RUSSELL VALE COLLIERY
RUSSELL VALE REVISED UNDERGROUND EXPANSION PROJECT

REHABILITATION MANAGEMENT PLAN

RVC EC PLN 020

SUMMARY TABLE

Property	Value
Name of Mine	Russell Vale Colliery
Rehabilitation Management Plan Commencement Date	1 August 2022
Mining Leases	CCL 745 (expires 27/12/2023) ML 1575 (expires 22/03/2029) MPL 271 (expires 09/05/2033)
Name of Lease Holder	Wollongong Coal Limited
Date of Submission	1 August 2021
Approved by	Richard Sheehan, Group Environmental Manager
Document Owner	Richard Sheehan, Group Environmental Manager
Effective Date	

Version	Date	Review Team	Nature of the Amendment
0.1	27/4/2022	Umwelt	Original draft
0.2	3/6/2022	WCL and Umwelt	Revised draft addressing WCL comments
0.3	17/6/2022	WCL and Umwelt	Final draft issued for consultation
1	29/7/2022	WCL and Umwelt	Final incorporating amendments to address stakeholder comments

Contents

1 PART 1 – INTRODUCTION TO THE MINING PROJECT

This Rehabilitation Management Plan (RMP) has been prepared in accordance with the NSW Resources Regulator (NSW RR) *Form and Way – Rehabilitation Management Plan for Large Mines* (NSW RR, 2021)[1]. This RMP has been prepared for the Russell Vale Colliery (RVC) to satisfy the requirements of Schedule 2 Condition B45 of Development Consent MP09_0013 (the Development Consent), and mining lease conditions for Consolidated Coal Lease (CCL) 745, Mining Lease (ML) 1575, and Mining Purpose Lease (MPL) 271.

An amendment to the *Mining Regulation 2016* (Regulation) under the *Mining Act 1992* (Mining Act) commenced on 2 July 2021. The amendment provides new standard rehabilitation conditions for mining leases which replaces existing mining lease conditions. A transitional period of 12 months (to 2 July 2022) has been established to allow mining operations sufficient time to prepare for the implementation of the new conditions for any existing mining title. As such, the current rehabilitation requirement conditions for CCL 745, ML 1575, and MPL 271 will be replaced by new standard conditions during 2022. This RMP has been prepared to address Clause 10(1) in Schedule 8A of the Regulation.

1.1 History of operations

RVC (formerly known as NRE No 1 Colliery) is an underground coal mine operated by Wollongong Coal Limited (WCL). RVC is located approximately 8 km north of Wollongong and 70 km south of Sydney (see **Figure 1.1**), within the local government areas (LGAs) of Wollongong and Wollondilly in the Illawarra region of NSW (see **Figure 1.1**).

The South Bulli Coal Mining Company commenced mining on the slopes of the Illawarra Escarpment in the late-19th Century. Mining has occurred since 1887 and surface facilities have operated at the Russell Vale site since this time. Historically, operations at Russell Vale Colliery have undertaken mining activities in the Wongawilli, Balgownie and Bulli seams at varying depths of cover. Most recent mining has occurred in the Wongawilli Seam.

With the advent of more sophisticated mining methods in the 1960s, workings progressed further west of the Illawarra Escarpment. Subsequently, four ventilation shafts (Shaft Numbers 1, 2, 3 and 5) and a shaft to provide personnel and materials access to the workings (No. 4 Shaft) were sunk to the west of the escarpment. Mining commenced in the early 1990s beneath the catchment of Cataract Dam.

Mining of the Wongawilli seam (No. 3 seam) in the area has been undertaken for more than 15 years. Prior to mining within the No. 3 seam, initial mining in the area was undertaken in the Bulli and Balgownie seams (No. 1 and 2 seams).

In August 2004, production temporarily ceased, and the mine was placed on care and maintenance until 3 December 2004 when it was sold to Gujarat NRE Coking Coal Ltd (NRE) by Bellpac Pty Ltd. Mining recommenced at NRE No.1 Colliery in July 2005. The coal washery at Russell Vale ceased operation in March 2003.

[1] A large mine is a mine the subject of one or more mining leases, the carrying out of activities under at least one of which require an environment protection licence under the *NSW Protection of the Environment Operations Act 1997*.

NRE mined the Bulli seam in areas known as 310, 312 and 'P' panels, as well as in the Wongawilli seam in an area known as Wonga Mains and LW 4 and 5 in Wonga East. WCL mined the first 365m of LW6 which ended in July 2015. RVC was then placed in care and maintenance.

Previous mine owners sought approval to expand the longwall mining operations at RVC in 2009, with subsequent amendments to submissions by new owners WCL in 2013 and 2019 in response to reviews undertaken by the NSW Department of Planning and Environment (DPE). The July 2019 submission provided major changes to the project to significantly reduce impacts from subsidence, including an amended mine plan which no longer involves longwall mining.

The Development Consent for the revised Russell Vale East (RVE) Underground Expansion Project (UEP) was approved by the NSW Independent Planning Commission (IPC) on 8 December 2020. The approved development involves mining of panels within the Wonga East area by means of non-caving bord and pillar mining technique only, with workings designed to be long term stable with negligible subsidence impacts. Operations are approved to be undertaken until five years from the date of commencement of mining operations. Mining operations under the Development Consent commenced in September 2021.

The Russell Vale Colliery pit top contains the Wongawilli Seam main mine portals and caters for mine ventilation, mining equipment, vehicle and machinery maintenance, mine supplies, administration, coal transport to the surface, and an 44,000-tonne capacity stockpiling facility.

There is currently one main transport entry into the mine, namely a roadway for rubber tyred vehicles. The rubber tyred vehicles are the primary transport system that services the mine. Coal is transported from the workings to the surface of the mine via conveyor.

To date, no rehabilitation works have been completed at RVC. Due to the nature of underground mining, only a relatively small surface disturbance footprint is required for operation of the mine. This has limited the opportunities for surface-related rehabilitation works to be undertaken at RVC.

1.2 Current development consents, leases and licences

RVC holds approvals for a variety of activities. These approvals include mining leases, complying development certificates, development consents, major project approvals, environmental protection licences, and a variety of other approvals. These are outlined in **Table 1.1**.

Table 1.1 Current Development Consents, Leases and Licences

Licence and/or Approval	Document Number	Issue Date	Expiry Date
Consolidated Coal Lease	745	27/12/1990	30/12/2023
Mining Purposes Lease	271	09/05/1991	09/05/2033
Mining Lease	1575	22/03/2012	22/03/2029
Environment Protection Licence	12040	Current	-
SPCC (now EPA) Approval for Storm WaterControl Dam	90/6041 (280.021C/21)	10/08/1992	-
Development Control for Storm Water Control Dam and Water Treatment	D91/551	17/06/1992	-
Dangerous Goods Licence	NDG021269	08/09/2015	-
Radiation Management Licence	5063081	-	22/10/2022
SPCC (now EPA) Approval for Stage 3 of RVEA	90/4711 (280021C/20)	04/09/1992	-
Development Control for Russell Vale Waste Emplacement Area	D89/839	11/04/1990	-
Development Control for Demolition of Washery	D2004/32	14/12/2004	-
Water Access Licence Certificate	10WA118770	29/01/2013	28/01/2028
Development Consent	MP09_0013	8/12/2020	25 March 2026
Commonwealth EPBC Approval	EPBC Approval 2020/8702	31/08/2021	31/12/2067
Complying Development Certificate – BathHouse	1091/11	07/11/2011	-

[1] This activity approval (D2014/49984) has been amended twice and is now (D2018/600[v2]) and expires 31/12/2021. The original access consent was also replaced by the Umbrella Consent (F2020/3092).

[2] This approval is replaced by the Umbrella Consent F2020/3092.

[3] This approval is also replaced by the Umbrella consent F2020/3092.

1.3 Land ownership and land use

RVC's lease area covers a range of leasehold and freehold lands. Land ownership and land use are presented in **Figure 1.2** and **Figure 1.3** respectively, with land ownership details provided in **Table 1.2.**

As discussed in **Section 1.1**, underground coal mining has been undertaken in the Illawarra Escarpment region since the late 19th century. The current RVC Pit Top and Coal Handling site is located on land which previously hosted surface facilities for these original underground workings.

The RVC Pit Top and Coal Handling sites are situated on freehold land owned by WCL.

Urban residential areas surround the Pit Top site to the east, northeast and south east, with light industrial land located along the southern side of Bellambi Lane to the east of the site.

The majority of RVC's lease area, including shaft sites No. 1, No. 2, No. 3, No. 4 and No. 5, is located within the Metropolitan Special Area for the Sydney drinking water catchment, as declared under the WaterNSW Act 2014. This land is owned and administered by WaterNSW. The remainder of the lease area is owned by WCL.

Potential future land uses for the RVC lease area are discussed in **Section 2.2**.

Table 1.2 describes the land ownership details relevant to each of the RVC's surface leases.

Table 1.2 Russell Vale Colliery Lease Land Ownership

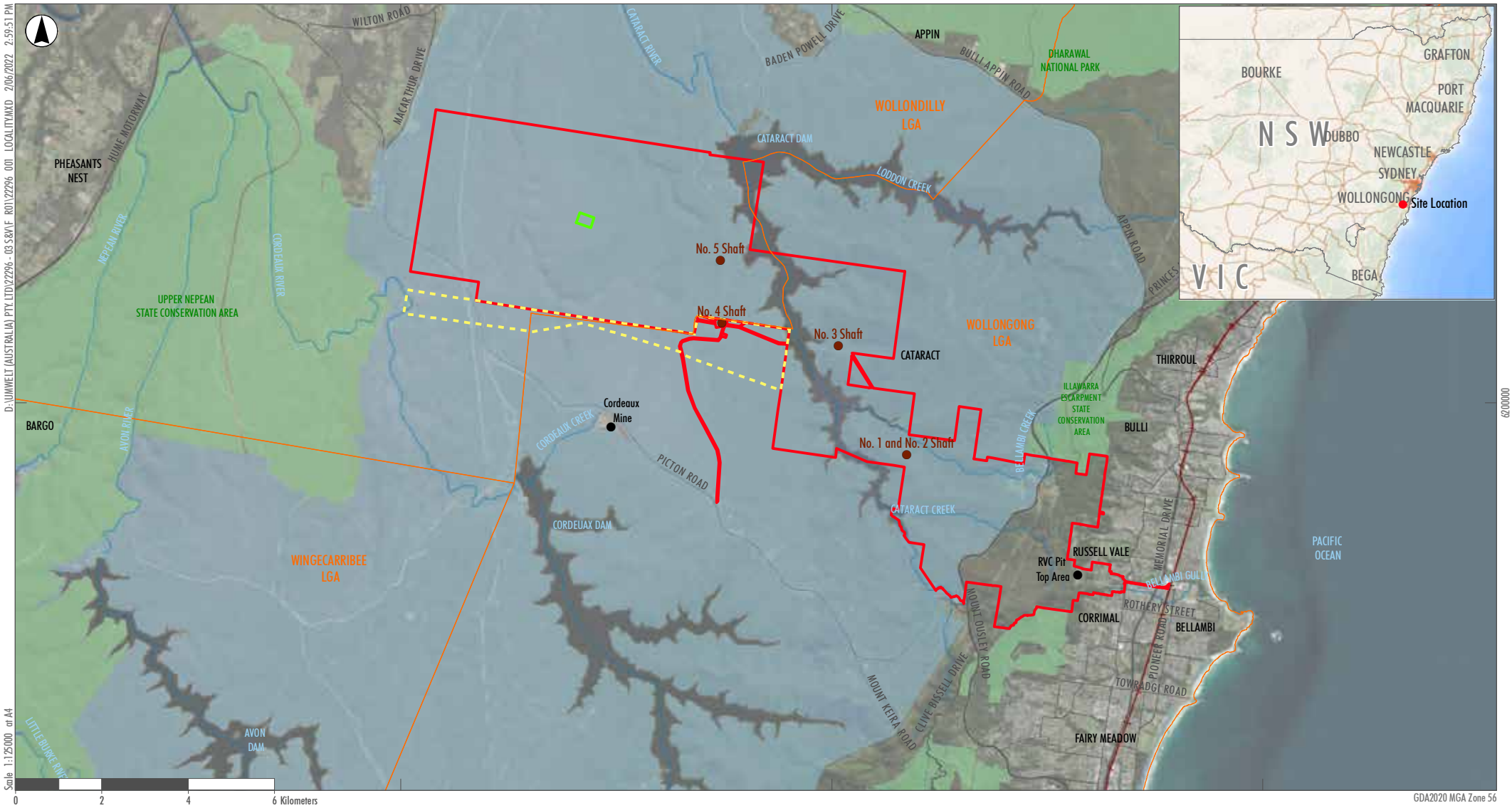
Property ID / Lot Number	DP Number	Land Use	Owner
1	77407	FREEHOLD	Wollongong Coal
1	630761	FREEHOLD	Wollongong Coal
1	986676	FREEHOLD	Wollongong Coal
63	751301	FREEHOLD	Wollongong Coal
1	1052074	FREEHOLD	Wollongong Coal
71	751301	FREEHOLD	Wollongong Coal
34	751301	FREEHOLD	Wollongong Coal
95	4414	FREEHOLD	Wollongong Coal
151	667029	FREEHOLD	Wollongong Coal
31	1006012	FREEHOLD	Wollongong Coal
1	986675	FREEHOLD	Wollongong Coal
2	1046069	FREEHOLD	Wollongong Coal
66	751301	FREEHOLD	Wollongong Coal
6	793358	FREEHOLD	Wollongong Coal
67	751301	FREEHOLD	Wollongong Coal
1	1046070	FREEHOLD	Wollongong Coal
6001	1077301	FREEHOLD	Wollongong Coal
6001	1077301	FREEHOLD	Wollongong Coal
2	1052074	FREEHOLD	Wollongong Coal
31	751301	FREEHOLD	Wollongong Coal
69	751301	FREEHOLD	Wollongong Coal
130	751301	FREEHOLD	Wollongong Coal
3	60975	FREEHOLD	Wollongong Coal
70	751301	FREEHOLD	Wollongong Coal
68	751301	FREEHOLD	Wollongong Coal
1	534522	FREEHOLD	Wollongong Coal
32	751301	FREEHOLD	Wollongong Coal
30	751301	FREEHOLD	Wollongong Coal
1	1046069	FREEHOLD	Wollongong Coal
6001	1077301	FREEHOLD	Wollongong Coal

Property ID / Lot Number	DP Number	Land Use	Owner
3	1052074	FREEHOLD	Wollongong Coal
1	652833	FREEHOLD	Wollongong Coal
96	4414	FREEHOLD	Wollongong Coal
1	225021	FREEHOLD	Wollongong Coal
2	225021	FREEHOLD	Wollongong Coal
3	225021	FREEHOLD	Wollongong Coal
4	225021	FREEHOLD	Wollongong Coal
1	1186788	LEASEHOLD	Sydney Catchment Authority
6502	1083715	LEASEHOLD	Private landholder
12	736121	LEASEHOLD	Integra Energy Australia
6000	1077301	LEASEHOLD	Illawarra Land Pty Ltd
6500	1083715	LEASEHOLD	Illawarra Land Pty Ltd
6501	1083715	LEASEHOLD	Private landholder
	63557	LEASEHOLD	
1	202320	LEASEHOLD	
101	1171375	LEASEHOLD	
611	1065600	LEASEHOLD	
50	1045297	LEASEHOLD	
108	883791	LEASEHOLD	
270	1138691	LEASEHOLD	
11	1190609	LEASEHOLD	
1	532342	LEASEHOLD	
2	532342	LEASEHOLD	
1	1022945	LEASEHOLD	
5	175437	LEASEHOLD	
102	1171375	LEASEHOLD	
1	976144	LEASEHOLD	
7	793358	FREEHOLD	

1.3.1 Land ownership and land use figure

In line with the requirements of the *NSW Form and Way: Rehabilitation Management Plan for Large Mines* **Figures 1.1 to 1.4** include the following information:

- **Figure 1.1** – Project Locality:
  - The location of the project in a State-wide context, the main and surrounding Local Government area/s and major towns.
  - Surface and subsurface authorisations covering the mining area (including exploration licences, assessment leases and mining leases) granted under the Mining Act 1992.
  - Water catchment areas (including special / protected areas around water catchment storage areas).
  - Main roads, railways and public infrastructure.
  - Neighbouring residences and neighbouring operations of significance (e.g., mines and industrial areas within, and adjacent to, the mining lease area).
- **Figure 1.2** – Land Ownership:
  - Land ownership (e.g., private, Crown land, land owned by the mining company).
  - Neighbouring residences and neighbouring operations of significance (e.g., mines and industrial areas within, and adjacent to, the mining lease area).
- **Figure 1.3** – Land Use:
  - Land use boundaries (e.g., cropping, pasture, forest, undisturbed flora/fauna habitat).
- **Figure 1.4(a to e)** – Existing Environment:
  - Surface contours at a minimum of five-metre contour intervals.
  - Vegetation community boundaries.
  - Areas of environmental, cultural or heritage sensitivity identified for retention or special management, including as required by a development consent (e.g., Aboriginal objects, heritage items, biodiversity offset areas within the mining area).



Legend

RVC Lease Area

- CL 745
- MPL 271
- ML 1575
- RVC Shaft Locations

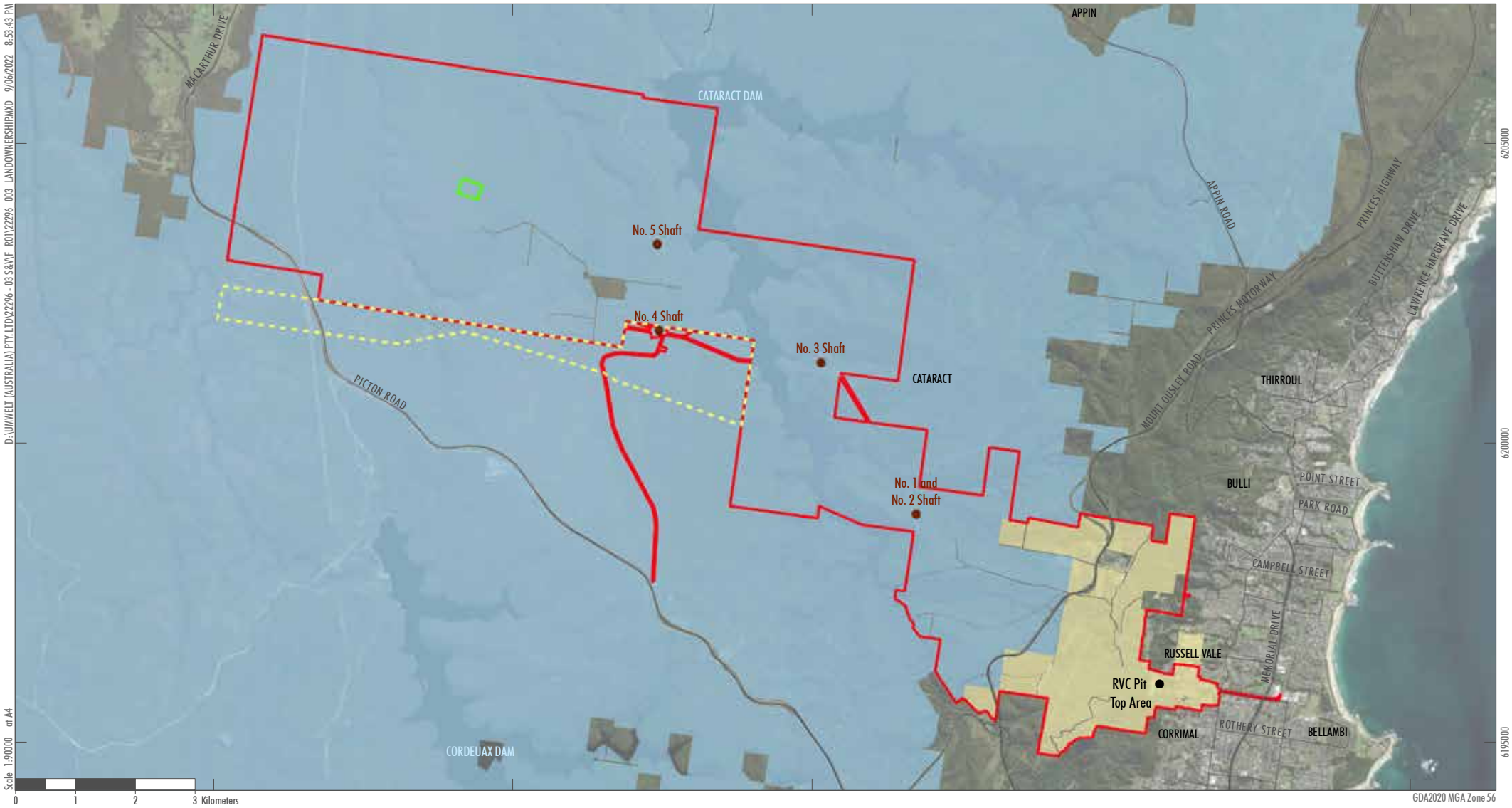
- National Parks and Reserves
- WaterNSW Metropolitan Special Area
- Local Government Area (LGA)
- Hydrolines
- Road
- Railway

