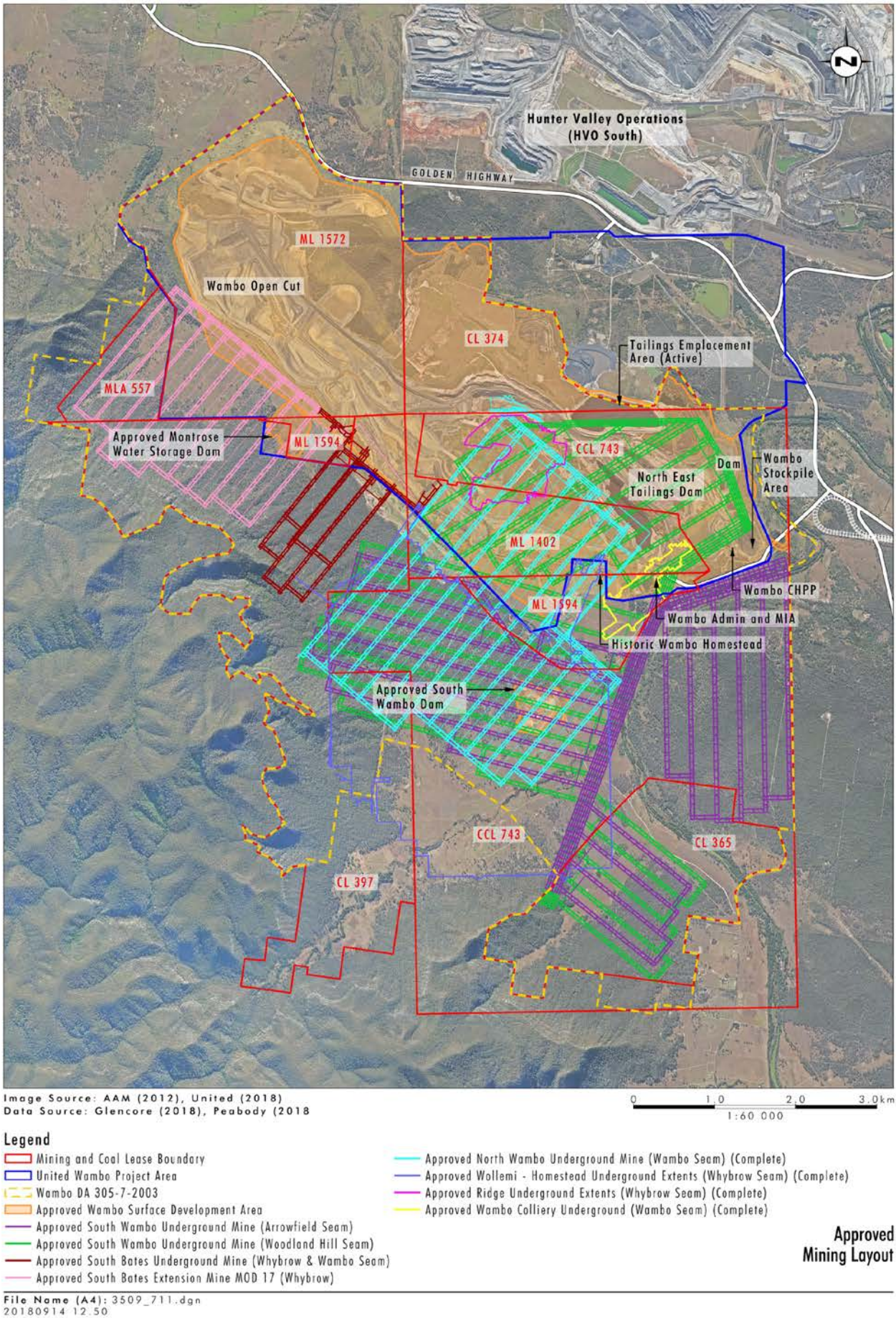

Figure 3: Approved Underground Mine Plan

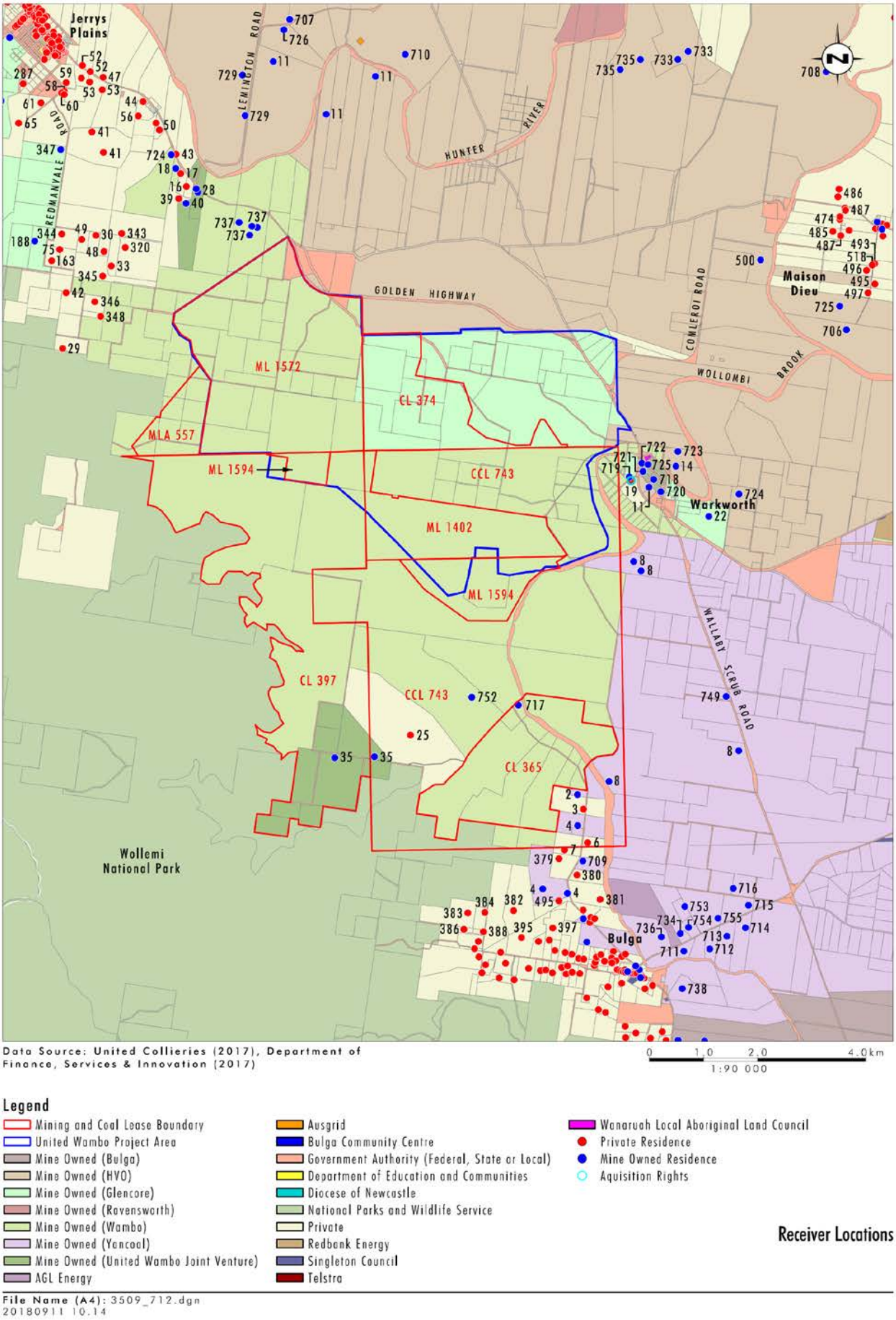

Figure 4: Receiver Locations

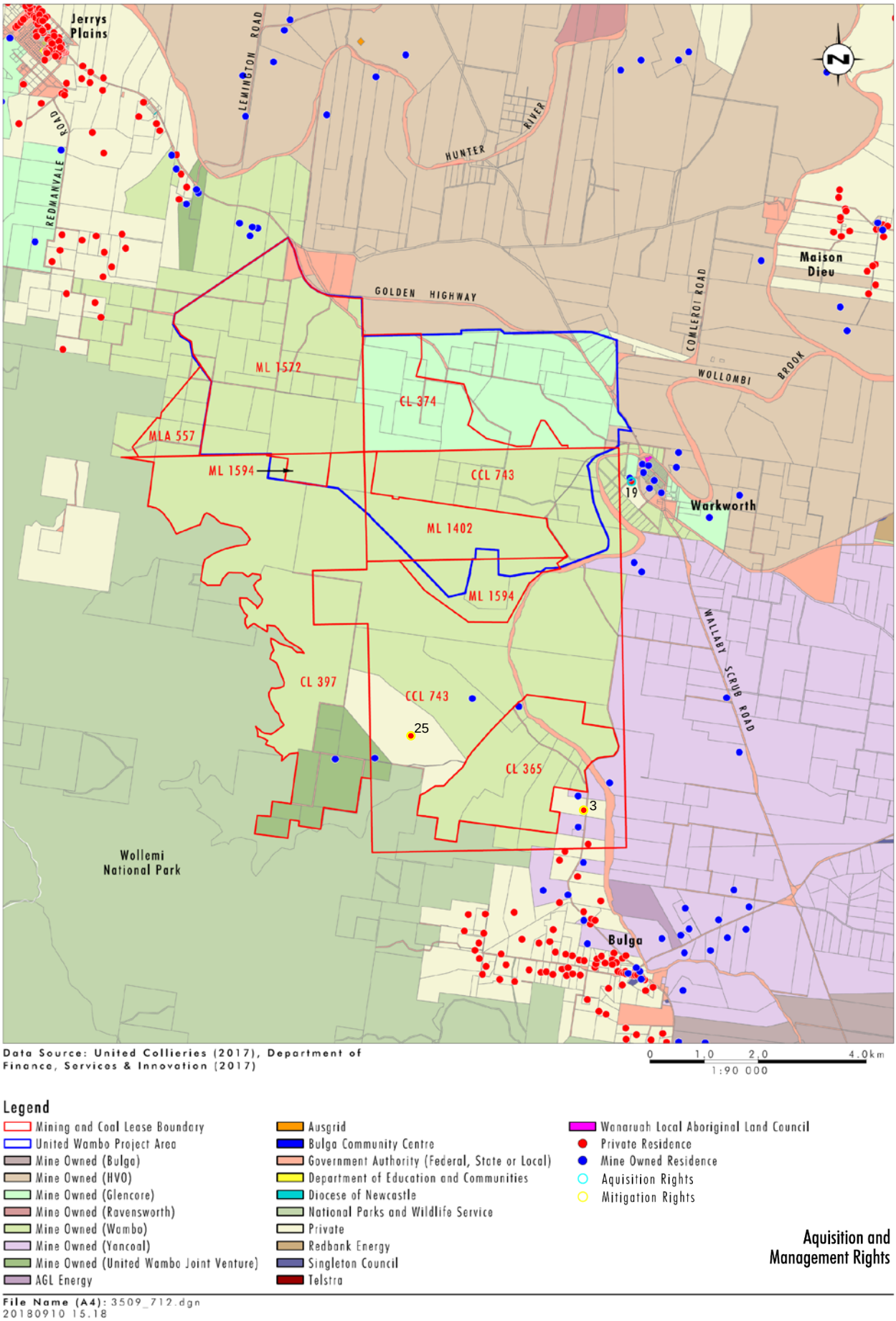

Figure 5: Receivers with Acquisition and/or Mitigation Rights

APPENDIX 5 NOISE COMPLIANCE ASSESSMENT

Applicable Meteorological Conditions

1. The noise criteria in condition B12 are to apply under all meteorological conditions except the following:

   (a) where 3°C/100 metres (m) lapse rates have been assessed, then:

      (i) wind speeds greater than 3 metres/second (m/s) measured at 10m above ground level;

      (ii) temperature inversion conditions between 1.5°C and 3°C/100m and wind speeds greater than 2m/s measured at 10m above ground level; or

      (iii) temperature inversion conditions greater than 3°C/100m.

   (b) where Pasquill Stability Classes have been assessed, then:

      (i) wind speeds greater than 3m/s at 10m above ground level;

      (ii) stability category F temperature inversion conditions and wind speeds greater than 2m/s at 10m above ground level;

      (iii) stability category G temperature inversion conditions.

Determination of Meteorological Conditions

2. Except for wind speed at microphone height, the data to be used for determining meteorological conditions shall be that recorded by the meteorological station required under condition B50.

