

Site	Russell Vale Colliery	DOC ID	RVC EC STD 001
Туре	Standard	Date Published	27/08/2021
Doc Title	ENVIRONMENTAL MANAGEMENT STRATEGY		

# RUSSELL VALE COLLIERY REVISED UNDERGROUND EXPANSION PROJECT

**ENVIRONMENTAL MANAGEMENT STRATEGY** 

**RVC EC STD 001** 



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#### **Revision history**

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Approved by	
Document Owner	Richard Sheehan
Effective Date	

# **Revisions**

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VERSION	DATE REVIEWED	REVIEW TEAM (CONSULTATION)	NATURE OF THE AMENDMENT
1	22/01/2021	EMM Consulting Pty Limited	Draft EMS
2	26/03/2021	EMM Consulting Pty Limited	Final EMS
3	14/05/2021	EMM Consulting Pty Limited	Final EMS
4	09/06/2021	EMM Consulting Pty Limited	Final EMS
5	05/07/2021	EMM Consulting Pty Limited	Final EMS
6	27/08/2021	EMM Consulting Pty Limited	Final EMS, incorporating approved management plan monitoring location plans and TARPs



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# 1. Introduction

This Environmental Management Strategy (EMS) has been prepared by Wollongong Coal Pty Limited (WCL) to ensure the environmental performance of the Russell Vale Colliery (the Colliery) is in accordance with condition F1 of development consent MP09\_0013.

# 1.1 Project Background

WCL operates the Russell Vale Colliery (formerly the NRE No.1 Colliery) in the Southern Coalfield of New South Wales (NSW). Russell Vale Colliery is an underground coal mine located at Russell Vale, approximately 8 kilometres (km) north of Wollongong and 70 km south of Sydney, within the local government areas (LGAs) of Wollongong and Wollondilly.

The Colliery which has been on 'care and maintenance' since 2015. WCL successfully sought Approval under the Environmental Planning and Assessment Act 1979 (EP&A Act) to expand the mining operations at the Colliery; this ongoing application is referred to as the Underground Expansion Project (UEP). The UEP has recently been approved under the EP&A Act by the Independent Planning Commission (IPC).

Mining as has been undertaken at Russell Vale Colliery since the 1880s. Continuous mining has been a feature since 1887 and surface facilities have operated at the Russell Vale site since this time. 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 has occurred in three seams, the Bulli Seam, Balgownie Seam and the Wongawilli Seam. The Balgownie seam is located approximately 10 metres (m) below the Bulli Seam and the Wongawilli Seam is located approximately 20 m below the Balgownie Seam. All three seams outcrop along the Illawarra Escarpment and the seams are accessed by adits 1 directly into the seams. There are two main mining areas within the Russell Vale Colliery lease area, which are referred to as Wonga East and Wonga West. In the Wonga East area, the Bulli Seam and Balgownie Seam have largely been fully extracted. The existing and proposed workings are contained within Consolidated Coal Lease 745 (CCL745) and Mining Lease 1575 (ML1575).

The Colliery Pit Top is located at the base of the Illawarra Escarpment above the suburb of Russell Vale (refer to Figure 1). The Pit Top facilities occupy an area of approximately 100 hectares (ha) at the eastern extent of the Colliery holdings. The site is accessed via a private driveway from the Princes Highway at a signalised intersection with Bellambi Lane. Coal has historically been hauled from Russell Vale Colliery to Port Kembla Coal Terminal (PKCT) by truck, via Bellambi Lane and Memorial Drive.



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The original UEP application submitted by Gujarat NRE Coking Coal Ltd in 2009 involved a substantial expansion of longwall mining in the Wongawilli Seam across the Wonga East area (a total of 11 longwall panels) and Wonga West area (a total of seven longwall panels) to extract 31 million tonnes (Mt) of run-of-mine (ROM) coal over a project life of 18 years. In response to concerns from the public and government agencies, the original UEP application was substantially revised over time to reduce the potential adverse impacts of the mine.

In order to address residual uncertainty regarding the impacts of longwall mining raised by the PAC Second Review Report, a revised mine design was developed based on a non-caving first workings mining system. The revised mine plan has been designed to be long term stable with negligible risk of pillar failure to address potential subsidence-related mining impacts on groundwater, surface water and biodiversity within the Cataract Reservoir catchment.

Changes to the Russell Vale Pit Top are also proposed to address concerns regarding potential amenity impacts to surrounding residential areas. This revised plan is referred to as the Revised Preferred Project.

After a formal review process by the PAC, the Independent Planning Commission (IPC) of NSW granted a Development Consent (MP09\_0013) on 8 December 2020 for the Revised UEP. The Revised UEP, which is also referred to as the Revised Preferred Project in assessment reports, is referred to as 'the project' from here on.

No offsite coal will be delivered to or received at the Colliery.

The location of the project is shown in Figure 1, and its main features are summarised in Section 1.2 of this EMS.

#### 1.2 Surface Facilities

#### 1.2.1 Colliery pit top facilities

The Pit Top is located on the lower slopes of the Illawarra Escarpment, adjacent to the suburbs of Russell Vale and Corrimal, occupies an area of approximately 100 ha's and includes coal handling, processing, storage and transport facilities, a mine water management system, mine entry adits, workshops and administration buildings.

Upgrades to the existing surface infrastructure will be undertaken in accordance with the Revised Preferred Project approval MP09\_0013 under the NSW EP&A Act. These upgrades are described further in Section 1.3.

Works associated with the planned upgrade are all located within the existing disturbance footprint of the Colliery, and within the boundary and capacity of the approved Pit Top surface water management system.



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#### 1.2.2 Ventilation shaft sites

The Colliery has five shafts, four are exclusively ventilation shafts (Vent Shafts No. 1-3, 5) and one is a shaft for personnel, materials and ventilation (Vent Shaft No. 4). Ventilation Shafts No. 1, No. 2 No. 3 and No. 5 site and associated facilities are located on CCL 745.



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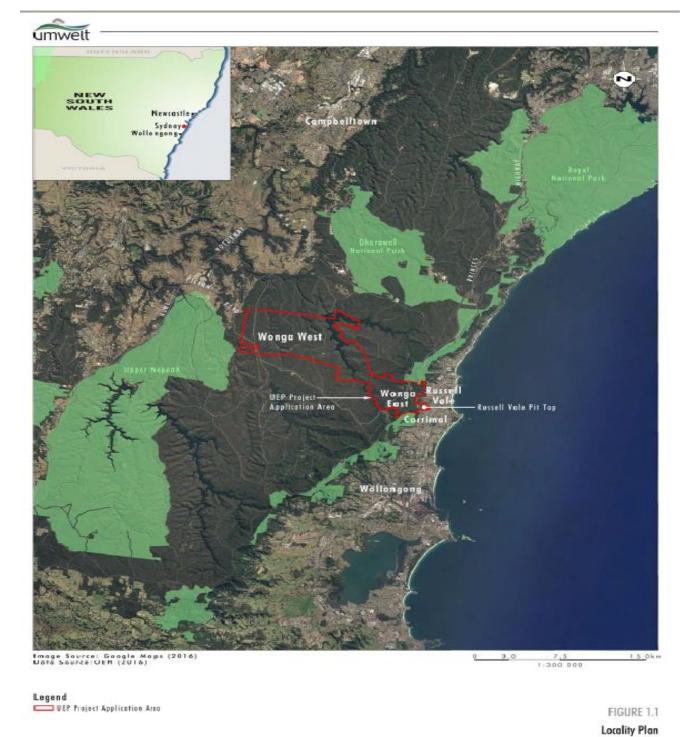


Figure 1 - Locality Plan

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#### 1.3 **Project Description**

#### **Project overview - Surface infrastructure** 1.3.1

The project involves a revised mine plan that has been designed to have negligible subsidence to address potential subsidence-related mining impacts on groundwater, surface water and biodiversity within the Cataract Reservoir catchment.

The project also involves changes to the Russell Vale Pit Top (the Pit Top), which includes key project components (i.e. surface infrastructure) requiring construction (see Section 2.3 for further detail) contained wholly within the existing disturbance footprint.

The current and proposed surface infrastructure are presented in Figure 2 and Figure 3 to Figure 5 respectively.

The key elements of the project are:

- mining by bord and pillar mining techniques only, with the workings designed to be long-term stable with minimal subsidence impacts;
- extraction of approximately 3.7 million tonnes of Run-of-Mine (ROM) coal at a reduced production rate of up to 1 million tonnes of product coal per year (equivalent to approximately 1.2 million tonnes of ROM coal per year);
- redesign of the Pit Top layout to relocate infrastructure to more shielded locations to reduce amenity impacts;
- operation of surface facilities and product transport, typically limited to daytime hours (7.00am to 6.00pm Mondays to Friday, 8.00am to 6.00pm Saturday, no Sundays and Public Holidays), with provision for occasional operation until 10.00pm Monday to Friday to cater for unexpected port closures or interruptions (Condition A12 and A13);
- reduced product trucking rates relative to the previous UEP mine plan with a maximum of 17 trucks permitted per hour;
- extension to the height of existing bunds, construction of new bunds and noise walls within the existing surface infrastructure area for improved noise mitigation;
- construction of a new truck loading facility and associated conveyors; and
- construction of a suitable dry coal processing plant to improve the quality of product coal removing reject rock material via use of dry separation methods will also be evaluated at this stage and if required to be installed, will be commissioned to align with the ramp up of production to 1.2 Mtpa ROM.



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### 1.3.2 Project staging

The project will be implemented in stages as per below with the scope of this EMS covering all stages:

#### Stage 1

Installation of environmental monitoring controls and mitigation measures, truck access roads, construction of new noise walls, noise bunds and new primary sizer.

Commencement of mining operations ramping up to approximately 0.5 Mtpa with crushed coal transferred to the ROM stockpile and coal loading via front-end loader to trucks to be transported to PKCT.

Evaluation of the feasibility of a coal processing plant (CPP) to be installed as part of the new Stage 2 surface infrastructure.

Key elements included in Stage 1 works include (see Figure 3):

- o development and mining by bord and pillar mining methods;
- o up to 500,000 tonnes of product coal per year;
- installation of new primary sizer inline;
- front end loading ROM coal onto trucks;
- ROM stockpile up to 30,000 tonnes; and
- construction of surface infrastructure works, including construction of new noise walls, noise bunds, truck access roads, and commissioning the design and construction of the truck loading bin and associated conveyers.

A copy of the Stage 1 surface infrastructure is provided in Figure 3.

### • Stage 2

Finalise the construction and commissioning of new surface infrastructure, comprising truck loading bins and associated conveyors.

The coal will be transferred from the ROM stockpile through a series of conveyors to the truck loading bin to be loaded onto the trucks for transportation to PKCT or transferred to a new stockpile area for temporary stockpiling.

Coal from temporary stockpile will be loaded onto trucks by front-end loader for transportation to PKCT (Stage 2A – see Figure 4).



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If the outcome of the evaluation in Stage 1 is to construct a CPP, the coal from the ROM stockpile will transferred by a series of conveyors to the CPP (Stage 2B – see Figure 5).

The product from the CPP will transferred to the truck loading bin to be loaded onto the trucks for transportation to PKCT or transferred to a new stockpile area for temporary stockpiling.

Coal from temporary stockpile will be loaded onto trucks by front-end loader for transportation to PKCT. The rejects conveyor will transfer the rejects from the CPP to the rejects stockpile (Stage 2B).

Commencement of full mining operations ramping up to 1.2 Mtpa is to align with when the new coal handling facilities and associated infrastructure is fully operational.

Key elements included in Stage 2 works include:

- o mining by bord and pillar mining;
- o up to 1 million tonnes of product coal per year;
- up to 1.2 million tonnes ROM coal per year;
- loading product coal onto trucks via bins;
- construction of new CPP;
- construction new surge bin;
- ROM stockpile 30,000 tonnes;
- product stockpile 14,000 tonnes;
- o emergency stockpile;
- o rejects stockpile 1,500 tonnes;
- o waste rock from CPP used in rehabilitation; and
- waste rock from CPP emplaced underground.

#### 1.3.3 Coal Handling and Processing

The proposed coal handling facilities and surface infrastructure upgrades proposed as part of the Revised Preferred Project will be undertaken in accordance with the UEP Project Consent under the NSW EP&A Act to improve the quality of ROM coal in order to meet market demands and to minimise impacts on the environment and local community.

Works associated with the planned upgrade are all located within the existing disturbance footprint of the study area. The planned upgrades to the existing surface infrastructure within the study area (Figure 2) are shown on Figure 3 to Figure 5.



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### 1.3.4 Reject Material Handling

Following commissioning of a suitable CPP, it is anticipated that approximately 0.2 Mtpa of reject material will be produced at full production. Reject material consisting of rock material from the CPP will be transferred via the rejects conveyor to the reject stockpile (see Figure 5).

Beneficial reuse would be dependent on further application and or approval, whilst underground emplacement would only be carried out if testing determines the material to be suitable – see RVC Waste Management Plan.

Reject material that after suitable testing meets the specifications (see Waste Management Plan RVC ENV PLN 033) are hauled back to the mine portal via the internal haul road (see Figure 2) for emplacement underground.

#### 1.3.5 Coal Stockpiling

Three main coal stockpiles will operate within the Pit Top operational area, these being the main ROM stockpile (30,000 t capacity), product stockpile (14,000 t capacity) and proposed temporary rejects stockpile (1,500 t capacity).

#### 1.3.6 Bellamby Gully Creek

The RPPR describes proposed Bellambi Gully Creek realignment works as being a part of a modification to the previous project consent MP10\_0046, i.e., MOD 4. The Modification was subsequently withdrawn, and the project was included in the UEP major project application. Subsequent to the issue of the RPPR in July 2019, and the UEP Additional Information Response Report in June 2020, on 23 July 2020 WCL was issued with an enforcement order by DPIE in relation to the replacement of the underground section of Bellambi Gully pipe. Generally, the order requires WCL to engage a suitably qualified independent licensed engineer to develop detailed plans for the replacement of the underground pipe section of Bellambi Gully Creek with a suitably designed and engineered open channel, generally in accordance with the design parameters outlined in Cardno 2020 Phase 1 and 2 Bellambi Gully Flood Assessment Proposed Stormwater Diversion Drain.

As a result of and in compliance with this order the detailed design for Bellambi Gully Diversion and associated site water management system improvements was completed in late 2020 with works commencing onsite post approval of the Construction Management Plan (CMP) by DPIE in April 2021. The construction works associated with the construction of the new diversion channel and associated site water management system improvements are reasonably expected to be completed by November 2021 are addressed in the Bellambi Gully Creek Diversion CMP. The operation of this new channel once completed in accordance with the DPIE order will be detailed in a specific maintenance plan inclusive of an implementation plan which would be included as appropriate in the RV Surface Operations Water Management Plan. This is shown in the context of the site EMS in Figure 6.

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#### 1.3.7 Rehabilitation

WCL intends to continue use of the site post the 5-year term of this MP09\_0013 Consent. As a result, decommissioning and closure of the Russell Vale Colliery Pit Top facilities are not proposed following the completion of the UEP project.

Rather, if required pending the completion of the 5-year term of the current approval if there are delays to expected future planning assessment process such that mining operations are required to cease the site would be maintained in care and maintenance capacity until such time as a planning consent for mining operations is obtained. If consent for continuing use of the site is at the times not anticipated to be forthcoming, WCL will prepare and implement a detailed mine closure and rehabilitation plan in consultation with the Resources Regulator and other relevant government agencies and stakeholders.

For this project term of 5 years from the date of commencement of mining operations, the existing rehabilitation and mine closure strategy outlined in the current Russell Vale Colliery Rehabilitation Management Plan or its equivalent Mine Operations Plan, and generally in accordance with the Rehabilitation Objectives detailed in Table 5 of the Development Consent.

WCL will continue to progressively rehabilitate and decommission non-critical infrastructure as they are phased out of operations or become non-critical to potential future land use options at the Colliery. This will be further detailed in the Rehabilitation Management Plan or combined with the Mining Operations Plan, in accordance with Condition B44.

#### 1.3.8 Environmental duty of care

WCL will implement all reasonable and feasible measures to prevent, and if prevention is not reasonable and feasible, minimise, any material harm to the environment that may result from the construction and operation of the project, and any rehabilitation required under the consent.

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Figure 2 - Existing Russell Vale Colliery Pit Top

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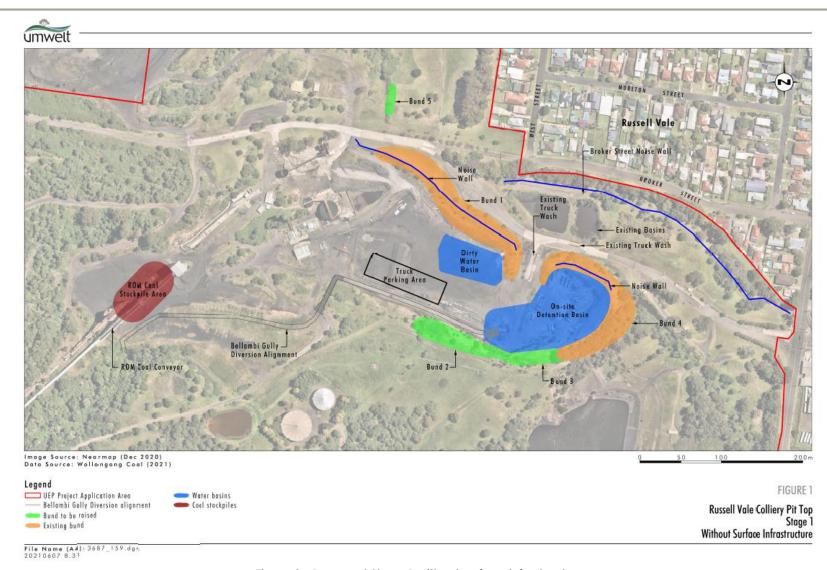


Figure 3 - Proposed Stage 1 without surface infrastructure

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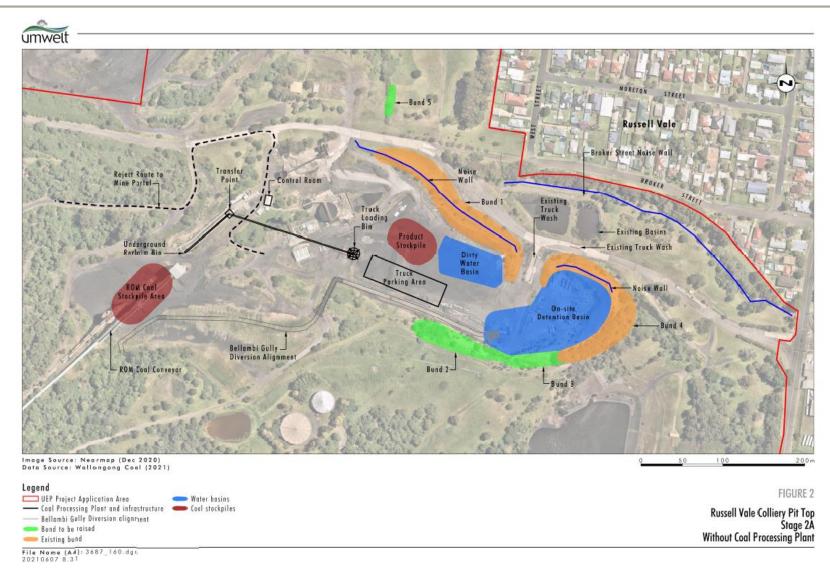


Figure 4 - Proposed Stage 2A surface infrastructure components without coal processing plant



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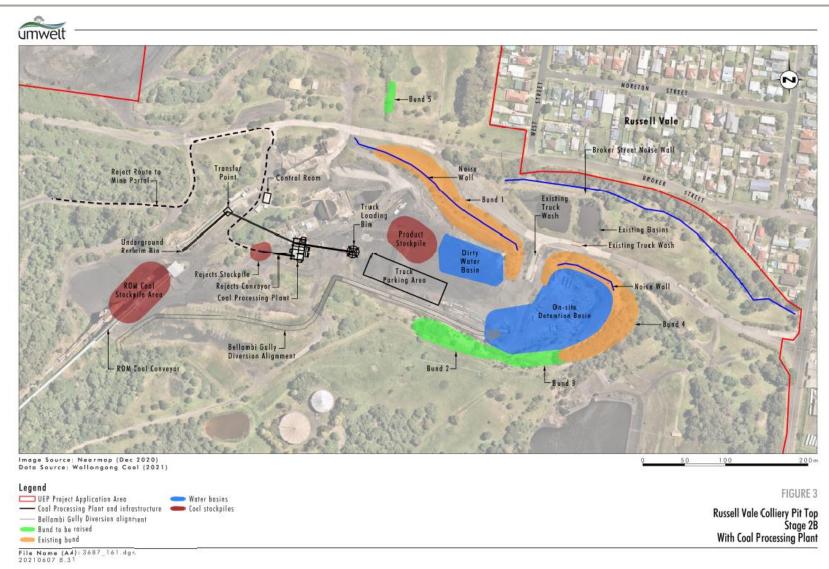


Figure 5 - Proposed Stage 2B surface infrastructure components with coal processing plant

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### 1.4 EMS Purpose

WCL's general environmental duty of care will ensure all reasonable and feasible measures to prevent, and if prevention is not reasonable and feasible, minimise, any material harm to the environment that may result from the Colliery construction and operation.