FIGURE 1.1

Project Locality

Image Source: ESRI Basemap (2022) Data source: NSW DSFI (2021)

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 2/06/2022



Legend

RVC Lease Area

- CL 745
- MPL 271
- ML 1575
- RVC Shaft Locations
- Road

Land Ownership

- WaterNSW
- WCL

Image Source: ESRI Basemap (2022) Data source: WCL (2021)

FIGURE 1.2

Land Ownership

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 9/06/2022

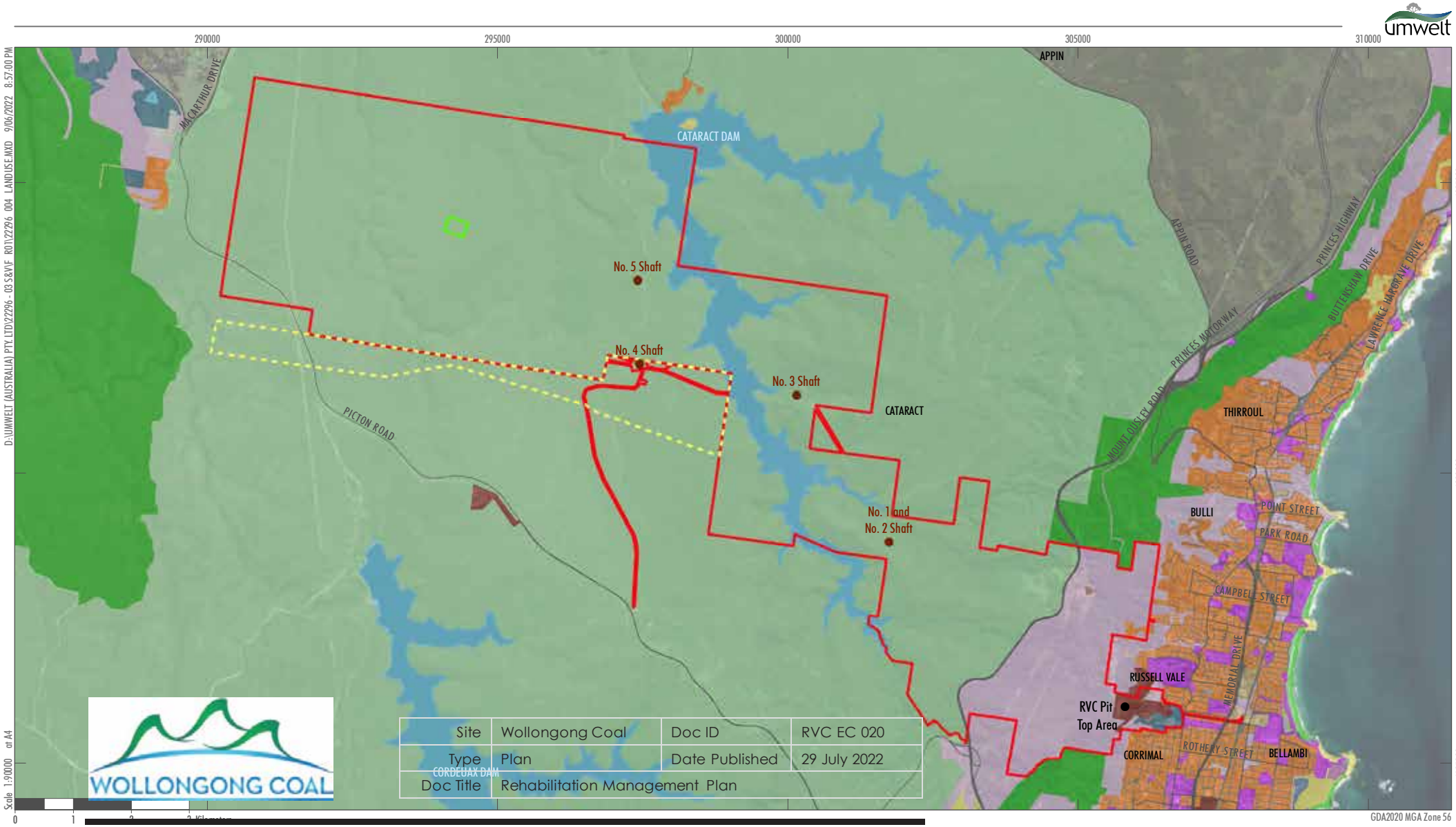


FIGURE 1.3
Land Use Environment

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 9/06/2022

2.2 Final land use options assessment

Development Consent MP 09_0013 does not define a final land use/s for the RVC lease area. As part of the UEP Revised Preferred Project Report (RPPR) submitted during the MP 09_0013 approval process, indicative post-mining land uses were proposed by WCL for each final land use domain. These land uses were also presented in the most recently approved Mining Operations Plan (2021).

The final land uses presented in the previous Mining Operations Plan included:

Legend

RVC Lease Area
- CL 745
- MPL 271
- ML 1575
- Roads
- Hydrolines

Contours (m)

Plant Community Type (PCT)
- Urban native/exotic
- Blackbutt - Turpentine - Banglay moist open forest on sheltered slopes and gullies, southern Sydney Basin Bioregion - Moderate condition
- Phragmites australis and Typha orientalis coastal freshwater wetlands of the Sydney Basin Bioregion - Moderate condition
- Revegetation

Image Source: ESRI Basemap (2021) Data source: NSW DSFI (2020), Biosis (2021)

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Scale 1:7000 at A4

FIGURE 1.4A

Existing Environment - RVC Pit Top Area

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 9/06/2022

Legend

RVC Lease Area

- CL 745
- MPL 271
- ML 1575
- Contours (m)

Plant Community Type (PCT)

- Red Bloodwood - scribbly gum heathy woodland - Low-to-moderate condition

FIGURE 1.4B

Existing Environment - Shafts No. 1 and No. 2

Image Source: Nearmap (2022) Data source: Biosis (2021)

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 9/06/2022

Legend

RVC Lease Area

- CL 745
- MPL 271
- ML 1575
- Contours (m)

Plant Community Type (PCT)

- Red Bloodwood - scribbly gum heathy woodland - Low-to-moderate condition

FIGURE 1.4C

Existing Environment - Shaft No. 3

Image Source: Nearmap (2022) Data source: Biosis (2021)

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 9/06/2022

Legend

RVC Lease Area

- CL 745
- MPL 271
- ML 1575
- Contours (m)

Plant Community Type (PCT)

- Red Bloodwood - scribbly gum heathy woodland - Low-to-moderate condition
- Banksia - Needlebush - Tea-tree damp heath swamp - Moderate condition

FIGURE 1.4D

Existing Environment - Shaft No. 4

Image Source: Nearmap (2020) Data source: Biosis (2021)

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 9/06/2022

Legend

RVC Lease Area

- CL 745
- MPL 271
- ML 1575
- Contours (m)

Plant Community Type (PCT)

- Red Bloodwood - scribbly gum heathy woodland - Low-to-moderate condition

FIGURE 1.4E

Existing Environment - Shaft No. 5

Image Source: Nearmap (2020) Data source: Biosis (2021)

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 9/06/2022

2 PART 2 – FINAL LAND USE

2.1 Regulatory requirements for rehabilitation

Rehabilitation at RVC is required by the *Mining Act 1992* and various conditions of the following:

- CCL 745.
- ML 1575.
- MPL 271.
- MP 09_0013.

Any activities associated with the closure or rehabilitation of RVC will be undertaken with due regard to all relevant legislation, including (but not limited to) the following:

- *Mining Act 1992 No 29.*
- *Biodiversity Conservation Act 2016.*
- *Dams Safety Act 2015.*
- *Environmental Planning and Assessment Act 1979 No 203.*
- *Protection of the Environment Operations Act 1997 No 156.*
- *Sydney Water Catchment Management Act 1998.*
- *Water Act 2007.*
- *Water Management Act 2000 No 92.*
- *Water NSW Act 2014 No 74.*
- *National Parks and Wildlife Act 1974 No 80.*

Table 2.1 provides a list of the regulatory requirements relating to rehabilitation that apply to RVC and whether each requirement applies to the entire site, a specific domain, or a defined parcel of land, as well as an indicative timing to meet each requirement.

It is noted that at the time of writing of this RMP, existing mining leases held by WCL are yet to receive the new standard mining lease conditions as required by the amendment to the Regulation. For the purpose of this RMP and in **Table 2.1** below, the new standard mining lease conditions have been applied and are assumed to be relevant to CCL 745, ML 1575, and MPL 271.

Table 2.1 Regulatory Requirements for Rehabilitation at RVC

Condition Source	Requirement	Relevant Land Area	Timing	Where Addressed in RMP
CCL 745, ML 1575 and MPL 271				
Condition 4	*Must prevent or minimise harm to environment* (1) The holder of a mining lease must take all reasonable measures to prevent, or if that is not reasonably practicable, to minimise, harm to the environment caused by activities under the mining lease. (2) In this clause – ***harm*** to the environment has the same meaning as in the *Protection of the Environment Operations Act 1997*.	Entire lease area	Ongoing	**This RMP**
Condition 5	*Rehabilitation to occur as soon as reasonably practicable after disturbance* The holder of a mining lease must rehabilitate land and water in the mining area that is disturbed by activities under the mining lease as soon as reasonably practicable after the disturbance occurs.	All disturbed surface areas	Ongoing	**Section 6**
Condition 6	*Rehabilitation must achieve final land use* (1) The holder of a mining lease must ensure that rehabilitation of the mining area achieves the final land use for the mining area.	All disturbed surface areas	Ongoing	**Table 4.1** **Section 6**
	(2) The holder of the mining lease must ensure any planning approval has been obtained that is necessary to enable the holder to comply with subclause (1).	Entire lease area	Ongoing	**Table 1.1**
	(3) The holder of the mining lease must identify and record any reasonably foreseeable hazard that presents a risk to the holder's ability to comply with subclause (1). *Note— Clause 7 requires a rehabilitation risk assessment to be conducted whenever a hazard is identified under this subclause.*	Entire lease area	Ongoing	**Section 3**
	(4) In this clause— ***final land use*** for the mining area means the final landform and land uses to be achieved for the mining area— a. as set out in the rehabilitation objectives statement and rehabilitation completion criteria statement, and b. for a large mine—as spatially depicted in the final landform and rehabilitation plan, and	All disturbed surface areas	Ongoing	**Section 4** **Section 5**

Condition Source	Requirement	Relevant Land Area	Timing	Where Addressed in RMP
	c. if the final land use for the mining area is required by a condition of development consent for activities under the mining lease—as stated in the condition. ***planning approval*** means— a. a development consent within the meaning of the *Environmental Planning and Assessment Act 1979*, or b. an approval under that Act, Division 5.1.			
Condition 7	***Rehabilitation risk assessment*** (1) The holder of a mining lease must conduct a risk assessment (a rehabilitation risk assessment) that— a. identifies, assesses and evaluates the risks that need to be addressed to achieve the following in relation to the mining lease— i) the rehabilitation objectives, ii) the rehabilitation completion criteria, iii) for large mines—the final land use as spatially depicted in the final landform and rehabilitation plan, and b. identifies the measures that need to be implemented to eliminate, minimise or mitigate the risks.	Entire lease area	During preparation of this RMP	**Section 3**
	(2) The holder of the mining lease must implement the measures identified.	Entire lease area	During preparation of this RMP	**Section 3**
	(3) The holder of a mining lease must conduct a rehabilitation risk assessment— a. for a large mine—before preparing a rehabilitation management plan, and b. for a small mine—before preparing the rehabilitation outcome documents for the mine, and c. whenever a hazard is identified under clause 6(3)—as soon as reasonably practicable after it is identified, and d. whenever given a written direction to do so by the Secretary.	Entire lease area	During preparation of this RMP	**Section 3**
Condition 8	***Application of Division*** This Division does not apply to a mining lease unless— a. the security deposit required under the mining lease is greater than the minimum deposit prescribed under the Act, section 261BF in relation to that type of mining lease, or	N/A	N/A	**N/A**

Condition Source	Requirement	Relevant Land Area	Timing	Where Addressed in RMP
	b. the Secretary gives a written direction to the holder of the mining lease that this Division, or a provision of this Division, applies to the mining lease.			
Condition 9	***General requirements for documents*** A document required to be prepared under this Division must— a. be in a form approved by the Secretary, and *Note* – The *approved forms are available on the Department's website* b. include any matter required to be included by the form, and c. if required to be given to the Secretary—be given in a way approved by the Secretary.	Entire lease area	Ongoing	**This RMP**
Condition 10	**Rehabilitation management plans for large mines** (1) The holder of a mining lease relating to a large mine must prepare a plan (a rehabilitation management plan) for the mining lease that includes the following: a. a description of how the holder proposes to manage all aspects of the rehabilitation of the mining area, b. a description of the steps and actions the holder proposes to take to comply with the conditions of the mining lease that relate to rehabilitation, c. a summary of rehabilitation risk assessments conducted by the holder, d. the risk control measures identified in the rehabilitation risk assessments, e. the rehabilitation outcome documents for the mining lease, f. a statement of the performance outcomes for the matters addressed by the rehabilitation outcome documents and the ways in which those outcomes are to be measured and monitored.	Entire lease area	Submission of rehabilitation objectives and completion criteria to NSW RR	**Section 3** **Section 4** **Section 6**
	(2) If a rehabilitation outcome document has not been approved by the Secretary, the holder of the mining lease must include a proposed version of the document. (3) A rehabilitation management plan is not required to be given to the Secretary for approval. (4) The holder of the mining lease— a. must implement the matters set out in the rehabilitation management plan, and b. if the forward program specifies timeframes for the implementation of the matters—must implement the matters within those timeframes.	Entire lease area	Ongoing	**Noted**
Condition 11	***Amendment of rehabilitation management plans*** The holder of a mining lease must amend the rehabilitation management plan for the mining lease	Entire lease area	As required	**Section 11**

Condition Source	Requirement	Relevant Land Area	Timing	Where Addressed in RMP
	as follows— a. to substitute the proposed version of a rehabilitation outcome document with the version approved by the Secretary—within 30 days after the document is approved, b. as a consequence of an amendment made under clause 14 to a rehabilitation outcome document—within 30 days after the amendment is made, c. to reflect any changes to the risk control measures in the prepared plan that are identified in a rehabilitation risk assessment—as soon as practicable after the rehabilitation risk assessment is conducted, d. whenever given a written direction to do so by the Secretary—in accordance with the direction.			
Condition 12	***Rehabilitation outcome documents*** (1) The holder of a mining lease must prepare the following documents (the rehabilitation outcome documents) for the mining lease and give them to the Secretary for approval— a. the rehabilitation objectives statement, which sets out the rehabilitation objectives required to achieve the final land use for the mining area, b. the rehabilitation completion criteria statement, which sets out criteria, the completion of which will demonstrate the achievement of the rehabilitation objectives, c. for a large mine, the final landform and rehabilitation plan, showing a spatial depiction of the final land use.	Entire lease area	To be determined following submission of rehabilitation objectives and completion criteria	**Section 4** **Section 5**
	(2) If the final land use for the mining area is required by a condition of development consent for activities under the mining lease, the holder of the mining lease must ensure the rehabilitation outcome documents are consistent with that condition.	Entire lease area	N/A – not required by Development Consent	**Section 4** **Section 5**
Condition 13	***Forward program and annual rehabilitation report*** (1) The holder of a mining lease must prepare a program (a forward program) for the mining lease that includes the following— a. a schedule of mining activities for the mining area for the next 3 years, b. a summary of the spatial progression of rehabilitation through its various phases for the next 3 years, c. a requirement that the rehabilitation of land and water disturbed by mining activities under the mining lease must occur as soon as reasonably practicable after the disturbance occurs.	Entire lease area	Concurrent with submission of this RMP	**N/A**

Condition Source	Requirement	Relevant Land Area	Timing	Where Addressed in RMP
	(2) The holder of a mining lease must prepare a report (an annual rehabilitation report) for the mining lease that includes— a. a description of the rehabilitation undertaken over the annual reporting period, b. a report demonstrating the progress made through the phases of rehabilitation provided for in the forward program applying to the reporting period, c. a report demonstrating progress made towards the achievement of the following— i) the objectives set out in the rehabilitation objectives statement, ii) the criteria set out in the rehabilitation completion criteria statement, iii) for large mines—the final land use as spatially depicted in the final landform and rehabilitation plan. (3) If a rehabilitation outcome document has not been approved by the Secretary, the holder of the mining lease must rely on a proposed version of the document. (4) The holder of the mining lease must give the forward program and annual rehabilitation report to the Secretary. (5) In this clause— ***annual reporting period*** means each period of 12 months commencing on: a. the date on which the mining lease is granted, or b. if the Secretary approves			
Condition 14	***Amendment of rehabilitation outcome documents and forward program*** (1) This clause applies to— a. a rehabilitation outcome document if it has been approved by the Secretary, and b. a forward program if it has been given to the Secretary. (2) The holder of a mining lease must not amend a document to which this clause applies that relates to the mining lease unless— a. the Secretary gives the holder a written direction to do so, or b. the Secretary, on written application by the holder, gives a written approval of the amendment. (3) The holder of the mining lease must amend the document in accordance with the Secretary's direction or approval. (4) Nothing in this clause prevents the holder of a mining lease preparing a draft amendment for	Entire lease area	As required	**N/A**

Condition Source	Requirement	Relevant Land Area	Timing	Where Addressed in RMP
	submission to the Secretary for approval.			
Condition 15	*Times at which documents must be prepared and given* (1) The holder of a mining lease must do the following before the end of the initial period— a. prepare a rehabilitation management plan, and b. prepare rehabilitation outcome documents and give them, other than the rehabilitation completion criteria statement, to the Secretary for approval, and c. prepare a forward program and give it to the Secretary. (2) The holder of the mining lease must prepare a forward program and annual rehabilitation report and give them to the Secretary before— a. 60 days after the last day of each annual reporting period, commencing with the annual reporting period in which the forward program was given to Secretary under subclause (1)(c), or b. a later date approved by the Secretary. (3) A rehabilitation completion criteria statement relating to completion of rehabilitation during a period covered by a forward program must be given to the Secretary for approval when the forward program is required to be given to the Secretary. (4) The holder of the mining lease must prepare updated rehabilitation outcome documents for the mining lease and give them to the Secretary for approval before— a. 60 days after a development consent is modified following an application referred to in clause 20(1)(b), or b. a later date approved by the Secretary. (5) A rehabilitation completion criteria statement is not required to be given to the Secretary under subclause (4) unless a rehabilitation completion criteria statement has already been given to the Secretary under subclause (3). (6) The Secretary may, by written notice, direct the holder of a mining lease to prepare, or give to the Secretary, a document required to be prepared under this Division at a time other than that specified in this clause. (7) The holder of the mining lease must comply with the direction. (8) In this clause— ***initial period*** means the period commencing when the mining lease is granted and ending— a. 30 days, or other period approved by the Secretary, after this Division first applies to the	Entire lease area	Ongoing	**This RMP**

Condition Source	Requirement	Relevant Land Area	Timing	Where Addressed in RMP
	mining lease, or b. if this Division applies to the mining lease because of an increase in the required security deposit— i) when the surface of the mining area is disturbed by activities under the mining lease, or ii) at a later date approved by the Secretary.			
Condition 16	***Certain documents to be publicly available*** (1) This clause applies to the following documents— a. a rehabilitation management plan, b. a forward program, c. an annual rehabilitation report. (2) The holder of a mining lease must make a document to which this clause applies publicly available by— a. publishing it on its website in a prominent position, or b. if the holder does not have a website— providing a copy of it to a person— i) on the written request of a person, and ii) without charge, and iii) within 14 days after the request is received. (3) If a document is published on the website of the holder of the mining lease, the holder must ensure that it is published— a. for a rehabilitation management plan—within 14 days after it is prepared or amended, or b. for a forward program or an annual rehabilitation report—within 14 days after it is given to the Secretary or amended, (4) Personal information within the meaning of the Privacy and Personal Information Protection Act 1998 is not required to be included in a document made available to a person under this clause.	Entire lease area	Within 14 days of this RMP being prepared, amended or submitted (where required)	**N/A**
Condition 17	***Records demonstrating compliance*** The holder of a mining lease must create and maintain records of all actions taken that demonstrate compliance with each of the conditions set out in this Part. *Note— The Act, sections 163D and 163E provide for the form in which records must be kept and the period for which they must be retained.*	Entire lease area	Ongoing	**Section 11**