Compliance Monitoring

3. Unless otherwise agreed by the Planning Secretary, this monitoring must be carried out in accordance with the relevant requirements for reviewing performance set out in the *NSW Industrial Noise Policy* (EPA, 2000), in particular the requirements relating to:

   (a) monitoring locations for the collection of representative noise data;

   (b) meteorological conditions during which collection of noise data is not appropriate;

   (c) equipment used to collect noise data, and conformity with Australian Standards relevant to such equipment; and

   (d) modifications to noise data collected, including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration,

   with the exception of applying appropriate modifying factors for low frequency noise during compliance testing. This should be undertaken in accordance with Fact Sheet C of the *NSW Noise Policy for Industry* (EPA, 2017).

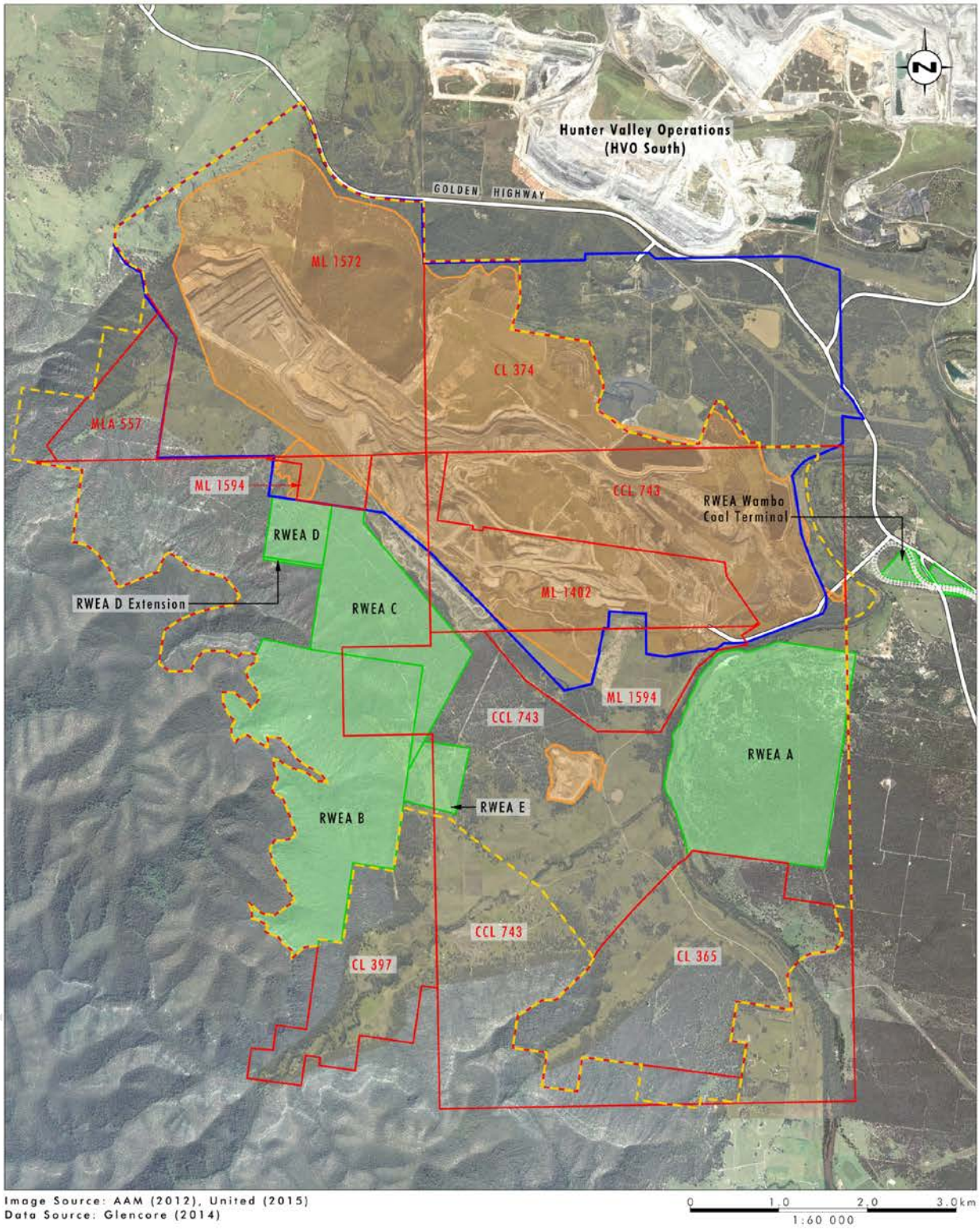

Figure 6: Biodiversity Offset Area

ATTACHMENT 1

PLANS 1 to 5

Plan 1A: Land Ownership
Plan 1B: Land Use
Plan 1C: Environmental Features
Plan 2: Final Landform and Rehabilitation Plan
Plan 3: Final Landform Cross-Sections
Plan 4: Mining Domains at Commencement of RMP Term (December 2020)
Plan 5: Mining Domains at End of RMP Term (December 2023)

ATTACHMENT 2

STAKEHOLDER CONSULTATION

Consultation for this RMP
(For Phase 2 Activities at the Wambo Coal Mine)

Stakeholder	Consultation
DPIE Water	Copy of draft Version 0 was provided to the DPIE Water via the DPIE - Major Projects Planning Portal 27 August 2020. DPIE requested the WMP be sent directly to nrar.servicedesk.@industry.com.au. A copy of the WMP was sent to NRAR 31 August 2020. No comments were received.
BCD	The previous version of the RMP (Mining Operations Plan September 2019 to December 2020) was attached to the Extraction Plan for Longwalls 21-24 submitted to DPIE for approval 28 July 2020. BCD provided comments on this version of the RMP requesting: *..that Table 28 and Table 29 include the minimum and maximum values measured in each zone as well as the average value.* Minimum and maximum (range) values have been added to Tables 15 and Table 16 of the RMP (Version1). Copy of draft Version 0 was provided to BCD via the DPIE - Major Projects Planning Portal 27 August 2020. Comments were received 20 October 2020. A summary of the comments and how they have been addressed is provided on the following pages.
Singleton Council	Copy of draft Version 0 was provided to the SSC 27 August 2020 via the DPIE - Major Projects Planning Portal. Comments were received 23 October 2020. A summary of the comments and how they have been addressed is provided on the following pages.
United (Glencore)	Internal discussions to ensure consistency between the Wambo United RMP and Wambo Coal Mine RMP documents.
Resources Regulator	Copy of draft Version 0 was provided to the RR via the DPIE - Major Projects Planning Portal 27 August 2020. No comments were received.
	Meetings were held 14 October and 2 November 2020 (via video) with United, Wambo and the RR to discuss key changes in the RMPs and Rehabilitation Cost Estimate (RCE) methodology for the two sites.
DPIE	Copy of draft Version 0 was provided to the DPIE for consultation via email on 27 August 2020. Comments were received on 20 November 2020 and are addressed in Version 3 of the RMP.

Evidence of Consultation
(As displayed on the Major Projects Planning Portal 30 September 2020)

Public Authority Response Summary

NSW Resources Regulator (PAE-9049954)

Status	Due Date
Pending Advice	Thursday, September 24, 2020

No response received

Water Group (PAE-9049955)

Status	Due Date
Closed	Thursday, September 24, 2020

Notes:
Please send post approval requests to NRAR as Landuse Enquiries deal solely with Pre Approvals.
nrar.servicedesk@industry.nsw.gov.au

Biodiversity and Conservation Division (PAE-9052206)

Status	Due Date
Pending Advice	Thursday, September 24, 2020

No response received

Singleton Council (PAE-9052207)

Status	Due Date
Pending Advice	Thursday, September 24, 2020

No response received

Reconciliation of BCD Comments and WCPL Responses

Comment	Response	Change Made to RMP
1. BCD recommends that the plant species composition of rehabilitation vegetation in each quadrat is compared against the diagnostic species for the targeted Plant Community Type, and against the vegetation needs of specific threatened species.	Noted.	Table 16 has been updated to state: *In addition to the completion criteria below, flora species composition of woodland rehabilitation will be compared to the characteristic species in each target plant community type and against the vegetation needs of threatened woodland species known or predicted from the local area to identify the need for additional planting or seeding.*
2. BCD recommends that rehabilitation completion is based on all monitoring sites meeting all completion criteria.	As average values are useful in describing the results of small sample sites located over a large area of the same or similar treatment, average values will be used for assessment against completion criteria where multiple sites sample rehabilitation of similar age and treatment. Individual site scores will also be reported, and investigation initiated at monitoring sites where completion criteria are not met to determine if low scores are representative of a broader area and additional actions are required.	Table 16 has been updated to state: *Average values will be used for assessment against completion criteria where multiple sites sample rehabilitation of similar age and treatment. Individual site scores will be reported and investigation initiated at sites where completion criteria are not met to determine if these poor scores are representative of a broader area and additional actions are required.*
3. BCD recommends that exotic plant cover remains less than 10% cover within woodland rehabilitation areas.	Noted.	Tables 14, 15 and 16 have been updated to require exotic plant cover to be less than 10%. Table 26 has also been updated with a revised trigger requiring action to be taken if exotic cover is greater than 10%.
4. BCD recommends that wording in Table 11 is revised so that the rehabilitation objectives meet the SMART principles.	WCPL considers that the rehabilitation objectives provided in Table 11 are appropriate for the required purpose. More detailed completion criteria which are considered to follow the SMART principles more closely are provided in Table 12 to Table 16. The text in the RMP has been updated to clarify this.	Section 3.1 has been updated to state: *The rehabilitation objectives in **Table 11** are considered to be broader objectives that cover specific aspects of rehabilitation. To complement these objectives, WCPL have developed performance indicators and preliminary completion criteria for each domain and rehabilitation phase based on the SMART principle.*

Comment	Response	Change Made to RMP
5. BCD recommends that the use of Landscape Function Analysis to measure landscape establishment is reconsidered in light of the recent paper by Erskine et al. (2013).	LFA forms one aspect of the monitoring program for the Wambo Coal Mine which currently includes regular LFA monitoring, Biometric monitoring, visual monitoring and subsidence inspections. WCPL is concerned that changing monitoring methods without a transition period may make it difficult to identify longer-term trends. WCPL therefore proposes a transition over the RMP term to phase out the LFA monitoring and transition to reliance solely on the other methods already implemented once a longer data period is available to draw meaningful trends.	Table 15 and Section 8.1.1 have been updated to include the following text: *Over the RMP term, WCPL will review the use of LFA as a monitoring method and transition to alternative monitoring methods for rehabilitated landscape establishment which may include soil monitoring, Biometric Vegetation Assessment and visual assessment as detailed below. The RMP will be updated to reflect any changes to the monitoring methodology.*
6. BCD recommends that the RMP includes a description on the objectives of the woodland rehabilitation corridors and the species that they are targeting.	Noted. Section 6.3.5 currently states: *In recognition of the importance of vegetation corridors to regional biodiversity, rehabilitation initiatives aim to increase the connectivity of vegetation in the region through the establishment of woodland corridors. Accordingly, the rehabilitation program has been designed to establish linkages between the rehabilitation areas, existing remnant vegetation and Wollemi National Park. In doing so, WCPL will address the issue of discontinuity in remnant vegetation across the Hunter Valley floor.* *Revegetation will include the use of native species with the potential to offer habitat resources for native wildlife (e.g. breeding, roosting/nesting or foraging resources), including threatened fauna species. The revegetation program will include the use of food tree species for the Glossy Black-cockatoo (e.g. Allocasuarina sp.).*	The text in Section 6.3.5 of the RMP has been updated to include the following (blue text): *The revegetation program will include the use of food tree species for the Glossy Black-cockatoo (e.g. Allocasuarina sp.) and consider providing for the food and habitat needs of other threatened woodland species.*
7. BCD recommends that the 'Threatened Species Management Protocol' includes the requirement to record threatened species, when they are encountered, and details of where they were seen, the context and the outcome.	Noted. The TSMP will be updated to include the requirement to record threatened species, when they are encountered, and details of where they were seen, the context and the outcome.	No changes to the RMP are proposed.