This EMS has been developed to provide a framework to ensure activities at the Colliery are undertaken in an environmentally responsible manner and in general accordance with the following:

- Russell Vale Revised Preferred Underground Expansion Project development consent MP09\_0013.
- ISO14001 Environmental Management Standard.
- Legislative and other requirements (further outlined in Sections 1.6 and 1.7).

The EMS forms part of the hierarchy of systems and documents that enables WCL to establish and sustain a high level of environmental performance in all facets of its business.

In addition, the EMS provides assistance to those undertaking works at the Colliery to apply appropriate environmental management measures. Where there is any conflict between the provisions of this EMS and the contractual obligations of any mining contactor, the statutory requirements are to take precedence.

In the case of any real or perceived ambiguity between elements of this EMS, the described management plans, and statutory requirements, clarification will first be sought from WCL's Environment Manager (EM) prior to implementing that element of the EMS over which the ambiguity is identified.

### 1.5 EMS Requirements

The EMS has been developed to fulfil the requirements of Development Consent MP09\_0013 Part F, Condition F1 and Environment Protection Licence (EPL) 12040 Conditions M5 and R2 as follows in Table 1.1.

Table 1.1 - Approval requirements

Approval Requirements	Section of EMS
MP09_0013 Part F, Consent Condition F1	
The Applicant must prepare an Environmental Management Strategy for the development to the satisfaction of the Planning Secretary. This strategy must:	
<ul> <li>a) provide the strategic framework for environmental management of the development;</li> </ul>	Section 2.1
b) identify the statutory approvals that apply to the development;	Sections 1.6, 1.7
c) set out the role, responsibility, authority and accountability of all key	Section 2.2

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Appro	val Requirements	Section of EMS
	personnel involved in the environmental management of the development;	
d)	describe the procedures to be implemented to:	Section 3
i)	keep the local community and relevant agencies informed about the operation and environmental performance of the development;	Sections 4.2, 4.3
ii)	receive, record, handle, respond to complaints;	Section 4.7
iii)	resolve any disputes that may arise during the course of the development;	Section 4.8
iv)	respond to any non-compliance and any incident; and	Section 3.7
v)	respond to emergencies.	Section 3.8
e)	include:	
	<ul> <li>references to any strategies, plans and programs approved under the conditions of this approval; and</li> </ul>	Table 1.2 and Appendix A
	<ul> <li>a clear plan depicting all the monitoring required to be carried out under the conditions of this consent.</li> </ul>	Section 3.5
MP09_	0013 Part E, Consent Conditions	
As sooresults a) b) E2 If an excee he/she	consent, the Applicant must also provide to any affected land owners and tenants a copy of the fact sheet entitled "Mine Dust and You" (NSW Health, 2017).  - Independent Review owner of privately-owned land considers the development to be ding the relevant criteria in PART B or PART C of the consent, then e may ask the Secretary in writing for an independent review of the	Section 3.7  Section 7
-	ts of the development on his/her land.	
	040 Conditions  - Recording of pollution complaints	Soction 47
M5.1 T license	s - Recording of pollution complaints the licensee must keep a legible record of all compliants made to the see or any employee or agent of the licensee in relation to pollution from any activity to which this licence applies.	Section 4.7
a)	he record must include details of the following:  Date and time of complaint.  Method by which the complaint was made.  Personal details of the complainant which were provided by the	



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Approval Requirements	Section of EMS
<ul> <li>Approval Requirements</li> <li>complainant or, if no such details were provided, a note to that effect.</li> <li>d) Nature of complaint.</li> <li>e) The action(s) taken by the Colliery in relation to the complaint, including any follow-up contact with the complainant.</li> <li>f) If no action was taken by the Colliery and the reason why no action was taken.</li> <li>M5.3 The record of a complaint must be kept for at least 4 years after the complaint was made.</li> </ul>	Section of EMS
M5.4 The record must be produced to any authorised officer of the EPA who asks to see them.	
• M6-Telephone complaints line M6.1 The Licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence. M6.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community know how to make a complaint. M6.3 The preceding two conditions does not apply until 3 months after: the date of the issue of this licence.	Section 4.7
R2 Notification of environmental harm     R2.1 Notifications must be made by telephoning the Environment Line service on 131 555.     R2.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.     Note: The licensee or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.	Sections 3.7.1, 3.7.2

In accordance with Conditions F2 and F3, WCL will:

- not commence mining operations until this EMS is approved by the Planning Secretary; and
- implement this EMS as approved by the Planning Secretary.

#### 1.6 Statutory Requirements

WCL seeks to comply with all relevant environmental legislation, approvals, and licenses.

Adherence to statutory requirements has been required throughout the operation of the Colliery and will continue to be applied as required.



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In accordance with Conditions A17 and A18 of the Consent, WCL will surrender the existing development consent and from such time MP09\_0013 will prevail.

Under current legislation the major approvals, license, permits, and leases required for the Colliery are identified in Table 1.2.

Table 1.2 – Approvals, license, permits and leases

License and / or Approval	Document Number	Issue Date	Expiry Date
Consolidated Coal Lease (CCL)	CCL 745	27 December 1990	30 December 2023
Mining Purposes Lease (MPL)	MPL 271	09 May 1991	09 May 2033
Mining Lease (ML) 1575	ML 1575	22 March 2012	22 March 2029
Project Approval - Russell Vale Revised Preferred Underground Expansion	MP09_0013	8 December 2020	5 years post commencement of mining operations.
Extraction Plan (EP)	Pending - must be prepared and approved by the Department of Planning and Environment (DPIE) and be to the satisfaction of the Secretary. Noting: EPs may be staged;	To be determined (TBD)	TBD
Environment Protection License (EPL) 12040	EPL 12040	6 May 2019	-
Environmental Protection and Biodiversity Conservation (EPBC) Act Approval	TBD- currently subject of determination.	-	-
Pillar Extraction Approval T&W Mains	C90/0146(G) C91/0146(H) C01/009	31October 2001 23 January 2002 28 June 2001	-
Approval to mine P&O Panels (first workings)	10.123.081	7 January 2005	-

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License and / or Approval	Document Number	Issue Date	Expiry Date
DC for Thin Seam Mining P/L	D1096/01	19 September 2001	-
EPA Approval for Storm Water Control Dam	90/6041 (280.021C/21)	10 August 1992	-
DC for Storm Water Control Dam and Water Treatment	D91/551	17 June 1992	-
Acknowledgement of Notification of hazardous chemicals on premises	NDG021269	8 September 2015	-
DC for Russell Vale Waste Emplacement	D89/839	11 April 1990	-
DC for Demolition of Washery	D2004/32	14 December 2004	-
Bore Licence	10BL602992	29 January 2013	28 January 2018
Water Access License (WAL)	WAL36488	20 February 2017	-

In addition, the Colliery operations are partially located within the WaterNSW Metropolitan Special Area and therefore the Special Areas Strategic Plan of Management and Sydney Drinking Water Catchment State Environmental Planning Policy 2011 (SEPP 2011) are to be considered.

#### 1.7 Other Relevant Legislation and standards

A number of other Acts and Regulations are applicable to mining operations within the approved Russell Vale mining area and include:

- Biosecurity Act 2015;
- Biodiversity Conservation Act 2016;
- Coal Mine Subsidence Compensation Act 2017;
- Crown Lands Act 1989;
- Contaminated Land Management Act 1997;
- Dams Safety Act 2015;
- Dangerous Goods (Road and Rail Transport) Act 2008;



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- Dangerous Goods (Road and Rail Transport) Regulation 2014;
- Environmental Planning and Assessment Act 1979;
- Environmental Protection and Biodiversity Conservation Act 1999 (Commonwealth);
- Energy and Utilities Administration Act 1987;
- Fisheries Management Act 1994;
- Heritage Act 1977;
- Local Land Services Amendment Act 2016;
- Mining Act 1992;
- National Parks and Wildlife Act 1974;
- Occupational Health and Safety Amendment (Dangerous Goods) Act 2003;
- Protection of the Environment Operations Act 1997;
- Protection of the Environment Operations Act (Waste) Regulation 2014;
- Roads Act 1993;
- Water Act 1912;
- Work Health and Safety (Mines) Act 2013;
- Water Management Act 2000; and
- Water NSW Act 2014.

WCL will ensure relevant Australian Standards (AS), guidelines and best practice documents are considered and where appropriate implemented at the Colliery. Standards as they relate to specific Colliery operations and or environmental aspects are identified in relevant operational management plans (refer Section 2).

Standards and guidelines which generally relate to the operation of a Colliery and will be referred to by WCL include, but are not limited to:

- AS4282 2019 Control of Obtrusive Effects of Outdoor Lighting;
- AS3745 2018 -Planning for Emergencies in Facilities;
- AS2601 2001 The Demolition of Structures;
- AS1940 2017 -The storage and handling of flammable and combustible liquids;
- AS1596 2014 The storage and handling of LP Gas;
- Guidelines for the Preparation of Emergency/Evacuation Plans, Rural Fire Service, 2019;
- Interim Construction Noise Guideline (ICNG), EPA 2009;
- Noise Policy for Industry (NPfI), EPA 2017;
- Planning for Bushfire Protection, Rural Fire Service, 2019;



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- The Australian Dangerous Goods Code, Australian Government 2018; and
- The Waste Classification Guidelines (Parts 1 to 4), EPA 2014.

# 1.8 Notification of commencement

WCL will notify DPIE in writing at least two weeks prior to the commencement of development and construction for the Colliery in accordance with Condition A5.



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# 2. Environmental Management

#### 2.1 Strategic Framework

Environmental management will be undertaken in accordance with the requirements of this EMS, supporting management plans and the requirements of the relevant approval, leases, EPL and other authorities as documented in Section 1.5.

Table 2.1 list the relevant management plans which operate under the EMS and the conditions of the consent which stipulate the requirement for the noted management plans. Figure 6 shows the environmental management structure that applies to the Colliery.

Plans and monitoring programs identified in Table 2.1 and *Figure* 6 outline the environmental monitoring and management practices for the Colliery. Copies of the approved Environmental Management Plans / Monitoring Programs are available on the WCL regulatory website, accessible via the following link: https://wollongongcoal.com.au/.

Plans depicting the locations of all monitoring sites noting their purpose required under the conditions of the MP09\_0013 for the Colliery are provided in Appendix A of this document, in accordance with Condition F9(e) of the Consent.

WCL also has in place a Safety, Health, Environment, Community and Quality (SHECQ) system with associated processes and procedures which will be used as an overarching strategic framework for the environmental management of the operation. Reference to these standards, procedures and other relevant EMS documentation is made throughout this EMS as appropriate.

Table 2.1 – Environmental management plans and programs

Document	Relevant conditions of Consent	Date of document
Noise management plan	B4, B5	January 2021
Air quality & greenhouse gas management plan	B9, B10	March 2021
Water management plan (including sub plans to extraction plan)	B17, B18, C10(g)(iii)	February 2021
Adit discharge water management plan	B19, B20	February 2021
Biodiversity management plan, swamp monitoring program (sub plan to extraction plan)	B21, B22, C10(g)(iv), C10(g)(v)	February 2021
Aboriginal cultural heritage management plan	B24, B25, C10(g)(vi)	February 2021



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Document	Relevant conditions of Consent	Date of document
(including sub plan to extraction plan)		
Historic heritage management plan (including sub plan to extraction plan)	B26, B27, C10(g)(vi)	February 2021
Traffic management plan, including drivers' code of conduct	A9 to A15 and B28 to B31	March 2021
Visual impact management plan	B33, B34	February 2021
Waste management plan	B37, B38	March 2021
Bushfire management plan	B40	February 2021
Rehabilitation management plan / Mining operations plan	B45	March 2021
Social impact management plan	B46	February 2021
Extraction plan and sub-plans	C10	-
Subsidence monitoring program	C10(g)(i)	-
Built features management plan	C10(g)(ii)	February 2021
Land management plan	C10(g)(vi)	February 2021
Public safety management plan	C10(g)(vii)	February 2021
Construction environmental management plan (CEMP), including out of hours protocol	D3, D4, D5, D6, D7	March 2021 (final)
Environmental management strategy	F1, F2, F3	March 2021
Pollution Incident Response Management Plan	EPL 12040	January 2021



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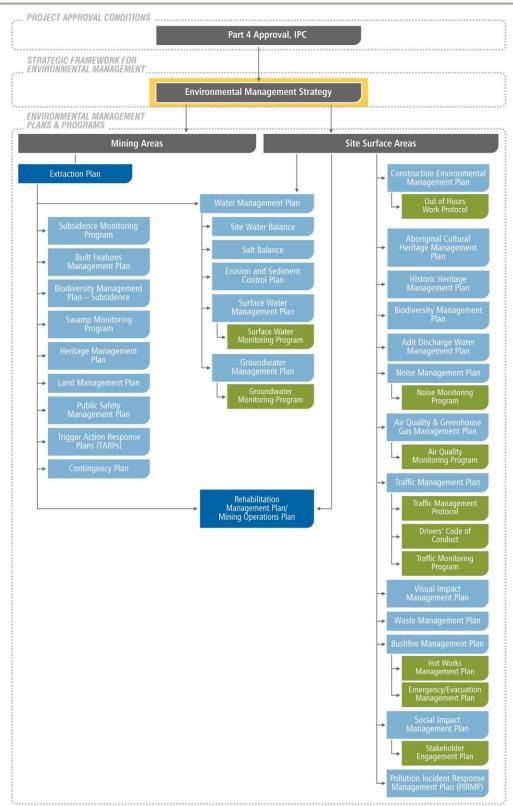


Figure 6 - Environmental management framework



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# 2.2 Roles and Responsibilities

Environment and community management is regarded as part of the responsibilities of all Colliery personnel. The roles and responsibilities specifical accountable for this EMS are outlined in Table 2.2.

Table 2.2 – Roles and responsibilities

Dala	Deep on the 1914 on and A annual Late 1914	A
Role	Responsibilities and Accountabilities	Authorities
Mine Manager	<ul> <li>Ensure adequate operational resources are available to assist Environmental representatives to allow the EMS to be implemented effectively and maintained.</li> </ul>	- Authority to suspend or stop operations as required to meet environmental requirements.
Environment Manager (EM)	<ul> <li>Ensure environmental management strategies, plans, programs and associated procedures are implemented in accordance with the requirements of this EMS and other external requirements.</li> <li>Ensure relevant approvals are in place to ensure proposed mining activities are permitted.</li> <li>Ensure access to information is available as required in the Development Consent.</li> <li>Manage complaints and management process.</li> </ul>	<ul> <li>Make recommendations to suspend operations as required to meet environmental obligations.</li> <li>Liaise with Government agencies and local community regarding environmental or social issues on behalf of the operations.</li> <li>Implement any additional environmental controls as necessary to meet environmental obligations.</li> </ul>
Environmental Monitoring Team Leader	- Assist the EM in delivery of identified responsibilities and accountabilities.	- Make recommendations to suspend operations as required to meet environmental obligations.
Site Environmental Representative (SER)	- Assist the EM in delivery of identified responsibilities and accountabilities.	- Make recommendations to suspend operations as required to meet environmental obligations.
Environmental Monitoring Representative	- Assist the EM in delivery of identified responsibilities and accountabilities.	- Make recommendations to suspend operations as required to meet environmental obligations.



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# 3. Environmental Procedures

# 3.1 Overall Approach

The primary environmental objective of WCL is to minimise impacts on the surrounding community potentially arising from Colliery construction and operations.

The following hierarchical approach will be used to ensure that works achieve compliance with the relevant conditions, criteria and performance measures of the Consent:

- Construction and operations will be managed to meet all relevant compliance criteria, through best operational practices and the implementation of reasonable and feasible best practice environmental controls and monitoring.
- Where impacts are above the compliance criteria (i.e. exceedance or noncompliance), notify DPIE and relevant agencies within 7 days and implement additional best practice environmental controls to minimise impacts and/or exposure duration at affected receivers.
- Where the use of recommended environmental control mitigation measures do not
  adequately address the impact, the activity will be recorded as an incident with
  investigation to determine and adopt alternative measures to minimise recurrence of
  impacts on the community.
- Liaise with the local community regarding scheduled works.

#### 3.2 Compliance

Compliance with all approvals, plans and procedures will be the responsibility of all Colliery personnel (staff and contractors) employed on or in association with Russell Vale and will be promoted through direct consultation and with the direction of the Mine Manager.

A Compliance Register is maintained and available on the WCL server to monitor compliance against development consent criteria, EPL and applicable legislation. Non-compliances identified through the Compliance Register are to be reported, with corrective actions implemented.

The Compliance Register is to be maintained as a 'live' document in which any changes to the development consent criteria can be actively managed.

A review of WCLs compliance with all conditions of the consent, mining leases and all other approvals and licences will be undertaken prior to (and included within) each Annual Review. Relevant approvals and licenses are identified in Table 1.2. The Annual Review will be made publicly available on WCLs website. Should the nature of non-compliance require it to be reported the processes defined in Section 3.7 are to be enacted.



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### 3.3 Site Inspections

The EM, SER or delegate will undertake regular inspections of the Colliery at least monthly or as required upon identification of works or activities with the potential to impact upon the environment and identify any remediation/rectification work required, and areas of actual or potential non-compliance.

The results of the inspections will be recorded in the Site Environmental Inspection Checklist Non-compliances identified (e.g. vegetation management, storage/disposal of hydrocarbons, waste bin capacity) are to be reported with appropriate actions identified, managed and implemented in accordance with this EMS.

Records will include the nature of the deficiency, any actions required and an implementation priority. The completion of the actions will be monitored to ensure they are implemented within specified timeframes of the EMS.

#### 3.4 Management Plans

WCL is progressively updating existing Colliery management plans for the underground expansion in accordance relevant development consent conditions. Existing management plans will continue to apply until the approval of a similar plan by the Planning Secretary (Condition A23).

Evidence of consultation with relevant stakeholders on updated management plan and how matters raised have been resolved will be outlined within each document in accordance with Condition A20.