Condition Source	Requirement	Relevant Land Area	Timing	Where Addressed in RMP
Condition 18	***Report on non-compliance*** (1) The holder of a mining lease must provide the Minister with a written report detailing any non-compliance with— a. a condition of the mining lease, or Note— The Act, section 364A contains provisions relating to the use and disclosure of information provided under this condition. b. a requirement of the Act or this Regulation relating to activities under the mining lease. (2) The holder of the mining lease must provide the report within 7 days after becoming aware of the non-compliance. (3) The holder of the mining lease must ensure the report— a. identifies the condition of the mining lease, or the requirement of the Act or this Regulation, to which the non-compliance relates, and b. describes the non-compliance and specifies the date or dates on which, or the period during which, the non-compliance occurred, and c. describes the causes or likely causes of the non-compliance, and d. describes the action that has been taken, or will be taken, to mitigate the effects, and to prevent any recurrence, of the non-compliance.	Entire site	Ongoing	**Section 10**
MP 09_0013				
Schedule 2 Condition B44	The Applicant must rehabilitate the site in accordance with the conditions imposed on the mining lease(s) associated with the development under the *Mining Act 1992*. This rehabilitation must be generally consistent with the proposed rehabilitation strategy described in the RPPR and comply with the objectives in Table 5. *Table 5: Rehabilitation objectives* ***Feature*** / ***Objective*** All areas of the site affected by the development • Safe, stable & non-polluting. • Fit for the intended post mining land use/s. • Establish the final landform and post-mining land use/s as soon as practicable after cessation of mining operations.	All disturbed surface areas	Progressive throughout operations	**Section 4.1**

Condition Source	Requirement		Relevant Land Area	Timing	Where Addressed in RMP
		• Minimise post-mining environmental impacts.			
	Areas proposed for native ecosystem re- establishment	• Establish/restore self-sustaining native ecosystems. • Establish local plant community types. • Establish: - Riparian habitat within any diverted and/or re- established creek lines and retained water features. - Habitat, feed and foraging resources for threatened fauna species. - Vegetation connectivity and wildlife corridors, as far as reasonable and feasible.			
	Other areas affected by development	• Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of local native plant species for the intended post-mining land use(s).			
	Final Landforms	• Stable and sustainable for the intended post-mining land use/s. • Consistent with surrounding topography to minimise visual impacts. • Incorporate relief patterns and design principles consistent with natural drainage that mimic natural topography and mitigate erosion to the greatest extent practicable.			
	Surface Infrastructure Sites	• Decommissioned and, subject to Historic Heritage Management Plan, removed, unless further approval is obtained for their retention and post- mining use. • Revegetated with suitable local native plant species to a landform consistent with the surrounding environment and the intended post mining land use(s).			
	Portals and vent shafts	• Decommissioned and made safe and stable. • Retain habitat for threatened species (e.g., bats) where practicable.			
	Watercourse subject to mine water discharge and/or	• Hydraulically and geomorphologically stable. • Aquatic ecology and riparian vegetation that is the same or better			

<table>
<tr><th>Condition Source</th><th>Requirement</th><th>Relevant Land Area</th><th>Timing</th><th>Where Addressed in RMP</th></tr>
<tr><td></td><td>
<table>
<tr><td>subsidence impacts or environmental consequences that are greater than negligible.</td><td>than prior to the grant of this consent.</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>Water quality</td><td>• Water retained on site is ft for the intended post-mining land use(s).
• Water management is consistent with any regional catchment management strategy.</td></tr>
<tr><td>Community</td><td>• No additional risk to public safety than prior to grant of this consent.
• Minimise the adverse socio-economic effects associated with mine closure.</td></tr>
</table>
Notes:
• These rehabilitation objectives apply to all subsidence impacts and environmental consequences caused by all underground mining of the development.
• Where remediation of watercourses is likely to cause subsidence impacts or environmental consequences greater than those that require rehabilitation, alternative equivalent works may be undertaken within e affected watercourses.
</td><td></td><td></td><td></td></tr>
<tr><td>Schedule 2 Condition B45</td><td>The Applicant must prepare and implement a Rehabilitation Management Plan in accordance with the conditions imposed on the mining lease(s) associated with the development under the Mining Act 1992. This plan must:
(a) Be prepared by a suitably qualified and experience person/s;
(b) Be prepared in accordance with the relevant requirements specified under the Mining Act 1992;
(c) Be prepared in consultation with the Department, DPIE Water, BCD, WaterNSW, RR and WCC;
(d) Be prepared in accordance with any relevant MEG Guideline;
(e) Include a life of mine rehabilitation and mining schedule which outlines key progressive rehabilitation milestones from the commencement of operations through to decommissioning</td><td>Entire site</td><td>During preparation and revision of RMP</td><td>This RMP</td></tr>
</table>

Condition Source	Requirement	Relevant Land Area	Timing	Where Addressed in RMP
	and mine closure; (f) Include Rehabilitation Objectives, Rehabilitation Completion Criteria and a Final Landform and Rehabilitation Plan (g) Include an overview of the identified risks to achieving successful rehabilitation and the type of rehabilitation strategies to be implemented to address the identified risks; (h) Describe the measures to be implemented on the site to achieve the Rehabilitation Objectives in Table 5 and the criteria in paragraph (f); (i) Include detailed mine plans and scheduling for rehabilitation to be initiated, undertaken and/or completed over the next three years, or other suitable time period as agreed with the Resources Regulator; (j) Include procedures for the reasonable use of interim stabilisation and temporary vegetation strategies to minimise the area exposed for dust generation; (k) Include a program to monitor, audit and report on the progress against the Rehabilitation Objectives and Rehabilitation Completion Criteria and the Final Landform and Rehabilitation Plan; and (l) Outline intervention and adaptive management techniques to ensure rehabilitation remains on a trajectory of achieving the Rehabilitation Objectives, Rehabilitation Completion Criteria and the Final Landform and Rehabilitation Plan as soon as reasonably practical. *Note*: *The Rehabilitation Management Plan may be combined with a Mining Operations Plan, or similar plan required under any mining lease granted for the development.*			
Schedule 2 Condition F5	Management plans required under this consent must be prepared in accordance with relevant guidelines and include: (a) a summary of relevant background or baseline data; (b) details of: i) the relevant statutory requirements (including any relevant consent, licence or lease conditions); ii) any relevant limits or performance measures and criteria; and iii) the specific performance 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 document/s listed in condition A2;	Entire Site	During preparation and revision of RMP	This RMP

Condition Source	Requirement	Relevant Land Area	Timing	Where Addressed in RMP
	(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 condition F5(c); (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 or performance criterion; ii) complaint; or iii) failure to comply with other statutory requirements; (i) public sources of information and data to assist stakeholders in understanding environmental impacts of the development; and (j) 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.*			

2.2 Final land use options assessment

Development Consent MP 09_0013 does not define a final land use/s for the RVC lease area. As part of the UEP Revised Preferred Project Report (RPPR) submitted during the MP 09_0013 approval process, indicative post-mining land uses were proposed by WCL for each final land use domain. These land uses were also presented in the most recently approved Mining Operations Plan (2021).

The final land uses presented in the previous Mining Operations Plan included:

- Domain 1 – Mixed use (e.g., tourism/heritage, native ecosystem, water management, residential, public open space).
- Domain 2 – Amalgamation into the Illawarra Escarpment State Conservation Area (IESCA) (i.e., native ecosystem).
- Domain 3 – Amalgamation into the WaterNSW Metropolitan Special Area (i.e., native ecosystem).

These final land use options remain indicative only and are subject to change. Based on the current knowledge of available resources within the RVC lease area, RVC has a potential operating life of over 25 years. As the preferred final land use/s will be contingent upon Wollongong City Council strategic planning devices, such as the Wollongong Local Environment Plan and Illawarra Escarpment Strategic Management Plan relevant at the time of closure, a final land use options assessment will be undertaken as part of the conceptual mine closure planning process. This will also allow for any changes to mine planning and infrastructure areas to be accounted for as part of the final land use planning process.

The final land use/s will be designed to be safe, stable, and non-polluting. Where possible, WCL will achieve the highest value final land use for the rehabilitation of the RVC lease area. These values may be environmental, social or economic. Possible land uses which may uphold these values include:

- Environmental:
  - Conservation areas.
  - Remnant/natural bushland.
  - Waterways and water management.
  - Catchment special areas.
- Social:
  - Crown land.
  - Transport corridor/fire trails.
  - Housing.
  - Public open space.
  - Tourism/heritage.
- Economic:
  - Continued industrial.

- Housing.

WCL will continue to assess potential final land use options throughout the life of the operation and in consultation with relevant stakeholders. The final land use design will be approved by DPE during the mine closure planning process.

2.3 Final land use statement

As discussed in **Section 2.2**, indicative final land uses for each domain have been proposed as part of the UEP RPPR and were also presented in the most recently approved Mining Operations Plan (2021). Whilst it is noted that these options are indicative only and are subject to change as part of the conceptual mine closure planning process, these will be utilised in reference to final land use/s for the purpose of this RMP.

2.4 Final land use and mining domains

Final land use and mining domains outlined in **Section 2.4.1** and **Section 2.4.2** (respectively) have been defined in accordance with the *Form and Way for Rehabilitation Management Plans for Large Mines* (NSW RR, 2021).

2.4.1 Final land use domains

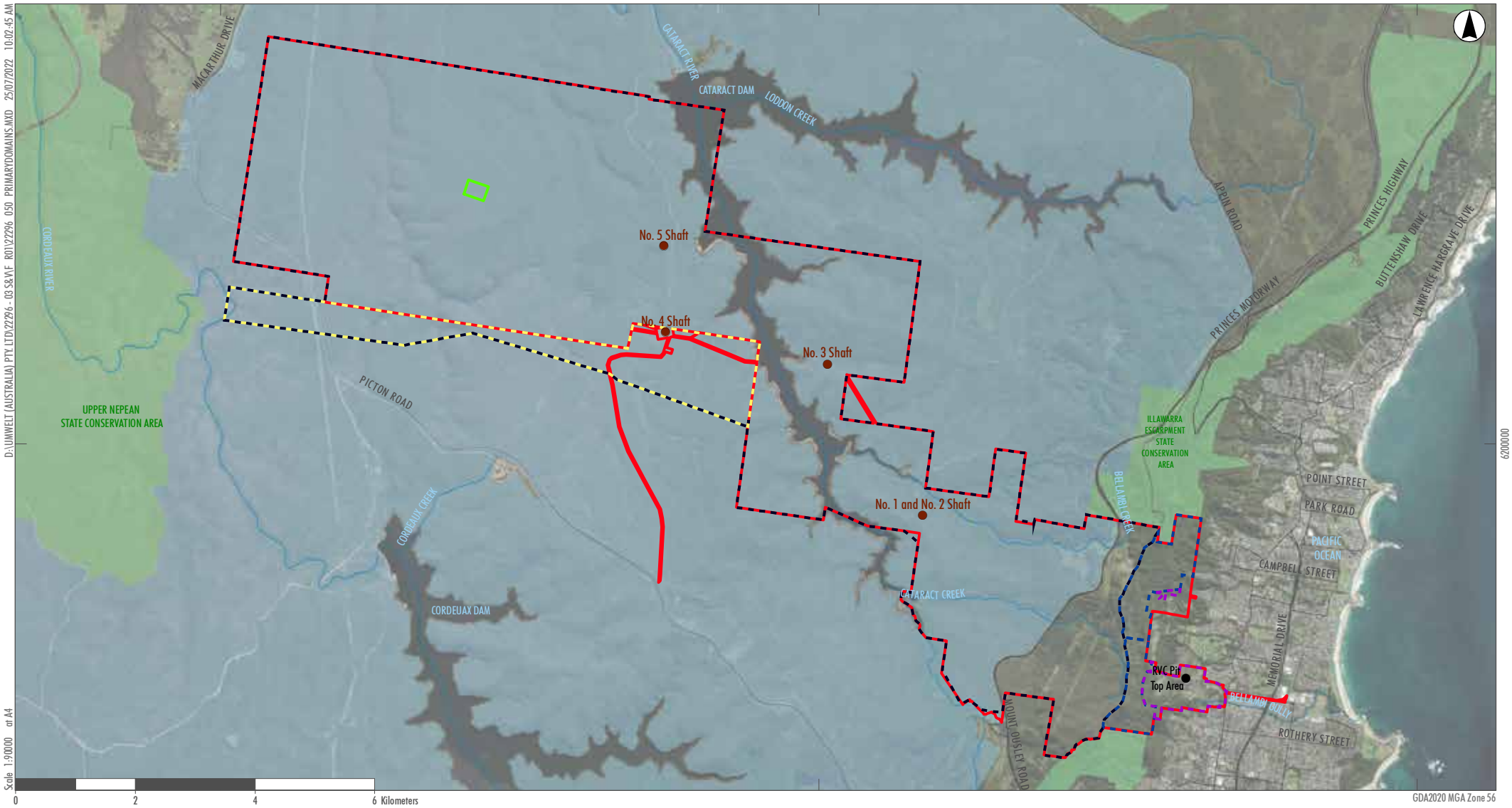
As discussed in **Section 2.2**, the indicative final land use domains are as follows (**Figure 2.1**):

- Domain 1 – Mixed use.
- Domain 2 – Amalgamation into the Illawarra Escarpment State Conservation Area (IESCA) (i.e., native ecosystem).
- Domain 3 – Amalgamation into WaterNSW's Metropolitan Special Area (i.e., native ecosystem).

2.4.2 Mining domains

Operations at RVC are undertaken across three defined mining domains with specific details of the mining domains and the current main mining infrastructure elements currently located within each domain are provided in **Table 2.2** below:

- Domain 1 – Pit Top:
  - Domain 1 consists of land on the escarpment foothills, including the Russell Vale Pit Top, and covers an area of approximately 80 hectares (ha).
- Domain 2 – Escarpment Face:
  - Domain 2 consists of land from the foothills to the top of the escarpment and covers an area of approximately 200 ha.
- Domain 3 – Woronora Plateau:
  - Domain 3 consists of areas west of the escarpment edge on the Woronora Plateau and covers an area of approximately 6,690 ha.



Legend

RVC Lease Area

- CL 745
- MPL 271
- ML 1575

Indicative Final Land Use Domains

- Domain 1 - Mixed Use
- Domain 2 - Amalgamation into the Illawarra Escarpment State Conservation Area
- Domain 3 - Amalgamation into WaterNSW's Metropolitan Special Area (i.e. native ecosystem)

- National Parks and Reserves
- WaterNSW Metropolitan Special Area
- RVC Shaft Locations
- Hydrolines

FIGURE 2.1

Indicative Final Land Use Domains

Image Source: ESRI Basemap (2022) Data source: NSW DSFI (2021); WCL (2021)

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 25/07/2022

Table 2.2 RVC Mining Domains

Mining Domain	Description of mining infrastructure
Domain 1 – Pit Top	Administration buildings Portable buildings Workshop/store Bath houses Ventilation fan Portals Compressor shed Wash down bay and adjacent heavy vehicle parking shed Open storage areas RV1 Conveyor and associated structures Coal clearance conveyors Truck loading bins Electrical Substation, powerlines and stanchions Drainage infrastructure (including sumps and swales, Dam 1, Stormwater Control Dam, Dirty Water Basin, Highway Dam) Bellambi Gully bypass, Bellambi Gully onsite flood detention basin Pipelines and services Car parking hardstand and access road Stockpile area Clarifier and associated infrastructure
Domain 2 – Escarpment Face	Mine dam Fire dam Site security (fences, gates) Pumps and water pipes Electrical/communications cables and power supply Fire trails and access roads
Domain 3 – Woronora Plateau	No. 1 shaft site No. 2 shaft site No. 3 shaft site No.4 shaft site No.5 shaft site Electricity transmission lines Access roads Water pipelines Exploration boreholes Environmental monitoring equipment Subsidence monitoring equipment and survey lines

3 PART 3 – REHABILITATION RISK ASSESSMENT

A rehabilitation focussed risk assessment was undertaken in March 2022, to identify how risk controls are to be incorporated into rehabilitation practices across the site.

The risk assessment was undertaken generally in accordance with *AS NZS ISO 31000:2018 Risk Management – Guidelines* and developed with consideration of the NSW RR Rehabilitation Risk Assessment Guidelines and bowtie risk assessment for operational and rehabilitation phases. The following key steps were addressed as part of the risk assessment:

- Identifying the related risks including the risk consequence.
- 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).
- Evaluating the risks.
- Establishing controls to mitigate or treat the identified risks.

A total of 31 risks were identified during the process of the risk assessment. Of these risks, 25 were ranked as low, 5 were ranked as medium and 1 was ranked as significant. **Table 3.1** presents a summary of the March 2022 risk assessment.

Table 3.1 Rehabilitation Risks Identified as Applicable to RVC

Identified Risk	Risk Ranking	Where Addressed in this RMP
General		
Insufficient skills and experience of rehabilitation personnel.	Low	Section 6.2.4 Section 6.2.5
Lack of clearly defined responsibilities.	Low	Table 11.2
Insufficient funding for or prioritization of rehabilitation activities.	Low	N/A – see Rehabilitation Cost Estimate
Active Mining		
Biological resource salvage and maintenance (e.g., subsoil, topsoil, vegetative material, seedbank, rocks, habitat resources) through clearing, salvage and handling practices.	Low	Section 6.2.1
Limited pre-existing biological resources for salvage (e.g., topsoil, weeds).	Low	Section 6.2.1
Adverse geochemical/chemical composition of materials such as overburden, interburden, processing wastes, subsoils and topsoils and imported cover materials.	Low	Section 6.2.1 Section 6.2.3 Section 6.2.4
Adverse surface and groundwater quality and quantity (underground and surface operations).	Low	Section 6.2.2
Decommissioning		
Impact on heritage items.	Low	Section 6.2.1
Hazard associated with retained infrastructure.	Low	Section 6.2.1
Contamination resulting from associated activities (e.g. storage and use of hydrocarbons/chemicals, drilling fluids, spillage of dirty or produced saline water, brine, sewage).	Medium	Section 6.2.1 Section 6.2.2
Generation of material and waste products from the demolition process.	Low	Section 6.2.1 Section 6.2.2

Identified Risk	Risk Ranking	Where Addressed in this RMP
Groundwater accumulation in former underground workings (e.g. potential for fill and spill or impacts on regional ground water users).	Low	Section 6.2.2
Exposure or access to underground workings.	Low	Section 6.2.2
Habitation of structures and/or underground workings by native fauna (e.g. bats).	Low	Section 6.2.2
Landform Establishment		
Unstable landform due to erosion and/or mass movement issues associated with inappropriate design and/or quality assurance during landform construction.	Medium	Section 6.2.3
Lack of availability of suitable materials for encapsulation or capping of adverse materials.	Significant	Section 6.2.3 Section 6.2.4 Section 9.2
Final landform unsuitable for final land use (e.g. large rocks present affecting cultivation, settlement and surface subsidence leading to extended ponding).	Low	Section 6.2.3
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).	Medium	Section 6.2.4
Ecosystem and Land Use Establishment		
Lack of availability and quality of target seed resources, including genetic integrity.	Low	Section 6.2.5
Poor seed viability, seed dormancy.	Low	Section 6.2.5
Ant and insect predation of seed.	Low	Section 6.2.5 Section 6.2.6
Damage to seed through revegetation process.	Low	Section 6.2.6
Weed infestation associated with both introduction and control (or lack thereof).	Low	Section 6.2.6
Adopting inappropriate or inadequate rehabilitation techniques, including equipment fleet.	Low	Section 6.2.5
Inappropriate revegetation species mix for targeted final land use.	Low	Section 6.2.5
Ecosystem and Land Use Development		
Weather and climatic influences (e.g., drought; intense rainfall events; bushfire and climate change).	Low	Section 6.2.5
Damage to rehabilitation (e.g., fauna, domestic stock, vandalism, vehicular interactions, bushfire, insects and plant disease).	Low	Section 6.2.5 Section 6.2.6
Re-disturbance of established rehabilitation areas.	Low	Section 6.2.5 Section 6.2.6
Insufficient establishment of target species and limited species diversity.	Low	Section 6.2.5
Erosion and failure of landform, drainage and water management/storage structures.	Medium	Section 6.2.3 Section 6.2.6
Mine Subsidence		
Impacts to aquifers and groundwater - loss of water to water users including the environment.	Medium	Section 6.2.2 Section 6.3

4 PART 4 – REHABILITATION OBJECTIVES AND REHABILITATION COMPLETION CRITERIA

4.1 Rehabilitation objectives and rehabilitation completion criteria

The rehabilitation objectives for RVC are to demonstrate, as a minimum, that each final land use domain will be returned to a condition capable of achieving the final land use.

Specific rehabilitation objectives have been stipulated by Schedule 2, Condition B44 of MP 09_0013, as presented in **Table 4.1** below.

Table 4.1 Rehabilitation Objectives as Required by MP 09_0013

Feature	Objective
All areas of the site affected by the development	• Safe, stable & non-polluting. • Fit for the intended post mining land use/s. • Establish the final landform and post-mining land use/s as soon as practicable after cessation of mining operations. • Minimise post-mining environmental impacts.
Areas proposed for native ecosystem re- establishment	• Establish/restore self-sustaining native ecosystems. • Establish local plant community types. • Establish: - Riparian habitat within appropriate areas of any diverted and/or re- established creek lines and retained water features. - Habitat, feed and foraging resources for threatened fauna species. - Vegetation connectivity and wildlife corridors, as far as reasonable and feasible.
Other areas affected by development	• Restore ecosystem function, including maintaining or establishing self- sustaining ecosystems comprised of local native plant species for the intended post-mining land use(s).
Final Landforms	• Stable and sustainable for the intended post-mining land use/s. • Consistent with surrounding topography to minimise visual impacts. • Incorporate relief patterns and design principles consistent with natural drainage that mimic natural topography and mitigate erosion to the greatest extent practicable.
Surface Infrastructure Sites	• Decommissioned and, subject to Historic Heritage Management Plan and relevant approvals and permits removed, unless further approval is obtained for their retention and incorporation in the post- mining use. • Revegetated with suitable local native plant species to a landform consistent with the surrounding environment and the intended post mining land use(s).
Portals and vent shafts	• Decommissioned and made safe and stable. • Retain habitat for threatened species (e.g., bats) where practicable.