Comment	Response	Change Made to RMP
8. BCD recommends that all Biometric field data collected in rehabilitation areas is provided in the Annual Review.	A summary of all biometric field data collected in rehabilitation areas will be provided annually in the Annual Rehabilitation Report and Forward Program.	No changes to the RMP are proposed.
9. BCD recommends that at least ten large rocks per hectare are left on the surface in the woodland rehabilitation areas are left to provide shelter for native plants and animals.	Noted. Section 6.3.1 of the RMP currently states: *Habitat augmentation involves the establishment of habitat structures within Management Domains. This includes requires the relocation of surplus trees and rocks removed from the Mine footprint for relocation as habitat structures within the Management Domains.* Table 21 requires WCPL to: *Use structures such as tree hollows, logs and other woody debris, rock material to augment the habitat value of rehabilitation.*	Table 15 of the RMP has been updated to clarify that habitat augmentation would include the use of large rocks (i.e. as well as timber resources).
10. BCD recommends that the completion criteria in Table 16 for BBAM site variables are clearly defined to enable a reader to know how they were derived.	Noted.	Table 16 has been updated to state: *The completion criteria below were developed using Table 3 in BioMetric 2.0 Operational Manual assessment methodology (NSW DECC, 2008) which was designed to score Biometric vegetation plots based on the difference between the measured values and the benchmark values for each PCT. Benchmark values were determined by OEH (at the time of development) for each PCT and these were adapted to create aspirational but achievable targets.*
11. BCD recommends that the revegetation strategy referred to in the draft RMP is cited in full, and a copy is provided with the RMP.	The "revegetation strategy" is not a separate document but instead refers to the general rehabilitation methodologies outlined in Section 6.3 (in particular, Sections 6.3.5 and 6.3.6) of the RMP.	No changes to the RMP are proposed.
12. BCD recommends that the RMP includes the date of when Phase 2 of the Wambo Mine commences.	Phase 2 is anticipated to commence on 1 December 2020 (consistent with the proposed commencement of the RMP).	Commencement date of Phase 2 specifically added to Section 1.1.

Comment	Response	Change Made to RMP
13. BCD recommends that Section 1.3.2 is reworded to make clear that rehabilitation to pasture and woodland will be on-going during mining operations.	Noted. WCPL notes that Section 6.1 of the RMP states: *Areas that are disturbed by the Mine will be progressively rehabilitated following mining activities in accordance with DA 305-7-2003. Revegetation will be progressive, commencing soon after the completion of landform shaping.*	Wording of the last paragraph in Section 1.3.2 has been revised to the following: *It is proposed to progressively rehabilitate the land to a combination of pasture and woodland as mining of individual areas is completed (i.e. rehabilitation will be progressive and on-going during mining operations).*
14. BCD recommends that Figure 2 'Wambo Coal Mine General Arrangement' is revised to make the Wambo Coal Pty Limited land easier to identify.	Noted.	Figure 2 has been updated to make WCPL-owned land more obvious.

Reconciliation of Singleton Council Comments and WCPL Responses/Actions

Comment	Response	Change Made to RMP
General Comments		
Specifically, further clarity is required on:	-	-
- The relationship between the Rehabilitation Strategy required under SSD 7142 and those approved under DA 305-7-2003 MOD 16 and DA 177-8-2004 MOD 3, in particular how the final landforms and final land uses will integrate;	Final landforms and final land uses are proposed in the documentation required under the relevant approvals for both Projects (i.e. the United Wambo Joint Venture and the Wambo Underground Mine). To allow for final landforms and final land uses to be integrated, WCPL will continue to consult with relevant authorities and stakeholders (e.g. surrounding land owners, United etc.) to refine the final landform/land use concepts. WCPL notes that Singleton Council states: *It is good to see that Figure 5 shows an integrated landform with the neighbouring United Wambo Project.*	No changes to the RMP are proposed.
- The relationship between Phase 1, Phase 2 and Phase 3 rehabilitation planning, the rationale for the various phases and the reasoning for limiting the Phase 2 Plan to three (3) years;	Please see responses made to specific comments below.	Please see responses made to specific comments below.
- There is a general lack of clarity around the established (or existing approved) final land use, the rehabilitation outcomes and the post closure land use(s); and	Please see responses made to specific comments below.	Please see responses made to specific comments below.
- The relationship between this Plan and the Mine Exit Strategy required under condition 95.	The Wambo Coal Mine does not have a requirement to prepare a Mine Exit Strategy under DA 305-7-2003 or DA 177-8-2004. Notwithstanding, when United prepares the Mine Exit Strategy for the United Wambo Open Cut Mine, WCPL will provide input on the Mine Exit Strategy to avoid any misalignment with commitments made in the Wambo Coal Mine RMP.	No changes to the RMP are proposed.

Comment	Response	Change Made to RMP
The Rehabilitation Plan does not provide detail on how these relationships will be achieved, nor does it establish how, a sustainable final landform and uses that co-exist with surrounding land uses would be achieved. The Plan lacks discussion on the existing surrounding land uses, or the future proposed land uses of surrounding operations and surrounding landowners, and how the final landform proposed in the Plan will accommodate and/or synergise with those uses, including co-existence of uses. Council acknowledges that the final land use domains in the Plan include rehabilitation (pasture and woodland) and mine infrastructure areas. It is important to note that the return of rehabilitation areas to pasture and woodland are not defined land uses under any land use planning definitions. The mine is located on land zoned RU1, which provides for a range of permissible land uses. If rehabilitation activities are signed off, the range of land uses permissible under the RU1 zoning must be supportable through landform design. The Plan does not consider whether the range of permissible post mining land uses are achievable. As such, landform design, stability, safety and sustainability, as documented through this process, should cater for a suite of possible final land uses.	Section 2.2 of the RMP states: *… Final land use will comprise of:* • *remnant woodland vegetation;* • *native open woodland vegetation; and* • *agricultural pastureland.* Plan 1B depicts the existing surrounding land uses. Future proposed land uses of the surrounding operations and surrounding landowners are not under the control of WCPL and therefore cannot be presented with any certainty. Section 2.3 of the RMP states: *The proposed final landform and final land use are shown in Figures 4 and 5. This is in accordance with the proposed final landform detailed in the Project EIS and the Synoptic Plan for integrated landscape rehabilitation across the Upper Hunter Valley (NSW Department of Mineral Resources, 1999).* *Notwithstanding the above, the preferred final landform concepts for the Mine will be revised and refined throughout the life of the Mine, utilising the outcomes of ongoing consultation with relevant authorities, stakeholders and the results of rehabilitation trials.* As described above, WCPL will continue to consult with relevant authorities and stakeholders (e.g. surrounding land owners, United etc.) to refine the final landform/land use concepts.	No changes to the RMP are proposed.

Comment	Response	Change Made to RMP
Council also acknowledges that the Plan is limited to a time period of 2020 to 2023. It is not clear why this is the case. An explanation in the Plan for the short planning duration, along with a timeline for future planning would be beneficial.	As required by Condition B108, of DA 305-7-2003, the RMP must: *(l) include detailed scheduling for progressive rehabilitation to be initiated, undertaken and/or completed over the next three years.* As such, the RMP focuses on the time period of 2020 to 2023 (i.e. the next three years). Notwithstanding the above, the RMP also includes final land use domains and a Final Landform and Rehabilitation Plan (Plan 2). It is worth noting that, as an underground mining operation, the majority of rehabilitation activities will not be able to be undertaken until mine closure as these activities are associated with surface facilities required for the life of mine.	No changes to the RMP are proposed.
Specific Comments		
Section 1.1 identifies that the Phase 2 mining operations include those described in DA 305-7-2003 as states that Phase 2 *the phase of the development that comprises underground mining operations at Wambo underground mine, the operation of Wambo infrastructure within the green operational area identified in Figure 2 of Appendix 2 and associated surface development*. There is no Figure included in the Plan that shows the relevant elements of Phase 2. There is no description in the Plan of the rationale for phasing the operations of the mine.	The relevant elements of Phase 2 are outlined in Figure 6 and Plan 4. The phases were defined during the assessment process of the United Wambo Joint Venture Project. The phases (in relation to the Wambo Coal Mine) are defined in DA 305-7-2003 as follows: *Phase 1: The phase of the development that comprises open cut mining operations at Wambo open cut mine, underground mining operations at Wambo underground mine and the operation of Wambo mine infrastructure (including minor upgrades to this infrastructure) within the green operation area identified in Figure 1 of Appendix 2.* *Phase 2: The phase of the development that comprises underground mining operations at Wambo underground mine, the operation of Wambo mine infrastructure within the green operational area identified in Figure 2 of Appendix 2 and associated surface development.* *Phase 3: The phase of the development following the cessation of underground mining operations that includes mine closure.*	No changes to the RMP figures are proposed. A summary of the mine phases has been added to Section 1.1.1 of the RMP.

Comment	Response	Change Made to RMP
Section 2.5.1 lists the final land use and mining domains for Phase 2. However, this table appears to include areas that are outside the underground mining operations, and the area depicted in green on Figure 2 of the approval. It is not clear the extent of this overlap, nor how the activities proposed in the Plan will inter-relate with those in SSD 7142.	Table 2 and Figure 4 of the RMP depict some small areas outside of the underground mining operations as a result of exploration activities and development of the North Wambo Creek Diversion. With regards to interaction with activities proposed in SSD 7142, WCPL will be responsible for rehabilitation of any subsidence impacts identified within the "SSD 7142 Operation Area".	Section 2.5.1 has been updated to state: *There are some small areas of Mining Domain 1 (i.e. Mine Infrastructure Areas) that are outside the limits of the underground mining operations and operational area as a result of exploration activities and development of the North Wambo Creek Diversion. These areas have been included for completeness and will be rehabilitated to Final Land Use Domain D (i.e. Rehabilitation [Mixed Pasture/Woodland]).*
Section 3 defines the overall objective of the final rehabilitated landform to be safe, non-polluting and stable landform that is compatible with the surrounding landscape and meets the requirements of post mining land use. It is good to see that Figure 5 shows an integrated landform with the neighbouring United Wambo Project.	Noted.	-
However, council would like to make the following comments in relation to Table 11 and Table 12 in Section 3:	-	-
- The rehabilitation objectives for Domain 1, 2 4, 8 are the same, despite there being different levels of complexity and potentially variable final land uses;	There is overlap between rehabilitation objectives as these are developed based on final land uses (and a mining domain may have multiple final land uses based on the proposed final landform).	No changes to the RMP are proposed.
- The objectives listed in Table 11 are not replicated in full in Table 12;	Rehabilitation objectives have been split over the various phases of rehabilitation development (i.e. throughout Tables 12 to 16).	No changes to the RMP are proposed.
- Table 11 and Table 12 include domains that are relevant to the United Wambo Project, it is not clear the extent to which these two operations and the respective plans of management inter-relate.	Tables 12 to 16 outline the stage of rehabilitation at which liability associated with these domains will be exchanged between WCPL and United.	A detailed split of the responsibilities associated with each of the mining titles has been prepared and presented to the NSW Resources Regulator. A cover letter summarising the responsibilities and other commitments has been included in the RMP.

Comment	Response	Change Made to RMP
Section 11 identifies ongoing review of the Plan however does not describe how this will take place, the frequency of review, what aspects of the Plan would be reviewed or how adaptive management practices would be identified and implemented should the review identify departure from adopted outcomes.	Under the requirements of the *Consultation Code of Practice: Rehabilitation Management Plans for Large Mines*, WCPL is required to prepare an Annual Rehabilitation Report and Forward Planning Program (this will likely be a component of WCPL's Annual Review). If the Annual Rehabilitation Report and Forward Planning Program identifies issues associated with rehabilitation, it will provide recommendations to address these issues (e.g. including adaptive management practices if necessary). If the results of the Annual Rehabilitation Report and Forward Planning Program (or in the case of any other circumstances as outlined in Section 11.1 of the RMP) require major amendments to the RMP, WCPL would undertake these amendments in consultation with the appropriate regulatory authorities and stakeholders.	No changes to the RMP are proposed.

Comment	Response	Change Made to RMP
Singleton Council has prepared a Local Strategic Planning Statement (LSPS), as required under the provisions of Part 3 of the Environmental Planning and Assessment Act 1979. This LSPS was exhibited in April/May 2020, and adopted by Council at its July 2020 Council Meeting, and supersedes the Singleton Land Use Strategy. This Plan should be updated to reflect the contemporary strategic land use planning context identified in the LSPS.	WCPL acknowledges that the LSPS identifies the following opportunities for Singleton to grow and innovate of relevance to the Wambo Coal Mine: • *Delivery of leading practice outcomes for post-mined land, which would involve collaborative pre-planning and investigation.* • *Protecting, conserving and better utilisation of the natural, historic and cultural landscapes of the LGA in a manner that is sustainable and respectful and does not detract from significance and meaning associated with the landscapes.* In consideration of the above, the rehabilitation objectives outlined in Table 11 of the RMP include the following commitments: • Mined land will be re-contoured to a landform compatible with the surrounding natural landscape. • Final landforms are consistent with and complement the topography of the surrounding region to minimise the visual prominence of the final landforms in the post mining landscape. • Land affected by subsidence will be stable and will not present a greater safety or environmental hazard than surrounding land or present a risk to future final land use options.	Section 2.4.1 of the RMP has been updated to note these opportunities as outlined in the LSPS.
Table 12 identifies the completion criteria to be adopted for each domain. Under Mine Infrastructure Areas reference is made to the disposal of materials on site, in appropriate coarse reject emplacement areas. Coarse reject emplacements are not identified in the Plan as a specific closure domain with specific management controls. The Plan does not discuss the impact of these emplacements, or their use for disposal of contaminated materials, on various environmental factors, including water quality.	As described in Table 1 of the RMP: *Coarse rejects and tailings would be incorporated, encapsulated and/or capped within open cut voids (that would comprise part of United's operations during Phase 2).* This is an approved element of the operation of both the Wambo Coal Mine and the United Wambo Open Cut Coal Mine.	No changes to the RMP are proposed.