#### 3.5 Environmental Monitoring

Environmental monitoring to determine compliance of operations with relevant regulatory requirements is to be undertaken at a minimum, using the methods specified in the respective Management Plans as required under Condition F5(e) or as otherwise outlined in the specific conditions (e.g. Condition F16) and corresponding management plans.

Regular inspections and/or internal audits will be undertaken as required by suitably qualified personnel under the direction of the Environment Manager, to identify any remediation/rectification work required, and areas of actual or potential non-compliance. This is discussed further in Section 3.3.

Figure 7 shows the strategic management process in which environmental monitoring is to be undertaken and compliance ensured.

In addition to the Compliance Register, WCL maintain a Monitoring Register to track the monitoring required by the Consent, EPL, mining leases and other authorities.



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Plans depicting the locations of all monitoring sites and confirming their purpose required under the relevant conditions of consent are set out the respective management plans and provided in Appendix A of this document for information.



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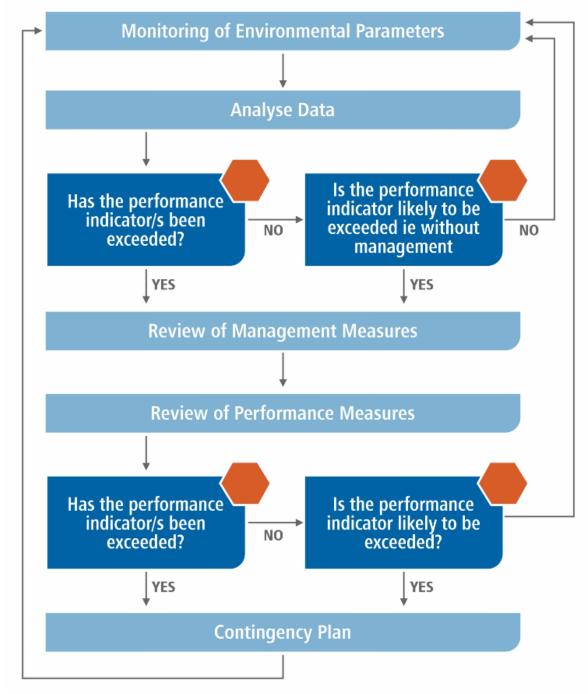


Figure 7 - Strategic management process



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### 3.6 Triggers and Responses

Condition F5(f) requires WCL to establish 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.

This takes the form of a Trigger Action Response Plan (TARP), as presented in Appendix B. The TARP provides a simple, transparent and useable reference for the short-term management of aspects or issues at the Colliery, and the implementation of appropriate management measures.

TARPs are designed to summarise for each aspect or issue:

- monitoring requirements (may include different locations);
- trigger levels (performance measures or criteria) that flag implementation of contingency measures;
- management and contingency actions (i.e. corrective and preventative actions) or reporting requirements;
- responsibilities; and
- timing.

# 3.7 Incidents, Exceedances and Non-Compliances

In accordance with Condition F1(d)(iv), any incidents, exceedance or non-compliance will be managed through established WCL procedures as detailed below,

MP09 0013 defines:

- an 'incident' to be "an occurrence or a set of circumstances that causes or threatens to cause material harm and which may or nor cause a non-compliance"; and
- 'exceedance or non-compliance as "an occurrence, set of circumstances or development that is a breach of this consent". Examples may include a breach of water quality criteria or EPL licence condition breach.

In accordance with Conditions F4, F9 and F10 of the Consent and EPL Condition R2, WCL will immediately notify DPIE, the EPA and other relevant agencies (e.g. Heritage Branch, Natural Resources Access Regulator, TfNSW) of any incidents, exceedance or non-compliance that has caused or has the potential to cause significant risk of material harm to the environment.

A detailed report of the incident shall be provided to the Secretary of DPIE and the EPA within 7 days of the incident occurring consistent with Condition F10 of the Consent and R2 of the EPL.



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#### 3.7.1 Incidents

The Consent defines an 'incident' to be "an occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be or cause a non-compliance."

An example of an incident may be a hydrocarbon or coal truck spill within the Colliery that if not contained or mitigated has the potential to impact the Bellambi Gully Creek (i.e. threaten to cause material harm). In the event that the incident did materially affect the watercourse it would escalate to an exceedance and / or non-compliance.

In the first instance, the incident would be managed though the WCL's Incident Management Procedure and Emergency Response Procedure/Emergency Management Plan.

The following order of priority actions are required in accordance with this procedure:

- Record the incident on the incident report form, which is to be forwarded to the Environment and Community (E&C) Department for action.
- Complete the incident form for any corrective actions that are identified as being required as a result of the incident, and follow up with a specific work order for rectification or corrective action/s as required.
- Ensure incident notification requirements are undertaken in accordance with the Consent and EPL conditions to DPIE, the EPA, other relevant agencies (e.g. Heritage Branch, Natural Resources Access Regulator, TfNSW) and affected landowner(s) where necessary.
- Review the effectiveness of the corrective or preventative action.
- Update the relevant work procedures and / or training requirements as required.

Once notified of an incident, the Control Room Operator (CRO) is to mobilise internal and external expertise and resources. Where an incident represents and immediate threat to human health or property, the first point of contact should be the Emergency response hotline on 000.

If the incident does not require and initial combat agency, or once 000 has been called, in accordance with the EPA notification protocol, the relevant individual responsible for activating the Pollution Incident Response Management Plan (PIRMP) needs to be notified.

In accordance with Conditions F1(d)(iv), F9 of the Consent, WCL will immediately notify DPIE and the EPA (e.g. EPA Environment Line Service on 131 555, in accordance with EPL Condition R2.1) of any incident that has caused or has the potential to cause significant risk of material harm to the environment. The notification will identify the development (including the development application number and name) and set out the location and nature of the incident.



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A detailed report of the incident shall be provided to the Secretary of DPIE and the EPA within 7 days of the incident occurring consistent with Condition F10 of the Consent and EPL Condition R2.2.

### 3.7.2 Exceedance or Non-Compliance

A non-compliance can be defined as:

- an occurrence, set of circumstance or development that is a breach of the Consent and / or EPL;
- any notice of non-compliance issued by the EPA; or
- any other regulatory authority with environmental jurisdiction.

An exceedance of a Consent criteria and / or performance measure, such as operational noise, air quality, greenhouse gas emissions, surface water or groundwater (i.e. has caused material harm to the environment) is deemed a non-compliance and would be in breach of the Consent and EPL conditions. WCL will assess and manage development-related risks to ensure there are no exceedances of the criteria and / or performance measure of the Consent and EPL.

Monitoring results are to be compared against the Consent, mining leases, EPL and permit conditions and any exceedance or non-compliance recorded against the monitoring result.

An exceedance or non-compliance may be detected from routine inspections, audits or monitoring or it can be from an external complaint or an internal incident.

As required by Condition F10 and EPL Condition R2.2, WCL will notify DPIE and the EPA of any exceedance or non-compliance within 7 days of becoming aware of it. The notification will set out the condition of the consent that the project has exceeded or is non-compliant with, why it does not comply, the reasons for the exceedance or non-compliance (if known), and what actions have been, or will be, undertaken to address the exceedance or non-compliance and whether affected landowner(s) have been notified.

In accordance with Condition E1, WCL will as soon as practicable and no longer than 7 days after obtaining exceedance monitoring results notify affected landowner(s) in writing of the exceedance and provide regular monitoring results until the development is complying with the relevant criteria. For an exceedance of any relevant air quality criteria, WCL will also provide a copy of the 'Mine Dust and You' (NSW Health, 2017) to affected landowner(s) and tenants (Condition E1(b)) for information.

In accordance with Condition F1(d)(iv), in the event of an exceedance or non-compliance, the EM is to undertake the actions outlined in the appropriate management plan and / or TARP, as it relates to the non-conformance. All reasonable and feasible steps will be taken to ensure the non-conformance ceases and does not reoccur, in accordance with Condition F4 of the Consent.

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Corrective or preventative actions are required to be undertaken in accordance with the WCL Incident Investigation, Reporting and Non-Conformance Procedure.

A review of compliance with all conditions of the Consent, mining leases and all other approvals and licenses will be undertaken prior to (and included within) each Annual Review and / or following an incident report in accordance with Condition F7 of the Consent. The Annual Review will be made publicly available on the WCL's website.

Compliance against relevant criteria is also to be assessed during any independent audits, as defined in Section 6.4.

#### 3.8 Emergency Response

As described above, each management plan prepared under the EMS will include a TARP and / or contingency plan detailing the required response if an environmental impact to that feature occurs above and beyond the predictions.

An emergency is an unexpected and catastrophic event above and beyond the level which has been accounted for within the management plans and the TARPs.

The Colliery operates in accordance with the PIRMP which incorporates the site emergency procedures as they relate to environmental concerns.

All site personnel will receive an appropriate level of emergency preparedness and response training, in accordance with the PIRMP (Section 3.8.1). Any changes to emergency procedures are to be documented and communicated to all personnel.

The requirements for notification and reporting of environmental incidents are outlined in the PIRMP. This procedure has been developed to fulfill the requirements of applicable environmental legislation.

Any emergency situations or incidents which do or could potentially have caused environmental harm will be reported in accordance with Section 3.7.

#### 3.8.1 Pollution incident response management plan

The purpose of WCL's PIRMP is to meet the requirements of the Protection of the Environment Legislation Amendment Act 2011 (POELA Act).

The plan provides a reference for the Colliery's pollution incident response procedures and responsibilities, as well as the day-to-day management for the prevention and mitigation of any such incident/s, including (but not limited to):

the implementation of pre-emptive management actions;



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- the location of hazardous materials;
- emergency response actions;
- communication procedure;
- safety equipment requirements; and
- personnel responsibilities.

The notification of environmental incidents under the PIRMP is only required for those incidents causing or threatening to result in material environmental harm as defined in the POEO Act.



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## 4. Communication

### 4.1 Internal communications

Clear communication throughout all levels and functions (e.g. management, staff members and subcontracted service providers), is key to minimising environmental impacts and achieving continual improvements in environmental performance during construction.

The environmental team will meet fortnightly or as required subject to site activities to discuss on-site environmental management, amendments to plans, changes to site activities, environmental monitoring results and other relevant aspects of the project.

Regular meetings may also be scheduled with the Colliery Senior Management Team (SMT) to communicate ongoing environmental performance and to discuss issues to be addressed.

The EM/SER or delegate will participate regularly in toolbox talks to communicate to the wider project personnel on environmental performance including sensitive environmental matters for future work areas, and to receive feedback from on-site personnel.

## 4.2 Communication with relevant agencies and authorities

The EM/SER will be the main point of contact regarding specific environmental issues.

The EM will prepare monthly internal reports addressing all key environmental matters and or KPI's for the Colliery to the SMT.

The EM/SER will make available publicly available on the website regular reporting on environmental performance of the development and monitoring results in accordance with Condition F17.

The EM/SER has the responsibility to make available environmental performance or monitoring information of the development should it be requested by DPIE, the EPA or other relevant agencies if required.

### 4.3 Communication with the Community

WCL is committed to regular liaison with the local community and strives to maintain positive relationship with all stakeholders.

Dissemination of information to the local community and relevant agencies regarding the Colliery, its progress and environmental management performance will be achieved via the following communication and reporting mechanisms.



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## 4.4 Community Consultative Committee

In accordance with Condition A17 of the Consent, a Community Consultative Committee (CCC) has been established for the Colliery to the satisfaction of the Secretary of the DPIE.

The CCC will continue to operate in general accordance with the Community Consultative Committee Guideline for State Significant Projects (DPIE January 2019).

### 4.5 Annual Review

As per Section 6.3 of this EMS.

### 4.6 Wollongong Coal Website

In accordance with Condition F17 of the Consent, the WCL website will be maintained as a means of providing information to stakeholders and interested parties about the operation and environmental performance of the Colliery.

The structure and content of the website, in accordance with best practice guidelines and the Consent, will include the following:

- a) The documents referred to in condition A2(c) of the consent.
- b) All current statutory approvals for the development.
- c) All approved strategies, plans and programs required under the conditions of consent.
- d) The proposed staging plans for the development if the construction, operation or decommissioning of the development is to be staged.
- e) Minutes of CCC meetings.
- f) Regular reporting on the environmental performance of the development in accordance with the reporting requirements in any plans or programs approved under the conditions of consent.
- g) A comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of consent, or any approved plans and programs.
- h) A summary of the current phase and progress of the development.
- i) Contact details to enquire about the development or to make a complaint.
- i) A complaints register, updated monthly.
- k) The Annual Reviews of the development.
- Audit reports prepared as part of any Independent Environmental Audit of the development and the Applicant's response to the recommendations in any audit report.
- m) Any other matter required by the Secretary of DPIE.

It is the responsibility of the Environment Manager to ensure that information provided on the website relevant to the Colliery is maintained.



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## 4.7 Complaints Protocol

The EM is responsible for maintaining a system for recording and responding to complaints.

The Colliery will ensure the telephone number and email address in which environmental and pollution complaints can be made is easily accessible to the community, via both signage at the operation and advertised by the WCL website, in accordance with Condition F17 and EPL Conditions M6.1 and M6.2.

The EM is responsible for ensuring that the currency and effectiveness of the telephone service is maintained. Notifications of complaints received are to be provided as quickly as practicable to EM, or delegate.

Complaints and enquiries do not have to be received via the telephone line or email and may be received in any other form. Any complaint or enquiry relating to environmental management or performance is to be relayed to the EM or delegate as soon as practical. All Colliery employees are responsible for ensuring the prompt relaying of complaints. All complaints will be recorded in the Colliery Complaints Register, in accordance with Condition F17 and EPL Condition M5.1.

For each complaint, the following information will be recorded in the complaints register in accordance with EPL Condition M5.2:

- g) Date and time of complaint.
- h) Method by which the complaint was made.
- i) Personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect.
- i) Nature of complaint.
- k) The action(s) taken by the Colliery in relation to the complaint, including any follow-up contact with the complainant.
- I) If no action was taken by the Colliery and the reason why no action was taken.

The EM is responsible for ensuring that all complaints are appropriately investigated, actioned and that information is fed back to the complainant, unless requested to the contrary.

The record of a compliant will be updated monthly on WCL's website in accordance with Condition F17. A copy of the complaint will be kept for at least 4 years after the compliant is made and will be provided to the EPA upon request, in accordance with EPL Conditions M5.3 and 5.4.

In accordance with Condition 9, an environmental incident complaint that has caused or has the potential to cause significant risk of material harm to the environment will be immediately notified to DPIE and other relevant agencies.



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If an owner of privately-owned land considers the Colliery to be exceeding a relevant environmental criteria (e.g. noise, air quality), the individual may ask the DPIE Secretary in writing for an independent review of the impacts of the development on his/her land (Section 7).

In accordance with Condition F17(a)(x) of the Consent, a Complaints Register will be made publicly available on the website and updated on a monthly basis. A summary of complaints received and actions taken will be presented to the CCC as part of the operational performance review. A summary of complaints received and actions taken will also be included in the Annual Review and the Annual Return.

### 4.8 Dispute Resolution

Should a complainant consider that WCLs response to a complaint does not satisfactorily address their concerns, the following procedure would be adopted:

- A meeting will be convened with the EM and the Mine Manager together with any other relevant WCL representative to seek resolution of the matter. The complainant may be provided with a written response from WCL detailing the results of investigations to date and the agreed actions to be taken in respect of the measures to be implemented.
- 2. On implementation of the nominated measures, the resolution process will be one of informed discussion involving the complainant and the EM. The complainant would be made fully aware of the WCL's environmental monitoring and management systems.

Every effort will be made by WCL to ensure that concerns are addressed in a manner that results in a mutually acceptable outcome. If after following the above procedure the complainant believes the matter remains unresolved and no further agreement can be reached the matter will be referred to the Secretary of DPIE to assist in delivering a mutually beneficial outcome (Section 7).

The Secretary will be the final arbiter for any dispute over the appropriateness of proposed measurements and monitoring of compliance of performance measures and performance indicators in the Consent, in accordance with Condition C2.

Any dispute between WCL and the owner of any built feature over the interpretation, application or implementation of the subsidence impact performance measures is to be settled by the Secretary, following consultation with the Resources Regulator. Any decision by the Secretary is final and not subject to further dispute resolution under the Consent, in accordance with Condition C8.

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## 5. Competence, Training and Awareness

The Environment Manager has overall responsibility for ensuring the requirements of this EMS are fully implemented.

The EM/SER will coordinate environmental training in conjunction with other training and development activities.

### 5.1 Staff training

Staff training will consist of three levels of applicable to different types of staff:

- Level 1 High level training on environmental legislative requirements (management staff).
- Level 2 Operational level training (project managers, supervisors, surface personnel, control room operators).
- Level 3 Basic awareness of environmental management (underground staff, all personnel).

Targeted environmental awareness training (e.g. air quality, noise, traffic, waste management) will be provided to individuals or groups of workers with a specific authority or responsibility for operational environmental management, or those undertaking an activity with a high risk of potential environmental impacts.

Training will be provided as deemed necessary to contractors to provide them with the knowledge, skills and awareness to minimise environmental impacts and conditions of consent relevant to their activities in accordance with Condition A28. At a minimum this will include:

- contractors whose activities are not directly supervised by Colliery personnel; and
- contractors whose activities are ongoing and have the potential to result in an environmental incident (e.g. truck drivers, stockpile contractors)

The EM/SER and Mine Training Manager will review the training program and monitor its implementation.

### 5.2 Environmental induction

All personnel, including contractors, sub-contractors and staff, are required to attend a compulsory site induction that includes an environmental component prior to commencement on site. The EM/SER, or delegate, will conduct the environmental component of the site induction.

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The environmental component will include an overview of:

- relevant details of the Colliery Management Plan's, including purpose and objectives;
- key environmental issues (i.e. protection of sensitive areas, dust and noise management);
- conditions of environmental licences, permits and approvals;
- specific environmental management requirements and responsibilities;
- mitigation measures for the control of environmental issues;
- incident response and reporting requirements; and
- information relating to the location of environmental constraints.

A record of all environment inductions will be maintained and kept on site. The ER may authorise amendments to the induction where required to address project modifications, legislative changes or amendments to this EMS or related documentation.

The EM/SER will review and endorse the induction program and monitor its implementation.

### 5.3 Toolbox talks

Toolbox talks will be used to raise awareness and educate personnel on construction related environmental issues. The Toolbox talks will be used to ensure environmental awareness continues during construction.

Toolbox talks will be tailored to specific environmental constraints as relevant to the package of works, including:

- erosion and sediment control;
- hours of work;
- emergency and spill response;
- threatened species, endangered ecological communities, clearing controls and vegetation protection;
- weed management;
- noise;
- housekeeping and waste;
- concrete washout;
- dewatering;
- project and clearing limits;
- works in waterways;



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- dust control; and
- traffic management.

Toolbox Talk attendance is mandatory, with attendees required to sign an attendance form. Records of Toolbox Talk attendance will be maintained.

### 5.4 Daily pre-start meeting

The pre-start meeting is a tool for informing the workforce of the day's/ shift's activities, safe work practices, environmental protection practices, safe work method statement (SWMS) for a particular area of work, work area restrictions, activities that may affect the works, coordination issues with other trades, hazards and other information that may be relevant to the day's work.

The Construction Manager, or other appropriate site staff member, will conduct a daily prestart meeting for the site workforce before the commencement of work each day (or shift) or where changes occur during a shift. Pre-start meetings may be project-wide and/or held for specific work areas.

The environmental component of pre-starts will include any environmental issues that could potentially be impacted by, or impact on, the day's construction activities. All attendees will be required to sign on to the pre-start and acknowledge their understanding of the issues explained.