Feature	Objective
Watercourse subject to mine water discharge 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 the grant of this 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
Water quality	• Water retained on site is ft for the intended post-mining land use(s). • Water management is consistent with any regional catchment management strategy, or approved plan.
Community	• No additional risk to public safety than prior to grant of this consent. • Minimise the adverse socio-economic effects associated with mine closure.

Completion criteria are objective target levels or values assigned to a variety of indicators which can be measured to demonstrate progress and the ultimate success of rehabilitation. As such, they provide a defined end point at which time rehabilitation can be deemed successful and the mining lease relinquishment process can proceed.

In accordance with Clause 12, Schedule 8A of the Regulation, rehabilitation completion criteria must be submitted to the NSW RR for approval. If amendments to the rehabilitation criteria are required as part of the refinement of the preferred final land use for the RVC lease area, the criteria will be resubmitted to the NSW RR for approval.

WCL has developed rehabilitation completion criteria which set the benchmark values for key indicators proposed to demonstrate that rehabilitation objectives have been met.

Rehabilitation objectives, performance indicators and completion criteria for the RVC lease area are outlined in **Table 4.2** below.

Table 4.2 Proposed Rehabilitation Performance Indicators and Completion Criteria

Final Land Use Domain	Mining Domain	Proposed Rehabilitation Objectives	Performance Indicators	Proposed Completion Criteria	Validation Method/s
All domains	**All domains**	Creation of a final landform which is safe, stable, non-polluting, fit for the intended post mining land uses and minimises post-mining environmental impacts.	Final landform construction. Management of contaminated materials. Geotechnical stability of all site benches and slopes. Erosion/subsidence impacts are classified as stable and/or not likely to increase in size/area of influence. Due diligence activities (including archaeological due diligence) undertaken prior to surface disturbance activities.	The final landform is constructed generally in accordance with the approval final landform design. All contaminated materials appropriately remediated and/or disposed of to a condition that does not pose a risk to the final landform. All benches and slopes are confirmed to be safe and stable in the long term. Any erosion and/or subsidence impacts beyond unreasonable measure are appropriately remediated to a condition that does not pose a risk to the final landform. Any identified archaeological sites appropriately managed in accordance with the Heritage Management Plan.	• As-constructed survey reports. • Approved final landform design. • Independent geotechnical reports. • Rehabilitation monitoring. • Before and after photographs. • Disturbance permit process (including archaeological due diligence). • Heritage Management Plan.
		Final landform is consistent with natural topography to mimic natural drainage patterns and mitigation erosion to the greatest extent practicable.	Final landform construction.	The final landform is constructed generally in accordance with the approval final landform design.	• As constructed survey reports. • Approved final landform design. • Visual inspection and comparison to surrounding landform.
		Surface infrastructure decommissioned, and, subject to Historic Heritage review outcome and any further approvals,	Services and non-heritage infrastructure removed. Infrastructure demolished in accordance with Australian Standard *AS 2601 – 2001: The Demolition of Structures*,	Removal and disconnection of all services and utilities if present and as required in accordance with the final land uses. All demolition works undertaken in accordance with *Australian Standard*	• Copies of relevant approvals, guidelines and standards. • Heritage Management Plan.

Final Land Use Domain	Mining Domain	Proposed Rehabilitation Objectives	Performance Indicators	Proposed Completion Criteria	Validation Method/s
		removed or retained, for the post-mining land use.	or its latest version. Preservation of approved heritage items to be retained. Boreholes and drill holes sealed.	*AS 2601 – 2001: The Demolition of Structures*, or its latest version. Historic heritage obligations satisfied in accordance with relevant agreements and the approved Heritage Management Plan. All boreholes and drill holes sealed in accordance with departmental guidelines and relevant standards.	• Records of agreements with stakeholders. • Demolition inspection reports. • Copies of decommissioning inspection reports.
		Portals and vent shafts decommissioned and made safe and stable with threatened species habitat retained where practicable.	Portals and vent shafts sealed. Threatened species habitat retained (where practicable).	Portals and vent shafts have been sealed in accordance with regulatory standards and guidelines. Threatened species habitat retained (where practicable).	• Copies of decommissioning inspection reports. • Copies of relevant guidelines/ standards. • Ecological/ rehabilitation monitoring report.
		Watercourses subject to mine water discharge and/or subsidence impacts are hydraulically and geomorphologically stable.	Assessment of post-mining water quality against background water quality. No exceedances of the subsidence performance criteria are observed.	Affected watercourse water quality is to agreed levels. Subsidence impacts to watercourses are compliant with the subsidence completion criteria as indicated during implementation of the Subsidence Monitoring Program.	• Water quality monitoring reports/data. • Copies of relevant approvals, management plans and guidelines.
		Aquatic ecology and riparian vegetation that is the same or better than prior to the grant of this consent.	Aquatic and ecological monitoring.	No impacts to aquatic ecology and/or riparian vegetation observed. Aquatic ecology and/or riparian vegetation condition is comparable to pre-existing environment	• Ecological/ rehabilitation monitoring reports.
		Minimise the adverse socio-economic effects associated with mine closure.	Advance notice of mine closure provided to employees (if possible). Progressively reduce mine	Advance notice of mine closure provided to employees. Work force progressively reduced leading up to closure.	• Internal communications. • Work force numbers.

Final Land Use Domain	Mining Domain	Proposed Rehabilitation Objectives	Performance Indicators	Proposed Completion Criteria	Validation Method/s
			work force as closure approaches (if possible). Ongoing employment opportunities offered for site personnel during/after mine closure process (if possible).	Ongoing employment opportunities offered for site personnel during/after mine closure process.	
Domain 1 – Mixed use (e.g., tourism/ heritage, native ecosystem, water management, residential, public open space)	**Domain 1 – RVC Pit Top**	Water retained on site is fit for the intended post mining land use. Water management is consistent with any regional catchment management strategy.	Assessment of water quality against guidelines for the approved post-mining land use. Identification of water management infrastructure to be retained in consultation with relevant stakeholders including review of ADWMP.	Water quality in all remaining storages is suitable for the approved post-mining land use. Retention of water management infrastructure in final landform consistent with recommendations from relevant stakeholders.	• Water quality monitoring reports/data. • Copies of relevant approvals, management plans and guidelines. • Approved final landform design.
		Establish riparian habitat within any diverted and/or re-established creek lines and retained water features.	Ecological monitoring.	Bellambi Gully Creek Diversion appropriately revegetated to be suitable for the approved final land use and comparable with pre-existing condition.	• Ecological/ rehabilitation monitoring reports and data.
Domain 2 – Potential amalgamation into Illawarra Escarpment State Conservation Area (i.e., native ecosystem)	**Domain 2 – Escarpment Face**	Self-sustaining native ecosystems populated by local plant community types are established.	Rehabilitation areas revegetated in accordance with preferred species planting list. Trees observed for establishment and survival.	Revegetated areas are comprised of species consistent with plant community types observed in surrounding natural bushland. More than 75% of trees are healthy and establishing with minimal maintenance.	• Ecological/ rehabilitation monitoring reports and data.
		Vegetation connectivity and wildlife corridors are established with habitat, feed and foraging resources for threatened fauna species provided.	Habitat corridors re/established. Monitoring indicates habitat structures/resources are comparable to surrounding remnant native bushland.	Habitat corridors re/established and consistent with surrounding remnant corridors. Suitable native species known to provide habitat and food for threatened fauna species planted and established.	• Ecological/ rehabilitation monitoring reports and data.

Final Land Use Domain	Mining Domain	Proposed Rehabilitation Objectives	Performance Indicators	Proposed Completion Criteria	Validation Method/s
		Vegetation established is consistent with surrounding land uses.	Rehabilitation areas revegetated in accordance with preferred species planting list.	Revegetated areas are comprised of species consistent with plant community types observed in surrounding natural bushland.	• Ecological/ rehabilitation monitoring reports and data.
Domain 3 – Potential amalgamation with WaterNSW Metropolitan Special Area (i.e., native ecosystem)	**Domain 3 – Woronora Plateau**	Self-sustaining native ecosystems populated by local plant community types are established.	Rehabilitation areas revegetated in accordance with preferred species planting list. Trees observed for establishment and survival.	Revegetated areas are comprised of species consistent with plant community types observed in surrounding natural bushland. More than 75% of trees are healthy and establishing with minimal maintenance.	• Ecological/ rehabilitation monitoring reports and data.
		Vegetation connectivity and wildlife corridors are established with habitat, feed and foraging resources for threatened fauna species provided.	Habitat corridors re/established. Monitoring indicates habitat structures/resources are comparable to surrounding remnant native bushland.	Habitat corridors re/established and consistent with surrounding remnant corridors. Suitable native species known to provide habitat and food for threatened fauna species planted and established.	• Ecological/ rehabilitation monitoring reports and data.
		Vegetation established is consistent with surrounding land uses.	Rehabilitation areas revegetated in accordance with preferred species planting list.	Revegetated areas are comprised of species consistent with plant community types observed in surrounding natural bushland.	• Ecological/ rehabilitation monitoring reports and data.

4.2 Rehabilitation objectives and rehabilitation completion criteria – stakeholder consultation

Condition B45(c), Schedule 2 of MP 09_0013 states that this RMP must be prepared in consultation with DPE, DPE Water, the Biodiversity Conservation Division (BCD), WaterNSW, NSW RR and Wollongong City Council (WCC). WCL has previously consulted with relevant stakeholders throughout the development of the RPPR which was developed to support the approval of MP 09_0013. Details of consultation undertaken during the project assessment processes are provided in the RPPR. Consultation has also been previously undertaken with relevant stakeholders in relation to the final land uses.

Relevant stakeholders have also been engaged for consultation regarding the contents of this RMP, in particular, the proposed rehabilitation objectives and completion criteria, prior to final submission of this RMP to the NSW RR.

Table 4.3 includes a summary of the consultation undertaken with the listed stakeholders along with matters raised during consultation and responses as appropriate to matters raised to inform the development of this RMP.

Table 4.3 Stakeholder Consultation Undertaken to Develop Rehabilitation Objectives and Completion Criteria

Stakeholder	Form of Consultation	Matters Raised in Consultation	WCL Response to Matters Raised in Consultation
DPE	Major Projects Portal	No matters raised to date.	-
DPE Water	Major Projects Portal and Letter	The Department of Planning and Environment - Water (DPE Water) has reviewed the rehabilitation objectives and completion criteria as requested and has no specific comments at this stage. Some general comments to consider in the plan preparation are provided below and further specific comment will be provided on review of the draft plan.	Noted.
		• Watercourse design to achieve a stable landform and riparian outcomes is recommended to be completed with reference to industry guidelines such as: "Rehabilitation Manual for Australian Streams (LWRRDC 2000) and "Guideline: Works that interfere with water in a watercourse for a resource activity (DNRME 2019).	**Section 6.2.3e** has been updated to reflect that the Bellambi Gully creek diversion works were designed in response to a DPE order which required WCL to provide a structure capable of managing a 1% AEP rainfall event (1 in 100 year). The diversion has been constructed based on these criteria.
		• Decommissioning of groundwater boreholes in accordance with relevant standards is supported. Relevant standards include the "Minimum Construction Requirements for Water Bores in Australia (2020)".	**Section 6.2.2f** has been updated to reflect that the relevant standards includes the "Minimum Construction Requirements for Water Bores in Australia (2020)".
		• Dirty runoff catchment areas are to be rehabilitated and clean surface runoff is to be maximised for conveyance downstream.	**Section 6.2.3a** has been updated to include this general commitment.
		• Ongoing water take by the final landform via interception, storage or diversion will need to comply with relevant approvals and licences under the Water Management Act 2000.	**Section 6.2.2f** has been updated to state: *Any ongoing water take by the final landform via interception, storage or diversion would comply with relevant approvals and licences under the Water Management Act 2000. WCL would also consider any relevant ongoing requirements of the NSW Aquifer Interference Policy.*
		• Ongoing aquifer interference activities need to be considered in terms of the requirements of the NSW Aquifer Interference Policy.	
DPE Environment and Heritage Group (including BCD and National Parks and Wildlife Services (NPWS))	Major Projects Portal and Letter	We draw your attention to previous comments provided to Wollongong Coal regarding Extraction Plans for Stages 1 and 2 and related Biodiversity Management Plans, particularly those comments relating to monitoring design and collection of baseline data (our reference: DOC22/397326, DOC21/1002718). Some of these comments are relevant to the Rehabilitation Plan.	WCL has previously provided comprehensive responses to BCD comments provided on the Stage 1 and Stage 2 Extraction Plans. Where relevant, the BCD comments have been considered during the preparation of this RMP.
		A Proposed Rehabilitation Objective (Table 1, p. 4/11) states that: "*Portals and vent shafts decommissioned and made safe and stable with threatened species habitat retained where practicable*." To better encapsulate this objective, it is recommended that the retention of threatened species habitat is added to the Performance Indicators and the Proposed Completion Criteria relating to this objective.	**Table 4.2** has been updated to include a proposed performance indicator and proposed completion criteria, and validation method in relation to the retention of threatened species habitat (where practicable).
		The performance indicator (Table 1, p. 5/11) "*Rehabilitation areas revegetated in accordance with preferred species planting list*" is supported, NPWS requests to be consulted on this preferred species planting list given that this area is identified for potential amalgamation into Illawarra Escarpment State Conservation Area.	Noted. NPWS will be consulted on the preferred species planting list prior to any rehabilitation works being undertaken within the area identified for potential amalgamation into the Illawarra Escarpment State Conservation Area.
		The Rehabilitation Management Plan is vague as to the boundaries of the land intended to be transferred to NPWS control. It is recommended that a map clearly showing the three 'domains' be included as part of the Rehabilitation Management Plan.	**Figure 2.1** has been added which shows the domains discussed.
		NPWS reiterate that any reservation under the NPW Act is separate to this Rehabilitation Management Plan and will have to follow due process including being subject to NPWS assessment of that land prior to addition to Illawarra Escarpment State Conservation Area.	Noted. WCL would undertake the appropriate processes in consultation with relevant stakeholders at the relevant time.
		The Rehabilitation Plan could refer to short, medium and long term rehabilitation objectives given some actions will be undertaken relatively soon (ie 5 years time), while others will be undertaken at the end of operations, (ie. up to 25 years from now). Early planning for short term rehabilitation measures could include mapping of Plant Community Types (PCTs) surrounding those areas to be rehabilitated, collection of seed and propagation of local provenance species.	WCL notes the suggestion and will continue to consider any short and medium term rehabilitation measures that can be progressed during operations. WCL has identified a number of rehabilitation activities that will be undertaken during the Forward Program period, including review and planning of Shaft 1 and 2 for decommissioning, a topsoil material balance review and contaminated land assessment.

Stakeholder	Form of Consultation	Matters Raised in Consultation	WCL Response to Matters Raised in Consultation
WaterNSW	Major Projects Portal and Letter	**Declared Sydney Drinking Water Catchment (SDWC) area and Special Areas** The proposed rehabilitation reforms require mining lease holders to prevent or minimise harm to the environment where harm to the environment has the same meaning as in the Protection of the Environment Operations Act 1997. Lease holders are also required to rehabilitate land and water disturbed by activities in the lease area. The Mining Act 1992 defines rehabilitation as the treatment or management of disturbed land or water for the purpose of establishing a safe and stable environment. There are a significant number of mine infrastructure (listed in Table 2.2 of the Draft RMP including ventilation shaft sites 1 to 5, electric transmission lines, access roads, water pipelines etc.) and a site office within Domain 3 and WCL mining leases including CCL 745 and ML 1575. These are located on land owned and managed by WaterNSW and within the Metropolitan Special Area. WCL is also undertaking underground mining within the Metropolitan Special Areas. These require both surface exploration investigations and implementation of environmental monitoring to monitor and manage subsidence impacts. WaterNSW requires that rehabilitation objectives, criteria and activities proposed by WCL must protect and improve the land and water environment within the SWDC and Metropolitan Special Areas. WaterNSW also requests that rehabilitation management plans in the SDWC and Metropolitan Special Areas must be prepared and implemented by WCL in consultation with and to the satisfaction of WaterNSW.	Noted. The performance indicators and completion criteria presented in **Table 4.2** are intended to align with WaterNSW's requirement for the protection and improvement of the land and water within the SDWC and Metropolitan Special Areas. WCL will continue to consult with WaterNSW in relation to rehabilitation activities to be undertaken within the Metropolitan Special Area. Any activities would be undertaken only after obtaining the necessary approvals.
		Ecological Restoration within Special Areas There are certain landscapes where the target final landform/landuse should be restoration rather than rehabilitation – this is a requirement included in WaterNSW approvals for WCL's exploration and environmental monitoring (in accordance with the 'National Standards for the practice of ecological restoration in Australia' SERA 2018). WCL must clearly demarcate the sites within Domains 1, 2 and 3 that are targeted for remediation in terms of natural (native), semi-natural and disturbed sites. WCL must look to include the highest standard of ecological restoration for land and water within Domain 2 and 3 which are proposed for amalgamation into the Illawarra Escarpment State Conservation Area and the Metropolitan Special Areas respectively.	All land disturbed by WCL (that is not required post-closure e.g. access tracks) will be rehabilitated to an appropriate standard for the proposed final land use (e.g. amalgamation into the State Conservation Area and Metropolitan Special Areas). The sites targeted for remediation are highlighted in the plans contained within the RMP.
		Rehabilitation Objective WaterNSW considers that the overarching closure and rehabilitation objective for WCL's mine sites must be to create a post-mining landform appropriate for the proposed post-mining land use or (if the post-mining land use is not yet known), as similar as possible in form and function to the pre-mining landscape of the area, and consistent with surrounding land uses. For WCL mine rehabilitation in Domain 3 within the Metropolitan Special Area, WaterNSW considers that the overall objective statement must be amended to reflect this.	The rehabilitation objectives outlined in **Table 4.1** are consistent with the requirements of the Development Consent MP09_0013. WCL considers that this requirement is largely consistent with the objectives required for the final landform. As the post-mining land use for all areas within Domain 3 will be native ecosystem, the intent is for the rehabilitation/restoration works to result in an outcome that is as similar as possible in form and function to the pre-mining landscape of the area, consistent with surrounding land uses. **Table 4.2** has been updated to include additional performance indicators and completion criteria to reflect this.

Stakeholder	Form of Consultation	Matters Raised in Consultation	WCL Response to Matters Raised in Consultation
		Rehabilitation requirements Rehabilitation requirements come from planning, and/r extraction plan approvals issued by DPE under the EP & A Act, RR approvals and compliance monitoring under the Mining Act 1992, and requirements from the RR due to compliance reporting under the NSW Rehabilitation Reforms. This will apply to both existing and new proposals. Rehabilitation requirements can also result from WaterNSW (Part 5) for exploration and environmental monitoring). The RMP must all these requirements adequately. WaterNSW typically imposes a condition for rehabilitation of the disturbed areas as follows: The picture can't be displayed. WaterNSW requests WCL to present a detailed inventory in the RMP of all (cumulative) land clearing undertaken and rehabilitated or to be rehabilitated for surface exploration and environmental monitoring activities at WCL Russell Vale Colliery within the Metropolitan Special Areas. WCL must also provide details of the proposed/implemented rehabilitation, appropriate rehabilitation objectives and criteria defined for these sites and their rehabilitation status which may be in different stages of rehabilitation. The RMP must present information on the cumulative impacts of all vegetation clearing from all approved activities.	WCL will prepare and provide WaterNSW with a detailed inventory of all land clearing activities undertaken within the Metropolitan Special Area. The status of any rehabilitation activities undertaken in these areas will also be provided. All disturbance undertaken within the Metropolitan Special Area has been undertaken in accordance with the relevant REFs submitted to WaterNSW for approval prior to works being undertaken.
		Other issues – Water and Mine closure WaterNSW also notes that the proposed RMP (including rehabilitation objective and criteria) by WCL are more focused on land (landform and land use) and less on water. Mine closure plans are closely linked with rehabilitation plans and required environmental outcomes. The 2019 Independent Expert Panel on Mining in the Catchments (IEPMC) reports and recommendations have also highlighted this issue and need to be considered as part of the reform of rehabilitation requirements and standard conditions. WaterNSW recommends that the RMP address this key issue. Rehabilitation objective and criteria for watercourses and creek systems also need to consider water quality and aquatic ecosystem issues. All these are important considerations in assessing whether rehabilitation outcomes for watercourses achieve Neutral or Beneficial Effect (NorBE) on receiving waters in the SDWC and Special Areas.	Due to the mining method implemented at RVC, impacts to watercourses and creek systems are considered unlikely. In the event that a relevant impact to a watercourse or creek system was identified by WCL, appropriate remediation strategies would be managed and determined in accordance with the protocols outlined within the approved Extraction Plan(s), Water Management Plan(s) and/or Adit Discharge Water Management Plan.
		Specific Rehabilitation Objectives and Criteria WaterNSW supports the rehabilitation objectives listed in Table 4.1 of the RMP as specified by DPE in the planning approval for WCL RVC MP 09_0013. WaterNSW has reviewed Table 4.2 of the draft RMP which presents the specific proposed rehabilitation performance indicators and completion criteria for each domain. WaterNSW is generally satisfied with the proposed objectives and criteria for Domain 3 within the Metropolitan Special Area. WaterNSW requests WCL to consider comments provided above in this regard and amend the table accordingly.	Noted. WCL has made amendments to the RMP (including **Table 4.2**) in consideration of the WaterNSW comments as described above.