Comment	Response	Change Made to RMP
Section 6.3.2 identifies a number of activities that would be undertaken to decommission mining infrastructure and contaminated materials, including disposal of such in mining voids, tailings emplacements and coarse reject emplacements. Council understands that the operational closure of these facilities would fall under the approved operations of the United Wambo Project. As such, it is not clear the extent to which the rehabilitation planning documents required under SSD 7142 incorporate the closure planning elements needed under DA 305-7-2003.	As noted by Singleton Council, the operational closure of the mining voids, tailing emplacements and coarse reject emplacements falls under the approved operations of the United Wambo Open Cut Coal Mine and, as such, is not discussed in detail in the Wambo Coal Mine Phase 2 RMP.	No changes to the RMP are proposed.
Section 11 discusses how the Plan will be implemented. As described above, under general comments, it is difficult to identify the relationships between existing approved final uses, the final uses proposed at adjacent operations and the final land uses approved for this Project. The section does not provide any information on these linkages, including how these will be created or sustainable.	These linkages are described in other sections of the RMP. Section 11 details the responsibilities for implementation of the RMP and includes a requirement for the Technical Services Manager and Manager: Environment and Community to liaise with relevant stakeholders.	No changes to the RMP are proposed.

Comment	Response	Change Made to RMP
Section 5, Table 25 and Table 26 refer to weather and climatic influences as threats and risks associated with successful rehabilitation. Council acknowledges the identification of flooding, bushfire and drought and real and credible threats to rehabilitation and landform success. It is recommended that the Plan go further to identify long term planning and contingency measures that would be implemented in the event that climate change impacts identified by modelling completed by AdaptNSW are experienced. AdaptNSW climate change modelling can be found at https://climatechange.environment.nsw.gov.au/.	WCPL has reviewed the AdaptNSW climate change modelling (and in particular, the snapshot provided for the Hunter region) and acknowledges that, of relevance to the Wambo Coal Mine, in the near future (2020 – 2039): • Maximum temperatures are projected to increase by 0.4 – 1.0°C. • Minimum temperatures are projected to increase by 0.5 – 0.9°C. • Rainfall is projected to decrease in spring and winter. • Average fire weather risk is projected to increase in summer, spring and winter. WCPL notes that the key risks to rehabilitation associated with the above changes is the increase in fire weather risk. WCPL has an existing Bushfire Management Plan that was prepared in consultation with the Rural Fire Service and Singleton Council to manage this risk throughout the life of the mine.	Section 5 of the RMP has been updated to include text outlining the potential risks to rehabilitation associated with climate change (as predicted by the AdaptNSW climate change modelling).
The Plan does not include any discussion on how the Rehabilitation Objective to minimise adverse socio-economic effects associated with mine closure would be achieved under the current, or future, Plan.	This will be addressed in future RMPs.	Section 3.1 of the RMP has been updated to state: *As operations approach completion at the Mine (i.e. within five years of closure), this RMP will be updated to provide further detail on measures to be taken to minimise the potential adverse socio-economic effects associated with mine closure.*

Comment	Response	Change Made to RMP
The Plan does not include how the progressive landform design would support any future land uses. Further clarification is required regarding the relationship between rehabilitation and mine closure, the timing of both, how the rehabilitated landform will achieve the approved final land uses and, given the life proposed for this Plan, the details that would be provided in subsequent Rehabilitation Management Plans.	It is worth noting that, as an underground mining operation, the majority of rehabilitation activities will not be able to be undertaken until mine closure as these activities are associated with surface facilities required for the life of mine. Notwithstanding the above, Section 6.1 of the RMP states: *Areas that are disturbed by the Mine will be progressively rehabilitated following mining activities in accordance with DA 305-7-2003. Revegetation will be progressive, commencing soon after the completion of landform shaping.*	No changes to the RMP are proposed.
Additionally, further clarification is required on the adaptive management strategies that will be implemented if, during operations and/or review of the Plan, the Rehabilitation Objectives in Table 10 of the approval are not being met.	Under the requirements of the *Consultation Code of Practice: Rehabilitation Management Plans for Large Mines*, WCPL is required to prepare an Annual Rehabilitation Report and Forward Planning Program (this will likely be a component of WCPL's Annual Review). If the Annual Rehabilitation Report and Forward Planning Program identifies issues associated with rehabilitation, it will provide recommendations to address these issues (e.g. including adaptive management practices if necessary).	No changes to the RMP are proposed.
The Plan does not include the following, as required by the conditions of consent:	-	-

Comment	Response	Change Made to RMP
- A description of how the rehabilitation of the site would be integrated with rehabilitation of the Wambo train loading facility and SSD 7142 United Wambo open cut coal mine;	SSD 7142 does not require this to be completed until five years prior to closure of the United Wambo Open Cut Project. Notwithstanding, WCPL has considered the rehabilitation of the United Wambo Open Cut Coal Mine and has integrated these activities throughout the RMP. With regards to integration of rehabilitation with the Wambo train loading facility, this is included in Section 6.3.2 of the RMP. The RMP also commits to continuing to consult with relevant authorities and stakeholders (e.g. surrounding land owners, United etc.) to refine the final landform/land use concepts and ensure an integrated final landform.	Section 6.3.2 of the RMP has been updated to more clearly describe how the rehabilitation of the site would be integrated with rehabilitation of the Wambo train loading facility: ***Train Loading Facility*** *Subject to consultation with relevant stakeholders at the time of decommissioning (e.g. DPIE), rehabilitation of the train loading facility would be integrated and undertaken in concert with rehabilitation of the key Mine Infrastructure Areas that are required for the life of the mine (e.g. CHPP). Areas in the vicinity of the rail loop will be revegetated with native species characteristic of the Warkworth Sands Woodland (such as Angophora floribunda and Banksia integrifolia) to compensate for the removal of a small portion of Warkworth Sands Woodland.*
- Detailed tailings management strategy that includes: (iii) a strategy for treating and/or emplacing all tailings material generated by the Wambo CHPP; and (iv) (ii) timing for rehabilitation of all tailings storage facilities, in order that final landform and land use objectives can be achieved in a timely manner;	Emplacement of tailings material generated by the Wambo CHPP is described in Section 6.3.1 of the RMP. The timing for the capping (i.e. commencement of rehabilitation) of each of the tailings facilities that will cease active tailings disposal during the RMP Term is also provided.	No changes to the RMP are proposed.

Comment	Response	Change Made to RMP
- Detailed scheduling for progressive rehabilitation to be initiated, undertaken and/or completed over the next three years.	Section 6.1 of the RMP details the areas to be rehabilitated over the next three years and states: *Areas that are disturbed by the Mine will be progressively rehabilitated following mining activities in accordance with DA 305-7-2003. Revegetation will be progressive, commencing soon after the completion of landform shaping.* WCPL notes that, as an underground mining operation, the majority of rehabilitation activities will not be able to be undertaken until mine closure as these activities are associated with surface facilities required for the life of mine. As such, a detailed schedule of rehabilitation timing is considered to be unnecessary.	No changes to the RMP are proposed.
Council recommends that the Plan be updated to include a detailed schedule of rehabilitation timing.	WCPL notes that, as an underground mining operation, the majority of rehabilitation activities will not be able to be undertaken until mine closure as these activities are associated with surface facilities required for the life of mine. As such, a detailed schedule of rehabilitation timing is considered to be unnecessary.	No changes to the RMP are proposed.

Reconciliation of DPIE Comments and WCPL Actions

Development Consent Condition	Sufficient (Yes/No/Partial)	Document reference and comment	Action Required	WCPL Action Taken
Part B Condition 69				
The Applicant must implement the Biodiversity Offset Strategy set out in Table 9 and shown in Appendix 6, to the satisfaction of the Planning Secretary.	Yes	The following three conditions are mentioned however would be required to be signed and approved in the BMP, no further action within the RMP however it is ideal to mention what is taking place to assist the reader.		
Part B Condition 70				
Table 9: Biodiversity Offset Strategy Remnant Woodland Enhancement Area A 424 ha Remnant Woodland Enhancement Area B 454 ha Remnant Woodland Enhancement Area C 211 ha Open Woodland Revegetation 270 ha Remnant Woodland Enhancement Area D 46 ha Remnant Woodland Enhancement Area D Extension 2 ha Remnant Woodland Enhancement Area E 41.6 ha Remnant Woodland Enhancement Area for the Wambo Coal Terminal As shown in Appendix 6 Notes: • The area of Open Woodland Revegetation in Table 9 was previously 1,570 hectares. Under EA (Mod 16) this obligation was reduced to 270 hectares, with the remaining area being taken up by SSD 7142. • Additional offsets may be required by the Planning Secretary under condition B3.	Yes			

Development Consent Condition	Sufficient (Yes/No/Partial)	Document reference and comment	Action Required	WCPL Action Taken
Part B Condition 71				
The land used to satisfy the requirement to establish Open Woodland Revegetation under condition B69 cannot be the same land as land used for Open Woodland Revegetation or Ecological Mine Rehabilitation under SSD 7142. If the United Wambo open cut coal mine does not proceed to Phase 2 (as defined with SSD 7142), then the Applicant must establish an additional 1300 hectares of Open Woodland Revegetation, as otherwise required under SSD 7142.	Yes			
Part B Condition 105				
The Applicant must rehabilitate the site to the satisfaction of the Resource Regulator. This rehabilitation must be generally consistent with the proposed rehabilitation activities described in the documents listed in condition A2(c) and must comply with the objectives in Table 10.	No	Table 10 within the Conditions of Approval set's out clear rehab objectives against clear features. Each of these objectives should be used exactly verbatim within the Rehab Management Plan. Each Objective in Table 10 needs to be placed against the correct Domain with a completion criteria addressing how the objective is going to be meet. Each objective from Table 10 needs to be included within each of the following tables within the Rehab Management Plan Tables 11, 12, 13, 14, 15 and 16.	Copy table 10 objectives verbatim into the relevant sections of this Rehab Management Plan.	

Development Consent Condition	Sufficient (Yes/No/Partial)	Document reference and comment	Action Required	WCPL Action Taken
<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></table>	No	The wording non-polluting is not used at all through the tables against the Domains.	Change words within rehab objectives of each domain to: • Safe, Stable; and • non-polluting. Then address this within the completion criteria against the rehab objectives by stating the domain will be non-polluting. For example. In table 11 of the RMP, the objectives state “Rehabilitated landforms will be designed to shed water safely without causing excessive erosion, jeopardising landform geotechnical integrity or increasing pollution of downstream watercourses” This should be revised to ‘non-polluting’. In table 12 of the RMP – the objective is not included and the completion criteria states “All water discharged from site meets relevant volumes and quality as specified by EPL 529”. This is only two examples however this is repeated throughout the completion criteria’s	The text in Section 3.1 of the RMP (above Table 3.1) has been revised slightly to match this wording verbatim. WCPL acknowledges that the overall objectives for rehabilitation are to ensure that all areas of the site affected by the development are rehabilitated to a safe, stable and non-polluting landform that is compatible with the surrounding landscape and fit for the intended post mining land use. Table 11 is intended to provide further detail beyond these overall objectives.

Development Consent Condition	Sufficient (Yes/No/Partial)	Document reference and comment	Action Required	WCPL Action Taken
Areas proposed for native ecosystem re-establishment • Establish a minimum of 270 hectares of Open Woodland Revegetation to satisfy condition B69. • Establish areas of self-sustaining: - Riparian vegetation, within any diverted and/or re-established creek lines and retained water features; - Habitat resources for threatened flora and fauna species; and - Vegetation connectivity and wildlife corridors, as far as is reasonable and feasible.	No	The RMP discusses the need for the objective and the Completion Criteria within Table 15 speaks about what needs to be achieved, however I can't locate the objectives as detailed in the approval conditions in section 3.1. Completion criteria needs to meet objectives as conditioned.	Please add the objectives verbatim from Table 10 within the appropriate domains and tables of the RMP.	Tables 11, 15 and 16 of the RMP have been updated to include the objectives verbatim from Table 10 of the Development Consent.