Pre-start topics, dates delivered, and a register of attendees will be recorded and the records maintained.



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## 6. Audit and Review

### 6.1 Document review

In accordance with the requirements of condition F7, this EMS will be reviewed within 3 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; and
- the approval of any modification of the conditions of this consent (unless the conditions require otherwise).

WCL will review and revise the EMS and any associated plans where required. Where revisions to any document are required, then within 6 weeks of the review, the revised document will be submitted to the Secretary for approval, unless agreed otherwise.

Any revisions or changes to the EMS will be made in consultation with the DPIE, relevant authorities (e.g. EPA) and groups (e.g. CCC).

### 6.2 Adaptive management

In accordance with Conditions F1(d)(iv) and F4, where exceedances of criteria or performance measures has occurred, WCL will at the earliest opportunity:

- take all reasonable and feasible steps to ensure that the exceedance ceases and does not re-occur (i.e. TARPs, contingency planning);
- consider all reasonable and feasible options for remediation (where relevant) and to
  prevent reoccurrence and submit a report to the Department describing those
  options and any preferred remediation measures or other course of action;
- within 14 days of the exceedance occurring, submit a report to the Secretary describing the remediation options, any preferred remediation measures or other course of action and how WCL will adapt environmental management to prevent reoccurrence;
- implement remediation measures as directed by the Planning Secretary; and
- amend relevant management plan mitigation measures, if required.



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### 6.3 Annual Review

In accordance with Condition F11 of the Consent, an Annual Review of the environmental performance of the Colliery is prepared and submit to DPIE by the end of March each year, following the commencement of activities approved under the Consent. Or at a timeframe agreed with the Secretary of DPIE.

The Annual Review will:

- Describe the development (including any rehabilitation) that was carried out in the previous calendar year and the development that is proposed to be carried out over the current calendar year.
- 2) Include a comprehensive review of the monitoring results and complaints records of the development over the previous calendar year, including a comparison of these results against the:
  - i) relevant statutory requirements, limits or performance measures/criteria;
  - ii) requirements of any plan or program required under this consent;
  - iii) monitoring results of previous years; and
  - iv) relevant predictions in the document/s listed in condition A2(c);
- 3) Identify any non-compliance or incident which occurred in the previous calendar year, and describe what actions were (or are being) taken to rectify the non-compliance and avoid recurrence.
- 4) Evaluate and report on:
  - ) the effectiveness of the noise and air quality management systems; and
  - ii) compliance with the performance measures, criteria and operating conditions of this consent;
- 5) Identify any trends in the monitoring data over the life of the development.
- 6) Identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies.
- 7) Describe what measures will be implemented over the next calendar year to improve the environmental performance of the development.

Copies of the Annual Review will be submitted to DPIE, Wollongong City Council (WCC) and made available to the CCC and any interested person upon request.

### 6.4 Auditing

Condition F13 of the Consent requires an Independent Environmental Audit (IEA) of the Russell Vale development, following one-year post commencement of mining activities and every 3 years thereafter (unless the Secretary advises otherwise).

The audit must:

- a) be prepared in accordance with the Independent Audit Post Approval Requirements (DPIE 2020 or as updated);
- b) be led and conducted by a suitably qualified, experienced and independent auditor whose appointment has been endorsed by the Planning Secretary;



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- c) be conducted by a suitably qualified, experienced and independent team of experts (including any experts in field/s specified by the Planning Secretary) whose appointment has been endorsed by the Planning Secretary;
- d) be carried out in consultation with relevant agencies and the CCC;
- e) assess the environmental performance of the development and whether it is complying with the relevant requirements in the consent, water licenses and mining leases for the development (including any assessment, strategy, plan or program required under those approvals);
- f) review the adequacy of any approval strategy, plan or program required under the abovementioned approvals of the consent;
- g) recommend appropriate measures or actions to improve the environmental performance of the development and any assessment, strategy, plan or program required under the abovementioned approvals and the consent; and
- h) be conducted and reported to the satisfaction of the Planning Secretary.

In accordance with Condition F14, within three months of commencing an Independent Environmental Audit, or other timeframe agreed by the Planning Secretary, WCL will submit a copy of the audit report to the Planning Secretary, and any other NSW agency that requests it, together with its response to any recommendations contained in the audit report, and a timetable for the implementation of the recommendations. All recommendations will be implemented to the satisfaction of the Planning Secretary.

All conditions of consent that require the carrying out of monitoring or an environmental audit, whether directly or by way of a plan, strategy or program, is taken to be a condition requiring monitoring or an environmental audit under Division 9.4 of Part 9 of the Environmental Planning and Assessment Act 1979.

### 6.5 Management reviews

Management reviews will be undertaken quarterly as part of the continual improvement process. The reviews will be initiated by the EMR and includes relevant project team members and the mine SLT members as required.

The WCL Environment and Community Department will meet at least quarterly, to review environmental management issues for the project. The meeting can be run in conjunction with a wider project team meeting if the EM/SER deems it appropriate.

The reviews will include:

- consideration of the general progress of work and the level of overall construction environmental risk;
- consideration of monitoring, inspection and audit results;
- consideration of recent and relevant incidents and any lessons learnt;
- consideration of any new regulatory obligations;
- consideration of any recorded pollution complaints;



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- a review of the effectiveness of environmental controls (e.g. erosion and sediment controls);
- consideration of changes in operational needs such as resourcing; and
- feedback from WCL and other relevant stakeholders.

The outcomes of the environmental reviews may trigger amendments to this EMS and related documentation, revision to the project's environmental management system, review of the risk assessment, re-evaluation of the project objectives and targets as well as input into other project documents.

The revision status of this plan is indicated on the inside cover and the footer of this document. Revisions to any documents listed within this EMS will not necessarily constitute a revision of this document. The distribution of controlled copies to relevant agencies.



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## 7. Independent Reviews

In accordance with Condition E2 of the Consent, if an owner of privately-owned land considers the development to be exceeding the relevant criteria of the Consent (e.g. if an environmental impact occurs above and beyond the predictions), the individual may ask the Secretary in writing for an independent review of the impacts of the development on his/her land.

If the Secretary is not satisfied that an independent review is warranted, the Planning Secretary will notify the landowner in writing of that decision, and the reasons for that decision, within 28 days of the request for a review, as per Condition E3 of the Consent.

If the Secretary is satisfied that an independent review is warranted, within 3 months, or other timeframe agreed by the Secretary and the landowner, of the Planning Secretary's decision, the WCL must in accordance with Condition E4 and E5 of the Consent:

- a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Planning Secretary, to:
  - (i) consult with the landowner to determine their concerns;
  - (ii) conduct monitoring to determine whether the development is complying with the relevant criteria of the Consent; and
  - (iii) if the development is not complying with the relevant criterion, identify measures that could be implemented to ensure compliance with the relevant criterion.
- b) give the Planning Secretary and landowner a copy of the independent review.

The Applicant must then comply with any written requests made by the Secretary to implement any findings of the review and in accordance with any timeframes specified.

Should an independent review be required, WCL will comply with the noted requirements of the Consent in consultation with the Secretary to ensure any potential exceedance is adequately identified, mitigated and or managed in accordance with any written requests made by the Secretary.



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## 8. Records and Document Control

### 8.1 Environmental records

The EM/SER is responsible for maintaining all environmental management documents so that they are always current at the point of use and consistent with respect to site operations.

Types of records include:

- monitoring, inspection and compliance reports/records;
- correspondence with public authorities;
- induction and training records;
- reports on environmental incidents, other environmental non-conformances, complaints and follow-up action;
- community engagement information;
- incident and non-conformance investigations; and
- minutes of environmental management system review meetings and evidence of any action taken.

All construction environmental management documents are subject to ongoing review and continual improvement. This includes times of change to scheduled activities or to legislative or licensing requirements.

Only the EM/SER, or delegate, has the authority to change any of the construction environmental management documentation.

### 8.2 Document control

The EMS will be developed, approved, implemented and maintained in accordance with the Document Control Procedure (WCL SYS PRO 001).

### 8.3 Monitoring Plans

Monitoring plans identifying monitoring to be carried out under the conditions of the Consent are available in Appendix A. Plans include:

- surface water monitoring locations;
- groundwater monitoring locations;
- biodiversity/swamp monitoring locations;



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- air and noise monitoring locations; and
- EPL monitoring locations.

Monitoring locations and associated plans in this EMS will be updated in line with the relevant management plan once approved by DPIE.



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## 9. References

Department of Planning, Infrastructure and Environment (DPIE) 2019, Community Consultative Committee Guideline for State Significant Projects.

Department of Planning, Infrastructure and Environment (DPIE) 2020, Independent Audit - Post Approval Requirements.

ERM 2013, NRE No. 1 Colliery Project Application (09\_0013) Environmental Assessment, prepared for Gujarat NRE Coking Coal Pty Ltd, Environmental Resources Management Australia.

Gujarat NRE2010, Incident Investigation, Reporting and Non-Conformance Procedure (NRE 014).

PAC 2015, Russell Vale Colliery – Underground Expansion Project: Review Report, Planning Assessment Commission.

PAC 2016, Russell Vale Colliery – Underground Expansion Project: Second Review Report, Planning Assessment Commission.

Umwelt 2019a, Russell Vale Revised Underground Expansion Project: Revised preferred project report and response to second PAC review, Umwelt Environmental and Social Consultants.

Umwelt 2019b, Russell Vale Colliery Revised Underground Expansion Project Submissions Report – Part A, Umwelt Environmental and Social Consultants.

Umwelt 2019c, Russell Vale Colliery Revised Underground Expansion Project Submissions Report – Part B, Umwelt Environmental and Social Consultants.

Wollongong Coal 2021, Aboriginal Cultural Heritage Management Plan, Wollongong Coal Pty Limited.

Wollongong Coal 2021, Air Quality and Greenhouse Gas Management Plan, Wollongong Coal Pty Limited.

Wollongong Coal 2021, Biodiversity Management Plan, Wollongong Coal Pty Limited.

Wollongong Coal 2021, Bushfire Management Plan, Wollongong Coal Pty Limited.

Wollongong Coal 2021, Construction Environmental Management Plan, Wollongong Coal Pty Limited.



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Wollongong Coal 2021, Extraction Plan, Wollongong Coal Pty Limited.

Wollongong Coal 2021, Historic Heritage Management Plan, Wollongong Coal Pty Limited.

Wollongong Coal 2021, Noise Management Plan, Wollongong Coal Pty Limited.

Wollongong Coal 2021, Pollution Incident Response Management Plan, Wollongong Coal Pty Limited.

Wollongong Coal 2021, Rehabilitation Management Plan, Wollongong Coal Pty Limited.

Wollongong Coal 2021, Social Impact Management Plan, Wollongong Coal Pty Limited.

Wollongong Coal 2021, Traffic Management Plan, Wollongong Coal Pty Limited.

Wollongong Coal 2021, Visual Impact Management Plan, Wollongong Coal Pty Limited.

Wollongong Coal 2021, Waste Management Plan, Wollongong Coal Pty Limited.

Wollongong Coal 2021, Water Management Plan, Wollongong Coal Pty Limited.

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# 10. Glossary of Terms and Abbreviations

Abbreviations		
AS	Australian Standards	
ссс	Community Consultative Committee	
CAR	Corrective or preventative actions	
CCL	Consolidated Coal Lease	
DPIE	Department of Planning, Industry and Environment	
EA	Environmental Assessment	
EMS	Environmental Management Strategy	
EP&A Act	Environmental Planning & Assessment Act 1979	
EPL	Environment Protection License	
EP	Extraction Plan	
ICNG	Interim Construction Noise Guideline	
JSPL	Jindal Steel and Power Limited	
ML	Mining Lease	
MPL	Mining Purposes Lease	
Mtpa	Million tonnes per annum	
NPfl	Noise Policy for Industry	
PAC	Planning Assessment Commission	
PIRMP	Pollution Incident Response Management Plan	
PWP	Preliminary Works Permit	
IPC	Independent Planning Commission	
ROM	Run of Mine	
SHECQ	Safety, Health, Environment, Community and Quality	
UEP	Underground Expansion Project	
WAL	Water Access Licence	
WCC	Wollongong City Council	

Terms		
continuous process	the site is operating at full production capacity	
emergency	an unexpected and catastrophic event above and beyond the level which has been accounted for within the management plans and the TARPs	
exceedance or non- compliance	<ul> <li>Any inspection/test result that does not meet the acceptance criteria specified in the development consent, EPL and /or other conditions of approval identified in the EMS;</li> </ul>	



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	<ul><li>Any notice of non-compliance issued by the EPA; or</li><li>Any other regulatory authority with environmental jurisdiction.</li></ul>	
incident	an occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be or cause a non-compliance	
material harm	<ul> <li>harm to the environment is material if:</li> <li>It involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or</li> <li>It results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000.</li> </ul>	
the Colliery	Russell Vale Colliery	
the Planning Secretary	The Planning Secretary of the Department of Planning, Industry and Environment (DPIE)	
the Project	the Revised Preferred Project	
Wollongong Coal Pty Limited	WCL	

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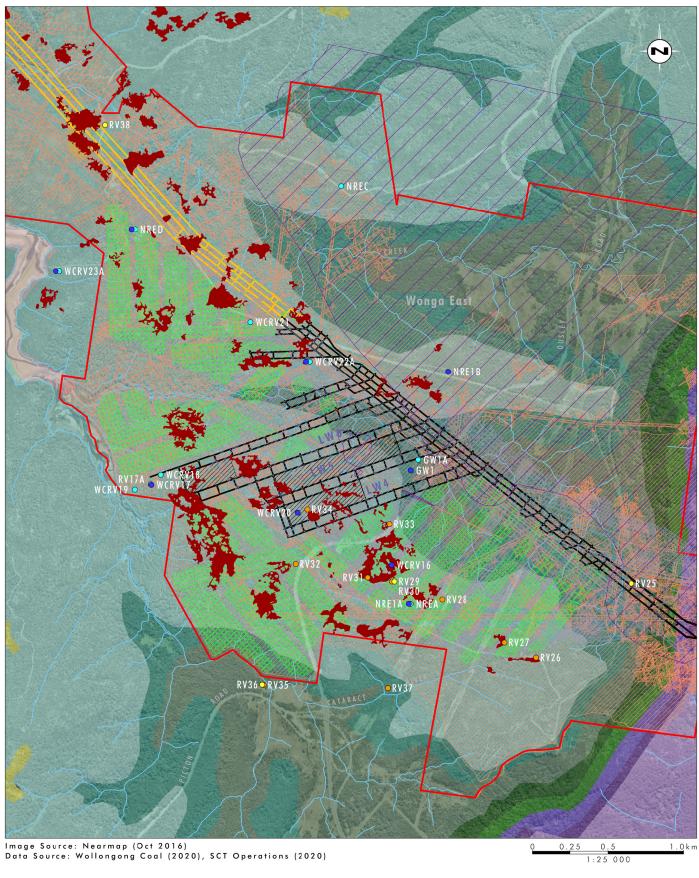
# Appendix A - Monitoring Locations

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# Appendix A1 – Groundwater Monitoring Locations





Existing Bulli Seam Workings
Existing Balgownie Seam Workings === UEP Mine Plan Approved Wonga Central Development Mains Existing Wongawilli Seam Workings Upland Swamps ZZZ Sill Drainage Line

 $Monitoring\ Locations:$ VWP Monitoring Site

OSP Monitoring Site VWP Proposed Monitoring Site OSP Proposed Monitoring Site

Surface Geology:

Pis - Sydney Group

Qs - Swamp sediments TRh - Hawkesbury Sandstone TRnz - Bald Hill Claystone

TRnbu - Bulgo Sandstone TRnsp - Stanwell Park Claystone
TRnc - Coal Cliff Sandstone FIGURE 5.1

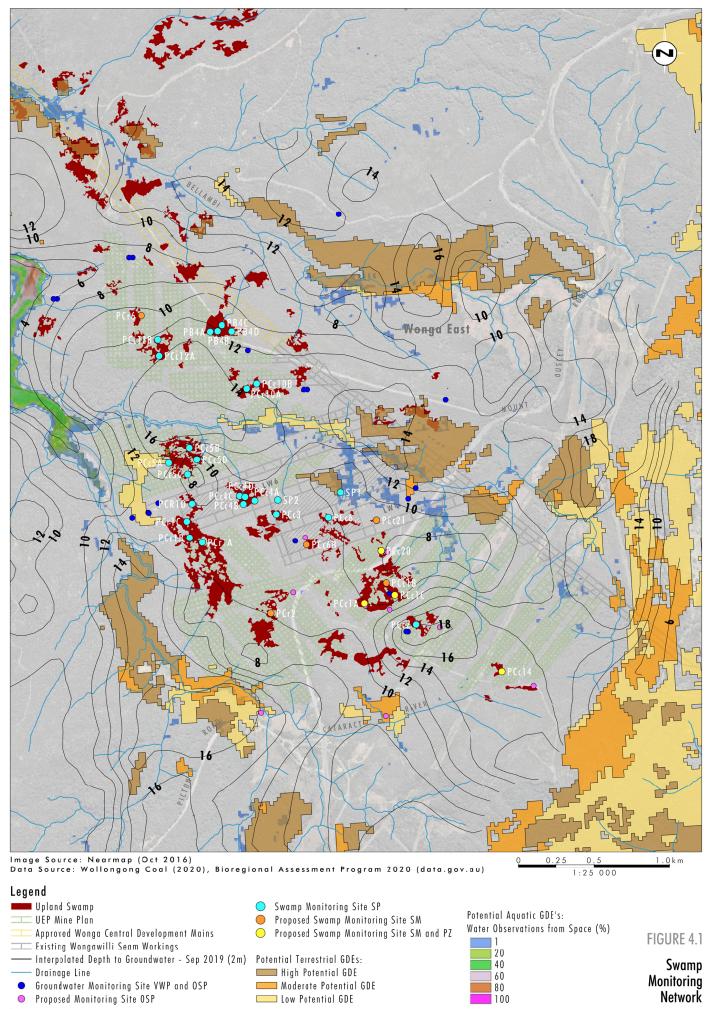
Groundwater Monitoring Network



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# Appendix A2 – Swamp Monitoring Locations