Stakeholder	Form of Consultation	Matters Raised in Consultation	WCL Response to Matters Raised in Consultation
NSW RR	Major Projects Portal and Letter	The Resources Regulator will review, assess and determine the rehabilitation objectives statement and rehabilitation completion criteria statement once submitted for approval pursuant to clauses 13 and 15 in Schedule 8A of the Mining Regulation 2016. Please note that the rehabilitation objectives statement will need to be approved by the Regulator prior to the approval of the rehabilitation completion criteria statement. The lodgement the rehabilitation completion criteria statement is not required until no later than when a forward program is submitted to us which relates to completion of rehabilitation during the period covered by that forward program [see clause 15(3) of Schedule 8A of the Mining Regulation 2016]. Where additional research and studies are required to further refine rehabilitation completion criteria before they are submitted for approval, a title holder will need to demonstrate how it has consulted with the relevant stakeholders, including the Resources Regulator, to ensure that the criteria reflect the appropriate benchmark. At this stage the rehabilitation management plan should include proposed versions of the rehabilitation objectives statement and rehabilitation completion criteria statement [refer clause 10(2) in Schedule 8A of the Mining Regulation 2016].	Noted.
Wollongong City Council (WCC)	Major Projects Portal and Letter	The proposed rehabilitation objectives and performance indicators provided in Table 1 of the Umwelt Stakeholder Consultation – Rehabilitation Management Plan provides insight into a predominantly acceptable preliminary strategy/framework.	Noted.
		However, Council is of the opinion that it is vital that all objectives, indicators, criteria and validation methods in the final RMP documents are targeted, specific, measurable, timebound and bench marked against relevant guidelines/legislation/standards/regulations with an explanation of applicability. As an example, removing the word generally from the below statement… "*The final landform is constructed generally in accordance with the approval final landform design.*"	The proposed performance indicators and completion criteria have been developed in accordance with the Form and Way: Rehabilitation Management Plan for Large Mines, legislative requirements and in consideration of pre-existing commitments.
		Rehabilitation to occur as soon as reasonably practicable after disturbance Council notes that whilst the Mining Regulation 2016 seeks to encourage rehabilitation to occur as soon as reasonably practicable after disturbance, the draft RMP appears to be predicated upon obligations for rehabilitation only being triggered by mine closure. The plan should be amended to identify areas (especially in and adjacent to areas of high conservation value), where rehabilitation can occur in the short term, as well as plan for areas which will be rehabilitated in a closure rehabilitation context.	As described in **Section 6.1**, WCL will undertake rehabilitation as soon as practicable during the mine life of RVC. However, due to the nature of underground mining undertaken at RVC, the potential for progressive rehabilitation to be undertaken is limited. RVC has a potential operating life of over 25 years. Limited (if any) opportunities for progressive rehabilitation of the pit top infrastructure (Domain 1) are available for the duration of the life of mine as the infrastructure is required for ongoing mining operations. Sites such as exploration drill pads, vent shafts and adits/portals will be progressively rehabilitated as soon as practicable.
		FLRP Plan 1 and FLRP Plan 2 The final landform and rehabilitation plan (FLRP Plan 1 and FLRP Plan 2) appear to be missing from Part 5 of the document. Section 6.2.3 on page 78 refers to a 'section 5.1' of the document, however there is no section 5.1 in the document.	FLRP1 and FLRP2 are included in **Section 5**. The reference to **Section 5.1** has been corrected.
		Rehabilitation Plan RVC-ENV-00X – proposed rehabilitation categories This plan should indicate how the proposed rehabilitation categories relate to the three Domains described. The basis for the rehabilitation categories identified on RVC-ENV-00 X is unclear. Similarly, the purpose of identifying these categories is unclear given that the categorisations do not seem to have informed any differentiation of rehabilitation objectives or actions. Council notes that the rehabilitation categories do not reflect current zoning and that any future change to the zoning of the land would be subject to the legislated process prescribed under the EP&A Act, the outcome of which will remain uncertain until it is complete. Wollongong City Council takes the view that where land is currently zoned something other than RU1 Primary Production (e.g. C3 Environmental Management), the final land use identified in the rehabilitation management plan should reflect the current zoning. This approach would acknowledge the strategic planning process and determination that has already been made in relation to the land and allow rehabilitation to occur as soon as reasonably practicable after disturbance.	The proposed rehabilitation categories in RVC-ENV-00X have been established based on the pre-existing final land-use commitments in the previous MOP, and in line with the various requirements of the Development Consent and other relevant legislation. The land in the vicinity of the pit top facilities is currently zoned RU1, C3 and SP2. If, at the time of rehabilitation, amendments to the zoning of the land are required to support the proposed final land-use, WCL would undertake the legislated process in consultation with the relevant stakeholders (i.e. WCC).

Stakeholder	Form of Consultation	Matters Raised in Consultation	WCL Response to Matters Raised in Consultation
		The orange category labelled 'Future RVEA Rehabilitation via WCC DA' implies that rehabilitation of this land will be deferred to a later time and different process. Given that this land falls within the RVC Lease Area which is operated under MP 2009/13, it is appropriate that details of, and commitment toward, its rehabilitation should form part the RMP prepared in accordance with condition 45 of the MP-2009/13 consent. Section 6.2.3 c) of the draft RMP states that there are no "relevant reject emplacement areas (subject to this RMP) at the RVC and therefore this is not relevant to this RMP." However, as referred to above and acknowledged on the Rehabilitation Plan RVC-ENV-00X, part of the Russell Vale Emplacement Area (RVEA) is located within lot 151 DP 667029, land which does form part of the RVC Lease Area and MP-2009/13 lands. The RMP should therefore detail how this area will be rehabilitated in a manner which coordinates with the rehabilitation of the remainder of the RVEA.	The RVEA rehabilitation final design and landform will continue to be developed in consultation with WCC, inclusive of flooding and other ancillary studies which are anticipated to be completed in 2023. On the finalisation of the agreed design, work will commence on the RVEA rehabilitation. Ongoing monitoring, maintenance, and remedial works, if any, will continue until the agreed final landform and rehabilitation is completed. **Section 6.2.3c** of the RMP has been updated to reflect the above.
		Forward program Standard condition 13 in Schedule 8A of the Regulation requires the holder of a mining lease must prepare a forward program for the mining lease that includes, among other requirements, (a) a schedule of mining activities for the mining area for the next 3 years, and (b) a summary of the spatial progression of rehabilitation through its various phases for the next 3 years, It is noted that the exhibited RMP does not include a forward schedule.	WCL is preparing a Forward Program which will be included as a component of future Annual Rehabilitation Reports and will be submitted via the Resources Regulator portal.
Relevant and affected landholder(s)[1]	Letter	-	-
Community Consultative Committee (CCC)	Letter	Proposed Rehabilitation Objective (PRO): Creation of a final landform which is safe, stable, non[1]polluting, fit for the intended post mining land uses and minimises post-mining environmental impacts. • Repair of cracks caused by subsidence when longwalls 4, 5 and 6 were mined. These are documented in the End of Panel reports for Longwall 4 and 5. Cracking to surface was documented and this should be repaired. The repair of this cracking does not appear to be covered by the PRO, Indicators or Criteria.	As noted, surface cracking caused by underground mining was documented in the End of Panel Reports for Longwalls 4 and 5. The Longwall 4 End of Panel report concluded: *In relation to surface cracking in the areas of sandstone outcropping, no remediation was deemed to be required. No public safety risk is inferred. This area will be continued to monitor in accordance with LW 5 Subsidence Monitoring Programme.* The Longwall 5 End of Panel report concluded: *In relation to surface cracking near the ridge above western end of Longwall 5, consultation was undertaken with the SCA. No remediation was deemed to be required. No public safety risk is inferred. This area will be continued to be monitored in accordance with LW 5 Subsidence Monitoring Programme.* WCL notes that this conclusion was reached as the impacts associated with remediation works required to repair subsidence cracking (clearing for access tracks, digging, ripping etc.) are typically greater than the impact of the subsidence cracks themselves which may also self-heal over time. **Section 6.3** outlines the rehabilitation of areas affected by subsidence.
		PRO: Final landform is consistent with natural topography to mimic natural drainage patterns and mitigation erosion to ***the greatest extent practicable***. *(my italics)* • "practicable" is vague and open to interpretation. This needs to be more clearly explained and quantified.	This wording is from Table 5, Condition B44, Schedule 2 of the Development Consent MP 09_0013. WCL is required to comply with these rehabilitation objectives.
		Other: the RVC East Rehabilitation Plan on p. 7 appears to cover only a portion of the Russell Vale Emplacement Area (RVEA). What of the remaining portion of the RVEA? How will this be rehabilitated? The Russell Vale Slag Heap, as it is known locally, (RVEA) is a site of contention both in the local community and with Wollongong City Council. The RMP should clearly show the site in its entirety and the plans for rehabilitation.	This RMP is required to cover the land within mining leases held by WCL for the Russell Vale Colliery (ML 1575, CCL 745 and MPL 271). The RVEA extends into CCL 745 but is subject to a separate WCC approval (D89/839). **Section 6.2.3c** has been updated to clarify this.
		Furthermore, much of this apparently unnamed figure on page 7, in particular the legend, is blurred and unreadable. I request that this figure is reissued in a clear and readable format and recirculated for review, along with an explanation of the plan for rehabilitation of the RVEA.	The figure provided on page 7 of the correspondence letter is FLRP 1A (provided in **Section 5**).

Stakeholder	Form of Consultation	Matters Raised in Consultation	WCL Response to Matters Raised in Consultation
Local Aboriginal communities (including all RAPs)	Letter	1. ILALC would like to note that previous archaeological surveys and reports within the Study Area have focussed on the identification of sites that will be impacted by subsidence - specifically, axe grinding grooves and rock shelters. It is noted that there is limited archaeological visibility within the area due to vegetation and ground cover, which reduced the ability to identify site types such as artefact scatters, isolated artefacts and axe grinding grooves within the Study Area. However recent archaeological investigations undertaken in the Illawarra escapement have identified artefact scatters and isolated artefacts within the same landforms present within the Rehabilitation Area. Therefore ILALC would suggest that in order to ensure that no Aboriginal cultural heritage sites are impacted by earthworks associated with the creation of landforms, drainage and activities carried out for watercourse stabilisation and revegetation, all areas of works are subject to focused archaeological investigation to ensure that these activities do not cause further harm to Aboriginal sites and objects.	Any rehabilitation activities requiring disturbance would be undertaken in accordance with the appropriate disturbance permit and/or REF process, which includes archaeological due diligence activities. **Table 4.2** has been updated to include relevant rehabilitation objectives and completion criteria to reflect these commitments.
		2. ILALC suggest that further conversations are held with the Aboriginal community to identify plant species that are culturally appropriate, and beneficial to the cultural landscape and ecosystem prior to establishing riparian habitat, and wildlife corridors and undertaking revegetation activities.	WCL will distribute the existing revegetation species list from the Surface Operations Biodiversity Management Plan (SOBMP) to interested Aboriginal stakeholders for review and comment. Any future amendments to the revegetation species list would be undertaken in consultation with all relevant stakeholders (e.g. government agencies).
		3. ILALC suggests indirect impacts on Aboriginal sites, including the cultural context of a site (including those downstream), are considered when undertaking activities such as 'diverting and/or re-establishing creek lines' and 'recreating landforms'. The context of a site is as much a part of the cultural values of a site as the physical manifestation of a site. For example, an axe grinding groove is typically placed in a location that is associated with water. Diverting a stream will disarticulate a site with its context and consequently have an impact on the cultural values associated with the site. Additionally increasing the flow of water into a catchment can cause increased downstream erosion, which can have an impact on sites located along watercourses. Impacts such as these need to be considered when developing the RMP.	The overarching goal of rehabilitation of the RVC would be to achieve a final landform similar to the surrounding natural topography and pre-existing land use. Due to the nature of mining at the RVC, there are limited surface water impacts anticipated. These potential impacts are discussed further in the various UEP assessment documentation and Water Management Plans.
		4. Objectives and completion criteria should reflect that this area is as much a cultural landscape as it is an environmental landscape and that no Aboriginal sites should be adversely impacted during the rehabilitation process.	As described above, **Table 4.2** has been updated to include relevant rehabilitation objectives and completion criteria to reflect these commitments.
		I did have a query about whether Traditional Owners would or could be involved in the rehabilitation works … My only concern is if Traditional Owners can be included in the rehabilitation.	WCL is open to working with the Traditional Owners during rehabilitation planning and future works. WCL will continue to consult with the relevant stakeholders as potential opportunities arise.

[1] Land within the mining leases is owned by WaterNSW and WCL. WCL has consulted with the surrounding community via the CCC.

5 PART 5 – FINAL LANDFORM AND REHABILITATION PLAN

In accordance with the requirements of Form and Way – *Rehabilitation Management Plan for Large Mines* (NSW RR, 2021), a final landform and rehabilitation plan (**FLRP Plan 1** and **FLRP Plan 2**) has been prepared to illustrate the proposed final landform across the RVC lease area.

In order to demonstrate the proposed final landform features in detail, individual plans (**FLRP 1a-e** and **FLRP 2a-e**) have been prepared for each disturbance area (i.e., RVC Pit Top and shaft sites).

Legend

Rehab Catagories

- Access Roads
- Future RVEA Rehabilitation Via WCC DA
- Heritage Zone
- Native Vegetation
- Residential
- SWC Infrastructure Lease Area
- Water Treatment Infrastructures Future
- Waterway/Dam
- RVC Lease Boundary

N

0 50 100

Meters

Coordinate System: GDA 1994 MGA Zone 56
Projection: Transverse Mercator
Datum: GDA 1994

WOLLONGONG COAL

WCL RUSSELL VALE COLLIERY
WOLLONGONG COAL LIMITED

TITLE: RVC EAST		
REHABLITATION PLAN		
	NAME	DATE
DRN	RT	14/06/2022
CKD		
APP		
SCALE		@A3
DRAWING NUMBER	1:3,500	REV 0
RVC-ENV-00X		

Scale 1:800 at A3

0 25 50 75 Metres

GDA2020 MGA Zone 56

Legend

RVC Lease Area

- CL 745
- MPL 271
- ML 1575

Final Land Use Domain

- Native Ecosystem

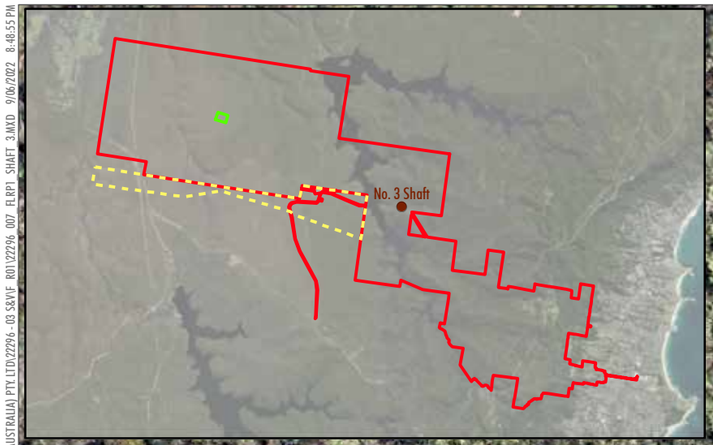
FLRP PLAN 1B

Final Landform Features - Shafts No.1 and No. 2 (Domain 3)

Image Source: Nearmap (2022) Data source: WCL (2021)

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 2/06/2022

300000 300100 300200 300300



6201300

Scale 1:800 at A3

0 15 30 45 Metres

GDA2020 MGA Zone 56

Legend

RVC Lease Area

CL 745

MPL 271

ML 1575

Final Land Use Domain

Native Ecosystem

FLRP PLAN 1C

Final Landform Features - Shaft No. 3 (Domain 3)

Image Source: Nearmap (2022) Data source: WCL (2021)

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 9/06/2022

D:\UMWELT (AUSTRALIA) PTY. LTD\22996 - 03 S&VP RO1\22996_007_FLRP1_SHAFT_3.MXD 9/06/2022 8:48:55 PM

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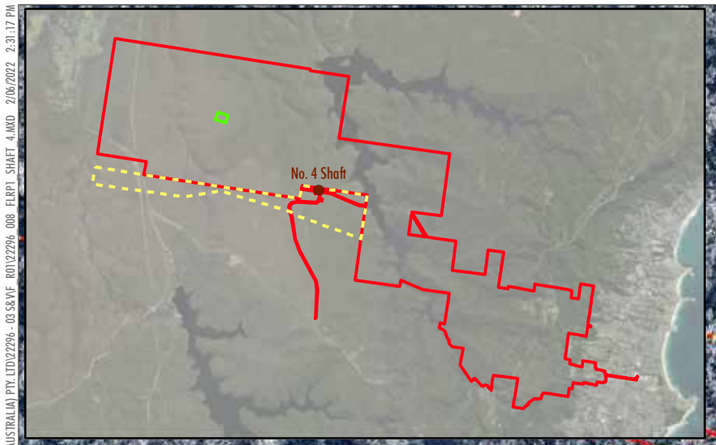

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Scale 1:2000 at A3

0 50 100 150 Metres

GDA2020 MGA Zone 56

Legend

RVC Lease Area

- CL 745
- MPL 271
- ML 1575

Final Land Use Domain

- Native Ecosystem

FLRP PLAN 1D

Final Landform Features - Shaft No. 4 (Domain 3)

Image Source: Nearmap (2022) Data source: WCL (2021)

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 2/06/2022

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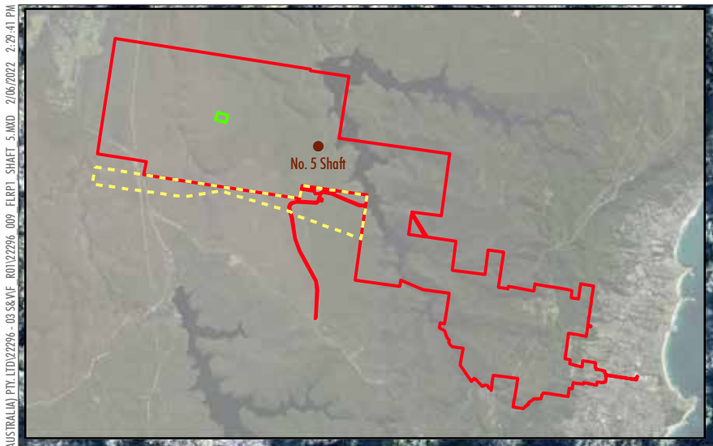

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6210300

Scale 1:700 at A3

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GDA2020 MGA Zone 56

Legend

RVC Lease Area

- CL 745
- MPL 271
- ML 1575

Final Land Use Domain

- Native Ecosystem

FLRP PLAN 1E

Final Landform Features - Shaft No. 5 (Domain 3)

Image Source: Nearmap (2022) Data source: WCL (2021)

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 2/06/2022

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umwelt

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6196000

6195500

Scale 1:5000 at A3

0 100 200 300 Metres

GDA2020 MGA Zone 56

Legend

RVC Lease Area

- CL 745
- MPL 271
- ML 1575

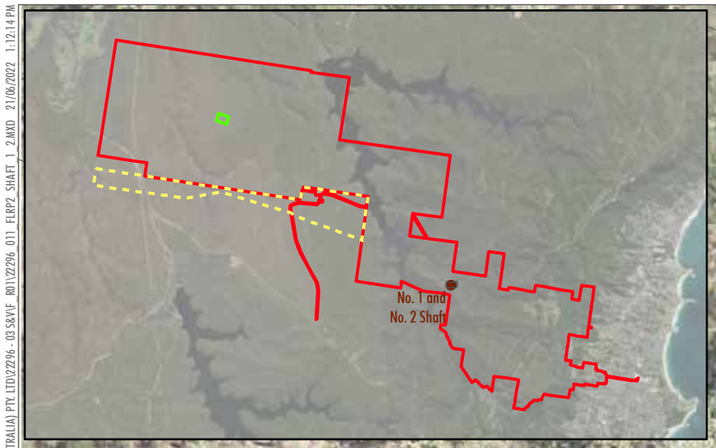
Final Landform Contours (m)