Development Consent Condition	Sufficient (Yes/No/Partial)	Document reference and comment	Action Required	WCPL Action Taken
<table><tr><td>Final landform</td><td>• Stable and sustainable for the intended post-mining land use/s. • Consistent with and complement the topography of the surrounding region to minimise the visual prominence of the final landforms in the post mining landscape. • Maximise surface water drainage to the natural environment (excluding final void catchment).</td></tr></table>		Cant find Consistent with and complement the topography of the surrounding area. Cant find any wording for maximise surface water drainage.	Include the objectives verbatim from table 10. Place against the correct domains within the tables and address with a completion criteria. e.g. Completion Criteria, Final landform will be consistent with and complement the topography of the surrounding region. Final land will maximise surface water drainage to the natural environment.	Table 11 states that one of the objectives is "*Final landforms are consistent with and complement the topography of the surrounding region to minimise the visual prominence of the final landforms in the post mining landscape.*" The relevant domains in Tables 11 to 16 have been updated such that the text now states: *Rehabilitated landforms will be designed to maximise surface water drainage to the natural environment and shed water safely without causing excessive erosion, jeopardising landform geotechnical integrity or increasing pollution of downstream watercourses.*

Development Consent Condition		Sufficient (Yes/No/Partial)	Document reference and comment	Action Required	WCPL Action Taken
Rehabilitated materials	• 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.		The RMP has provided a lot of detail about Topsoil management. Seeds and substrates appears to be missing.	Include the objectives verbatim from table 10. Place against the correct domains within the tables and address with a completion criteria.	Section 6.3.1 of the RMP has been updated to match the verbatim wording of this objective. Domains D, E and G in Tables 11, 15 and 16 have been updated to include this objective.
Surface infrastructure of the development	• Decommissioned and removed, unless the RR agrees otherwise. • All surface infrastructure sites are to be revegetated with suitable local native plant species to a landform consistent with the surrounding environment.	Yes			
Portals and vent shafts of the development	• To be decommissioned and made safe and stable. • Retain habitat for threatened species (e.g. bats), where practicable.	Yes	Objective of retain habitat for threatened species is not present within the section of the RMP that looks after portals, vents and shafts.		Objectives for Domain 5 (Underground Mining Area) now include retaining portals and vent shafts as habitat for threatened species, where practicable.

Development Consent Condition		Sufficient (Yes/No/Partial)	Document reference and comment	Action Required	WCPL Action Taken
Watercourses subject to mine water discharges and/or subsidence impacts or environmental consequences that are greater than negligible	• Hydraulically and geomorphologically stable. • Aquatic ecology and riparian vegetation that is the same or better than prior to commencement of mining.	Yes	Although wording is not used exactly from table 10.	Include the objectives verbatim from table 10. Place against the correct domains within the tables and address with a completion criteria	Wording has been updated throughout to be consistent with Table 10 of the Development Consent.
Water quality	• 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.	Partial	Although water quality is discussed through the document the objective is not discussed and not committed too within the completion criteria.	Include the objectives verbatim from table 10. Place against the correct domains within the tables and address with a completion criteria. Completion Criteria: Water retained on site is fit for the intended post mining use. If water is discharged from site it will be suitable for all receiving environments	Tables 11 to 16 have been updated where relevant with wording verbatim from Table 10 of the Development Consent.
Built features damaged by mining operations	• Repair to pre-mining condition or equivalent unless the: - owner agrees otherwise; or - damage is fully restored, repaired or compensated for under the *Coal Mine Subsidence Compensation Act 2017*.	Partial	Could not find this rehab objective within section 3 of the RMP.	Include the objectives verbatim from table 10. Place against the correct domains within the tables and address with a completion criteria.	Additional text has been added in Section 3.1 to directly address this condition.

Development Consent Condition	Sufficient (Yes/No/Partial)	Document reference and comment	Action Required	WCPL Action Taken
Cliffs, minor cliffs, rock face features and steep slopes • No additional risk to public safety compared to prior to mining.	Partial	Appears to be meet as safety is discussed throughout the document, but is not directly used as a rehab objective. Also not mentioned in the completion criteria.	Include the objectives verbatim from table 10. Place against the correct domains within the tables and address with a completion criteria.	Additional text has been added in Section 3.1 to directly address this condition.
Community • Ensure public safety. • Minimise adverse socio-economic effects associated with mine closure.	Partial	Safety as discussed is meet within the document just need to bring forward into a completion criteria. Socio-economic effects are also not addressed within this document for mine closure	Include the objectives verbatim from table 10. Place against the correct domains within the tables and address with a completion criteria.	As this objective applies to all domains, this was addressed in Section 6.3.2. This text has now also been reproduced in Section 3.1. Section 3.1 has also been updated to include additional commitments regarding the minimisation of adverse socio-economic effects associated with mine closure.
Part B Condition 106				
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.	No	Not until all objectives in the table 10 are meet and have appropriate completion criteria against them.	Address the above comments.	Complete as addressed above.

Development Consent Condition	Sufficient (Yes/No/Partial)	Document reference and comment	Action Required	WCPL Action Taken
Part B Condition 107				
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.	Yes	Document provides good detail in progressive rehab. However there does not appear to be much progressed as part of this document. This could be due to the fact it is an underground mine and minimal land is available for progressive rehab. Interim measures appear to be covered and addressed		
Part B Condition 108				
The Applicant must prepare a Rehabilitation Management Plan for all land disturbed by the development to the satisfaction of the Resources Regulator. This plan must:				
A) be prepared by a suitably qualified and experienced person/s;	No	In section 2.1 claims it has been compiled by suitably qualified and experienced person/s no evidence other than this.	Please provide details of the suitable qualified persons.	Section 2.1 now states that assistance was provided by Resource Strategies and Eco Logical Australia.
B) be prepared in consultation with the Department, DPIE Water, BCD and Council;	Yes	Consultation meet		
C) be prepared in accordance with any relevant DRG Guideline;		For the RR to comment.		
D) describe how the rehabilitation of the site would achieve the objectives identified in Table 10 and be integrated with the measures in the Biodiversity Management Plan referred to in condition B74 [sic];	No	Table 10 needs to be addressed first	As commented above	Complete as addressed above.
E) describe how the rehabilitation of the site would be integrated with rehabilitation of the Wambo train loading facility and SSD 7142 United Wambo open cut coal mine;	Yes			
F) include detailed performance and completion criteria for evaluating the performance of the rehabilitation of the site, and for triggering remedial action (if necessary);	Yes			
G) describe the measures to be implemented to ensure compliance with the relevant conditions of this consent, and address all aspects of rehabilitation including mine closure, final landform, final land use/s and water management in the final landform;	No	As discussed earlier not all objectives have been meet		Complete as addressed above.

Development Consent Condition	Sufficient (Yes/No/Partial)	Document reference and comment	Action Required	WCPL Action Taken
H) include a detailed tailings management strategy that includes: i) a strategy for treating and/or emplacing all tailings material generated by the Wambo CHPP; and ii) timing for rehabilitation of all tailings storage facilities, in order that final landform and land use objectives can be achieved in a timely manner;	Yes			
I) include procedures for the use of interim stabilisation and temporary vegetation strategies, where reasonable to minimise the area exposed for dust generation;	Yes			
J) include a program to monitor, independently audit and report on the effectiveness of the measures in paragraph (g), and progress against the detailed performance and completion criteria in paragraph (f);	Yes			
K) to the maximum extent practicable build on and integrate with the other management plans required under this consent; and	Yes			
L) include detailed scheduling for progressive rehabilitation to be initiated, undertaken and/or completed over the next three years.	Yes			
Part B Condition 109				
The Applicant must not commence Phase 2 until the Rehabilitation Management Plan is approved by the Resources Regulator.	Yes			
Part B Condition 110				
The Applicant must implement the Rehabilitation Management Plan as approved by the Resources Regulator. *Note:* • *The Resources Regulator may permit the Rehabilitation Management Plan to be combined with a Mining Operation Plan, or similar plan under any mining lease granted for the development.*	No		Include a statement that this RMP will be implemented	Section 11.2 has been updated with a statement that the RMP will be implemented.

ATTACHMENT 3

REHABILITATION RISK ASSESSMENT

Wambo Phase 2 Rehabilitation Management Plan Risk Assessment					
ID	**Date**	**Name**	**Role**	**Experience**	**Qualifications**
1	15/07/2020	Peter Jaeger (WCPL)	Manager: Environment and Community, Acting Manager Health Safety and Training	Over 10 years in energy sector.	B Env Sc, Grad Cert Agri Business
2	15/07/2020	Nicole Dobbins (WCPL)	Senior Environmental Advisor	Over 17 years experience in environmental management and project approvals in the resource industry.	Bachelor of Science (Environment Biology)
3	15/07/2020	Michael Berry (WCPL)	Technical Services Manager	TBA	TBA
4	15/07/2020	Eugene Luyke (WCPL)	Technical Services Superintendent (Open Cut)	Approximately 20 years in mining industry.	Btech Engineering
5	15/07/2020	Matthew Copeland (Resources Strategies)	Environmental Project Manager	Over 5 years of experience in environmental management and project approvals in the resource industry.	Bachelor of Engineering (Civil and Geotechnical)
6	15/07/2020	Elijiah Butler (Resource Strategies)	Environmental Project Manager	2 years of experience in environmental management and project approvals in the resource industry.	Bachelor of Engineering (Chemical and Environmental)

ID	ID	Mine Closure / Rehabilitation Aspect	Risk Source	Potential Events / Consequences	Consequence Category	Ranking Without Controls				Existing / Proposed Risk Treatment / Control	Action	Person Responsible for Action	Ranking With Controls				Is Risk ALARP with Controls?
						Consequence	Likelihood	Existing Risk	Risk Level				Consequence	Likelihood	Existing Risk	Risk Level	
1	1	General	Insufficient skills and experience of rehabilitation personnel.	Rehabilitation inadequate, sign off not received from RR and relinquishment not successful.	Finance / Reputation (ranked on Finance)	25	3	75	Med	Experienced rehabilitation contractors. QA/QC Processes. Rehabilitation Management Plan. Biodiversity Management. Monitoring programs. Regulator consultation and/or audits.	-	-	25	2	50	Med	Yes
1	2	General	Lack of clearly defined responsibilities.	Rehabilitation inadequate, sign off not received from RR and relinquishment not successful.	Finance / Reputation (ranked on Finance)	25	3	75	Med	Experienced rehabilitation contractors. QA/QC Processes. Rehabilitation Management Plan. Biodiversity Management Plan. Monitoring programs. Regulator consultation and/or audits. Clearly defined responsibilities between WCPL, contractors and Glencore/United to be captured in RACI - Who's responsible, who's accountable, who's consulted, who's informed.	Complete RACI Table.	Peter Jaeger	25	2	50	Med	Yes
1	3	General	Insufficient funding for or prioritisation of rehabilitation activities.	Rehabilitation inadequate, sign off not received from RR and relinquishment not successful. Lack of regulator confidence resulting in issues with other approvals.	Finance / Reputation (ranked on Finance)	10	3	30	Low - Med	Internal ARO (Asset Requirement Obligations) calculator. Liability calculator used by Wambo Coal to assess financial costs. RCE. Internal budgeting to include rehabilitation activities - five year forecast. Regulator consultation and/or audits. Rehabilitation Management Plan. Biodiversity Management Plan.	-	-	5	2	10	Low	Yes
1	4	General	Discrepancies between commitments made by WCPL and Glencore with regards to rehabilitation outcomes and/or closure criteria.	Sign off not received from RR and relinquishment delayed.	Reputation	5	2	10	Low	Rehabilitation Management Plan. Biodiversity Management Plan. Clearly defined responsibilities between WCPL, contractors and Glencore/United to be captured in RACI - Who's responsible, who's accountable, who's consulted, who's informed. Regulator consultation and/or audits.	Complete RACI Table.	Peter Jaeger	2	2	4	Low	Yes
1	5	General	Code of Practice: Rehabilitation Management Plan for Large Mines remains a consultation draft and is not finalised.	Compliance requirements increase in excess of current requirements in draft Guideline.	Finance	10	2	20	Low - Med	Stakeholder consultation.	-	-	10	2	20	Low - Med	Yes
2	1	Land Clearance	Pre-operation site conditions and environmental values (e.g. over-grazing, clearing, weeds, etc.).	Low baseline quality of rehabilitation areas, requiring additional efforts to meet completion criteria.	Finance / Environmental (ranked on Finance)	5	3	15	Low - Med	Annual monitoring programs, 2003 EIS record of land quality pre-mining. Importing of topsoil or organic matter to improve land quality. Internal ARO (Asset Requirement Obligations) calculator. Liability calculator used by Wambo Coal to assess financial costs. RCE. Internal budgeting to include rehabilitation activities - five year forecast.	-	-	5	2	10	Low	Yes
2	2	Land Clearance	Loss of biological and habitat resources (e.g. subsoil, topsoil, vegetative material, seedbank, rocks, etc.) through clearing, salvage and handling practices.	High quality vegetation / habitat resources lost through poor land clearance activities.	Environmental	2	3	6	Low	Minimal future land clearance to occur for Wambo in Phase 2. Topsoil Management Procedure. Surface Disturbance Permit. Vegetation and Burrow Clearing Protocol.	-	-	2	2	4	Low	Yes
2	3	Land Clearance	Clearing in inappropriate seasonal conditions to salvage biological resources.	High quality vegetation / habitat resources lost through poor land clearance activities.	Environmental	2	3	6	Low	Minimal future land clearance to occur for Wambo in Phase 2. Topsoil Management Procedure. Surface Disturbance Permit. Vegetation and Burrow Clearing Protocol.	-	-	2	2	4	Low	Yes
2	4	Land Clearance	Poor topsoil management practices (e.g. topsoil and subsoil not separated, topsoil not stockpiled appropriately, etc.).	Insufficient/inadequate topsoil resources to rehabilitate requiring importation of additional resources.	Finance	10	5	50	Med	Topsoil Management Procedure. Topsoil stockpiles maintained on site. Topsoil volume required for closure adequately assessed in Internal ARO.	-	-	10	5	50	Med	Yes
3	1	Active Mining/ Production	Contamination resulting from associated activities (e.g. storage and use of hydrocarbons/chemicals, drilling fluids, spillage of dirty or produced saline water, brine, sewage, etc.)	Discharge to environment/watercourses. Land contamination. Land remediation costs.	Environmental	2	3	6	Low	Double layered storages, hardstand areas, inspections undertaken regularly. Groundwater and surface water monitoring programs (Water Management Plan).	-	-	2	2	4	Low	Yes
3	2	Active Mining/ Production	Impoundment/co-disposal of unconsolidated/ supernatant processing waste materials such as tailings and coarse reject materials.	Discharge to environment/watercourses. Land contamination. Land remediation costs.	Environmental	10	2	20	Low - Med	Contained within site catchment area or double skinned pipeline. Tailings dam and infrastructure inspection regime. Differential flow meters to monitor pipelines (i.e. leak detection).	-	-	10	2	20	Low - Med	Yes
3	3	Active Mining/ Production	Adverse geochemical/ chemical composition of materials such as overburden/ interburden, processing wastes, subsoils and topsoils and imported cover materials.	Poor quality rehabilitation outcomes if imported topsoil was below standard. Poor quality runoff from rehabilitated surfaces effecting water quality.	Environmental	10	2	20	Low - Med	On site material not particularly prone to AMD or geochemical issues. Imported material (if required) would be checked for quality.	-	-	10	2	20	Low - Med	Yes
3	4	Active Mining/ Production	Materials prone to spontaneous combustion (product stockpile PAD).	Spontaneous combustion event.	Financial	50	2	100	Med	Spon Com. Propensity testing. Spontaneous Combustion Management Plan. Stockpile management.	PJ to follow up existing controls for spon com events.	Peter Jaeger	10	2	20	Low - Med	Yes
3	5	Active Mining/ Production	Materials prone to spontaneous combustion (underground event).	Spontaneous combustion event.	People	50	3	150	Med - High	Spontaneous Combustion Management Plan. Real time monitoring and control room operator monitoring alarm system. Emergency sealing systems. Spon Com. Propensity testing.	-	-	50	2	100	Med	Yes