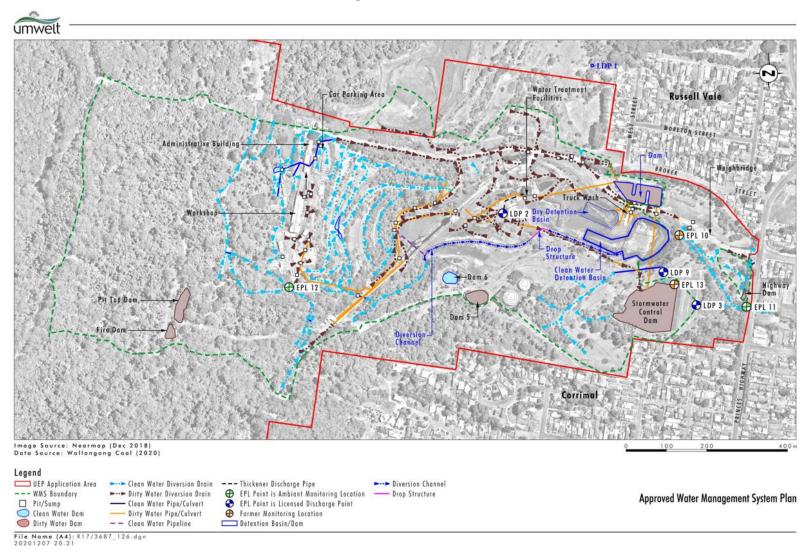
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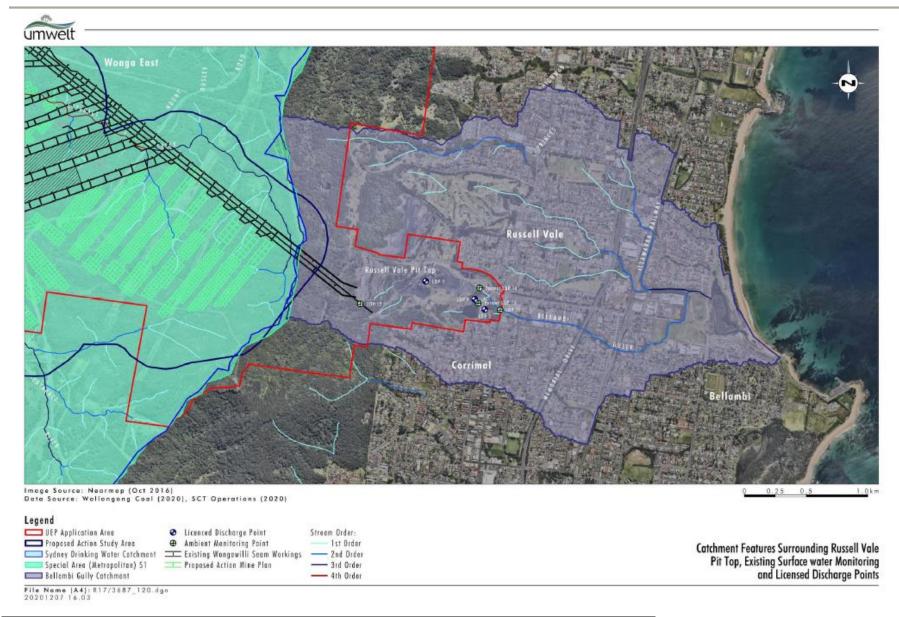
## Appendix A3 – Surface Water Monitoring Locations



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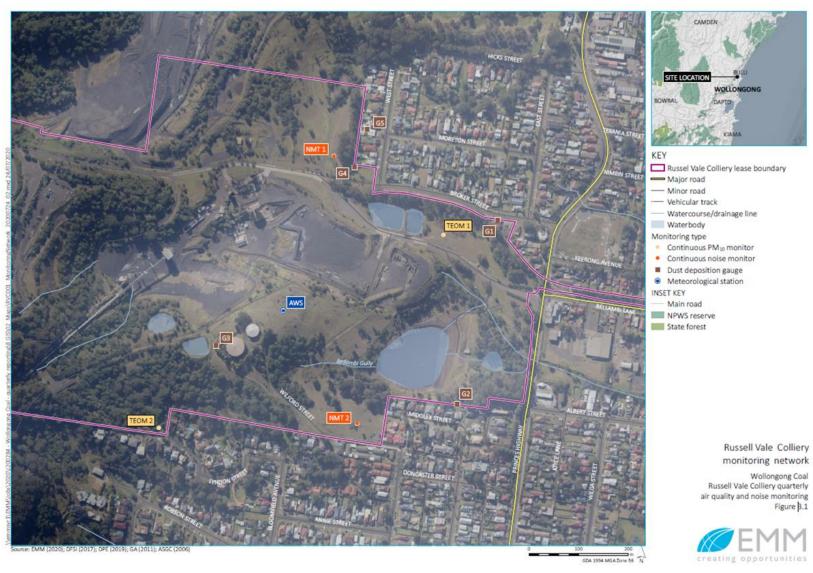
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# Appendix A4 – Air Quality Monitoring Locations



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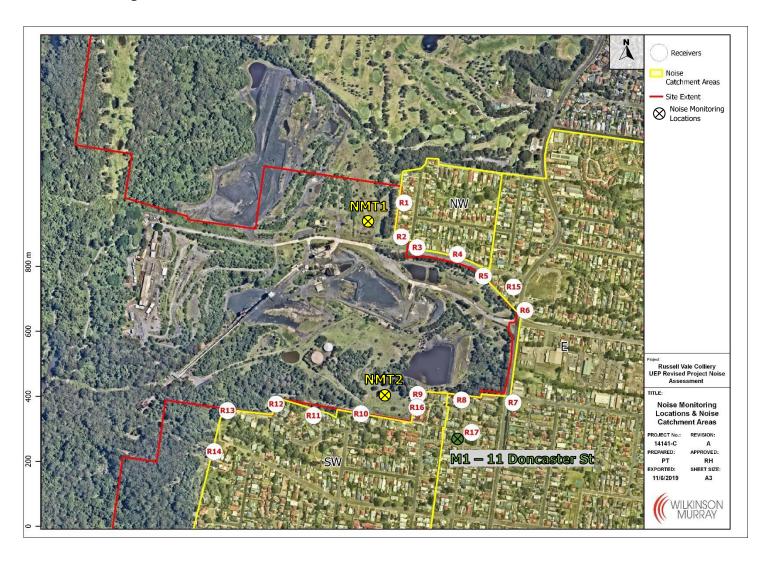
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# Appendix A5 – Noise Monitoring Locations

Figure 4-1 Noise Monitoring Locations and Noise Catchment Areas

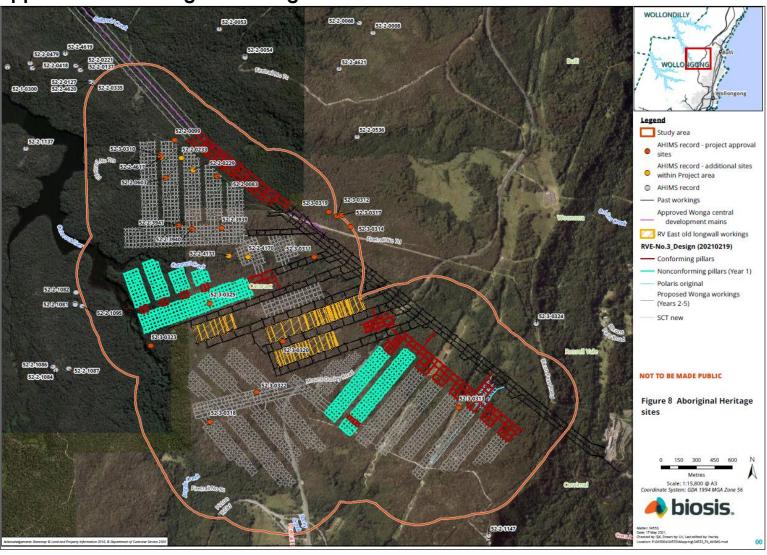






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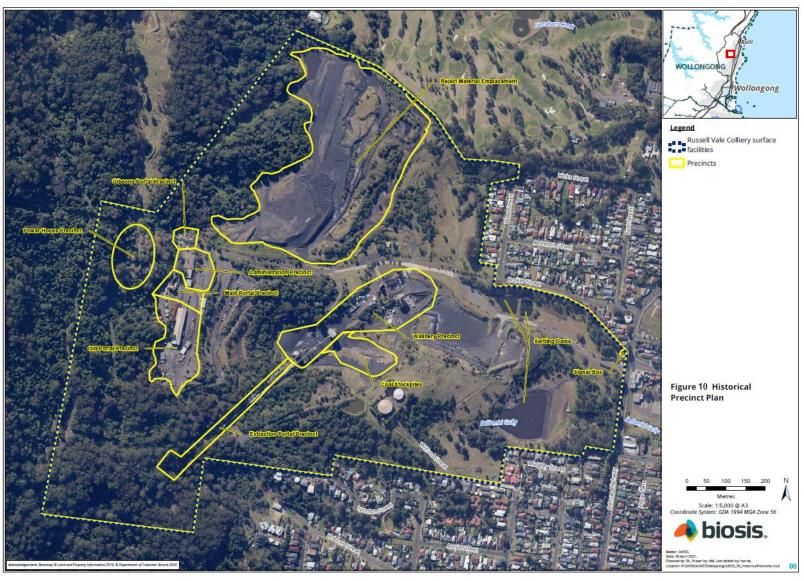
# Appendix A6 – Aboriginal Heritage Sites





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# **Appendix A7 – Historical Precinct Plans**



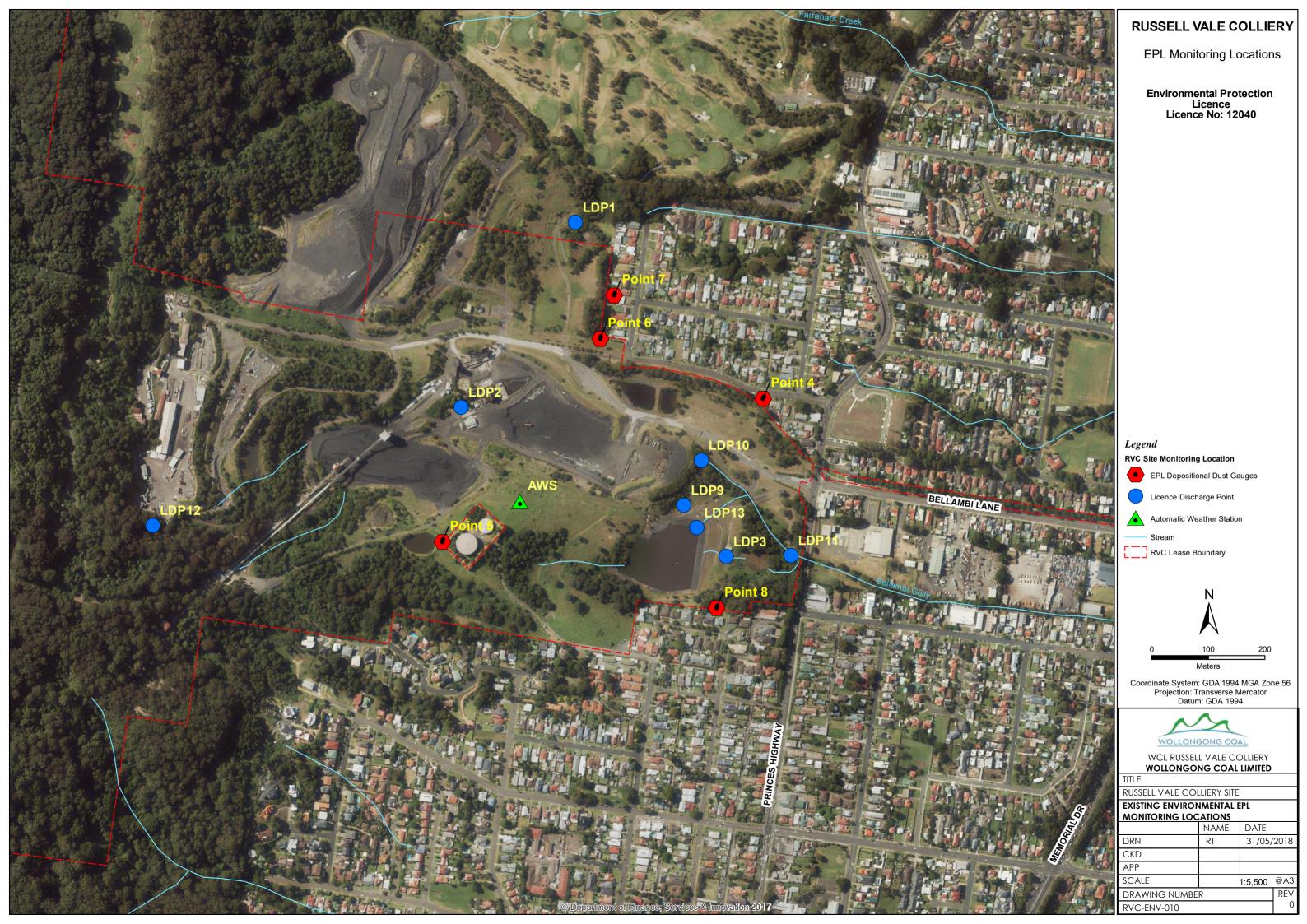
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# Appendix A8 – EPL Monitoring Locations





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# Appendix B - TARPS



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# Appendix B1 – Groundwater TARP

Feature	Trigger Monitoring Location	Unit	Timing/ Frequency During Mining	Purpose	Criteria	Action/ Reporting	Reporting	Responsibility
Swamp water quality	Existing swamp piezometers: PB4 B near swamp BCUS4 PCc10 (A/B) at	EC	Field analysis when piezometers are manually dipped:  • Every 2 months prior to and after swamp is mined under;	Detection of potential impact to swamp water conditions due to mine activities	Level 1: No exceedance of Level 2 or Level 3	Continue monitoring.	Report negligible impact in routine reporting.	Russell Vale Colliery (Environmental Manager)
	CCUS10 PCc12 A at CCUS12 PCc2 at CCUS2 PCc4 (C) at CCUS4 PCc5 (B) at CCUS5 PCr1 (B) at CRUS1 For newly installed swamp piezometers refer to USMP		Monthly during period when swamp is mined under.		Level 2: One reading above the trigger level of 193 µS/cm	1. Review sampling methodology/ equipment to verify if the reading is representative. If not, resample and test within 7 days of the result.  2. If the data is representative, review weather station data, groundwater quality and level data and subsidence monitoring to identify whether further investigation is warranted. If an impact due to mining is identified progress to Level 3.	1. One week 2. Two weeks to assess whether further investigation is required. Commence investigation if exceedance of Level 3 criteria identified (see Level 3 reporting requirements). 3. One to two months depending on timing of review of second data period.	Russell Vale Colliery (Environmental Manager)
					Level 3: Two consecutive readings above the trigger of 193 µS/cm	1. Inform DPIE and Water NSW 2. Investigate and report on the cause of the trigger exceedances (e.g. climatic, systemic, failure) 3. Inform DPIE and WaterNSW of investigation outcomes 4. Identify mitigation options 5. Review monitoring frequency and parameters 6. Report potential impact,	1.Immediately 2. Commence within one week 3. One month 4. Commence works within 2 months 5. One month 6. Six monthly reporting in accordance with Extraction Plan approval	Russell Vale Colliery (Environmental Manager)

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Feature	Trigger Monitoring Location	Unit	Timing/ Frequency During Mining	Purpose	Criteria	Action/ Reporting	Reporting	Responsibility
						and response, within six monthly reporting		
Swamp water quality	Existing swamp piezometers: PB4 B near swamp BCUS4 PCc10 (A/B) at CCUS10 PCc12 A at CCUS12 PCc2 at CCUS2 PCc4 (C) at CCUS4 PCc5 (B) at CCUS5 PCr1 (B) at CRUS1  For newly installed swamp piezometers refer to USMP	рН	Field analysis when piezometers are manually dipped:  • Every 2 months prior to and after swamp is mined under;  • Monthly during period when swamp is mined under.	Detection of potential impact to swamp water conditions due to mine activities	Level 1: No exceedance of Level 2 or Level 3	Continue monitoring.	Report negligible impact in routine reporting.	Russell Vale Colliery (Environment al Manager)
					Level 2: One reading outside of the trigger range of 3.8 to 6.3	1. Review sampling methodology/ equipment to verify if the reading is representative. If not, resample and test within 7 days of the result.  2. If the data is representative, review weather station data, groundwater quality and level data and subsidence monitoring to identify whether further investigation is warranted. If an impact due to mining is identified progress to Level 3.	1. One week 2. Two weeks to assess whether further investigation is required. Commence investigation if exceedance of Level 3 criteria identified (see Level 3 reporting requirements). 3. One to two months depending on timing of review of second data period.	Russell Vale Colliery (Environment al Manager)
					Level 3: Two consecutive readings outside of the trigger range of 3.8 to 6.3	1. Inform DPIE and Water NSW 2. Investigate and report on the cause of the trigger exceedances (e.g. climatic, systemic, failure) 3. Inform DPIE and WaterNSW of investigation outcomes 4. Identify mitigation options 5. Review monitoring frequency and parameters 6. Report potential impact, and response, within six monthly reporting	1. Immediately 2. Commence within one week 3. One month 4. Commence works within 2 months 5. One month 6. Six monthly reporting in accordance with Extraction Plan approval	



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Feature	Trigger Monitoring Location	Unit	Timing/ Frequency During Mining	Purpose	Criteria	Action/ Reporting	Reporting	Responsibility
Swamp water levels	Existing swamp piezometers: PB4 B near swamp BCUS4 PCc10 (A/B) at CCUS10 PCc12 A at CCUS12 PCc2 at	swamp piezometers: PB4 B near swamp BCUS4 PCc10 (A/B) at CCUS10 PCc12 A at CCUS12 PCc2 at CCUS2 PCc4 (C) at CCUS4 PCc5 (B) at CCUS5 PCr1 (B) at CRUS1 For newly installed swamp piezometers  level monitoring with logger set 6 hourly interval.  Data downloaded and manually dipped:  Every 2 months prior to and after swamp is mined under;  Monthly during period when swamp is mined under.	Detection of potential impact to swamp water conditions due to mine activities	Level 1: Water level readings consistently above the water level trigger* or levels below trigger during periods of low rainfall (<20 mm/month)	Continue monitoring.	Report negligible impact in routine reporting.	Russell Vale Colliery (Environmental Manager)	
	CCUS2 PCc4 (C) at CCUS4 PCc5 (B) at CCUS5 PCr1 (B) at CRUS1  For newly installed swamp piezometers refer to USMP		under;  • Monthly during period when swamp is mined		Level 2: One monthly water level reading below the water level trigger during a period with rainfall above 20 mm/month	Review sampling methodology/ equipment to verify if the reading is representative. If not, resample and test within 7 days of the result.     If the data is representative, review weather station data, groundwater quality and level data and subsidence monitoring to identify whether further investigation is warranted. If an impact due to mining is identified progress to Level 3.	1. One week  2. Two weeks to assess whether further investigation is required. Commence investigation if exceedance of Level 3 criteria identified (see Level 3 reporting requirements).  3. One to two months depending on timing of review of second data period.	Russell Vale Colliery (Environmental Manager)
				Level 3: Two consecutive monthly water level readings below the water level trigger* during a period with rainfall above 20 mm/month	Inform DPIE and Water NSW     Investigate and report on the cause of the trigger exceedances e.g. climatic, systemic, failure)	<ul><li>4. Commence works within</li><li>2 months</li><li>5. One month</li></ul>	Russell Vale Colliery (Environmental Manager)	



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Feature	Trigger Monitoring Location	Unit	Timing/ Frequency During Mining	Purpose	Criteria	Action/ Reporting	Reporting	Responsibility
						and response, within six monthly reporting		
Hawkes- bury Sandstone water quality	Existing open standpipes: NRE A, NRE C, NRE D,	EC	2 monthly – field analysis for open standpipes	Detection of potential impact to Hawkesbury Sandstone water due to	Level 1: No exceedance of Level 2 or Level 3 triggers	Continue monitoring.	Report negligible impact in routine reporting.	Russell Vale Colliery (Environmental Manager)
		analysis for open	One above trigg	Level 2: One reading above the trigger level of 376 µS/cm	1. Review sampling methodology/ equipment to verify if the reading is representative. If not, resample and test within 7 days of the result.  2. If the data is representative, review weather station data, groundwater quality and level data and subsidence monitoring to identify whether further investigatior is warranted. If an impact due to mining is identified progress to Level 3.	whether further investigation is required. Commence investigation if exceedance of Level 3 criteria identified (see Level 3 reporting requirements).  3. One to two months depending on timing of review of second data	Russell Vale Colliery (Environmental Manager)	
					Level 3: Two consecutive readings above the trigger level of 376 µS/cm	1. Inform DPIE and Water NSW 2. Investigate and report on the cause of the trigger exceedances (e.g. climatic, systemic, failure) 3. Inform DPIE and WaterNSW of investigation outcomes 4. Identify mitigation options 5. Review monitoring frequency and parameters 6. Report potential impact, and response, within six monthly reporting	2 months 5. One month	