FLRP PLAN 2A

Final Landform Contours - RVC Pit Top Area (Domain 1)

Image Source: ESRI Basemap (2022) Data source: Umwelt (2022)

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 21/06/2022



Scale 1:800 at A3

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GDA2020 MGA Zone 56

Legend

RVC Lease Area

- CL 745
- MPL 271
- ML 1575

Final Landform Contours (m)

FLRP PLAN 2B

Final Landform Contours - Shafts No.1 and No. 2 (Domain 3)

Image Source: Nearmap (2022) Data source: Umwelt (2022)

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 21/06/2022

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Legend

RVC Lease Area

- CL 745
- MPL 271
- ML 1575

— Final Landform Contours (m)

FLRP PLAN 2C

Final Landform Contours - Shaft No. 3 (Domain 3)

Image Source: Nearmap (2022) Data source: Umwelt (2022)

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 21/06/2022

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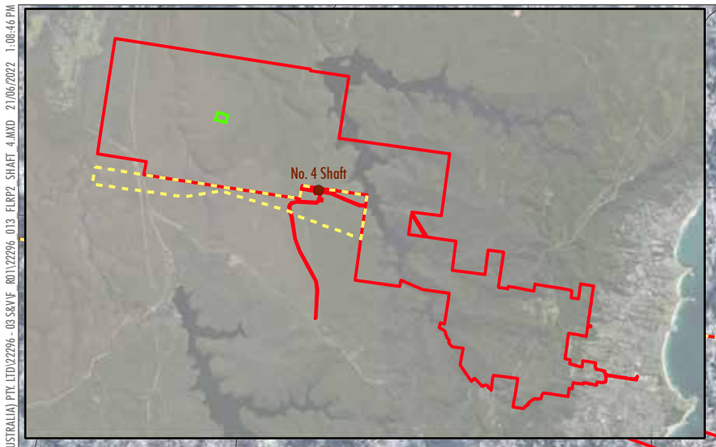
6019800



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Scale 1:2000 at A3

0 50 100 150 Metres

GDA2020 MGA Zone 56

Legend

RVC Lease Area

- CL 745
- MPL 271
- ML 1575

Final Landform Contours (m)

FLRP PLAN 2D

Final Landform Contours - Shaft No. 4 (Domain 3)

Image Source: Nearmap (2022) Data source: Umwelt (2022)

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 21/06/2022

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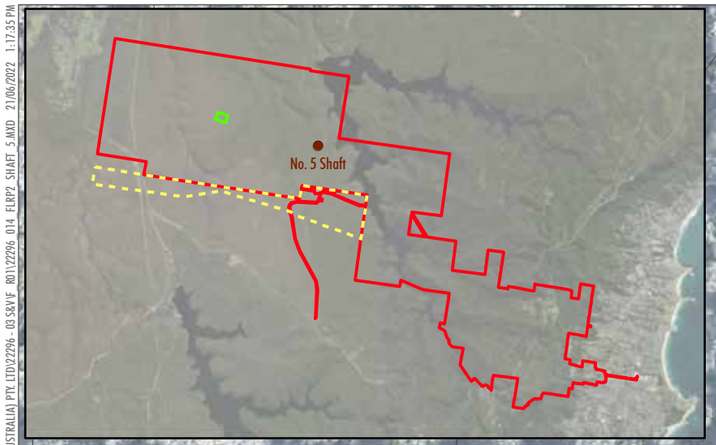

297300 297400 297500

6203300

340 345 350

Scale 1:700 at A3

0 25 50 75 Metres

GDA2020 MGA Zone 56

Legend

RVC Lease Area

CL 745

MPL 271

ML 1575

Final Landform Contours (m)

FLRP PLAN 2E

Final Landform Contours - Shaft No. 5 (Domain 3)

Image Source: Nearmap (2022) Data source: Umwelt (2022)

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 21/06/2022

6 PART 6 – REHABILITATION IMPLEMENTATION

6.1 Life of mine rehabilitation schedule

WCL will undertake rehabilitation as soon as practicable during the mine life of RVC. However, due to the nature of underground mining undertaken at RVC, the potential for progressive rehabilitation to be undertaken is limited. As discussed in **Section 2.2**, RVC has a potential operating life of over 25 years. Limited (if any) opportunities for progressive rehabilitation of the pit top infrastructure (Domain 1) are available for the duration of the life of mine as the infrastructure is required for ongoing mining operations.

Sites such as exploration drill pads, vent shafts and adits/ portals will be progressively rehabilitated as soon as practicable.

The Environmental Assessment undertaken during the UEP approval process (ERM, 2013) identified the following progressive rehabilitation schedule for operations at RVC:

- Ongoing maintenance and rehabilitation at the Russell Vale site including removal of all redundant infrastructure such as water pipelines and items of mining equipment no longer required.
- Undertake a heritage inventory / archival recording of the Russell Vale site. This will include an assessment of the 1887 portal.
- Staged site rehabilitation at Russell Vale while continuing extraction of the Bulli and Wongawilli seams, this will include rehabilitation of any mine entrances no longer required and remediation of unused areas.
- Sealing Russell Vale mine adits at the completion of mining which is anticipated to be required in approximately 30 years' time.
- Undertake final rehabilitation of the Russell Vale site and commence staged site development for an alternative use.
- Refine the rehabilitation cost schedule list of items and reassess the costs associated with this schedule.

The approximate timing of these works is yet to be determined and will be developed as part of detailed progressive rehabilitation planning when an approximate timing of mine closure is determined. Of the limited available opportunities for progressive rehabilitation, WCL has identified several works to be undertaken in the short term (within five years of this RMP), including:

- Progression of the design, notification and approval process to permanently seal Portals 2, 5, 18 and 19 of the Bulli and Balgownie seam workings. These portals are no longer required and will be sealed so as not to pose a hazard to operations or the surrounding environment.
- Removal of the old surface coal clearance systems. Including the old conveyors, coal bins and truck load out facility which are now redundant infrastructure. The removal of the truck load out facility will also improve visual amenity from community areas.
- Commencement of rehabilitation of the No 1 and 2 shaft asset areas. Preliminary scoping work has identified that these shafts are redundant to current and future mining requirements. The design, approval and execution planning are described in the Forward Program.

The progressive rehabilitation schedule of the RVC Pit Top and shaft sites under the current MP 09_0013 approval is demonstrated in Figures 6.1 to 6.5 below. WCL will continue to investigate opportunities for progressive rehabilitation works to be undertaken during the life of mine.

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Legend

RVC Lease Area

- CL 745
- MPL 271
- ML 1575

Infrastructure Area

FIGURE 6.1A

Life of Mine Progressive Rehabilitation Schedule - RVC Pit Top Area (2022)

Image Source: ESRI Basemap (2022) Data source: WCL (2022)

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 2/06/2022

Legend

RVC Lease Area

- CL 745
- MPL 271
- ML 1575

Landform Establishment

FIGURE 6.1B

Life of Mine Progressive Rehabilitation Schedule - RVC Pit Top Area (2026)

Image Source: ESRI Basemap (2022) Data source: WCL (2022)

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 2/06/2022

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6196000

6195500

Scale 1:5000 at A3

0 100 200 300 Metres

GDA2020 MGA Zone 56

Legend

RVC Lease Area

- CL 745
- MPL 271
- ML 1575

Ecosystem and Land Use Establishment

FIGURE 6.1C

Life of Mine Progressive Rehabilitation Schedule - RVC Pit Top Area (2031)

Image Source: ESRI Basemap (2022) Data source: WCL (2022)

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 2/06/2022

Legend

RVC Lease Area

- CL 745
- MPL 271
- ML 1575

Infrastructure Area

FIGURE 6.2A

Final Landform Features - Shafts No.1 and No. 2 (Domain 3)

Image Source: Nearmap (2022) Data source: WCL (2022)

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 2/06/2022

Legend

RVC Lease Area

- CL 745
- MPL 271
- ML 1575

Ecosystem and Land Use Establishment

FIGURE 6.2B

Life of Mine Progressive Rehabilitation Schedule - Shafts No.1 and No. 2 (2026)

Image Source: Nearmap (2022) Data source: WCL (2022)

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 2/06/2022

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Scale 1:800 at A3

0 25 50 75 Metres

GDA2020 MGA Zone 56

Legend

RVC Lease Area

- CL 745
- MPL 271
- ML 1575

Ecosystem and Land Use Development

FIGURE 6.2C

Life of Mine Progressive Rehabilitation Schedule - Shafts No.1 and No. 2 (2031)

Image Source: Nearmap (2022) Data source: WCL (2022)

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 2/06/2022

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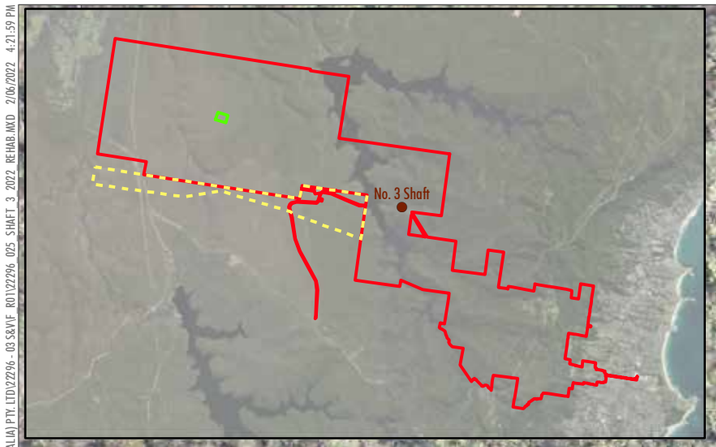

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Scale 1:800 at A3

0 15 30 45 Metres

GDA2020 MGA Zone 56

Legend

RVC Lease Area

CL 745

MPL 271

ML 1575

Infrastructure

FIGURE 6.3A

Life of Mine Progressive Rehabilitation Schedule - Shaft No. 3 (2022)

Image Source: Nearmap (2022) Data source: WCL (2022)

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 2/06/2022

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6201300

Scale 1:800 at A3

0 15 30 45 Metres

GDA2020 MGA Zone 56

Legend

RVC Lease Area

- CL 745
- MPL 271
- ML 1575

Ecosystem and Land Use Establishment

FIGURE 6.3B

Life of Mine Progressive Rehabilitation Schedule - Shaft No. 3 (2026)

Image Source: Nearmap (2022) Data source: WCL (2022)

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 2/06/2022

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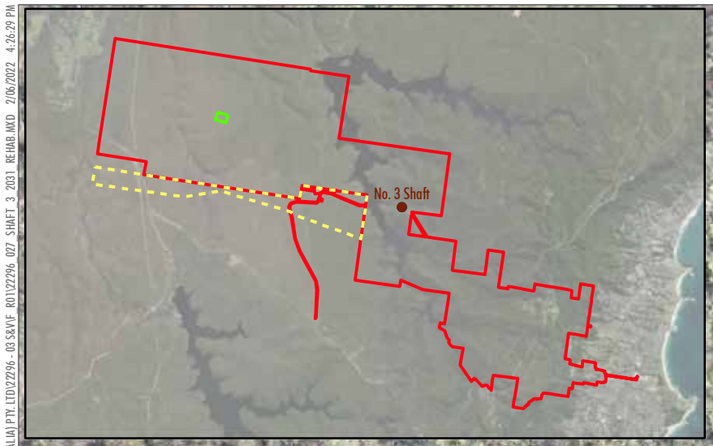

6201300

Scale 1:800 at A3

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GDA2020 MGA Zone 56

Legend

RVC Lease Area

CL 745

MPL 271

ML 1575

Ecosystem and Land Use Development

FIGURE 6.3C

Life of Mine Progressive Rehabilitation Schedule - Shaft No. 3 (2031)

Image Source: Nearmap (2022) Data source: WCL (2022)

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 2/06/2022

umwelt

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6202000

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Scale 1:2000 at A3

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GDA2020 MGA Zone 56

Legend

RVC Lease Area

- CL 745
- MPL 271
- ML 1575

Infrastructure Area

FIGURE 6.4A

Life of Mine Progressive Rehabilitation Schedule - Shaft No. 4 (2022)

Image Source: Nearmap (2022) Data source: WCL (2022)

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 2/06/2022

297200 297400 297600 297800

6202020

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Scale 1:2000 at A3

0 50 100 150 Metres

GDA2020 MGA Zone 56

Legend

RVC Lease Area

- CL 745
- MPL 271
- ML 1575

Ecosystem and Landform Establishment

FIGURE 6.4B

Life of Mine Progressive Rehabilitation Schedule - Shaft No. 4 (2026)

Image Source: Nearmap (2022) Data source: WCL (2022)

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 2/06/2022

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6201020

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Scale 1:2000 at A3

0 50 100 150 Metres

GDA2020 MGA Zone 56

Legend

RVC Lease Area

CL 745

MPL 271

ML 1575

Ecosystem and Landform Development

FIGURE 6.4C

Life of Mine Progressive Rehabilitation Schedule - Shaft No. 4 (2031)

Image Source: Nearmap (2022) Data source: WCL (2022)

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 2/06/2022

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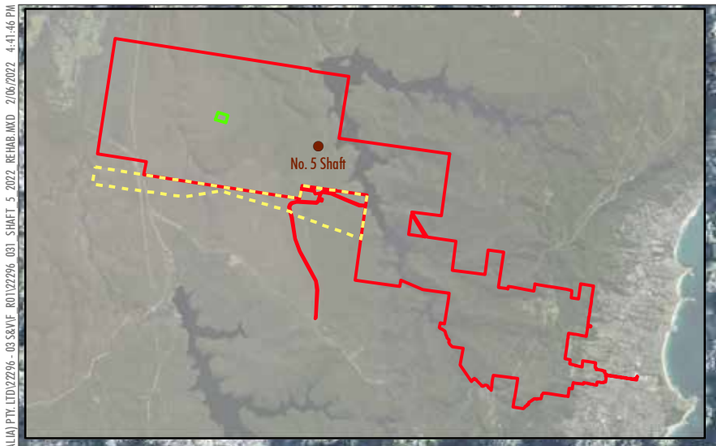

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6203300

Scale 1:700 at A3

0 25 50 75 Metres

GDA2020 MGA Zone 56

Legend

RVC Lease Area

CL 745

MPL 271

ML 1575

Infrastructure Area

FIGURE 6.5A

Life of Mine Progressive Rehabilitation Schedule - Shaft No. 5 (2022)

Image Source: Nearmap (2022) Data source: WCL (2022)

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 2/06/2022

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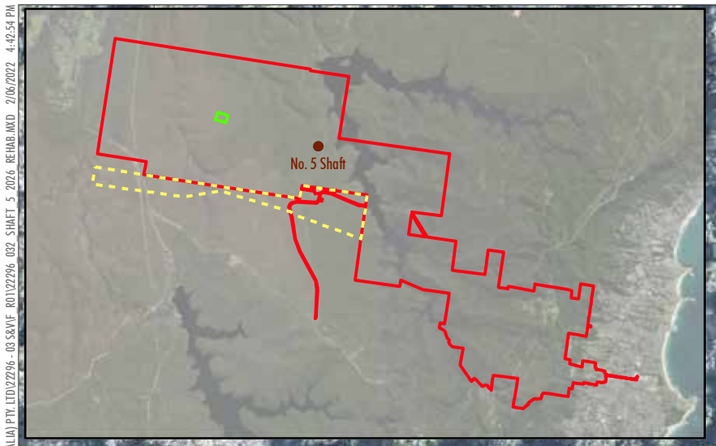

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Scale 1:700 at A3

0 25 50 75 Metres

GDA2020 MGA Zone 56

Legend

RVC Lease Area

- CL 745
- MPL 271
- ML 1575

Ecosystem and Landuse Establishment

FIGURE 6.5B

Life of Mine Progressive Rehabilitation Schedule - Shaft No. 5 (2026)

Image Source: Nearmap (2022) Data source: WCL (2022)

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 2/06/2022

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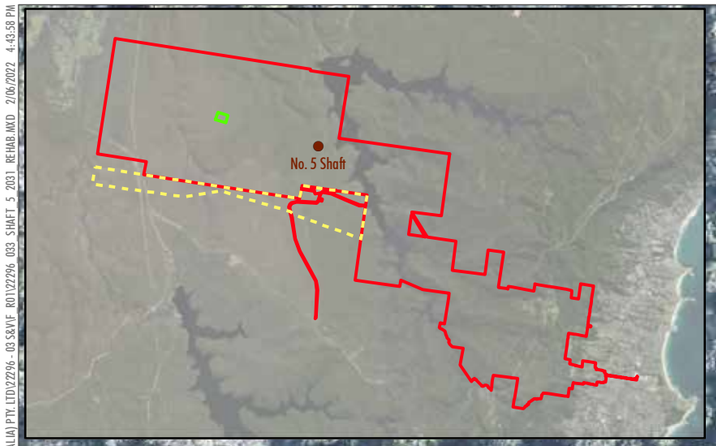

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Scale 1:700 at A3

0 25 50 75 Metres

GDA2020 MGA Zone 56

Legend

RVC Lease Area

- CL 745
- MPL 271
- ML 1575

Ecosystem and Landuse Development

FIGURE 6.5C

Life of Mine Progressive Rehabilitation Schedule - Shaft No. 5 (2031)

Image Source: Nearmap (2022) Data source: WCL (2022)

Mine Name: Russell Vale Colliery
Title Holder: Wollongong Coal Limited
Drawn By: Umwelt Australia
Date Drawn: 2/06/2022

6.2 Phases of rehabilitation and general methodologies

The rehabilitation objectives for the RVC lease area aim to, in summary, create a safe, stable, non-polluting final landform capable of supporting the preferred final land uses (refer to **Section 2.4** and **Section 4**). This will be achieved by demonstrating completion of a series of conceptual phases of rehabilitation which are described in **Table 6.1**.

Table 6.1 Rehabilitation Phases

Phase	Description
Active Mining	Activities undertaken as part of active mining that are associated with rehabilitation, including: • topsoil management • flora and fauna management • cover/overburden emplacement • waste management • geology and geochemistry • spontaneous combustion • reject material • erosion and sediment control • biological resources management • mine subsidence • cultural heritage • exploration.
Decommissioning	Removing infrastructure such as equipment, hardstands, buildings, structures and contaminated and hazardous materials.
Landform Establishment	Involves the shaping of land disturbed for mining purposes into a desired land profile consistent with the approved final landform designs.
Growth Medium Development	Establishing and enhancing physical structure, chemical properties and biological properties of a soil stratum for plant growth. This includes placing and spreading soil and applying ameliorants.
Ecosystem and Land Use Establishment	Involves the planting and/or seeding of plant species. Weed and feral pest management is also undertaken to protect juvenile species as they develop.
Ecosystem and Land Use Development	The established ecosystems/landform is managed to encourage growth towards a desired and sustainable post mining land use outcome.

6.2.1 Active mining phase

a. Soils and materials

Due to the nature of underground mining undertaken across the RVC lease area, very little surface disturbance is required over the life of mine and therefore topsoil stripping/disturbance is limited. Where topsoil stripping is required (for example, erosion and sediment control works, construction of bunds etc.), the following controls are to be implemented:

- Works will not take place during heavy rainfall.
- Completion of a disturbance permit prior to any disturbance works and where identified seek additional approvals.
- Undertake stripping of topsoil immediately before starting bulk earthworks, and wherever practicable stockpile topsoil for rehabilitation or revegetation works on site.
- Suitable areas for any temporary stockpiling of excavated soil and debris (on flat ground) will be clearly identified and delineated before the commencement of works.
- Ensure stockpiles are:
    - Constructed on the contour at least two (preferably five) metres from hazard areas, particularly in areas of concentrated water flows or slopes steeper than 10 percent.
    - Stabilised if they are to be in place for more than 10 days.
    - Protected from run-on water by installing water diversion structures upslope.
    - Installed with sediment filters immediately downslope and wherever possible direct runoff to site dirty water management system to protect other lands and waterways from pollution.
- All erosion, sediment control and runoff diversion measures will be established before any excavation begins. These will be left in place throughout works execution and beyond works completion until all surfaces have been fully restored and stabilised.

Availability of topsoil is considered a risk to rehabilitation and/or achieving the final landform. Due to the age of the existing surface disturbance areas and the timeframe that they are anticipated to remain operational, existing topsoil volumes for the rehabilitation of surface disturbance areas are limited.

A capping material and topsoil balance assessment will be undertaken as part of the Forward Program. The aim of this assessment will be to determine the amount of suitable materials available for use in landform design and rehabilitation and quantify any shortcomings that may be identified. If a materials deficit eventuates, WCL will explore options to overcome this deficit, including importing suitable materials to site for use in landform design. This investigation will form part of the mine closure planning process.

b. Flora

Flora (including threatened and invasive species) is managed across the RVC lease area in accordance with the approved Surface Operations Biodiversity Management Plan (SOBMP).