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						Consequence	Likelihood	Existing Risk	Risk Level				Consequence	Likelihood	Existing Risk	Risk Level	
4	1	Decommissioning	Impacts on European/ historic heritage items.	Discrepancy between commitments and expectations. Damage to heritage items.	Financial	10	3	30	Low - Med	Heritage Management Plan. UWJV Blast Management Plan. Competent drill and blasting engineering to limit vibration within consent limits. Ongoing maintenance works. Induction. Fenced and signed.	-	-	5	2	10	Low	Yes
4	2	Decommissioning	Impacts on Aboriginal heritage items.	Damage to heritage items.	Reputation	5	2	10	Low	AHIMS records. AHIPs. Heritage Management Plan. Due diligence assessments. Surface Disturbance Permits.	-	-	5	2	10	Low	Yes
4	3	Decommissioning	Contamination resulting from associated activities (e.g. storage and use of hydrocarbons/chemicals, drilling fluids, spillage of dirty or produced saline water, brine, sewage, etc.)	Refer Item 3.1.	Environmental	2	3	6	Low		-	-	2	2	4	Low	Yes
4	4	Decommissioning	Generation of waste products from demolition process (e.g. conveyors, electrical substations, compressors, services [pipes/cables], stores, laydown areas, etc.).	Inappropriate management of waste products.	Environmental	5	3	15	Low - Med	Experienced contractors for demolition works. Waste management processes implemented and reviewed. Inspections of demolition works after completion.	-	-	2	2	4	Low	Yes
4	5	Decommissioning	Groundwater accumulation or reinjection in former underground workings (e.g. potential for fill and spill or impacts to regional groundwater users). Note: SBUE dips away from North Wambo Creek and open cut.	Contamination of groundwater system with saline water. Impacts to regional users.	Environmental	10	3	30	Low - Med	Groundwater monitoring program. Water Management Plan. Dewatering systems in place. Detailed groundwater modelling. TARPs around groundwater levels and/or quality. Depth of workings.	-	-	10	2	20	Low - Med	Yes
4	6	Decommissioning	Adverse geotechnical and or geochemical issues associated with process waste storage facilities (e.g. spontaneous combustion).	Refer Item 3.4.	Financial	10	2	20	Low - Med	Refer Item 3.4. Product coal removed at this stage as into decommissioning.	Refer Item 3.4	PJ	10	2	20	Low - Med	Yes
4	7	Decommissioning	Unauthorised access to underground workings, habitation of structures, underground workings etc. by native fauna (e.g. bats).	Harm to native fauna.	Environmental	2	3	6	Low	All underground mine portals and ventilation shafts have been sealed in accordance with *MDG6001 (Guidelines for the Permanent Filling and Capping of Surface Entries to Coal Seams).* Liability calculator used by Wambo Coal to assess financial costs.	-	-	2	2	4	Low	Yes
4	8	Decommissioning	Unauthorised access to underground workings, habitation of structures, underground workings etc. by members of the public (e.g. squatters).	Harm to persons.	People	25	3	75	Med	All underground mine portals and ventilation shafts have been sealed in accordance with *MDG6001 (Guidelines for the Permanent Filling and Capping of Surface Entries to Coal Seams).* Liability calculator used by Wambo Coal to assess financial costs. Remotely located site.	-	-	10	2	20	Low - Med	Yes
4	9	Decommissioning	Failure to remove all infrastructure that is not to be retained post-closure (e.g. services, infrastructure, roads, carparks, hardstand areas, concrete footings).	Sign off not received from RR and relinquishment delayed.	Compliance / Financial	5	2	10	Low	Site inspections, review of infrastructure, identification of likely contaminated areas. Internal ARO (Asset Requirement Obligations) calculator. Triannual decommissioning assessment.	-	-	5	2	10	Low	Yes
4	10	Decommissioning	Failure to remove all hazardous materials (e.g. carbonaceous material on the surface, hazardous wastes, other wastes).	Sign off not received from RR and relinquishment delayed.	Compliance / Financial	5	2	10	Low	Site inspections, review of infrastructure, identification of likely contaminated areas. Internal ARO (Asset Requirement Obligations) calculator. Triannual decommissioning assessment.	-	-	5	2	10	Low	Yes
4	11	Decommissioning	Land contamination sites not successfully identified or remediated resulting in impacts to the environment.	Sign off not received from RR and relinquishment delayed.	Compliance / Financial	5	2	10	Low	Site inspections, review of infrastructure, identification of likely contaminated areas. Internal ARO (Asset Requirement Obligations) calculator. Triannual decommissioning assessment.	-	-	5	2	10	Low	Yes
4	12	Decommissioning	Ventilation shafts not sealed adequately.	Refer Items 4.7 and 4.8.	People	25	3	75	Med	All underground mine portals and ventilation shafts have been sealed in accordance with *MDG6001 (Guidelines for the Permanent Filling and Capping of Surface Entries to Coal Seams).* Liability calculator used by Wambo Coal to assess financial costs. Remotely located site.	-	-	10	2	20	Low - Med	Yes
5	1	Landform Establishment	Use of inappropriate rehabilitation machinery and equipment.	Landform failure. Unable to achieve completion criteria. Damage to existing vegetation/rehabilitation.	Finance / Reputation (ranked on Finance)	10	3	30	Low - Med	Experienced rehabilitation contractors. QA/QC Processes. Rehabilitation Management Plan. Biodiversity Management Plan. Monitoring programs. Regulator consultation and/or audits. Clearly defined responsibilities between WCPL, contractors and Glencore/United to be captured in RACI - Who's responsible, who's accountable, who's consulted, who's informed.	Complete RACI Table.	Peter Jaeger	5	2	10	Low	Yes
5	2	Landform Establishment	Failure of borehole or gas well seals.	Resealing of boreholes or gas wells required. Oxygen ingress to underground workings. Impacts to rehabilitation equipment.	People	5	2	10	Low	All bores/gas wells to be capped and sealed in accordance with appropriate guidelines.	-	-	5	2	10	Low	Yes

ID	ID	Mine Closure / Rehabilitation Aspect	Risk Source	Potential Events / Consequences	Consequence Category	Ranking Without Controls				Existing / Proposed Risk Treatment / Control	Action	Person Responsible for Action	Ranking With Controls				Is Risk ALARP with Controls?
						Consequence	Likelihood	Existing Risk	Risk Level				Consequence	Likelihood	Existing Risk	Risk Level	
5	3	Landform Establishment	Instability of highwall and lowwalls.	Landform failure. Inability to meet final landform criteria.	Financial	10	2	20	Low - Med	Engineering design standards. Ongoing monitoring of landform stability.	-	-	5	2	10	Low	Yes
5	4	Landform Establishment	Availability of suitable materials for capping of hazardous materials and impounded tailings.	N/A to Wambo Phase 2 Operation as United will manage landform establishment for tailings.													
5	5	Landform Establishment (i.e. not active mine site).	Final landform instability (e.g. steep slopes, erosion etc.) affecting final land use capability.	Refer 5.3.	Financial	10	2	20	Low - Med	Annual monitoring, erosion and sediment control inspections, LiDAR monitoring. Ongoing maintenance. Slopes to be no greater than 1:6 (10 degrees or 17%) across the entire ML area (unless otherwise agreed by RR). Slope length within range of 50 m – 80 m (subject to slope gradient). Preferred option: Mine waste rock emplacement slopes constructed to form an 'S' shape with the upper nominally at 20 to 30% being convex and the lower 70 to 80% being concave. Profile if unable to achieve preferred option: Mine waste rock emplacement slopes constructed with a "back-sloped bench', approximately 4 m wide, constructed on the	-	-	5	2	10	Low	Yes
5	6	Landform Establishment	Final landform unsuitable for final land use (e.g. large rocks present affecting cultivation, settlement and surface subsidence leading to extended ponding etc.).	Refer Item 1.3.	Finance / Reputation (ranked on Finance)	10	3	30	Low - Med	Internal ARO (Asset Requirement Obligations) calculator. Liability calculator used by Wambo Coal to assess financial costs. RCE. Internal budgeting to include rehabilitation activities - five year forecast. Regulator consultation and/or audits. Rehabilitation Management Plan. Biodiversity Management Plan.	-	-	5	2	10	Low	Yes
5	7	Landform Establishment	Adoption of inappropriate or inadequate rehabilitation techniques, including equipment fleet.	Refer Item 1.3.	Finance / Reputation (ranked on Finance)	10	3	30	Low - Med	Internal ARO (Asset Requirement Obligations) calculator. Liability calculator used by Wambo Coal to assess financial costs. RCE. Internal budgeting to include rehabilitation activities - five year forecast. Regulator consultation and/or audits. Rehabilitation Management Plan. Biodiversity Management Plan.	-	-	5	2	10	Low	Yes
5	8	Landform Establishment	Landform aspect not suitable for intended target plant species.	Refer Item 1.3.	Finance / Reputation (ranked on Finance)	10	3	30	Low - Med	Internal ARO (Asset Requirement Obligations) calculator. Liability calculator used by Wambo Coal to assess financial costs. RCE. Internal budgeting to include rehabilitation activities - five year forecast. Regulator consultation and/or audits. Rehabilitation Management Plan. Biodiversity Management Plan.	-	-	5	2	10	Low	Yes
5	9	Landform Establishment	Diversion of surface water runoff away from catchment areas.	Reduced flow in creeks.	Environmental	2	3	6	Low	Water Management Plan. Site Water Management System. Surface water monitoring program. Groundwater monitoring program. Impacts assessed through EIS/EA process. Final landform designed to meet appropriate standards and minimise catchment areas. Groundwater modelling of predicted take.	-	-	2	2	4	Low	Yes
5	10	Landform Establishment	Groundwater accumulation in voids.	Refer Item 4.5.	Environmental	10	3	30	Low - Med	Groundwater monitoring program. Water Management Plan. Dewatering systems in place. Detailed groundwater modelling. TARPs around groundwater levels and/or quality. Depth of workings.	-	-	10	2	20	Low - Med	Yes
5	11	Landform Establishment	Groundwater accumulation in underground workings.	Refer Item 4.5.	Environmental	10	3	30	Low - Med	Groundwater monitoring program. Water Management Plan. Dewatering systems in place. Detailed groundwater modelling. TARPs around groundwater levels and/or quality. Depth of workings.	-	-	10	2	20	Low - Med	Yes
5	12	Landform Establishment	Watercourse diversion instability affecting riparian health.	Rehabilitation fails to be established, resulting in sign off not being received from RR and relinquishment not successful.	Financial	10	3	30	Low - Med	Implementation of North Wambo Creek Diversion Action Plan. Stakeholder consultation.	-	-	5	2	10	Low	Yes
5	13	Landform Establishment	Water availability, on and off site.	Insufficient water available to support landform establishment.	Financial	5	3	15	Low - Med	Water Management Plan. Biodiversity Management Plan. Consideration of water requirements when designing final landforms. Species selection for site conditions. Undertake establishment during appropriate seasons.	-	-	5	2	10	Low	Yes
5	14	Landform Establishment	Rehabilitated landforms are not designed to shed water safely without causing excessive erosion, jeopardising landform geotechnical integrity or increasing pollution of downstream watercourses.	Refer Item 5.3.	Financial	10	2	20	Low - Med	Engineering design standards. Ongoing monitoring of landform stability.	-	-	5	2	10	Low	Yes
5	15	Landform Establishment	Final landforms are not consistent with and do not complement the topography of the surrounding region.	Risk of regulator not signing off on rehabilitation.	Financial	5	2	10	Low	Final landform design will consider topography of surrounding region, and will be based on surrounding natural landforms. Consultation with stakeholders.	-	-	5	2	10	Low	Yes
5	16	Landform Establishment	Creek diversion unstable and presents a safety hazard.	Refer Item 5.3.	Financial	10	2	20	Low - Med	Engineering design standards. Ongoing monitoring of landform stability.	-	-	5	2	10	Low	Yes