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Hawkes- bury Sandstone water quality	Existing open standpipes: pH 2 monthly – field analysis for open standpipes C, NRE D, Quarterly – discrete	analysis for open standpipes Quarterly – discrete	potential impact to Hawkesbury Sandstone	Level 1: No exceedance of Level 2 or Level 3 triggers	Continue monitoring.	Report negligible impact in routine reporting.	Russell Vale Colliery (Environmental Manager)	
	GW1A, RV18, RV19, RV21, RV22A		analysis for open standpipes	open water due to mine activities	Level 2: One reading outside of the trigger range of 3.7 to 6.5	1. Review sampling methodology/ equipment to verify if the reading is representative. If not, resample and test within 7 days of the result.  2. If the data is representative, review weather station data, groundwater quality and level data and subsidence monitoring to identify whether further investigatior is warranted. If an impact due to mining is identified progress to Level 3.	whether further investigation is required. Commence investigation if exceedance of Level 3 criteria identified (see Level 3 reporting requirements).  3. One to two months depending on timing of review of second data	Russell Vale Colliery (Environmental Manager)
					Level 3: Two consecutive readings outside of the trigger range of 3.7 to 6.5	1. Inform DPIE and Water NSW 2. Investigate and report on the cause of the trigger exceedances (e.g. climatic, systemic, failure) 3. Inform DPIE and WaterNSW of investigation outcomes 4. Identify mitigation options 5. Review monitoring frequency and parameters 6. Report potential impact, and response, within six monthly reporting	<ul><li>4. Commence works within 2 months</li><li>5. One month</li></ul>	



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Feature	Trigger Monitoring Location	Unit	Timing/ Frequency During Mining	Purpose	Criteria	Action/ Reporting	Reporting	Responsibility
Hawkes- bury Sandstone water levels	Existing open standpipes: Water level dipped water level in areas being actively	potential impact to Hawkesbury Sandstone	potential impact to Hawkesbury	Level 1: No exceedance of Level 2 or Level 3 triggers	Continue monitoring.	Report negligible impact in routine reporting.	Russell Vale Colliery (Environmental Manager)	
	O, INICE D,		Level 2: One monthly water level reading below the water level trigger	1. Review sampling methodology/ equipment to verify if the reading is representative. If not, resample and test within 7 days of the result.  2. If the data is representative, review weather station data, groundwater quality and level data and subsidence monitoring to identify whether further investigatior is warranted. If an impact due to mining is identified progress to Level 3.	whether further investigation is required. Commence investigation if exceedance of Level 3 criteria identified (see Level 3 reporting requirements).  3. One to two months depending on timing of review of second data	Russell Vale Colliery (Environmental Manager)		
					Level 3: Two consecutive monthly water level readings below the water level trigger	1. Inform DPIE and Water NSW 2. Investigate and report on the cause of the trigger exceedances (e.g. climatic, systemic, failure) 3. Inform DPIE and WaterNSW of investigation outcomes 4. Identify mitigation options 5. Review monitoring frequency and parameters 6. Report potential impact, and response, within six monthly reporting	2 months 5. One month	
Bulgo Sandstone water quality	Newly installed open standpipes, which may	EC	2 monthly – field analysis for open standpipes	Verification of characterisatio n of Bulgo Sandstone	Level 1: No exceedance of Level 2 or	Report negligible impact in routine reporting.	Report negligible impact in routine reporting.	Russell Vale Colliery (Environmental Manager)

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Feature	Trigger Monitoring Location	Unit	Timing/ Frequency During Mining	Purpose	Criteria	Action/ Reporting	Reporting	Responsibility
	include:			water quality	Level 3 triggers			
	RV43A and RV44			and detection of changes in quality post mining and closure, outside of predicted impacts	Level 2: One reading above the trigger level of 376 µS/cm within the first 12 months of installation	1. Review sampling methodology/ equipment to verify if the reading is representative. If not, resample and test within 7 days of the result.  2. If the data is representative, review weather station data, groundwater quality and level data and subsidence monitoring to identify whether further investigation is warranted. If an impact due to mining is identified progress to Level 3.	1. One week 2. Two weeks to assess whether further investigation is required. Commence investigation if exceedance of Level 3 criteria identified (see Level 3 reporting requirements). 3. One to two months depending on timing of review of second data period.	Russell Vale Colliery (Environmental Manager)
					Level 3: Two consecutive readings above the trigger level of 376 µS/cm within the first 12 months of installation	1. Inform DPIE and Water NSW 2. Investigate and report on the cause of the trigger exceedances 3. Inform DPIE and WaterNSW of investigation outcomes 4. Identify mitigation options 5. Review monitoring frequency and parameters 6. Report potential impact, and response, within six monthly reporting	<ol> <li>Immediately</li> <li>Commence within one week</li> <li>One month</li> <li>Commence works within 2 months</li> <li>One month</li> <li>Six monthly reporting in accordance with Extraction Plan approval</li> </ol>	Russell Vale Colliery (Environmental Manager)
Bulgo Sandstone water quality	Newly installed open standpipes, which may	pН	2 monthly – field analysis for open standpipes	Verification of characterisatio n of Bulgo Sandstone	Level 1: No exceedance of Level 2 or Level 3 triggers	Continue monitoring.	Report negligible impact in routine reporting.	Russell Vale Colliery (Environmental Manager)
	include: RV43A and RV44			water quality and detection of changes in quality post	Level 2: One reading outside of the	Review sampling     methodology/ equipment to     verify if the reading is     representative. If not,	One week     Two weeks to assess     whether further     investigation is required.	Russell Vale Colliery (Environmental

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Feature	Trigger Monitoring Location	Unit	Timing/ Frequency During Mining	Purpose	Criteria	Action/ Reporting	Reporting	Responsibility
				mining and closure, outside of predicted impacts	trigger range of 3.7 to 6.5 within the first 12 months of installation	resample and test within 7 days of the result.  2. If the data is representative, review weather station data, groundwater quality and level data and subsidence monitoring to identify whether further investigation is warranted. If an impact due to mining is identified progress to Level 3.	Level 3 reporting requirements). 3. One to two months depending on timing of	
					Level 3: Two consecutive readings outside of the trigger range of 3.7 to 6.5 within the first 12 months of installation	1. Inform DPIE and Water NSW 2. Investigate and report on the cause of the trigger exceedances (e.g. climatic, systemic, failure) 3. Inform DPIE and WaterNSW of investigation outcomes 4. Identify mitigation options 5. Review monitoring frequency and parameters 6. Report potential impact, and response, within six monthly reporting	<ol> <li>Immediately</li> <li>Commence within one week</li> <li>One month</li> <li>Commence works within 2 months</li> <li>One month</li> <li>Six monthly reporting in accordance with Extraction Plan approval</li> </ol>	Russell Vale Colliery (Environmental Manager)
Bulgo Sandstone water levels	Newly installed open standpipes, which may	Water level	Monthly manual dipped water levels	Detection of changes in Bulgo Sandstone	Level 1: No exceedance of Level 2 or Level 3 triggers	Continue monitoring.	Report negligible impact in routine reporting.	Russell Vale Colliery (Environmental Manager)
	include: RV43A and RV44			groundwater level post mining and closure, outside of predicted impacts	Level 2: One monthly water level reading below the water level trigger	Review sampling     methodology/ equipment to     verify if the reading is     representative. If not,     resample and test within 7     days of the result.      If the data is representative,     review weather station data,     groundwater quality and     level data and subsidence		Russell Vale Colliery (Environmental Manager)

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Feature	Trigger Monitoring Location	Unit	Timing/ Frequency During Mining	Purpose	Criteria	Action/ Reporting	Reporting	Responsibility
						monitoring to identify whether further investigation is warranted. If an impact due to mining is identified progress to Level 3.	depending on timing of review of second data period.	
					Level 3: Two consecutive monthly water level readings below the water level trigger	1. Inform DPIE and Water NSW 2. Investigate and report on the cause of the trigger exceedances (e.g. climatic, systemic, failure) 3. Inform DPIE and WaterNSW of investigation outcomes 4. Identify mitigation options 5. Review monitoring frequency and parameters 6. Report potential impact, and response, within six monthly reporting	1. Immediately 2. Commence within one week 3. One month 4. Commence works within 2 months 5. One month 6. Six monthly reporting in accordance with Extraction Plan approval	(Environmental Manager)
Groundwate r levels and vertical head profile	Existing VWPs: NRE1B, NRE1D, GW1, RV16, RV17, RV20, RV22, RV23, RV24, RV25, RV27, RV29, RV35 and RV36	Water level	Daily – water level monitoring with logger set at 6 hourly interval and downloaded monthly in areas being actively undermined	Impact on groundwater levels and vertical head profile due to mining impacts/subsid ence impacts beyond those already predicted.	Level 1: No exceedance of Level 2 or Level 3 triggers Level 2: Detection of a significant change in vertical head gradient at one VWP sensor, as indicated by movement of the head profile below (to the left) of the minimum predicted head profile and baseline	1. Review condition of the VWP equipment. 2. If the data is representative, review climate trends, groundwater trends within other sensors and nearby monitoring locations and subsidence monitoring to identify whether further	Report negligible impact in routine reporting.  1. One week 2. Two weeks to assess whether further investigation is required. Commence investigation if exceedance of Level 3 criteria identified (see Level 3 reporting requirements). 3. One to two months depending on timing of review of second data period.	Russell Vale Colliery (Environmental Manager) Russell Vale Colliery (Environmental Manager)

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Feature	Trigger Monitoring Location	Unit	Timing/ Frequency During Mining	Purpose	Criteria	Action/ Reporting	Reporting	Responsibility
					observation data (refer Appendix H)			
					Level 3: Detection of a significant change in vertical head gradient at more than one VWP sensor, as indicated by movement of the head profile below (to the left) of the minimum predicted head profile and baseline observation data across multiple sensor levels (refer Appendix H)	1. Inform DPIE and Water NSW 2. Investigate and report on the cause of the trigger exceedances 3. Inform DPIE and WaterNSW of investigation outcomes 4. Identify mitigation options 5. Review monitoring frequency and parameters 6. Report potential impact, and response, within six monthly reporting	1. Immediately 2. Commence within one week 3. One month 4. Commence works within 2 months 5. One month 6. Six monthly reporting in accordance with Extraction Plan approval	Russell Vale Colliery (Environmental Manager)
Groundwate r levels and vertical head profile	Newly installed VWPs, which may include: RV43 and	Water level	Daily – water level monitoring with logger set at 6 hourly interval and downloaded	Impact on groundwater levels and vertical head profile due to	Level 1: No exceedance of Level 2 or Level 3 triggers	Continue monitoring.	routine reporting.	Russell Vale Colliery (Environmental Manager)
	RV48		monthly	mining impacts/subsid ence impacts and recovery post mining, beyond those already predicted.	Level 2: Detection of a significant change in vertical head gradient at one VWP sensor, as indicated by movement of the head profile below (to the	1. Review condition of the VWP equipment. 2. If the data is representative, review climate trends, groundwater trends within other sensors and nearby monitoring locations and subsidence monitoring to identify whether further investigation is warranted. If an impact due to mining is	One week     Two weeks to assess whether further investigation is required. Commence investigation if exceedance of Level 3 criteria identified (see Level 3 reporting requirements).      One to two months depending on timing of	Russell Vale Colliery (Environmental Manager)



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Feature	Trigger Monitoring Location	Unit	Timing/ Frequency During Mining	Purpose	Criteria	Action/ Reporting	Reporting	Responsibility
					left) of the minimum predicted head profile.	identified progress to Level 3.	review of second data period.	
					Level 3: Detection of a significant change in vertical head gradient at more than one VWP sensor, as indicated by movement of the head profile below (to the left) of the minimum predicted head profile.		1. Immediately 2. Commence within one week 3. One month 4. Commence works within 2 months 5. One month 6. Six monthly reporting in accordance with Extraction Plan approval	Russell Vale Colliery (Environmental Manager)
Undergroun d workings	Mine inflows	Inflow	Daily volumetric flow monitoring of mine inflow and discharge	Inflows volumes to underground workings is in line with predictions and captured by appropriate water licences.	Level 1: Mine pump volumes are within predicted mine inflow range (< 1ML/day) — excluding changes in dewatering volumes to manage inrush risk or due to equipment maintenance.	Continue monitoring.	Report negligible impact in routine reporting.	Russell Vale Colliery (Environmental Manager)
					Level 2: Increase in flow rate of >1ML/day (above	Review equipment to verify if the reading is representative. If not, remeasure.     If the data is representative,	One week     Two weeks to assess     whether further     investigation is     required. Commence     investigation if	Russell Vale Colliery (Environmental Manager)



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Feature	Trigger Monitoring Location	Unit	Timing/ Frequency During Mining	Purpose	Criteria	Action/ Reporting	Reporting	Responsibility
					predictions) for 4 successive days from active mining areas - excluding changes in dewatering volumes to manage inrush risk or due to equipment maintenance.	review mine water quality and inflow data, ground water data and geotechnical/subsidence records to identify any adverse trends that may indicate any adverse trends that may indicate an impact beyond previous predictions. If an impact due to mining is identified progress to Level 3.	exceedance of Level 3 criteria identified (see Level 3 reporting requirements). 3. One to two months depending on timing of review of second data period.	
					Level 3: Increase in flow rate of >1ML/day (above predictions) for 7 successive days from active mining areas - excluding changes in dewatering volumes to manage inrush risk or due to equipment maintenance.	1. Inform DPIE and Water NSW 2. Investigate and report on the cause of the trigger exceedances 3. Inform DPIE and WaterNSW of investigation outcomes 4. Identify mitigation options 5. Review monitoring frequency and parameters 6. Report potential impact, and response, within six monthly reporting	1. Immediately 2. Commence within one week 3. One month 4. Commence works within 2 months 5. One month 6. Six monthly reporting in accordance with Extraction Plan approval	Russell Vale Colliery (Environmental Manager)
Undergroun d workings	Mine inflows	Mine inflows pH Monthly – field analysis Quarterly – discrete analysis	Underground mine water quality will not impact current	Level 1: No exceedance of Level 2 or Level 3 triggers	Continue monitoring.	Report negligible impact in routine reporting.	Russell Vale Colliery (Environmental Manager)	
				beneficial use of groundwater in Permian coal measures	Level 2: One reading outside of the trigger range of 7.7 to 9.4	Review sampling     methodology/ equipment to     verify if the reading is     representative. If not,     resample and test within 7	One week     Two weeks to assess     whether further     investigation is required.     Commence investigation     if exceedance of Level 3	Russell Vale Colliery (Environmental Manager)



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Feature	Trigger Monitoring Location	Unit	Timing/ Frequency During Mining	Purpose	Criteria	Action/ Reporting	Reporting	Responsibility
						days of the result.  2. If the data is representative, review mine water quality and inflow data, groundwater data and geotechnical/subsidence records to identify any adverse trends that may indicate an impact beyond previous predictions. If an impact due to mining is identified progress to Level 3.	criteria identified (see Level 3 reporting requirements). 3. One to two months depending on timing of review of second data period.	
					Level 3: Two consecutive readings outside of the trigger range of 7.7 to 9.4	1. Inform DPIE and Water NSW 2. Investigate and report on the cause of the trigger exceedances (e.g. climatic, systemic, failure) 3. Inform DPIE and WaterNSW of investigation outcomes 4. Identify mitigation options 5. Review monitoring frequency and parameters 6. Report potential impact, and response, within six monthly reporting	1. Immediately 2. Commence within one week 3. One month 4. Commence works within 2 months 5. One month 6. Six monthly reporting in accordance with Extraction Plan approval	
Undergroun d workings		analysis Quarterly – discrete	Underground mine water quality will not impact current	Level 1: No exceedance of Level 2 or Level 3 triggers	Continue monitoring.	Report negligible impact in routine reporting.	Russell Vale Colliery (Environmental Manager)	
		beneficial use of groundwater in Permian coal measures	Level 2: One reading above the trigger level of 5,226 µS/cm	Review sampling     methodology/ equipment to     verify if the reading is     representative. If not,     resample and test within 7     days of the result.      If the data is representative,     review mine water quality	1. One week 2. Two weeks to assess whether further investigation is required. Commence investigation if exceedance of Level 3 criteria identified (see Level 3 reporting requirements).	Russell Vale Colliery (Environmental Manager)		

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Feature	Trigger Monitoring Location	Unit	Timing/ Frequency During Mining	Purpose	Criteria	Action/ Reporting	Reporting	Responsibility
						and inflow data, groundwater data and geotechnical/subsidence records to identify any adverse trends that may indicate an impact beyond previous predictions. If an impact due to mining is identified progress to Level 3.	3. One to two months depending on timing of review of second data period.	
					Level 3: Two consecutive readings above the trigger level of 5,226 µS/cm	1. Inform DPIE and Water NSW 2. Investigate and report on the cause of the trigger exceedances (e.g. climatic, systemic, failure) 3. Inform DPIE and WaterNSW of investigation outcomes 4. Identify mitigation options 5. Review monitoring frequency and parameters 6. Report potential impact, and response, within six monthly reporting	2 months 5. One month	
Undergroun d workings	Mine inflows	Sulfate	Quarterly – discrete analysis	Underground mine water quality will not impact current	Level 1: No exceedance of Level 2 or Level 3 triggers	Continue monitoring.	Report negligible impact in routine reporting.	Russell Vale Colliery (Environmental Manager)
				beneficial use of groundwater in Permian coal measures	Level 2: One reading above the trigger level of 167 mg/L	Review sampling methodology/ equipment to verify if the reading is representative. If not, resample and test within 7 days of the result.     If the data is representative, review mine water quality and inflow data, groundwater data and	Two weeks to assess whether further investigation is required. Commence investigation if exceedance of Level 3 criteria identified (see Level 3 reporting requirements).	Russell Vale Colliery (Environmental Manager)



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						geotechnical/subsidence records to identify any adverse trends that may indicate an impact beyond previous predictions. If an impact due to mining is identified progress to Level 3.	3. One to two months depending on timing of review of second data period.	
					Level 3: Two consecutive readings above the trigger level of 167 mg/L	1. Inform DPIE and Water NSW 2. Investigate and report on the cause of the trigger exceedances (e.g. climatic, systemic, failure) 3. Inform DPIE and WaterNSW of investigation outcomes 4. Identify mitigation options 5. Review monitoring frequency and parameters 6. Report potential impact, and response, within six monthly reporting	2 months 5. One month	Russell Vale Colliery (Environmental Manager)
Undergroun d workings	Mine inflows	Dissolved Al	Quarterly – full metals analysis	Underground mine water quality will not impact current	Level 1: No exceedance of Level 2 or Level 3 triggers	Continue monitoring.	Report negligible impact in routine reporting.	Russell Vale Colliery (Environmental Manager)
				beneficial use of groundwater in Permian coal measures	Level 2: One reading above the trigger level of 0.11 mg/L	Review sampling     methodology/ equipment to     verify if the reading is     representative. If not,     resample and test within 7     days of the result.     If the data is representative,     review mine water quality     and inflow data, groundwater     data and     geotechnical/subsidence     records to identify any	1. One week 2. Two weeks to assess whether further investigation is required. Commence investigation if exceedance of Level 3 criteria identified (see Level 3 reporting requirements). 3. One to two months depending on timing of review of second data	Russell Vale Colliery (Environmental Manager)