Due to the nature of mining operations undertaken at RVC, very little additional vegetation disturbance/clearance to that from historical operations beyond that identified in the SOBMP

for weed management is required throughout the life of mine. Any required disturbance including weed management will be assessed through the site permitting process with additional permits or approvals to ensure that potential impacts to biodiversity are adequately identified and mitigated. A register of all sensitive areas, which clearly identify the ecological values to be avoided during disturbance works, will be developed as a component of the Forward Program and maintained throughout the life of mine.

Opportunities for progressive rehabilitation will be explored throughout the life of mine, however revegetation works are generally limited to creating/maintaining vegetation bunds at this stage of the mine life. Revegetation undertaken as part of rehabilitation works will be comprised of species that are easily propagated and established from readily available local provenance seed. Such species are identified in Appendix E of the approved SOBMP.

To ensure a successful survival rate of all planted specimens, the following aspects are to be considered:

- Revegetation, where practicable, is to occur during the months where optimal climatic conditions are available for plant establishment and growth.
- Pest control measures as outlined in the SOBMP are to be implemented.
- Weed removal to be undertaken as required until the completion of the maintenance period.
- Establishment of No Go Zones and appropriate delineation and protection such as:
    - Install fencing or bunding around revegetation area to prevent access and exclude further impacts for the duration of the revegetation program.

Weeds are managed throughout the RVC lease area in accordance with the weed management program as outlined in the approved SOBMP. Weed management activities are undertaken in consultation with the Illawarra Weeds District Authority and are centred on best practice principles, including prevention, early intervention and regular monitoring and removal. These principles, as outlined in the approved SOBMP, will be applied to rehabilitation areas to ensure the survival and sound condition of rehabilitation is preserved across the RVC lease area.

c. Fauna

Fauna (including threatened and pest species) is managed across the RVC lease area in accordance with the approved BMPs for the pit top area and associated with approved Extraction Plans.

Due to the nature of mining operations, very little disturbance to fauna (in particular, habitat removal) is expected to occur throughout the life of mine. In the event mandatory disturbance works may impact fauna habitat, a review is undertaken to determine the need for additional approvals and an activity specific environment management plan is developed to assess and manage the impacts to fauna within the work area. An Unexpected Threatened Species Find Protocol has also been developed to mitigate the risks to threatened fauna species, such as the Powerful Owl (*Ninox strenua*) and the Grey Headed Flying Fox (*Pteropus poliocephalus*).

Where practicable, rehabilitation areas will include native tree species known to provide habitat, feed and foraging opportunities for threatened fauna species which may frequent

the site. Additionally, habitat augmentation will be undertaken (where possible) in disturbed areas where native bushland has been identified as the preferred final land use, including rock piles and log emplacement. As described above, revegetation species will be comprised of those that are easily propagated and established from readily available local provenance seed.

Vertebrate pest management is undertaken in accordance with the SOBMP and in consultation with Local Land Services and WCC. Management strategies for pests such as deer, rabbits and red foxes are outlined in the SOBMP and include 1080 baiting, cage trapping and habitat removal (e.g., warren/den ripping). Additional measures, including exclusion fencing, are implemented to provide extra protection for rehabilitation and/or revegetation areas from damage caused by foraging pest species.

d. Rock/overburden emplacement

No rock/overburden is emplaced on the RVC lease area. Due to the nature of bord and pillar mining undertaken across the RVC lease area, minimal overburden interference is experienced and therefore does not require handling/storage on the surface. Some oversized material is generated when screening the coal product which is stored and reused for beneficial purposes on site (subject to appropriate testing of materials).

A capping material and topsoil balance assessment will be undertaken as part of the Forward Program. The aim of this assessment will be to determine the amount of suitable materials available for use in landform design and rehabilitation and quantify any shortcomings that may be identified. If a materials deficit eventuates, WCL will explore options to overcome this deficit, including importing suitable materials to site for use in landform design. This investigation will form part of the mine closure planning process.

e. Waste management

All waste management undertaken across the RVC lease area is undertaken in accordance with the approved Waste Management Plan. Methods for managing various sources of waste generated at RVC are detailed below.

Construction Waste

Generally, infrastructure construction activities are not expected to generate a significant amount of waste material as these will involve predominately modular/prefabricated components which are assembled offsite. Other construction wastes that may be generated include office, domestic and maintenance/workshop waste.

Any wastes generated during construction works will be managed in accordance with the site waste management system including classification, prior to removal from site as required by a licensed waste management contractor to a licensed waste disposal facility.

Office Waste

Office wastes are largely comprised of paper, office stationery, cardboard/packaging and printer ink cartridges. Minimal quantities of office wastes are generated at RVC, most of which is recycled.

Domestic Waste

Domestic waste generated at RVC includes food scraps, food/drink packaging and other putrescible wastes.

Recycling will be undertaken where possible (e.g., aluminium cans, glass bottles) while the rest of the waste is disposed of offsite by a licensed contractor to an appropriate landfill facility.

Mine Water

Waste mine water is regulated under Environment Protection Licence (EPL) 12040. The volume of wastes discharged from EPL Point 2 will not exceed 2,500 kL/day under dry weather conditions. Under wet weather conditions, this volume may be exceeded, however all practical measures will be undertaken to minimise additional pollution caused by wet weather events.

Further detail on the management of mine water is provided in the Adit Discharge Water Management Plan (ADWMP) and Surface Operations Water Management Plan.

Wastewater

Wastewater includes waste from toilets, bathhouses and kitchens. All on-site wastewater is discharged to mains sewer.

Operational Waste

Operational wastes are generated from workshops, coal mining and maintenance activities and include machinery parts, oils and oily water, paint, lubricants, hydrocarbons, timber, tyres, material off-cuts and machinery parts.

Oils and greases are stored in drums on bunded pallets and stored under cover. Waste oil and oily water is collected from a waste oil tank, and, if necessary, holding pits or sumps are removed from site by authorised oil recycling/disposal contractors.

f. Geology and geochemistry

Some oversized material is generated when screening the coal product which is stored and reused for beneficial purposes on site (subject to appropriate testing of materials).

g. Material prone to spontaneous combustion

The propensity for spontaneous combustion of coal mined in the RVC lease area is generally considered to be low. Previous test results from areas of the lease have shown Wongawilli seam coal as having low propensity to self-heating, while no instances of spontaneous combustion have been recorded in the ninety-year life of Wongawilli seam coal in the NSW Southern Coalfields. Periodic testing of core samples of the Wongawilli Seam has indicated that the roof section has a low to low-medium proneness to spontaneous combustion whilst the working section has a low-medium to medium proneness.

Comprehensive gas monitoring systems exist at RVC including a control room which analyses the ongoing monitoring. Atmospheric bag samples are taken when activated by a risk-based Trigger Action Response Plan (TARP) system. These have been analysed to report on any spontaneous combustion indicator gases (CO, H2, C2H4, and C2H6). An extensive database now exists, which assists with an understanding of what is "normal".

h. Material prone to generating acid mine drainage

Geochemical analyses of ROM samples were undertaken as part of additional information supplied to DPE by WCL during the UEP approval application. The analyses indicated acid mine drainage has not been identified and is not foreseen to be likely to occur during the mine life of the RVC lease area.

i. Ore beneficiation waste management (reject and tailings disposal)

Some oversized material is generated when screening the coal product which is stored and reused for beneficial purposes on site (subject to appropriate testing of materials). Tailings are not produced at RVC and therefore the geochemical characteristics and storage of tailings are not relevant to this RMP.

j. Erosion and sediment control

Erosion and sediment controls are implemented in accordance with the RVC Surface Operations Water Management Plan and its Erosion and Sediment Control Plan (ESCP) where there is potential for erosion and transportation of sediments.

Physical erosion and sediment control measures implemented on site include, but are not limited to the following:

- clean water diversion drains and banks
- dirty water diversion structures
- filter fences
- sediment control dams.

In addition to these measures, prior to any proposed ground disturbance works, WCL undertakes a review to assess the extent of erosion and sediment risk. Regular inspections (monthly and after wet weather events greater than 10 mm) are undertaken by WCL with maintenance works carried out as required.

During rehabilitation works across the RVC lease area, establishment of stable vegetation cover will serve as the key erosion and sediment control to ensure rehabilitation areas achieve a final landform that is safe, stable and non-polluting. Additional measures such as catch drains and filter fences may also be implemented during rehabilitation to mitigate the risk of erosion to rehabilitation areas.

The final landform design for RVC will be subject to a geotechnical review to ensure the design adheres to the relevant rehabilitation objectives as specified by MP 09_0013, namely, to create a final landform which incorporates relief patterns and design principles consistent with natural drainage that mimics natural topography and mitigates erosion to the greatest extent practicable, while remaining long term stable and non-polluting.

k. Ongoing management of biological resources for use in rehabilitation

The management of topsoil resources at RVC is detailed in **Section 6.2.1a**.

As discussed, in **Section 2.6.1b**, local provenance seed will be sourced from surrounding native flora species wherever practicable or local seed providers at time of rehabilitation. Rehabilitation works, including sourcing of native seed, propagation of seed and habitat augmentation will be subject to guidance and regular checks by a suitably qualified contractor.

There are currently no habitat structure storages (e.g., tree stags) on site due to the limited surface disturbance required as part of operations to date. All removal of topsoil, vegetation and habitat structures not subject to an approval are subject to a review to determine the need for additional approvals. The potential salvage of these materials for use in later rehabilitation works will be assessed as part of the review.

l. Mine subsidence

Due to the bord and pillar mining methodology undertaken in the RVC lease area, negligible subsidence impacts are expected from Wongawilli seam mining operations. In addition, the mine plan has been designed to be long term stable with negligible risk of pillar failure, significantly reducing the potential for subsidence-related mining impact requiring rehabilitation within the RVC lease area.

The potential impact on the overlying extracted workings in the Bulli and Balgownie seams that could result in the occurrence of indirect subsidence has been difficult to determine and quantify due to the age of those workings and lack of detail from historical mining operations. Mine subsidence from prior longwall extraction is an important consideration at RVC. The potential for subsidence impacts on natural and manmade features has been assessed for areas which may potentially be affected by mine subsidence and a number of protection and monitoring measures have been implemented in these areas. This was the subject of detailed evaluation and review through the UEP approval process. The MP09_0013 consent conditions address this in Part C (Appendix A) which covers the specific environmental conditions for underground mining subsidence management. Condition C1 and C7 provide Subsidence Impact Performance Measures that are addressed through the Extraction Plan and subplans detailing the appropriate risk management and monitoring required under MP 09_0013.

An approved Stage 1 Extraction Plan has been prepared for all second workings, including preparation of management plans, monitoring programs, TARPs and a contingency plan, in accordance with Condition C10 of MP 09_0013. The TARPs and contingency plan identify remediation measures that may be required if exceedances occur.

m. Management of potential cultural and heritage issues

A Heritage Management Plan (HMP) (comprising the Aboriginal Cultural Heritage Management Plan and Historic Heritage Management Plan) has been developed and implemented at RVC in accordance with Condition B24 and Condition B26 (respectively) of MP 09_0013. The HMP details the measures to be implemented to prevent any direct or indirect impact on any Aboriginal items and describe the process to record and preserve any heritage items across the RVC lease area.

Aboriginal Heritage

To date, surveys have identified 24 Aboriginal heritage sites across the RVC lease area located within the approved mine area. A subsidence impact assessment of sites relevant to the Stage 1 and Stage 2 Extraction Plan has been undertaken, with the risk generally assessed as being low to very low. No known Aboriginal heritage sites have been identified within the pit top facilities.

No identified Aboriginal sites are expected to require salvage throughout the life of mine. Any unexpected finds will be managed in accordance with the unexpected finds contingency plan as outlined in the HMP. In the event salvage is required, a strategy for the care, control and storage of Aboriginal objects would be developed, with a Care and Control Agreement to be developed in accordance with Registered Aboriginal Parties (RAPs).

An Aboriginal Heritage TARP has also been developed for the management of potential impacts associated with mining operations.

Historic Heritage

The RVC surface facilities are associated with and are adjacent to aspects of the former South Bulli Colliery and contains a number of features with coal mining associated heritage values from the last 19th century onwards. The South Bulli Colliery is listed on the Wollongong LEP 2009 as item 5928. Individual heritage features previously listed on the Illawarra REP No. 1 1986 and gazetted in 1990 were consolidated as the South Bulli Colliery in the Wollongong LEP 1990.

Possible retention and relocation of historic heritage items is managed in accordance with the 2021 WCL Conservation Management Plan) which includes several policies for the conservation and future development of heritage areas.

Environment and community management, including the management of potential cultural and heritage issues, is regarded as part of the responsibilities of all RVC personnel. Activity-specific training will include Aboriginal and historic heritage content where required prior to the undertaking of works that have the potential to cause impacts or heritage items. This material will include training on the basic awareness of identifying Aboriginal and non-Aboriginal artefacts, requirements of the HMP, location of identified heritage sites and procedures to follow in the event of an unexpected heritage item discovery.

The UEP project area is also located in the vicinity of the curtilage of Cataract Dam as defined by the high-water mark of the Dam.

A Historic Heritage TARP has also been developed for the management of potential impacts associated with mining operations.

n. Exploration activities

Exploration activities will be undertaken within CCL 745, ML 1575 and MPL 271 in order to gather data on geology, coal quality, strata conditions, gas characteristics and groundwater relevant to the RVC lease area.

Disturbance required for the development of exploration facilities (drill pads etc.) is rehabilitated as soon as practicable following completion of exploration works in accordance with relevant guidelines and standards published by the Division of Resources and Geoscience (DRG).

6.2.2 Decommissioning and Demolition

Decommissioning and demolition activities required to achieve the final land uses will be outlined and scheduled as part of the mine closure planning process. The nature of infrastructure decommissioning across the RVC lease area will be contingent upon the preferred final land uses nominated as part of the mine closure planning process, however it is anticipated that all mining infrastructure will be decommissioned during mine closure.

Decommissioning of infrastructure scheduled during the short-term mine life is outlined in **Section 6.2.1**. All decommissioning and demolition works undertaken throughout the life of mine will be in accordance with *Australian Standard AS 2601-2001 The Demolition of Structures* (Standards Australia, 2001) as per Condition A25 of MP 09_0013.

a. Site security

Security measures designed to restrict public access to site infrastructure areas will be implemented during any decommissioning activities undertaken during the life of mine. These include, but are not limited to:

- security fencing and locked gates
- appropriate signage
- site inductions and training for required personnel.

All shaft sites are located on land owned by WaterNSW, which is subject to strict access restrictions to unauthorised personnel. This limits unauthorised access to the RVC lease area in general however also ensures only authorised personnel can access shaft sites.

Site access tracks will be subject to a review with WaterNSW to determine their ongoing need for access. If required, the tracks would be decommissioned and rehabilitated as soon as practicable to prevent unauthorised access into the RVC lease area.

b. Infrastructure to be removed or demolished

While a preferred final land use for the RVC lease area has yet to be determined, it is envisaged that all non-heritage related site infrastructure will be removed as part of the mine closure process, including (but not limited to):

- workshop, bathhouse and administration infrastructure
- coal handling and conveyor infrastructure
- access to shafts and portals (sealed).

If the RVC pit top facility is to be utilised as residential living as part of the final land use, water management infrastructure (dams, drainage infrastructure etc.) and utility services (electrical, sewage and water) may be retained rather than be disconnected and removed, as would be undertaken if an alternative final land use (e.g., native bushland) is to be selected.

Identification of infrastructure to be demolished will be assessed as part of the mine closure planning process, including all relevant studies and designs. All demolition works required to achieve the final land use will be undertaken in accordance with *Australian Standard AS 2601-2001 The Demolition of Structures* (Standards Australia, 2001) as per Condition A25 of MP 09_0013 and will be subject to additional risk assessments and specific controls.

c. Buildings, structures and fixed plant to be retained

As discussed in **Section 6.2.2b**, identification of potential infrastructure to be retained as part of the final land use will be undertaken as part of the mine closure planning process, however it is likely that all non-heritage related infrastructure will be removed to achieve the final land use.

If infrastructure is to be retained as part of the final land use, a structural assessment will be undertaken by a suitably qualified and experienced person. The assessment will:

- Determine the structural integrity of the building/structure/infrastructure to be retained.
- Identify any risks to public safety, the environment and any potential modes of failure.

d. Management of carbonaceous/contaminated material

Carbonaceous material remaining at closure will be scraped up and either disposed of using an authorised waste service or suitably capped to support the final land use, where appropriate. Specific management strategies for carbonaceous materials will be developed as part of the mine closure planning process.

Due to the age of mining operations historically undertaken at RVC, the extent of potential contamination is not currently understood and would be the subject of a site-specific review or Phase 1 investigation. Prior to the commencement of final rehabilitation works, if required pending the outcome of the Phase 1 review an appropriately qualified contamination specialist will be engaged to verify and assess the presence of any contamination on site and the subsequent risk to rehabilitation and determine any specific management/ remedial measures.

Contaminated sediment identified in water management structures will be removed prior to backfilling of dams with clean materials.

e. Hazardous materials management

Hazardous materials identified at RVC include diesel, compressed gases, flammable and combustible liquids and corrosive substances. All materials are stored in appropriate areas in suitably sized and bunded storage vessels in line with legislative requirements.

The mine closure planning process will identify any hazardous materials that may potentially remain at mine closure. A register of Safety Data Sheets (SDS) for all chemicals used on site is maintained and will be utilised to determine the presence and management of hazardous materials at mine closure.

Any remaining hazardous materials will either be utilised or disposed of at an authorised waste management facility in accordance with the Waste Management Plan and applicable legislation and guidelines. Storage tanks may be removed and sold or disposed of depending on their previous use and condition at the end of mine life.

f. Underground infrastructure

Decommissioning of underground mining infrastructure will occur as soon as practicable following the completion of mining operations. All decommissioning works will be undertaken in accordance with agency approval conditions, legislation and guidelines, including (but not limited to):

- MDG 6001 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).
- EDG01 Borehole Sealing Requirements on Land: Coal Exploration (Department of Trade and Investment, Resources and Energy, 2012).
- Section 92 (1) of the *Coal Mine Health & Safety Act, 2002* (as amended).

Prior to sealing underground access, all underground infrastructure will be reviewed, inspected, and, if suitable, salvaged and relocated to an appropriate temporary location until a permanent management (e.g., sale of equipment to another site) is determined.

The process and design of sealing shafts, decline entries and portals will be undertaken by a suitably qualified engineer to assess any risks associated with achieving the final land use.

Once this is complete, the sealing works will be undertaken as directed by the *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) and any other associated requirements.

In accordance with the guideline shafts and adits will be filled with appropriate stable filling material and capped with concrete to the satisfaction of the suitably qualified engineer and the NSW RR. All shaft sites will continue to be fenced prior to and during sealing to prevent unauthorised access. Following completion of sealing and capping works, a plaque will be placed on the portal and shaft cap and include the name of the colliery and date of sealing.

Ventilation infrastructure supporting underground workings, including fans and vents, will also be removed during the decommissioning process.

Any remaining boreholes requiring rehabilitation will be sealed in accordance with *EDG01 Borehole Sealing Requirements on Land: Coal Exploration* (Department of Trade and Investment, Resources and Energy, 2012) and *Minimum Construction Requirements for Water Bores in Australia* (2020).

Groundwater accumulation in underground workings and potential adit discharges at the surface will be managed in accordance with the WCL ADWMP. The ADWMP is awaiting approval from the DPE however will be in effect prior to the decommissioning of underground workings. Any ongoing water take by the final landform via interception, storage or diversion would comply with relevant approvals and licences under the *Water Management Act 2000.* WCL would also consider any relevant ongoing requirements of the NSW *Aquifer Interference Policy*.

6.2.3 Landform establishment

This section provides an overview of the key characteristics of the proposed conceptual final landform as illustrated in **FLRP Plan 1A-E** and **FLRP Plan 2A-E** in **Section 5**. The conceptual final landform has been designed to create a landform that is safe, stable and non-polluting and suitable for the intended post mining land use.

a. Water management infrastructure

The retention of water management infrastructure in the post mining landform will be determined as part of the mine closure planning process and agreed final land use. Any water management infrastructure retained in the final landform will be fit-for-purpose for the preferred final land uses of the RVC lease area.

Water management infrastructure that is not required as part of the final landform will be rehabilitated at the completion of mining operations. Sediment will be removed from dams and sediment basins before being backfilled with either wall or clean material. Reprofiling will be undertaken as required to achieve the final landform design. Dirty runoff catchment areas will be rehabilitated, and clean surface runoff will be maximised for conveyance downstream.

Adits will be managed in accordance with the ADWMP.

Details of the landform establishment processes for Bellambi Gully are described further in Section 6.2.3e.

b. Final landform construction: general requirements

The final landform design for rehabilitated areas of the RVC lease area will be subject to a geotechnical review to be undertaken by a suitably qualified and experienced engineer. The purpose of this review is to ensure the final landform is constructed to a condition that supports the preferred final land use and is safe, stable and non-polluting.

Construction of the final landform will involve reprofiling the site to reduce slope lengths and ensuring all benches are geotechnically stable. Where necessary, contour banks will be constructed, and drainage channels will be armoured to achieve landform stability. The final landform design will aim to mirror the natural and existing geography of the land adjacent to rehabilitation areas.