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						Consequence	Likelihood	Existing Risk	Risk Level				Consequence	Likelihood	Existing Risk	Risk Level	
6	1	Growth Medium Development	Use of inappropriate rehabilitation machinery and equipment.	Refer Item 5.1.	Finance / Reputation (ranked on Finance)	10	3	30	Low - Med	Experienced rehabilitation contractors. QA/QC Processes. Rehabilitation Management Plan. Biodiversity Management Plan. Monitoring programs. Regulator consultation and/or audits. Clearly defined responsibilities between WCPL, contractors and Glencore/United to be captured in RACI - Who's responsible, who's accountable, who's consulted, who's informed.	Complete RACI Table.	Peter Jaeger	5	2	10	Low	Yes
6	2	Growth Medium Development	Soil compaction from mining activities.	Refer Item 2.4.	Financial	10	3	30	Low - Med	Refer Item 2.4. Ripping to be carried out to break up compaction. Incorporation of soil ameliorants and organic matter.	-	-	10	2	20	Low - Med	Yes
6	3	Growth Medium Development	Subsoil and topsoil deficit for rehabilitation activities.	Refer Item 2.4.	Financial	10	5	50	Med	Refer Item 2.4. Ripping to be carried out to break up compaction. Incorporation of soil ameliorants and organic matter.	-	-	10	5	50	Med	Yes
6	4	Growth Medium Development	Substrate inadequate to support revegetation or agricultural land capability (e.g. lack of organic matter, nutrient deficiency, lack of soil biota, adverse soil chemical properties, exposed hostile geochemical materials, and any other factors impeding the effective rooting depth).	Refer Item 2.4.	Financial	10	3	30	Low - Med	Refer Item 2.4. Ripping to be carried out to break up compaction. Incorporation of soil ameliorants and organic matter.	-	-	10	2	20	Low - Med	Yes
7	1	Ecosystem Establishment	Lack of availability and quality of seed resources, including genetic integrity.	Rehabilitation fails to be established, resulting in additional works being required to meet completion criteria.	Financial	10	2	20	Low - Med	Annual seed collection program. Biodiversity Management Plan - annual flora monitoring program. Reputable supplier.	-	-	10	2	20	Low - Med	Yes
7	3	Ecosystem Establishment	Ant and insect predation of seed.	Refer Item 7.1.	Financial	10	2	20	Low - Med	Annual seed collection program. Biodiversity Management Plan - annual flora monitoring program. Reputable supplier.	-	-	10	2	20	Low - Med	Yes
7	4	Ecosystem Establishment	Damage to seed by mixing with fertilisers.	Refer Item 7.1.	Financial	10	2	20	Low - Med	Annual seed collection program. Biodiversity Management Plan - annual flora monitoring program. Reputable supplier.	-	-	10	2	20	Low - Med	Yes
7	5	Ecosystem Establishment	Use of inappropriate rehabilitation machinery and equipment.	Refer Item 5.1.	Finance / Reputation (ranked on Finance)	10	3	30	Low - Med	Experienced rehabilitation contractors. QA/QC Processes. Rehabilitation Management Plan. Biodiversity Management Plan. Monitoring programs. Regulator consultation and/or audits. Clearly defined responsibilities between WCPL, contractors and Glencore/United to be captured in RACI - Who's responsible, who's accountable, who's consulted, who's informed.	Complete RACI Table.	Peter Jaeger	5	2	10	Low	Yes
7	6	Ecosystem Establishment	Lack of resources for rehabilitation maintenance.	Refer Item 1.3.	Finance / Reputation (ranked on Finance)	10	3	30	Low - Med	Internal ARO (Asset Requirement Obligations) calculator. Liability calculator used by Wambo Coal to assess financial costs. RCE. Internal budgeting to include rehabilitation activities - five year forecast. Regulator consultation and/or audits. Rehabilitation Management Plan. Biodiversity Management Plan.	-	-	5	2	10	Low	Yes
7	7	Ecosystem Establishment	Weed infestation associated with both introduction and control (or lack thereof).	Rehabilitation fails to be established, resulting in additional works being required to meet completion criteria.	Financial	10	2	20	Low - Med	Completion criteria - Biometric monitoring confirms exotic cover <33%. Biodiversity Management Plan - annual flora monitoring program. Weed management program.	-	-	10	2	20	Low - Med	Yes
7	8	Ecosystem Establishment	Lack of structural integrity of buildings and infrastructure to be retained in final land use.	Collapse/failure of infrastructure to be retained (e.g. dams).	Environmental	2	2	4	Low	Water infrastructure built and managed to applicable design standards. Surface water monitoring. Erosion and sediment controls.	-	-	2	2	4	Low	Yes
7	9	Ecosystem Establishment	Damage from fauna (e.g. kangaroos, feral goats, etc.) and livestock.	Rehabilitation fails to be established, resulting in additional works being required to meet completion criteria.	Financial	10	2	20	Low - Med	Annual feral animal control program implemented. Ecological monitoring confirms feral animal control program effective. Biodiversity Management Plan - annual flora monitoring program.	-	-	5	2	10	Low	Yes
7	10	Ecosystem Establishment	Lack of infrastructure to support intended final land use (e.g. dams, fences, watering facilities, etc.). Note: Intended final land uses are native vegetation or grazing, minimal infrastructure required.	Farm dams retained insufficient to support grazing and additional dams required.	Environmental	2	2	4	Low	Water infrastructure built and managed to applicable design standards. Surface water monitoring. Erosion and sediment controls. Consideration in final landform design.	-	-	2	2	4	Low	Yes
7	11	Ecosystem Establishment	Adoption of inappropriate or inadequate rehabilitation techniques, including equipment fleet.	Refer Item 5.1.	Finance / Reputation (ranked on Finance)	10	3	30	Low - Med	Internal ARO (Asset Requirement Obligations) calculator. Liability calculator used by Wambo Coal to assess financial costs. RCE. Internal budgeting to include rehabilitation activities - five year forecast. Regulator consultation and/or audits. Rehabilitation Management Plan. Biodiversity Management Plan.	-	-	5	2	10	Low	Yes
7	12	Ecosystem Establishment	Inappropriate revegetation species mix for targeted final land use.	Rehabilitation fails to meet completion criteria, resulting in additional works being required.	Financial	10	2	20	Low - Med	Revegetation species and target communities defined in EIS, RMP and BMP. Progressive review of rehabilitation as undertaken. Annual seed harvest program. Reputable seed provider.	-	-	10	1	10	Low	Yes

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7	13	Ecosystem Establishment	Weather and climatic influences (e.g. drought, intense rainfall events, bushfire, etc.).	Weather conditions are not appropriate for establishing rehabilitation, resulting in overall delays. Weather conditions result in damage to rehabilitation, resulting in additional works being required to meet criteria.	Financial	10	3	30	Low - Med	Mitigation actions have been implemented as required by the Bushfire Management Plan.	-	-	10	3	30	Low - Med	Yes
7	14	Ecosystem Establishment	Insects and plant disease.	Rehabilitation fails to be established, resulting in additional works being required to meet completion criteria.	Financial	10	2	20	Low - Med	Biodiversity Management Plan - annual flora monitoring program. Reputable seed supplier. Treatment program following identification.	-	-	5	2	10	Low	Yes
7	15	Ecosystem Establishment	Lack of integration of native ecosystems with agricultural ecosystems.	Rehabilitation fails to meet completion criteria, resulting in additional works being required.	Financial	10	2	20	Low - Med	Rehabilitation Management Plan. Biodiversity Management Plan. Consultation with stakeholders regarding final land uses. Revegetation species and target communities defined in EIS, RMP and BMP. Progressive review of rehabilitation as undertaken.	-	-	5	2	10	Low	Yes
7	16	Ecosystem Establishment	Insufficient establishment of target species and limited species diversity.	Refer Item 7.12.	Financial	10	2	20	Low - Med	Revegetation species and target communities defined in EIS, RMP and BMP. Progressive review of rehabilitation as undertaken. Annual seed harvest program. Reputable seed provider.	-	-	10	1	10	Low	Yes
7	17	Ecosystem Establishment	Limited vegetation structural development and habitat for targeted fauna species.	Refer Item 7.12.	Financial	10	2	20	Low - Med	Revegetation species and target communities defined in EIS, RMP and BMP. Progressive review of rehabilitation as undertaken. Annual seed harvest program. Reputable seed provider.	-	-	10	1	10	Low	Yes
7	18	Ecosystem Establishment	Erosion and failure of drainage and water management/ storage structures.	Erosion of landform. Collapse/failure of infrastructure to be retained (e.g. dams).	Environmental	2	2	4	Low	Water infrastructure built and managed to applicable design standards. Surface water monitoring. Erosion and sediment controls.	-	-	2	2	4	Low	Yes
7	19	Ecosystem Establishment	Overgrazing of pasture rehabilitation areas.	Rehabilitation fails to be established, resulting in additional works being required to meet completion criteria.	Financial	10	2	20	Low - Med	Biodiversity Management Plan - annual flora monitoring program. Livestock management practices.	-	-	5	2	10	Low	Yes
7	20	Ecosystem Establishment	Poor water quality discharges (e.g. acid-drainage, high salinity, etc.).	Impact to receiving environment.	Environmental	2	2	4	Low	Water infrastructure built and managed to applicable design standards. Surface water monitoring. Erosion and sediment controls. Consideration in final landform design. EPL conditions.	-	-	2	2	4	Low	Yes
7	21	Ecosystem Establishment	Poor seed viability, seed dormancy.	Refer Item 7.1.	Financial	10	2	20	Low - Med	Annual seed collection program. Biodiversity Management Plan - annual flora monitoring program. Reputable supplier.	-	-	10	2	20	Low - Med	Yes
7	22	Ecosystem Establishment	Excessive water discharges.	Exceeding allowed discharge volume resulting in non-compliance with EPL.	Compliance	5	2	10	Low	Water infrastructure built and managed to applicable design standards. Surface water monitoring. Erosion and sediment controls. Consideration in final landform design. EPL conditions.	-	-	5	2	10	Low	Yes
7	23	Ecosystem Establishment	Woodland Corridor and Mixed Woodland/Pasture Areas established are not consistent with revegetation strategy.	Refer Item 7.12.	Financial	10	2	20	Low - Med	Revegetation species and target communities defined in EIS, RMP and BMP. Progressive review of rehabilitation as undertaken. Annual seed harvest program. Reputable seed provider.	-	-	10	1	10	Low	Yes
7	24	Ecosystem Establishment	Established woodland vegetation does not link remnant vegetation to the north and east of the Project with the eastern borders of Wollemi National Park.	Revegetation does not form a corridor for wildlife.	Financial	5	2	10	Low	Revegetation areas planned and planted in accordance with commitments. Biodiversity Management Plan - annual flora monitoring program. Consultation with stakeholders. Progressive rehabilitation.	-	-	5	2	10	Low	Yes
7	25	Ecosystem Establishment	Pasture species established consistent with revegetation strategy.	Refer Item 7.12.	Financial	10	2	20	Low - Med	Revegetation species and target communities defined in EIS, RMP and BMP. Progressive review of rehabilitation as undertaken. Annual seed harvest program. Reputable seed provider.	-	-	10	1	10	Low	Yes
7	26	Ecosystem Establishment	Tree species established along creek line are not consistent with riparian zone.	Suitable environment not established.	Environmental	5	3	15	Low - Med	Implementation of North Wambo Creek Diversion Action Plan (Revegetation Strategy). Stakeholder consultation. Revegetation areas planned and planted in accordance with commitments. Biodiversity Management Plan - annual flora monitoring program.	-	-	2	3	6	Low	Yes
8	1	Ecosystem and Land Use Development	Weather and climatic influences (e.g. drought, intense rainfall events, bushfire, etc.).	Refer Item 7.13.	Financial	10	3	30	Low - Med	Mitigation actions have been implemented as required by the Bushfire Management Plan.	-	-	10	3	30	Low - Med	Yes
8	2	Ecosystem and Land Use Development	Vandalism to revegetation areas.	Rehabilitation fails to be established, resulting in additional works being required to meet completion criteria.	Financial	2	2	4	Low	Site security. Biodiversity Management Plan - annual flora monitoring program. Signage and fencing.	-	-	2	1	2	Low	Yes
8	3	Ecosystem and Land Use Development	Inadvertent or unauthorised access by mining equipment and vehicles.	Rehabilitation fails to be established, resulting in additional works being required to meet completion criteria.	Financial	2	2	4	Low	Site security. Biodiversity Management Plan - annual flora monitoring program. Signage and fencing.	-	-	2	1	2	Low	Yes