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Feature	Trigger Monitoring Location	Unit	Timing/ Frequency During Mining	Purpose	Criteria	Action/ Reporting	Reporting	Responsibility
						adverse trends that may indicate an impact beyond previous predictions. If an impact due to mining is identified progress to Level 3.	period.	
					Level 3: Two consecutive readings above the trigger level of 0.11 mg/L	1. Inform DPIE and Water NSW 2. Investigate and report on the cause of the trigger exceedances (e.g. climatic, systemic, failure) 3. Inform DPIE and WaterNSW of investigation outcomes 4. Identify mitigation options 5. Review monitoring frequency and parameters 6. Report potential impact, and response, within six monthly reporting	2 months 5. One month	
Undergroun d workings	Mine inflows	Dissolved As	Quarterly – full metals analysis	Underground mine water quality will not impact current	Level 1: No exceedance of Level 2 or Level 3 triggers	Continue monitoring.	Report negligible impact in routine reporting.	Russell Vale Colliery (Environmental Manager)
				beneficial use of groundwater in Permian coal measures	Level 2: One reading above the trigger level of 0.03 mg/L	1. Review sampling methodology/ equipment to verify if the reading is representative. If not, resample and test within 7 days of the result.  2. If the data is representative, review mine water quality and inflow data, groundwater data and geotechnical/subsidence records to identify any adverse trends that may indicate an impact beyond	1. One week 2. Two weeks to assess whether further investigation is required. Commence investigation if exceedance of Level 3 criteria identified (see Level 3 reporting requirements). 3. One to two months depending on timing of review of second data period.	Russell Vale Colliery (Environmental Manager)



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						previous predictions. If an impact due to mining is identified progress to Level 3.		
					Level 3: Two consecutive readings above the trigger level of 0.03 mg/L	outcomes	1. Immediately 2. Commence within one week 3. One month 4. Commence works within 2 months 5. One month 6. Six monthly reporting in accordance with Extraction Plan approval	Russell Vale Colliery (Environmental Manager)
Undergroun d workings	Mine inflows	Dissolved Mo	Quarterly – full metals analysis	Underground mine water quality will not impact current	Level 1: No exceedance of Level 2 or Level 3 triggers	Continue monitoring.	Report negligible impact in routine reporting.	Russell Vale Colliery (Environmental Manager)
				beneficial use of groundwater in Permian coal measures	Level 2: One reading above the trigger level of 0.09 mg/L	1. Review sampling methodology/ equipment to verify if the reading is representative. If not, resample and test within 7 days of the result.  2. If the data is representative, review mine water quality and inflow data, groundwater data and geotechnical/subsidence records to identify any adverse trends that may indicate an impact beyond previous predictions. If an impact due to mining is	1. One week 2. Two weeks to assess whether further investigation is required. Commence investigation if exceedance of Level 3 criteria identified (see Level 3 reporting requirements). 3. One to two months depending on timing of review of second data period.	Russell Vale Colliery (Environmental Manager)



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Feature	Trigger Monitoring Location	Unit	Timing/ Frequency During Mining	Purpose	Criteria	Action/ Reporting	Reporting	Responsibility
						identified progress to Level 3.		
					Level 3: Two consecutive readings above the trigger level of 0.09 mg/L	1. Inform DPIE and Water NSW 2. Investigate and report on the cause of the trigger exceedances (e.g. climatic, systemic, failure) 3. Inform DPIE and WaterNSW of investigation outcomes 4. Identify mitigation options 5. Review monitoring frequency and parameters 6. Report potential impact, and response, within six monthly reporting		Russell Vale Colliery (Environmental Manager)
Undergroun d workings	Mine inflows	Dissolved Sb	Quarterly – full metals analysis	Underground mine water quality will not impact current	Level 1: No exceedance of Level 2 or Level 3 triggers	Continue monitoring.	Report negligible impact in routine reporting.	Russell Vale Colliery (Environmental Manager)
				beneficial use of groundwater in Permian coal measures	Level 2: One reading above the trigger level of 0.03 mg/L	1. Review sampling methodology/ equipment to verify if the reading is representative. If not, resample and test within 7 days of the result.  2. If the data is representative, review mine water quality and inflow data, groundwater data and geotechnical/subsidence records to identify any adverse trends that may indicate an impact beyond previous predictions. If an impact due to mining is identified progress to Level 3.	1. One week 2. Two weeks to assess whether further investigation is required. Commence investigation if exceedance of Level 3 criteria identified (see Level 3 reporting requirements). 3. One to two months depending on timing of review of second data period.	Russell Vale Colliery (Environmental Manager)



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Feature	Trigger Monitoring Location	Unit	Timing/ Frequency During Mining	Purpose	Criteria	Action/ Reporting	Reporting	Responsibility
					Level 3: Two consecutive readings above the trigger level of 0.03 mg/L	1. Inform DPIE and Water NSW 2. Investigate and report on the cause of the trigger exceedances (e.g. climatic, systemic, failure) 3. Inform DPIE and WaterNSW of investigation outcomes 4. Identify mitigation options 5. Review monitoring frequency and parameters 6. Report potential impact, and response, within six monthly reporting	week 3. One month 4. Commence works within 2 months 5. One month	



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# Appendix B2 – Surface Water TARP LDP11

Monitoring				Trigger				
Location	Parameters	Timing / Frequency	Purpose	Level	Action/Reporting	Timing	Responsibility	
LDP11	pH EC TSS Turbidity	Monthly During discharges	To determine if mining operations are impacting surface water quality.	Level 1  Normal Operations  pH 8.0 to 8.9  EC < 2,083 µS/cm  Turbidity < 100 NTU	Continue     monitoring.		Russell Vale Colliery (Group Environment & Approvals Manager; Logistics Manager)	
				Level 2  pH  1 sample outside of 8.0 to 8.9 range (20th / 80th percentiles)  EC  1 sample greater than 2,083 µS/cm (80th percentile)  Turbidity between 100 - 300 NTU	readings at LDP 12 to determine if there is a	24 hours) 2. Immediately (within 24 hours)	Russell Vale Colliery (Group Environment & Approvals Manager; Environment Monitoring Manager; Control Room Officer)	



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Monitoring				Trigger			
Location	Parameters	Timing / Frequency	Purpose	Level	Action/Reporting	Timing	Responsibility
						1 month. Commence works within 2 months.	
					4. Review monitoring frequency and parameters	1 month.	
					5. Report potential impact, and response, within six monthly reporting		
				Level 3			
				pH:  1 sample outside of  7.5 – 9.4 range (5 <sup>th</sup> / 95 <sup>th</sup> percentiles)  EC:  1 sample greater than 2,651 μS/cm (95 <sup>th</sup> percentile)	at LDP 11 to the readings at LDP 12	24 hours)  2. Immediately (within 24 hours)	Russell Vale Colliery (Group Environment & Approvals Manager; Environment)
				Turbidity > 300 NTU	2. If a significant difference in water quality is identified at step 1, investigate potential cause of		



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Monitoring				Trigger	Trigger		
Location	Parameters	Timing / Frequency	Purpose	Level	Action/Reporting	Timing	Responsibility
					exceedances via a site inspection.  3. If the source poor water quality is identified to be originating from site Inform DPIE and NSW EPA	3. Immediately (within 24 hours)	
					4. Inform DPIE and NSW EPA of investigation outcomes	4. 1 week	
					5. Identify mitigation options	5. 1 month.  Commence works within 2 months	
					6. Review monitoring frequency and parameters	6. 1 month.	
					7. Report potential impact, and response, within six monthly reporting		



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#### LDP2

Monitoring				Trigger			
Location	Parameters	Timing / Frequency	Purpose	Level	Action/Reporting	Timing	Responsibility
LDP2	pH EC TSS	Monthly During discharges	To determine if mining operations are impacting surface water quality.	Level 1  Normal Operations  pH 8.5 to 9.1  EC < 2,434 µS/cm  TSS < 26mg/L	Continue monitoring.		Russell Vale Colliery (Group Environment & Approvals Manager; Logistics Manager)
				Level 2  pH  1 sample outside of 8.5 to 9.1 range (20th / 80th percentiles)  EC  1 sample greater than 2.434 µS/cm (80th percentile)  TSS 1 sample between 26- 50 mg/L (80th percentile and EPL limit)	1. Investigate potential cause of exceedances (e.g. climatic; systemic; failure) including comparison to EPL12 results (upstream) and proposed adjacent urbanised monitoring point (B2) and consideration of potential mine water contamination  2. Identify mitigation options		Russell Vale Colliery (Group Environment & Approvals Manager; Environment Monitoring Manager; Control Room Officer)



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Monitoring				Trigger			
Location	Parameters	Timing / Frequency	Purpose	Level	Action/Reporting	Timing	Responsibility
					<ul><li>3. Review monitoring frequency and parameters</li><li>4. Report potential impact, and response, within six monthly reporting</li></ul>	1 month.	
				Level 3  pH:  1 sample outside of  6.5 – 9.2 range (EPL limit)  EC  1 sample greater than 2,910 µS/cm (95th percentile)  TSS:  1 sample greater than 50 mg/L (EPL limit)	1. Cease discharge (if TSS trigger) 2. Inform DPIE and NSW EPA 3. Investigate and report on the cause of the trigger exceedances (e.g. climatic; systemic; failure) including comparison to EPL12 results (upstream) and proposed adjacent urbanised monitoring point (B2) and consideration of potential mine water contamination	1 week	Russell Vale Colliery (Group Environment & Approvals Manager; Environment)



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Monitoring	Monitoring			Trigger	Trigger		
Location	Parameters	Timing / Frequency	Purpose	Level	Action/Reporting	Timing	Responsibility
					4. Inform DPIE and NSW EPA of investigation outcomes  5. Identify mitigation options	1 month.  Commence works within 2 months	
					6. Review monitoring frequency and parameters	1 month.	
					7. Report potential impact, and response, within six monthly reporting		



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#### Appendix B3 – Air Quality and Greenhouse Gas TARP

#### Table B3A – TARP levels, actions and responses – particulate matter

Alarm level	Action required	Response
<ul> <li>Level 1</li> <li>Limit = 50 μg/m³</li> <li>Based on rolling 1-hour average PM<sub>10</sub> (i.e., 12 consecutive 5-minute concentrations).</li> <li>Triggered when the reading exceeds the limit consecutively for a period of 2 hours.</li> <li>Alarm does not repeat during sustained exceedance.</li> </ul>	Russell Vale Colliery Environment Manager to coordinate a desktop-based review of wind speed and direction conditions, real-time PM <sub>10</sub> concentrations at both TEOMs to determine upwind-downwind concentration and review current site operations to identify potential source of concentrations.	Should the desktop-review identify that Russell Vale Colliery operations are the contributing source of concentrations, the Environment Manager or delegate will organise increased dust control practices specific to the contributing source(s) and discuss with the Operations Manager to consider temporarily modifying operations.  Mitigation measures to be implemented will be specific to the emission source in question and are listed in Section 9.
<ul> <li>Level 2</li> <li>Limit = 80 μg/m³</li> <li>Based on rolling 1-hour average PM<sub>10</sub>.</li> <li>Triggered when the reading exceeds the limit consecutively for a period of 2 hours.</li> <li>Alarm does repeat every hour during sustained exceedance.</li> </ul>	Following completion of Level 1 actions, Russell Vale Colliery Environment Manager or delegate to undertake an in-person inspection of likely contributing source of concentrations.	If site investigations identify that Russell Vale Colliery is the contributing source of concentrations, implement additional controls, relocate or cease dust emitting activities.  Mitigation measures to be implemented will be specific to the emission source in question and are listed in Section 9.
Level 3  Limit = 200 µg/m³  - Based on rolling 1-hour average PM10.  - Triggered when the reading exceeds the limit consecutively for a period of 30 minutes.  - Alarm does repeat every 30 minutes during sustained exceedance.	Following completion of Level 1 actions, Russell Vale Colliery Environment Manager or delegate to undertake an in-person inspection of likely contributing source of concentrations.	If site investigations identify that Russell Vale Colliery is the contributing source of concentrations, cease those activities immediately (as practicable to do so). Determine and implement additional controls and/or relocate activities prior to recommencement.  NB: classified as an air quality incident.  Mitigation measures to be implemented will be specific to the emission source in question and are listed in Section 9.

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#### Table B3B - TARP levels, actions and responses - odour

ALARM LEVEL	ACTION REQUIRED	RESPONSE
Odour Performance Indicator  Detectable odour at the site boundary during site inspections.	During routine weekly site inspection walkovers, the Environment Manager or delegate to note the detection of odour.  In the event of odour detection, the Environment Manager or delegate to initiate investigation:  To determine if odour is attributed to site operations.  Review conditions and operations to identify potential root causes and implement mitigation measures as required.	<ul> <li>Investigation initiated immediately on detection of odour.</li> <li>Based on the identified source of odour emissions, mobilise and implement appropriate emission control measures to eliminate the generation of odourous emissions</li> <li>Long term (&gt;week) detections of odour to be reported to DPIE and EPA.</li> <li>Results of investigation reported to EPA within 1 week of completion.</li> <li>Commence preparation of mitigation/action plan immediately on detection of odour, as required.</li> <li>Monthly updates of investigation progress, if required by EPA and DPIE.</li> <li>Monitoring results included in annual review.</li> <li>Inform stakeholders of monitoring.</li> <li>Identify, investigate and report on impacts to air quality.</li> </ul>



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#### Table B3C – TARP levels, actions and responses – spontaneous combustion

ALARM LEVEL	ACTION REQUIRED	RESPONSE
Spontaneous Combustion Performance Indicator  Detectable signs that may indicate heating in a surface stockpile area.	During routine weekly site inspection walkovers, the Statutory Official for the mine or delegate to look for physical signs that may indicate the presence of a heating in a surface coal stockpile area.  In the event of heating detected, the Statutory Official for the mine or delegate to initiate investigation:  to determine if spontaneous combustion is occurring; and manage risks associated with any spontaneous combustion.	<ul> <li>The coal that is produced at RVC has a low propensity for spontaneous combustion.</li> <li>If a spontaneous combustion or fire event was to occur on or within the surface stockpile, the response actions would include turning the stockpile over, spreading out the material and cooling it with water to cool the product;</li> <li>Ongoing monitoring and inspection program to ensure the heating does not re-ignite;</li> <li>Investigation initiated immediately to determine the cause of the spontaneous combustion event and implementation of appropriate mitigation measures to prevent reoccurrence.</li> <li>Ongoing monitoring of coal stockpile management (e.g. loading out older coal stockpiles, sealing coal that has been stockpiled for longer than 3 months to prevent ingress of oxygen).</li> </ul>



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#### Table B3D - TARP levels, actions and responses - dust deposition

ALARM LEVEL	ACTION REQUIRED	RESPONSE
DDGs – Deposited dust (Insoluble Solids) Performance <sup>(a)</sup>	If criteria trigger value is exceeded for the rolling 12 month average the Environmental Manager is to:	To Inform stakeholders of monitoring and to Identify, investigate and report on impacts the following would occur:
<ul> <li>Indicator:         <ul> <li>Monthly insoluble solids exceed 4/g/m²/month</li> </ul> </li> <li>Annual average insoluble solids exceed 4/g/m²/month</li> <li>Performance Indicators:         <ul> <li>Repeat dust deposition gauge sampling of impacted and adjacent DDGs.</li> </ul> </li> </ul>	<ul> <li>Initiate a review of conditions and operations during the period of sampling to identify potential root causes and implement mitigation measures as required.</li> <li>Inform EPA and DPIE of exceedance as required.</li> </ul>	<ul> <li>Report exceedances of criteria immediately once results are received.</li> <li>Investigation initiated within 1 week.</li> <li>Results of investigation reported to EPA and DPIE within 1 week of completion.</li> <li>Commence preparation of mitigation/action plan within 1 week if required.</li> <li>Prepare and implement a site mitigation/action plan in consultation with EPA and DPIE if appropriate including investigation of possible mitigation measures in consultation with EPA and DPIE.</li> <li>Monthly updates of investigation progress, if required by EPA and DPIE.</li> <li>Monitoring results included in annual review.</li> </ul>

<sup>(</sup>a) Dust deposition is measured at five locations required by the approval and EPL (G01, G02, G03, G04 and G05). Dust deposition is also measured at an additional six locations (G06, G07, G09, G10, G11 and G12). Although the reporting of the data from the additional six locations is not required by the approval or the EPL, the data will be used to inform air quality management at Russell Vale Colliery.

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# Appendix B4 – Noise TARP

Level	Management/Control Action						
Level 1 Normal operation	<ol> <li>Review of measured audio data to assess whether the noise is related to site operations.</li> <li>Review of meteorological data to confirm that environmental noise measurements are valid. Measurements are deemed valid under the following meteorological conditions:         <ul> <li>No rain/hail;</li> <li>Average wind speeds (over 15-minute period) less or equal to 5 m/s at 2 m above ground level;</li> <li>Review predicted meteorological conditions to identify if noise enhancing conditions are forecast or likely to occur for the rest of the shift/assessment period of the day.</li> </ul> </li> <li>Review predicted noise impacts for the shift against observations to ensure compliance.</li> </ol>	<ul> <li>Shift Site Supervisor</li> <li>Shift Production Manager,</li> <li>Environment Monitoring Coordinator,</li> <li>Group Environment Manager</li> </ul>					
Level 2 Alarm	<ul> <li>4. Review of measured audio data to assess whether the noise is related to site operations.</li> <li>5. Review of meteorological data to confirm that environmental noise measurements are valid. Measurements are deemed valid under the following meteorological conditions: <ul> <li>No rain/hail;</li> <li>Average wind speeds (over 15-minute period) less or equal to 5 m/s at 2 m above ground level;</li> </ul> </li> <li>6. If UEP noise is audible and a significant contributor to total noise levels (Item 1), and measurements are deemed valid (Item 2): <ul> <li>Review predicted meteorological conditions to identify if noise enhancing conditions are forecast or likely to occur for the rest of the shift/assessment period of the day.</li> <li>Review predicted noise impacts for the shift against observations.</li> </ul> </li> <li>7. Prepare a priority list all plant and equipment operating on site.</li> <li>8. Modify operations on site and consider relocating or shutting down 'high priority' and then 'lower priority' operating equipment, as per the priority list, as necessary to reduce noise levels back to level 1.</li> <li>9. Record management strategies. This includes details of investigation, type of response (if any required), real-time monitoring results and actions taken.</li> </ul>	<ul> <li>Shift Site Supervisor</li> <li>Shift Production Manager,</li> <li>Environment Monitoring Coordinator,</li> <li>Group Environment Manager</li> </ul>					
Level 3 Alarm	<ol> <li>Review of measured audio data to assess whether the noise is related to site operations.</li> <li>Review of meteorological data to confirm that environmental noise measurements are valid. Measurements are deemed valid under the</li> </ol>	Shift Site     Supervisor					



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Level	Management/Control Action					
	<ul> <li>following meteorological conditions:</li> <li>No rain/hail;</li> <li>Average wind speeds (over 15-minute period) less or equal to 5 m/s at 2 m above ground level;</li> <li>If UEP noise is audible and a significant contributor to total noise levels (Item 1), and measurements are deemed valid (Item 2):</li> <li>Prepare a priority list all plant and equipment operating on site.</li> <li>Where possible, progressively relocate or shutdown 'high priority' and then 'lower priority' operating equipment as per the priority list.</li> <li>Review predicted meteorological conditions to identify if noise enhancing conditions are forecast or likely to occur for the rest of the shift/assessment period of the day.</li> <li>Review predicted noise impacts for the shift against observations.</li> </ul>	Shift Production Manager,     Environment Monitoring Coordinator,     Group Environment Manager				
	<ol> <li>Monitor changes in noise levels against operational changes.</li> <li>Monitor the changes in noise levels until noise levels drop below the alarm trigger.</li> <li>Monitor changes in meteorological conditions and noise levels and progressively reinstate equipment once noise levels have dropped below the alarm trigger.</li> <li>Record management strategies. This includes details of investigation, type of response (if any required), real-time monitoring results and actions taken.</li> </ol>					