A capping material and topsoil balance assessment will be undertaken as part of the Forward Program. The aim of this assessment will be to determine the amount of suitable materials available for use in landform design and rehabilitation and quantify any shortcomings that may be identified. If a materials deficit eventuates, WCL will explore options to overcome this deficit, including importing suitable materials to site for use in landform design. This investigation will form part of the mine closure planning process.

The final landform design may also incorporate water management infrastructure as required to support the preferred final land uses. Specific details of water management strategies to be incorporated into the final landform design will be assessed as part of the conceptual mine closure planning process.

c. Final landform construction: reject emplacement areas and tailings dams

There are no tailings storage facilities or relevant reject emplacement areas (subject to this RMP) at the RVC and therefore this is not relevant to this RMP.

The RVEA marginally extends into CCL 745 and is being managed under a separate WCC approval (D89/839). The RVEA rehabilitation final design and landform will continue to be developed in consultation with WCC, inclusive of flooding and other ancillary studies which are anticipated to be completed in 2023.

On the finalisation of the agreed design, work will commence on the RVEA rehabilitation.

Ongoing monitoring, maintenance, and remedial works, if any, will continue until the agreed final landform and rehabilitation is completed.

d. Final landform construction: final voids, highwalls and low walls

Due to the nature of underground mining undertaken at RVC, final voids, highwalls and low walls are not relevant to this RMP.

e. Construction of creek/river diversion works

The Bellambi Gully Creek diversion works have been constructed to form an open channel capable of safely passing upstream clean water through the RVC pit top facility through to downstream Bellambi Gully Creek based on a design event of a 1:100 year flow. The works were modelled and designed by a suitably qualified engineer and subsequently approved by DPE during 2021. The diversion channel is complemented by a large flow detention basin to ensure that flows during an expected 1:100 year event are managed to reduce downstream flooding risk.

The completed diversion and OSD basin is expected to remain in perpetuity in the final landform.

The Bellambi Gully creek diversion was designed in response to a DPE order which required WCL to provide a structure capable of managing a 1% AEP rainfall event (1 in 100 year). The diversion has been constructed based on these criteria.

6.2.4 Growth medium development

The current availability of substrate materials suitable for growth medium development is a constraint to rehabilitation works. Due to the limited surface disturbance generated on site, limited rehabilitation resources (e.g., topsoil) are available on site. A materials balance assessment will be undertaken as part of the Forward Program and mine closure planning process to quantify existing available resources and any material gaps that may be encountered during final rehabilitation works. Should a material imbalance be identified, WCL will assess available options for overcoming this imbalance to ensure suitable volumes of rehabilitation resources are available prior to mine closure.

All substrate materials to be utilised in rehabilitation works (e.g., topsoil) will be subject to appropriate testing and inspections to ensure the quality of the material is suitable for use at RVC. This quality assessment will also involve ensuring selected materials are free from potential weed seedbanks to mitigate the risk of weed germination in rehabilitation areas. Should invasive weed species develop across rehabilitation areas, management will be undertaken in accordance with the Weed Management Program as outlined in the SOBMP.

The substrate will be ripped and seeded for stabilisation using appropriate method/s such as hydroseeding to promote rapid vegetation cover establishment. Establishment of vegetation cover in addition to upslope water diversion measures and measures such as benching on steep slopes are the primary erosion and sediment control measure to protect rehabilitation areas from erosion caused by surface water runoff and wind exposure. However, in the event emplaced substrate in rehabilitation areas is anticipated to be exposed while vegetation cover establishes, additional erosion and sediment control measures such as filter fences and coir logs may be implemented where required.

6.2.5 Ecosystem and land use establishment

Revegetation of disturbed areas with native species will be undertaken across the RVC lease area where required by the respective final land use/s.

The rehabilitation objectives for a final land use of native ecosystem re-establishment (as stipulated by MP 09_0013) are as follows:

- establish/restore self-sustaining native ecosystems
- establish local plant community types
- establish:
  - riparian habitat within any diverted and/or re-established creek
  - lines and retained water features
  - habitat, feed and foraging resources for threatened fauna species
  - vegetation connectivity and wildlife corridors, as far as is reasonable and feasible.

Revegetation will be subject to guidance and regular checks by suitably qualified rehabilitation contractors with seed sourced from reputable suppliers. WCL will undertake a due diligence assessment of local seed suppliers to ensure maximum viability of seed is achieved.

It is envisaged any revegetation works would be undertaken during Autumnal months when local climatic conditions are favourable for native flora growth. In the event Autumnal planting is not feasible, revegetation will occur when suitable conditions allow.

A revegetation species list is included in the SOBMP. This list comprises species consistent with local vegetation communities as well as those which offer habitat, feed and foraging resource for threatened fauna species.

Weed and pest fauna species will be managed in accordance with the SOBMP (see **Section 6.2.1a** and **Section 6.2.1b** respectively).

6.2.6 Ecosystem and land use development

Rehabilitated lands will be managed to ensure that rehabilitation is sustainable and can be demonstrated to have achieved the specified rehabilitation objectives, completion criteria and preferred final land uses.

Ongoing management of rehabilitated areas will include:

- weed and feral animal control, including:
  - execution of the weed management program in accordance with the SOBMP
  - feral animal exclusion via fencing of sensitive rehabilitation areas
  - ongoing feral animal management in accordance with the SOBMP.
- erosion and drainage controls and ongoing inspections of potential erosion impacts, water management infrastructure (as required and if suitable in lieu of the final land use/s) and strategic buffer planting
- ongoing monitoring of rehabilitation areas (see **Section 8**)
- ongoing environmental monitoring and management of surface water, groundwater, ecology and land capability in accordance with relevant approved management plans.

Rehabilitation monitoring programs will be continued until it can be demonstrated that the rehabilitation has satisfied the completion criteria.

6.3 Rehabilitation of areas affected by subsidence

Subsidence predictions, monitoring and management within the RVC lease area are outlined in the Stage 1 and Stage 2 Extraction Plan.

Extensive subsidence modelling and predictions have been undertaken during both the approvals in the environmental assessment process and post approval via the Extraction Plan process to ensure the potential impacts of subsidence are adequately addressed by the mine plan. The revised UEP mine plan is designed to be long term stable with negligible risk of pillar failure, significantly reducing the potential for subsidence-related mining impacts on groundwater, surface water and biodiversity. In addition to this, a subsidence monitoring program has been developed to provide data to assist with the management of subsidence

risk and to ensure compliance with subsidence performance measures as stipulated by MP 09_0013.

Although only minimal subsidence impacts are predicted to occur within the RVC lease area during the UEP project, the following remediation measures may be implemented should subsidence impacts be experienced.

Table 6.2 Indicative Mine Subsidence Remediation Options

Feature Affected by Subsidence	Indicative Remediation Options
Cliffs and steep slopes	• Grouting of rock cracks. • Rock bolting or meshing. • Fill tension cracks. • Stabilise slopes e.g., batter, bench, or other method.
Cultural heritage	• Rehabilitation to be undertaken in liaison with Aboriginal stakeholders, an Aboriginal cultural heritage expert and OEH.
Groundwater	• No rehabilitation options are considered viable.
Streams	• Natural stream remediation where sediment naturally seals cracks or fractures. • Stream hand mortaring. • Injection grouting of material to fill voids in small fractured areas. • Injection grouting of material in a series of boreholes in a pattern designed to cover larger fracture areas. • Permeation grouting where material is added to the stream and is drawn down cracks sealing them. • Curtain grouting which places grout in a curtain downstream of the fractures which acts like a dam causing the subsurface fractures to fill forcing water back into the stream bed. • Impermeable linings on the stream bed. • Filling or compaction of fractures in highly sedimentary stream beds. • Offset if required.
Aquatic ecology	• As for streams.
Upland Swamps	• Installation of coir log dam erosion control structures at knick points. • Water spreading techniques to 'dam' and release water to maintain swamp moisture. • Sealing of surface cracks with grouting material in accessible areas such as exposed rock surfaces in stream beds and rock bars within swamp boundaries. • Injection grouting of material to fill voids in fractured containing rock bars. • Offset if required.
Terrestrial ecology	• As for swamps.

In the event that the subsidence monitoring program identifies subsidence impacts to the extent requiring remediation, this will be reported as part of the six-monthly subsidence impact reports prepared by WCL. This report will include an indication of the success and/or shortcomings of applied remediation techniques to ensure effective remediation of subsidence is achieved in any possible future occurrences.

7 PART 7 – REHABILITATION QUALITY ASSURANCE PROCESS

A rehabilitation quality assurance process will be implemented throughout the RVC mine life to ensure rehabilitation is undertaken in accordance with nominated methodologies and to identify risks prior to proceeding to the next phase of rehabilitation.

The rehabilitation quality assurance process is outlined in **Table 7.1** below.

Table 7.1 Rehabilitation Quality Assurance Process

Rehabilitation Phase	Quality Assurance Actions and Processes	Responsibilities for Implementation	Method for Documenting and Recording Process	Method and Timeframe for Reviewing and Refining Process
Active mining	• Up to date mine plans. • Review process and pre-disturbance checklists for surface monitoring and or exploration. • Weed management program. • Routine inspections of operational areas, subsidence, erosion and sediment controls etc.	• Mine Operations Manager. • Environmental Superintendent (or delegate).	• Inspections and documentation. • Six-monthly subsidence reporting. • Annual ecological reporting. • Annual EPBC compliance reporting.	Annually or following incident.
Decommissioning	• Inspections and demolition reports. • Material testing to ensure any contaminated materials have been removed prior to commencing next phase of rehabilitation.	• Environmental Superintendent (or delegate).	• Inspections and documentation. • Waste disposal records.	Annually or following incident.
Landform Establishment	• Finalisation of detailed final landform design for all domains across RVC lease area prior to decommissioning phase. • Surveys and preparation of as-constructed plans of final constructed landform and features (e.g. slopes, banks etc.). • Commencement to next phase of rehabilitation is not permitted until landform construction is confirmed to be generally in accordance with final landform plans.	• Mine Manager. • Survey Manager. • Technical Experts. • Environmental Manager (or delegate).	• As-constructed landform surveys. • Inspections and documentation.	Annually or following incident.

Rehabilitation Phase	Quality Assurance Actions and Processes	Responsibilities for Implementation	Method for Documenting and Recording Process	Method and Timeframe for Reviewing and Refining Process
Growth Medium Development	• Selection of rehabilitation material (soil etc.) from suitably qualified suppliers compliant with relevant standards/guidelines. • Weed management of rehabilitation areas. • Installation of erosion and sediment controls as required to manage risk of damage to rehabilitation areas. • Soil sampling to confirm appropriate application of growth medium materials prior to application of seed.	• Environmental Superintendent (or delegate). • Geotechnical Engineer.	• Rehabilitation material certificates and/or product data sheets. • Inspections and documentation. • Annual reporting of rehabilitation in Annual Review.	Annually or following incident.
Ecosystem and Land Use Establishment	• Development of species list (refer to SOBMP) and planting schedule for revegetation works. • Sourcing of quality seed from local, suitably qualified suppliers. • Weed and feral pest management. • Rehabilitation monitoring and maintenance as required.	• Environmental Superintendent (as required).	• Revegetation species list. • Native seed quality assurance records from supplier. • Feral pest management and inspection reports prepared by contractor. • Weed management and inspection reports prepared by contractor. • Annual Review. • Inspections and documentation. • Annual ecological reporting.	Annually or following incident.

Rehabilitation Phase	Quality Assurance Actions and Processes	Responsibilities for Implementation	Method for Documenting and Recording Process	Method and Timeframe for Reviewing and Refining Process
Ecosystem and Land Use Development	• Weed and feral pest management. • Rehabilitation monitoring.	• Environmental Superintendent (or delegate).	• Feral pest management and inspection reports prepared by contractor. • Weed management and inspection reports prepared by contractor. • Inspections and documentation. • Annual ecological reporting. • Annual Review.	Annual or following incident.

8 PART 8 – REHABILITATION MONITORING PROGRAM

As rehabilitation opportunities are limited throughout the operational life of mine across the RVC lease area, it is unsuitable to develop a formal rehabilitation monitoring program until such time that closure rehabilitation works are planned and designed. This is expected to occur during the conceptual mine closure planning process.

A rehabilitation monitoring program will be designed and implemented at RVC to evaluate the progress of rehabilitation towards fulfilling rehabilitation objectives and rehabilitation completion criteria.

The RVC rehabilitation monitoring program will be finalised as part of the conceptual mine closure planning process and will follow best practice methods and principles to ensure that the desired outcomes for each final land use domain are achieved. The exact scope of the monitoring program for each final land use domain will be dependent on the outcomes of specialist assessments and the final land use as agreed to by relevant stakeholders.

It is expected that the following types of monitoring will be required as part of the rehabilitation monitoring program:

- baseline monitoring during mining conditions
- initial rehabilitation monitoring for a period of one to two years following rehabilitation.
- ongoing monitoring (less frequently) from two years post mining until lease relinquishment
- post-lease relinquishment monitoring (to be negotiated with future landowner)
- use of research trials where appropriate.

Post-closure monitoring will focus on achieving outcomes in terms of:

- revegetation
- infrastructure removal
- contamination remediation
- gas management
- water management
- land stability (geotechnical)
- site safety and security.

8.1 Analogue site baseline monitoring

To date, baseline monitoring through the use of analogue sites is yet to be undertaken at RVC. It is envisaged that a baseline monitoring program will be designed as part of the mine closure planning process. WCL will complete reviews of existing literature and case studies of similar underground mining operations' baseline monitoring programs as part of the program design.

The objective of baseline monitoring is to provide baseline data to be utilised in validating the proposed rehabilitation objectives and completion criteria. Should any revisions to the proposed rehabilitation objectives and/or completion criteria be identified following

completion of the baseline monitoring program, this RMP will be updated in consultation with DPE, and NSW RR as required.

8.2 Rehabilitation establishment monitoring

As discussed in **Section 8**, a rehabilitation monitoring program (including rehabilitation establishment monitoring) will be designed as part of the conceptual mine closure planning process.

The monitoring program will be designed in consideration of results and outcomes of the baseline monitoring program and will be tailored to the specific final land use selected for each final land use domain.

The rehabilitation establishment monitoring program will be implemented at the commencement of the ecosystem establishment phase of rehabilitation and will aim to:

- Enable early identification of actual or emerging issues that have the potential to delay revegetation establishment.
- Identify if triggers have been met for preventative or mitigation controls to minimise the impacts of emerging issues in accordance with the rehabilitation TARP (refer to Section 10).
- Provide data that may inform continuous improvement of rehabilitation methods.

8.3 Measuring performance against rehabilitation objectives and rehabilitation completion criteria

The rehabilitation program to be implemented across the RVC lease area will serve as the primary tool for measuring performance against rehabilitation objectives and completion criteria. Specific details of the monitoring program (methodology, timing, parameters to be monitored etc.) are yet to be designed, however these components will be tailored to rehabilitation objectives and completion criteria specific to each final land use domain.

Data collected as part of the rehabilitation monitoring program, in addition to physical observations made during routine inspections, will be assessed periodically (timing yet to be determined) to determine if rehabilitation areas are on a trajectory to achieving the final land use. In accordance with the rehabilitation quality assurance program (see **Table 7.1)**, progression to the next rehabilitation phase will not occur until monitoring indicates that rehabilitation is satisfactory as per the domain-specific completion criteria.

9 PART 9 – REHABILITATION RESEARCH, MODELLING AND TRIALS

9.1 Current rehabilitation research, modelling and trials

As there are no active rehabilitation areas within the RVC lease area, there are no current rehabilitation research, modelling or trial programs in effect at RVC.

9.2 Future rehabilitation research, modelling and trials

WCL is proposing to undertake research, modelling and/or trials to address various knowledge gaps that were identified as part of the rehabilitation risk assessment (see **Section 3**). These programs will be completed as a component of the Forward Program to allow for results and outcomes of the programs to be adequately addressed throughout the closure process.

A brief summary of each potential research, modelling and trial program is outlined below, noting that the exact scope of these programs will be refined further prior to the commissioning of each program.

9.2.1 Contaminated Land Review

As discussed in **Section 6.2.2d**, WCL will undertake a contaminated land review of Domain 1 to better understand the potential extent of contamination originating from historical underground mining operations on the site. Due to the age and history of operations undertaken within the Domain 1 pit top facilities and the lack of regulation/governance that existed prior to current-day operations, there is a likelihood for previously unidentified contaminated materials to be discovered on site. The aim of this investigation will be to determine the extent of any potential contamination and characterise any waste materials identified so that the land can be adequately remediated to support the preferred final land use of the site.

9.2.2 Assessment of Feasible Growth Medium Source

As discussed in **Section 6.2.4**, the current availability of substrate materials suitable for growth medium development is a constraint to rehabilitation works. Due to the limited surface disturbance generated on site, limited rehabilitation resources (e.g., topsoil) are available on site. A materials balance assessment will be undertaken as part of the Forward Program to quantify existing available resources and any material gaps that may be encountered during landform establishment and growth medium development works. As part of this assessment, preferred materials for use in rehabilitation (e.g., composted soils, virgin material etc.) will be investigated, with possible sources and risks identified.

10 PART 10 – INTERVENTION AND ADAPTIVE MANAGEMENT

As discussed in **Section 9**, a formal rehabilitation monitoring program will be developed as part of the conceptual mine closure planning process when closure rehabilitation planning works are undertaken. This will ensure the monitoring program is fit-for-purpose and suitable for application in a closure rehabilitation context.

As such, a rehabilitation TARP is yet to be developed by WCL. The rehabilitation TARP will be developed in conjunction with the formal rehabilitation monitoring program during the conceptual mine closure process.

11 PART 11 – REVIEW, REVISION AND IMPLEMENTATION

11.1 Review and revision

Statutory triggers for reviewing and revising this RMP are provided in **Table 11.1**.

Table 11.1 Statutory Triggers for Review and Revision of this RMP

Condition	Trigger Requirement
MP 09_0013 Condition F7	Within three months of: • The submission of an incident report under condition F9; • The submission of an Annual Review under condition F11; • The submission of an Independent Environmental Audit under condition F13; or • The approval of any modification of the conditions of this consent (unless the conditions require otherwise); the suitability of existing strategies, plans and programs required under this consent must be reviewed by the Applicant.
MP 09_0013 Condition F8	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 6 weeks of the review.
CCL 745, ML 1575, MPL 271 Condition 11	*Amendment of rehabilitation management plans* The holder of a mining lease must amend the rehabilitation management plan for the mining lease as follows— • to substitute the proposed version of a rehabilitation outcome document with the version approved by the Secretary—within 30 days after the document is approved, • as a consequence of an amendment made under clause 14 to a rehabilitation outcome document—within 30 days after the amendment is made, • to reflect any changes to the risk control measures in the prepared plan that are identified in a rehabilitation risk assessment—as soon as practicable after the rehabilitation risk assessment is conducted, • whenever given a written direction to do so by the Secretary—in accordance with the direction.

11.2 Implementation

The roles and responsibilities for monitoring, review and implementation of this RMP are defined in **Table 11.2** below.

Table 11.2 Responsibilities for the Implementation of this RMP

Position	Responsibility
Mine Manager	• Undertake training in relevant management plans and procedures as required. • Provide resources required to implement these procedures. • Develop and update mine plans as required. • Develop final landform design and select preferred final land uses.
Environmental Manager	• Implement, monitor and review the programs and procedures linked to this RMP. • Undertake consultation with stakeholders and regulatory authorities. • Undertake monitoring and maintenance of rehabilitation areas. • Promote the continual improvement of this RMP. • Ensure all personnel (including contractors) are trained in relevant fields as required e.g., cultural. • Report the progress of any rehabilitation and monitoring of biodiversity in the Annual Review. • Coordinate the completion of rehabilitation activities in accordance with this RMP. • Coordinate the development of the site rehabilitation objectives and closure criteria in consultation with key stakeholders.
Environmental Superintendent	• Implement, monitor and review the programs and procedures linked to this RMP. • Undertake consultation with stakeholders and regulatory authorities. • Undertake monitoring and maintenance of rehabilitation areas. • Promote the continual improvement of this RMP. • Ensure all personnel (including contractors) are trained in relevant fields as required e.g., cultural. • Report the progress of any rehabilitation and monitoring of biodiversity in the Annual Review. • Coordinate the completion of rehabilitation activities in accordance with this RMP. • Coordinate the development of the site rehabilitation objectives and closure criteria in consultation with key stakeholders.
Geotechnical Engineer	• Ensure landform establishment and other rehabilitation works are consistent with final landform design plans.
Survey Manager	• Ensure landform establishment and other rehabilitation works are consistent with final landform design plans.

12 REFERENCES

NSW Resources Regulator (2021) *Form and Way – Rehabilitation Management Plan for Large Mines*.

ERM (2013) *NRE No.1 Colliery Project Application (09_0013) Environmental Assessment*.

Standards Australia (2001) *Australian Standard AS 2601-2001 The Demolition of Structures*.

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

Department of Trade and Investment, Resources and Energy (2012) *EDG01 Borehole Sealing Requirements on Land: Coal Exploration*.