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						Consequence	Likelihood	Existing Risk	Risk Level				Consequence	Likelihood	Existing Risk	Risk Level	
8	4	Ecosystem and Land Use Development	Post-closure water quality issues (e.g. acid-drainage, high salinity, etc.).	Refer Item 7.20.	Environmental	2	2	4	Low	Water infrastructure built and managed to applicable design standards. Surface water monitoring. Erosion and sediment controls. Consideration in final landform design. EPL conditions.	-	-	2	2	4	Low	Yes
8	5	Ecosystem and Land Use Development	Insects and plant disease.	Refer Item 7.14.	Financial	10	2	20	Low - Med	Biodiversity Management Plan - annual flora monitoring program. Reputable seed supplier. Treatment program following identification.	-	-	5	2	10	Low	Yes
8	6	Ecosystem and Land Use Development	Overgrazing of pasture rehabilitation areas.	Refer Item 7.19.	Financial	10	2	20	Low - Med	Biodiversity Management Plan - annual flora monitoring program. Livestock management practices.	-	-	5	2	10	Low	Yes
8	7	Ecosystem and Land Use Development	Lack of resources for rehabilitation maintenance.	Refer Item 1.3.	Finance / Reputation (ranked on Finance)	10	3	30	Low - Med	Internal ARO (Asset Requirement Obligations) calculator. Liability calculator used by Wambo Coal to assess financial costs. RCE. Internal budgeting to include rehabilitation activities - five year forecast. Regulator consultation and/or audits. Rehabilitation Management Plan. Biodiversity Management Plan.	-	-	5	2	10	Low	Yes
8	8	Ecosystem and Land Use Development	Re-disturbance of established rehabilitation areas.	Rehabilitation fails to be established, resulting in additional works being required to meet completion criteria.	Financial	2	2	4	Low	Biodiversity Management Plan - annual flora monitoring program. Signage and fencing.	-	-	2	1	2	Low	Yes
9	1	Mine Subsidence Affected Areas	Extended water ponding in excess of approved impacts.	Rehabilitation or existing vegetation are impacted by ponding.	Financial	5	3	15	Low - Med	Subsidence assessments, geomorphology assessments, EIS/EA predictions. Subsidence Monitoring Program. Rehabilitation Management Plan.	-	-	5	3	15	Low - Med	Yes
9	2	Mine Subsidence Affected Areas	Re-direction of creek and river flows inconsistent with predicted impacts.	Effects vegetation along previous alignment. Changes to sediment load.	Environmental	2	3	6	Low	Biodiversity Management Plan - annual flora monitoring program. Repair of flow path if required. Extraction Plan - Geomorphology Assessment.	-	-	2	3	6	Low	Yes
9	3	Mine Subsidence Affected Areas	Subsidence cracking and sink holes.	Cracking presents a risk to the environment, safety and/or the final land use objectives.	Environmental / People / Financial (ranked on Financial)	10	3	30	Low - Med	Remediation of surface cracks >50 mm wide. Biodiversity Management Plan - annual flora monitoring program. Extraction Plan. Subsidence assessments. Limited access to site.	-	-	5	3	15	Low - Med	Yes
9	4	Mine Subsidence Affected Areas	Inter-connective cracking with underground workings.	Loss of surface flows to underground workings.	Environmental	2	3	6	Low	Remediation of surface cracks >50 mm wide. Extraction Plan. Subsidence assessments. Subsidence monitoring program. Groundwater monitoring program. Surface water monitoring program.	-	-	2	3	6	Low	Yes
9	5	Mine Subsidence Affected Areas	Interference with tree roots.	Rehabilitation or existing vegetation are impacted by cracking.	Environmental	2	2	4	Low	Remediation of surface cracks >50 mm wide. Biodiversity Management Plan - annual flora monitoring program. Extraction Plan. Subsidence assessments.	-	-	2	2	4	Low	Yes
9	6	Mine Subsidence Affected Areas	Impacts to aquifers and groundwater loss of water to water users including the environment.	Reduction of water availability in groundwater table.	Financial	5	2	10	Low	Groundwater monitoring program. Water Management Plan. Depressurisation from historic mining. Detailed groundwater modelling. TARPs around groundwater levels and/or quality. Depth of workings. Predicted impacts as described in EIS/EA documentation. Make good provisions for downstream users.	-	-	5	2	10	Low	Yes
9	7	Mine Subsidence Affected Areas	Land affected by subsidence will be stable and will not present a greater safety or environmental hazard than surrounding land or present a risk to future final land use options.	Refer Item 9.3.	Environmental / People / Financial (ranked on Financial)	10	3	30	Low - Med	Remediation of surface cracks >50 mm wide. Biodiversity Management Plan - annual flora monitoring program. Extraction Plan. Subsidence assessments. Limited access to site.	-	-	5	3	15	Low - Med	Yes
9	8	Mine Subsidence Affected Areas	Watercourses subject to subsidence impacts are not hydraulically and geomorphologically stable.	Refer Item 9.2.	Environmental	2	3	6	Low	Biodiversity Management Plan - annual flora monitoring program. Repair of flow path if required. Extraction Plan - Geomorphology Assessment.	-	-	2	3	6	Low	Yes
9	9	Mine Subsidence Affected Areas	Riparian vegetation that is the same or better than prior to commencement of mining is not able to be established along watercourses subject to subsidence impacts.	Refer Item 7.25.	Financial	10	2	20	Low - Med	Revegetation species and target communities defined in EIS, RMP and BMP. Progressive review of rehabilitation as undertaken. Annual seed harvest program. Reputable seed provider.	-	-	10	1	10	Low	Yes

			Consequence					
Likelihood	*Likelihood description*	*Probability*	Low (1)	Minor (2)	Moderate (5)	Significant (10)	Major (25)	Catastrophic (50)
5 - Very Likely	Likely to occur repeatedly – Expected in the work team	10% - 100%	5	10	25	50	125	250
4 - Likely	Probably will occur several times - Expected at this location	1% - 10%	4	8	20	40	100	200
3 - Possible	Could occur intermittently - Expected within Peabody	0.1% - 1%	3	6	15	30	75	150
2 - Unlikely	Could occur but hardly ever - Expected within the mining industry	0.01% - 0.1%	2	4	10	20	50	100
1 - Rare	Improbable or unrealistic - Not expected in the mining industry but seen in other industries	< 0.01%	1	2	5	10	25	50

			Consequence descriptions					
	Consequence Category		Low	Minor	Moderate	Significant	Major	Catastrophic
	Harm to People	P	Near miss, near hit, no medical treatment, report only (RO)	Slightly injured, first aid treatment (FAI)	Medical treatment (MTI), disabling reversible impairment, restricted work (RWI) or lost time (LTI)	Serious bodily injury or disabling irreversible impairment, permanent partial disability (PPD)	Single fatality incident. Total and permanent disability (TPD). Major irreversible health effects	Multiple fatality incident. Major injury / disease among multiple employees
	Environmental	E	Negligible or reversible environmental impact Nil to minor remediation (typically a shift) No breach of regulations or requirement to report to regulators	Minor reversible environmental impact, minor remediation (typically < 5 days) Non-compliances and breaches of regulation that may result in a citation (NOV) May require reporting to the regulators	Incident resulting in moderate reversible onsite and/or off-site impact causing short term effect. Moderate remediation required (typically a month) Non-compliances and breaches of regulation that may result in prosecution or citation or punitive fine. Requirement or obligation to report to the regulators	Incident resulting in significant onsite or off-site environmental impact causing medium to long term environmental harm Significant remediation required (typically less than 12 months) Significant legal issues, non-compliances and breaches of regulation that results in a prosecution or citation or fine Moderate litigation issues involving many weeks of senior management time	A major incident resulting in regional environmental impact causing long term environmental harm Major long term remediation required (greater than 12 months) Major litigation or prosecution resulting in long term interruption to operations or loss of licence at a site	Incident resulting in catastrophic widespread regional environmental harm causing disastrous effect Major long term remediation required (over multiple years) Major litigation or prosecution , Loss of License to operate at Multiple sites
	Finance (higher of cost or NPV)	F	<$10,000	$10,000 - $100,000	$100,000 - $1 mil	$1 mil - $20 mil	$ 20 mil-$100 mil	>$100 mil
	Impact on reputation	R	Minor impact, no public concern; Market cap impact < $20 M (< $0.07 per share)	Local media or public concern; Market cap impact $20 M - $30 M ($0.07 - $0.12 per share)	Regional media or public concern. Local criticism; Market cap impact $30 M - $100 M ($0.12 - $0.40 per share)	National adverse media or public criticism; Market cap impact $100 M - $250 M ($0.40 - $1.00 per share)	International adverse media or public criticism. International public concern; Market cap impact $250 M - $500 M ($1.00 - $1.85 per share)	Significant international public or media criticism or condemnation; Market cap impact > $500 M (> $1.85 per share)
	Law / Compliance / regulatory	C	Minor, one-off violations of law, regulation, permit or policy; minimal fines, penalties or costs	Recurring or systemic minor violations of law, regulation, permit or policy	Violations of law, regulation, permit or policy with moderate fines or penalties, Moderate Litigation, MSHA imminent danger order or similar	Significant violation of law or permit with material fines, penalties or costs. Serious dispute with strategic customer. Major Litigation	Material Litigation. Serious investigation by SEC, DOJ or foreign equivalent. Code of Conduct violations	Criminal investigation or proceedings involving officers or directors. Litigation with allegations of executive fraud or misappropriation
	Strategic risk	SR	Event does not have a meaningful impact to Strategic Outlook	Event does not have meaningful impact to Strategic Outlook, but may require further monitoring	Event may have a material impact on near-term outlook for a region or mine	Event has a material impact on strategic outlook for a region or basin that may require a change to operations to mitigate risk	Event causes mines in a region or basin to cease current operations	Event or threat such that BTU would cease to exist as an ongoing concern in coal operations

Risk Score	Notification	Level	Action (H&S)
<11	Crew / team	Same level	Develop a plan (formal or informal) with crew or continue with and established plan (SOP etc.) that ensures the task can be completed safely. Team should remain aware for changing conditions.
11 to 30	Supervisor	.+1	Develop a formal safe action plan with supervisor and others within the crew (SOP) that identifies all known hazards and details what controls need to be in place and how the task should be performed to ensure it can be completed safely.
31 to 50	Area manager or site GM	.+2	Conduct a formalized risk review of existing work process and controls. Explore additional control options that eliminate, substitute or reduce the risk. Monitor controls for effectiveness during the task.
51 - 100	BU Mgt	.+3	Controls should be reviewed to ensure risk is as low as reasonably practicable (ALARP), critical controls must be identified and monitored for effectiveness. If risk is not at ALARP, additional controls must be identified and a plan developed for implementation.
101 to 199	ELT	.+4	Controls should be added / improved and an additional risk assessment completed for activity to proceed.
200 or greater	CEO	.+5	Controls should be added / improved and an additional risk assessment completed for activity to proceed.