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# Appendix B5 – Traffic TARP

	MO NITORING T			TRIGGER					
ASPECT	SITES	PARAMETERS	FREQUENCY	PURPOSE	LEVEL	ACTION / REPORTING	RESPONSIBILITY	TIMING	PURPOSE
Transport	wide and particularly along loading and transit areas.  Bellambi Lane adjacent to Colliery as identified in Noise and Air Quality Management Plans.	Driver, plant operator communication issues.  Loading/discharge delays.  Air Quality - Field Analysis: Refer to Air Quality Management Plan	Management Plan TARPs	To assess the effectiveness of air quality control measures; To assess effectiveness of noise control measures; To ensure the mine contributions for dust concentrations and deposition levels remain below relevant air quality criteria at the nearest residences;	Iraffic Inspection  Performance Indicator  1. Drivers to act in accordance with code of conduct  Criteria  Driver acts contrary to code of conduct in the opinion of the Logistics Manager.  Performance Indicator  2. Iruck wash not operational  Criteria  No loading from stockpile while truck wash not operating.	Performance Indicators:  Driver required to undertake training with periodic review		of mitigation/action plan within 1 week if required	Inform stakeholders of monitoring Identify, investigate and report on impacts to traffic, noise and air quality



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MO NIT	ORING		TRIGGER			TRIGGER		
SPECT	PARAMETERS	FREQUENCY	PURPOSE	LEVEL	ACTION / REPORTING	RESPONSIBILITY	TIMING	PURPOSE
			quality; and To provide data suitable to demonstrate compliance with the CoA.	efficient manner  Criteria  Trucks inspected to ensure in good working order, well maintained and covers fit for purpose  Performance Indicator  4. A traffic related unintended event  Criteria  The occurrence of a	Performance Indicator Review of truck condition undertaken by Logistics Manager on a weekly basis and identify potential causes of exceedances relating to noise or air quality and identify mitigation required  Criteria  If inspection reveals that trucks are in poor order the haulage contractor would be contacted immediately to rectify the problem and maintenance regime would investigated by Logistics Manager  Performance Indicator The traffic related unintended event must be reported to the Logistics Manager immediately and a report logged with DP&E where required.  Criteria The occurrence of a traffic- related unintended event			



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	MO NITORIN	G			TRIGGER			TRIGGER			
SPECT	SITES	PARAMETERS	FREQUENCY	PURPOSE	LEVEL	ACTION / REPORTING	RESPONSIBILITY	TIMING	PURPOSE		
					I was a second of the second o	Performance Indicator					
					main mine access road) or plant/equipment	Person enters control zone while heavy vehicle, plant/machinery in energised or de-energised in an unsafe position					
					Criteria	Criteria					
						Operator to advise person to immediately leave area.					
					Control of the Contro	Air Quality					
					Air Quality – refer to Air	Air Quality – refer to Air	Group Environmental Manager				
					Quality Management	Quality Management Plan Criteria					
					Criteria	Air Quality – refer to Air Quality Management Plan					
						<u>Noise</u>					
					211201111111111111111111111111111111111	Performance Indicator  Noise – refer to Noise					
					1. Noise - refer to Noise	Management Plan					
						Noise – refer to Noise Management Plan					

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# Appendix B6 – Landscape and Lighting TARP

Monitoring and Reporting	Remedial Action	Monitoring and reporting program
Visual Bunding		
Visual Inspection on site to identify:		
Damage and erosion	<ul> <li>Trace back onsite conditions or mining operations that may have contributed to the existing erosion.</li> <li>Implement new operation methods to minimise or eliminate practices detrimental to visual bunding.</li> </ul>	Opportunistically / Monthly inspection with recommendations and improvements reported in Annual Review
Damage that may affect structural integrity and stability of bunding	<ul> <li>Engage an engineer to inspect and report on suitable rectification or remedial works.</li> <li>Carry-out rectification or remedial work as recommended.</li> </ul>	Quarterly with recommendations and improvements reported in Annual Review
Potential environmental or operational impacts that may affect the bunding.	Develop and implement site planning strategies to minimise environmental or operational processes impacting the visual bunding.	Quarterly with recommendations and improvements reported in Annual Review
Screen Planting		
Visual Inspection on site to monitor:		
Insect and disease	<ul> <li>Period of treatment: Until the problem has been eliminated.</li> <li>Chemical spray: Apply in accordance with manufacturers label and Pesticide Act.</li> </ul>	Quarterly with results reported in Annual Review
Stakes and ties	<ul> <li>Removal: If plants are robust with well-developed systems and no longer require support, remove stakes and ties.</li> </ul>	At end of first full growing season

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Monitoring and Reporting	Remedial Action	Monitoring and reporting program
Weeding	General Requirement: Remove unwanted broadleaf plants and grasses considered invasive to the locality.	Quarterly with results reported in Annual Review
	<ul> <li>Vigorous ground covers: keep 200mm clear from the base of any shrub or tree. Remove as follows: Small areas – by hand and large areas – Proprietary herbicides.</li> </ul>	
	Herbicide application to be applied as follows: To the manufacturer's instructions and Safety Data Sheets (SDS), when the weather is humid with moderate temperatures and maximum sunlight, when the ground has recommended soil moisture, and avoid windy days or if rain is likely to follow within 12 hours.	
Visual Inspection from the nominated viewpoints in sect	ion 6.5 'Sensitive Views' to identify effectiveness of:	
Screen planting at screening mining infrastructure and mining operations (including noise walls and buildings).	Identify areas where screening is limited or not effective and produce a planting plan / strategy for additional supplementary planting.	Quarterly with results and improvements reported in Annual Review
Noise Walls & New Cladding		
Visual Inspection on site to identify:		
Required general maintenance	Identify areas of structures that require general maintenance such as cleaning, painting or repair.	Quarterly
	<ul> <li>Carry-out remedial cosmetic repair and painting as required to match the original materials and finishes nominated.</li> </ul>	
Damage	<ul> <li>Identify damage to structures that may affect their Structural integrity and are a risk to people's safety.</li> </ul>	Opportunistically / when damage occurs
	<ul> <li>Engage an engineer to inspect and report on suitable rectification or remedial works.</li> </ul>	
	<ul> <li>Carry-out rectification or remedial work as recommended. Match the original materials and finishes nominated.</li> </ul>	
Visual Inspection from the nominated viewpoints in sect	ion 6.5 Sensitive Views to identify impacts of lighting to:	

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Monitoring and Reporting	Remedial Action	Monitoring and reporting program
Nominated materials and finishes to noise walls and buildings at blending as far as possible with the surrounding landscape.	<ul> <li>Identify issues arising that are impacting the effectiveness of the noise walls and building that affect their ability to no longer blend as far as possible with the surrounding landscape.</li> </ul>	Annually with recommendations and improvements reported in Annual Review
Lighting		
Visual Inspection on site to identify:		
Initial Lighting Audit	<ul> <li>Audit the existing lighting at RVC against Australian Standard AS4282.</li> <li>Develop a Corrective Action Plan (CAP) to rectify any non-conformances with the standard.</li> </ul>	Audit within 3 months of this VIMP being approved by the secretary.  Implement any corrective actions within 3 months of the CAP being developed.
Required general maintenance and adjustment	<ul> <li>Identify lighting that require general maintenance such as cleaning, or repair.</li> <li>Identify lighting that requires adjustment to improve illumination of mining operation.</li> <li>Review lighting impacts to off-site neighbouring areas following required adjustments.</li> </ul>	Monthly internal inspections and/or on receipt of complaint
Annual maintenance and adjustment	Engage an engineer to inspect and report on improvements or adjustments to existing lighting.	Annual external audit with recommendations and improvements reported in Annual Review
Additional lighting requirements	<ul> <li>Engage a consultant/engineer to identify and design suitable locations for proposed lighting.</li> </ul>	As required



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Monitoring and Reporting	Remedial Action	Monitoring and reporting program			
Visual Inspection from the nominated viewpoints in Sect	Visual Inspection from the nominated viewpoints in Section 5.4 Viewpoints to identify impacts of lighting to:				
Off-site, boundaries and neighbouring areas	<ul> <li>Identify areas where lighting impacts effect off-site areas.</li> <li>Identify lighting impacts caused by the adjustment of lighting.</li> <li>Adjust lighting onsite to minimise or remove lighting impacts.</li> <li>Vehicle lighting impacts – limit use of high beam through regular training of operators.</li> </ul>	When adjustments to lighting occur Training records Monthly during internal inspection Annually during external audit On receipt of complaint			



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# Appendix B7 – Waste Management TARP

Aspect	Monitoring				Trigger	Trigger				
	Site	Parameters	Frequency	Purpose	Level	Action/ Reporting	Responsibility	Timing	Purpose	
Waste	WCL Russell Vale Colliery	Routine visual inspection of waste disposal areas. Water quality monitoring as specified in EPL/WMP.	Regular inspection and after significant rainfall events.	To evaluate the effectiveness of waste management controls	Level 1 No waste management issues.  Level 2 Waste management deficiencies or changes observed.  Level 3 Significant waste management deficiencies observed or involving hazardous or special waste. Water quality exceeds relevant criteria. Project specific contamination criteria exceeded.	Complete Environmental Inspection Checklist and check waste tracking reports. Level 1 No notification required, continue checking. Level 2 Notify Environment Manager. Organise clean up. Level 3 Confirmation of monitoring results (if relevant). Notify Environment Manager. Investigation of cause. Proposed remediation options and implement strategy. Appropriate notifications made to DPIE, EPA and other regulators. Maintain	Environment Manager	Report deficiencies once identified. Organise immediate clean up. Investigation initiated and immediately reported to relevant agencies. Incidents managed through WCL EMS procedures.	Identify any deficiencies in waste minimisation and management.	

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Aspect	Monitoring			Trigger					
	Site Parameters Frequency Purpose		Level	Action/	Responsibility	Timing	Purpose		
						Reporting			
						asbestos and			
						contaminate			
						land register.			



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# Appendix B8 - Aboriginal Cultural Heritage TARP

Assast	Monitoring				Trigger			
Aspect	Sites	Parameters	Frequency	Purpose	Level	Action/Reporting	Responsibility	Timing
	Aboriginal heritage sites (Stage 1):  Bulli Mine Shaft 20 (AHIMS 52-3- 0311) Bulli Mine		Baseline archival recording 3 months prior to second workings within 350m of site.		Within prediction (Level 1):  No change in site condition observed.  • Less than 100mm recorded subsidence.	Continue monitoring.     Report negligible impact in six monthly reports.	Russell Vale Colliery (Environmental Manager)	• Six monthly reporting.
Aboriginal Heritage	Shaff 29 (AHIMS 52-3-0313)  Bulli Mine Shaff 26 (AHIMS 52-3-0323) Bulli Mine Shaff 27 (AHIMS 52-3-0325) Wonga East 4 (AHIMS 52-2-4170) Wonga East 5 (AHIMS 52-2-4171)	Baseline recording.  Visual inspections and comparative photograph monitoring regime.	Continuous subsidence monitoring using GNSS units within the extraction area.  Six monthly monitoring from the commencement of mining within 350m of the site.  Final assessment recording within 12-24 months of second workings mining being completed within 350m of site.	To determine if subsidence effects resulting from bord and pillar mining system result in impacts to Aboriginal heritage sites and the heritage values of those sites.	Within prediction (Level 2): Change in site condition is observed but the heritage values of the site are not impacted.  • Greater than 100mm and less than 300mm recorded subsidence.  • Cracking in sandstone platforms or shelter walls/ceilings.	Continue monitoring but at increase intervals of monthly monitoring.  Inform DPIE, Resources Regulator, Heritage NSW and RAPs of potential impact, and consult on proposed adaptive management and, if required, remediation.  Undertake site inspection with RAPs to document and photograph any observed changes / impacts.  Investigate potential cause of observed changes in site condition.  Where the investigation identifies mining as a likely cause of the changes, consultation and meetings with RAPs to determine the most appropriate mitigation measures and management of the site.	Russell Vale Colliery (Environmental Manager)	DPIE, Heritage NSW and RAPs informed within one week.      Investigations into potential cause of observed changes to be commenced within 2 days of being detected.      Six monthly reporting.

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	Monitoring				Trigger			
Aspect	Sites	Parameters	Frequency	Purpose	Level	Action/Reporting	Responsibility	Timing
					along existing joints and/or bedding planes.  • Changes to the water seepage patterns or water flow regime through the sandstone.	Cease operations and implement adaptive management if assessed as a requirement  Review the mine plan for future mining areas to avoid impacts to sites potentially impacted by future second workings  Report potential impacts in six monthly reports.		
					Exceeding prediction (Level 3):  Change in site condition is observed, and the heritage values of the site are impacted.  • Greater than 300mm recorded subsidence.	<ul> <li>Continue monitoring.</li> <li>Inform DPIE, Resources Regulator, Heritage NSW, and RAP of potential impact.</li> <li>Undertake site inspection to document and photograph any observed changes / impacts.</li> <li>Investigate potential cause of observed changes in site condition.</li> <li>Where the investigation identifies mining as a likely cause of the changes, consultation on potential remediation / mitigation action will be undertaken with Heritage NSW and RAP.</li> <li>Cease operations and implement adaptive management and contingency plan.</li> <li>Review the mine plan for future mining areas to avoid impacts to</li> </ul>	Russell Vale Colliery (Environmental Manager)	DPIE, Heritage     NSW and RAP     informed within     one week.      Investigations     into potential     cause of observed     changes to be     commenced     within 2 days of     being detected.      Commence     preparation of     mitigation/action     and monitoring     plan within one     week (if required).      Within 14 days of     the exceedance     occurring, submit a     report to the DPIE     and Heritage NSW     describing the     remediation     options and any

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Associ	Monitoring				Trigger				
Aspect	Sites	Parameters	Frequency	Purpose	Level	Action/Reporting	Responsibility	Timing	
						sites potentially impacted by future second workings.  • Use appropriate specialists to undertake physical remediation activities.  • Report potential impacts in six monthly reports.		preferred remediation measures of other course of action  • Six monthly reporting.	



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# Appendix B9 - Non-Aboriginal TARP - Non Subsidence

A 1	Monitoring				Trigger			
Aspect	Sites	Parameters	Frequency	Purpose	Level	Action/Reporting	Responsibility	Timing
					Within prediction (Level 1):  No change in site condition observed.	Continue monitoring.     Report negligible impact in six monthly reports.	Russell Vale Colliery (Environmental Manager)	End of panel reporting.
Non Aboriginal Heritage	Historical heritage sites:  1. South Bulli Colliery	Visual inspection and photographic records of heritage items.  As per updated CMP	Routinely inspected on a 6 monthly basis.  Revised CMP within 12 months of commencement.  Final assessment recording as part of mine closure sign-off process.	To determine if pit top operations have had an impact on the heritage value of sites (noting the operational nature of the site).	Within in prediction (Level 2): Change in site condition is observed, but the heritage values of the site are not impacted.	Continue monitoring.      Inform DPIE, WCC and Heritage NSW of potential impact.      Undertake site inspection to document and photograph any observed changes / impacts.      Investigate potential cause of observed changes in site condition and, if identified as potential caused by mining, review management procedures.      Report potential impacts in six monthly reports.	Russell Vale Colliery (Environmental Manager)	DPIE, WCC and Heritage NSW informed within one week.     Investigations into potential cause of observed changes to be commenced within 2 days of being detected.     Six monthly reporting.
					Exceeding prediction (Level 3):  Change in site condition is observed, and the heritage	Continue monitoring.  Inform DPIE, WCC and Heritage NSW of potential impact.  Implement adaptive	Russell Vale Colliery (Environmental Manager)	<ul> <li>DPIE, WCC and Heritage NSW informed within one week.</li> <li>Investigations into potential cause of</li> </ul>

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A 1	Monitoring				Trigger			
Aspect	Sites	Parameters	Frequency	Purpose	Level	Action/Reporting	Responsibility	Timing
	Sires	rarameters	rrequency	rurpose	values of the site are impacted.	management and contingency plan  • Undertake site inspection to document and photograph any observed changes / impacts.  • Investigate potential cause of observed changes in site condition.  • Where the investigation identifies mining as a likely cause of the changes, consultation on potential remediation / mitigation works will be conducted with Heritage NSW and WCC.  • Use appropriate specialists to undertake physical remediation activities.	Responsibility	observed changes to be commenced within 2 days of being detected.  • Commence preparation of mitigation/action and monitoring plan within one week (if required).  • Within 14 days of the exceedance occurring, submit a report to the DPIE, WCC and Heritage NSW describing the remediation options and any
						Report potential impacts in six monthly reports.		preferred remediation measures of other course of action  • Six monthly
								• Six monthly reporting.



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# Appendix B10 - Non-Aboriginal TARP - Subsidence

A	Monitoring				Trigger			
Aspect	Sites	Parameters	Frequency	Purpose	Level	Action/Reporting	Responsibility	Timing
					Within prediction (Level 1):  No change in site condition observed.  • Less than 100mm recorded subsidence.	Continue monitoring.     Report negligible impact in six monthly reports.	Russell Vale Colliery (Environmental Manager)	• End of panel reporting.
Non Aboriginal Heritage	Historical heritage sites:  1. Cataract Dam	Subsidence monitoring	Impact assessment recording, within six months after each predicted subsidence movement at the site (that is when the bord and pillar mining system is closest traverse to the FSL of Cataract Reservoir).  Final assessment recording within 6 months of completion of all subsidence movements at the site.	To determine if subsidence effects resulting from bord and pillar mining system result in impacts to the heritage values of Cataract Dam.	Within in prediction (Level 2):  Change in site condition is observed, but the heritage values of the site are not impacted.  • Greater than 100mm and less than 300mm recorded subsidence.	Continue monitoring.     Inform DPIE and Heritage NSW of potential impact.      Undertake site inspection to document and photograph any observed changes / impacts.      Investigate potential cause of observed changes in site condition and, if identified as potential caused by mining, review management procedures.      Report potential impacts in six monthly reports.	Russell Vale Colliery (Environmental Manager)	DPIE and Heritage NSW and informed within one week.     Investigations into potential cause of observed changes to be commenced within 2 days of being detected.     Six monthly reporting.
					Exceeding prediction (Level 3):  Change in site condition is observed, and the heritage	Continue monitoring.     Inform DPIE and Heritage NSW of potential impact.     Implement adaptive management an contingency	Russell Vale Colliery (Environmental Manager)	DPIE and Heritage NSW and informed within one week.     Investigations into potential cause of observed changes to be commenced

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Aspect	Monitoring				Trigger	Trigger			
	Sites	Parameters	Frequency	Purpose	Level	Action/Reporting	Responsibility	Timing	
					values of the	plan		within 2 days of	
					site are impacted.	Undertake site inspection to		being detected.	
					impacteu.	document and photograph any		Commence	
					Greater than	observed changes / impacts.		preparation of	
					300mm	•Investigate potential cause of		mitigation/action an	
					recorded	observed changes in site		monitoring plan	
					subsidence.	condition.		within one week (if	
						Where the investigation		required).	
						identifies mining as a likely		Within 14 days of	
						cause of the changes,		the exceedance	
						consultation on potential		occurring, submit a	
						remediation / mitigation works		report to the DPIE	
						will be conducted with Heritage NSW.		and Heritage NSW	
						NSVV.		describing the remediation options	
						Review mine planning for future		and any preferred	
						mining areas to avoid further		remediation	
						impacts		measures of other	
								course of action	
						Use appropriate specialists to undertake physical remediation			
						activities.		Six monthly	
						don'inoo.		reporting.	
						Report potential impacts in six monthly reports.			