NARRABRI MINE

AIR QUALITY MANAGEMENT PLAN

	NARRABRI MINE ENVIRONMENTAL MANAGEMENT SYSTEM	Document owner:	Environmental Superintendent
		Document approver:	General Manager
		Revision period:	3 years
		Revision:	0B
		Last revision date:	16 August 2023

WHC_PLN_NAR_AIR QUALITY MANAGEMENT PLAN

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Onward document number:
NCO-006-2-0B-PLN

Acronyms and abbreviations

Acronym	Description
^{o}	degrees
^{o}C	degrees Celsius
AQMP	Air Quality Management Plan
BoM	Bureau of Meteorology
CCC	Community Consultative Committee
CF	cut and flit
CHPP	Coal Handling and Preparation Plant
DPE	NSW Department of Planning and Environment
EMS	Environmental Management Strategy
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
EPA	NSW Environment Protection Authority
EPL	Environment Protection Licence under the POEO Act
g/m^2/month	grams per square metre per month
HSE	Health, Safety & Environment
HVAS	high volume air samplers
IEA	Independent environmental audit
km	kilometre
m/s	meters per second
ML	Mining Lease
mm	millimetre
Mtpa	million tonnes per annum
NCOPL	Narrabri Coal Operations Pty Ltd
PCI	pulverized coal injection
PM_{10}	Particulate matter less than 10 µm in aerodynamic equivalent diameter
POEO Act	*Protection of the Environment Operations Act 1997* (NSW)
ROM	Run of mine
SoC	Statement of Commitments
TARP	Trigger Action Response Plan
tph	tonnes per hour
µg/m^3	micrograms per cubic meter
µm	micrometres
W/m^2	watts per square metre
WHC	Whitehaven Coal Limited

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1. Introduction

1.1 Background

The Narrabri Mine is an existing underground coal mining operation situated in the Gunnedah Coalfield. It is located approximately 25 kilometres (**km**) south-east of Narrabri and approximately 60 km north-west of Gunnedah, within the Narrabri Shire Council Local Government Area in New South Wales (**NSW**). The Narrabri Mine includes an underground coal mine, a coal handling and preparation plant and associated rail siding and surface infrastructure.

The Narrabri Mine is operated by Narrabri Coal Operations Pty Ltd (**NCOPL**), on behalf of the Narrabri Mine Joint Venture, which consists of two Whitehaven Coal Limited (**WHC**) wholly owned subsidiaries, and other joint-venture partners[1]. The underground mine is covered by Mining Lease (**ML**) 1609 which covers an area of 5,298 hectares (**ha**) for the predominant purpose of mining for coal from the Hoskissons Coal Seam.

Stage 1 of the Narrabri Mine was approved in November 2007 under Part 3A of the *Environmental Planning and Assessment Act 1979* (**EP&A Act**). Construction of the mine and supporting infrastructure commenced in 2008, with production using a continuous miner commencing in 2010. Following the approval of the Stage 2 Environmental Assessment (R.W Corkery & Co., 2009) (the **EA**) and the issue of the Stage 2 Project Approval 08_0144 (**Project Approval**) in July 2010, and *Environment Protection and Biodiversity Conservation Act 1999* approval (**EPBC 2009/5003**) in January 2011, the Narrabri Mine was converted to an 8 million tonnes per annum (**Mtpa**) run of mine (**ROM**) longwall mining operation, which commenced in 2012.

The Project Approval has subsequently been modified on a number of occasions. The environmental assessment for Modification 5 (Resource Strategies, 2015), approved in December 2015, changed the mine geometry by reducing the number of longwall (**LW**) panels from 26 to 20, increased some LW panel widths and increased the production to 11 Mtpa of ROM coal until July 2031.

Modification 7, the most recent modification of the Project Approval, was approved on 23 November 2021. The environmental assessment for Modification 7 (Resource Strategies, 2021) describes the change in mining method within the extent of the previously approved LW 201 and LW 202 and allows for up to 0.7 Mtpa via bord and pillar extraction at pillar reduction panels Cut and Flit (**CF**) 201 to CF 205. There is no change to the previously approved longwall panels LW 203 to LW 209. The bord and pillar mining will occur concurrently with existing longwall operations for a period of approximately five years, with the maximum ROM coal production rate remaining within the approved limit of 11 Mtpa.

The Narrabri Mine Stage 2 underground mining layout is shown in Figure 1-1.

[1] For full details on the joint venture ownership, refer to the introduction of the Environmental Management Strategy.

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LEGEND

- ML 1609
- Stage 2 underground mining layout
- Namoi River pipeline
- Ventilation complex (upcast-decommissioned)
- Ventilation complex (upcast)
- Ventilation complex (downcast)
- Highway
- Roads
- Railway
- Watercourse
- State forest

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Figure 1-1

Underground Mining Layout

1.2 Purpose and scope

This Air Quality Management Plan (**AQMP** or **Plan**) has been developed in accordance with Schedule 4 Condition 7A of the Project Approval, the Environment Protection Licence (**EPL**) 12789, and the applicable regulatory framework regarding air quality in NSW.

The AQMP forms part of the Narrabri Mine Environmental Management Strategy (**EMS**).

1.3 Objectives

The objectives of this Plan are to:

- provide details of the relevant statutory requirements, including any relevant approval, licence or lease conditions;
- provide detail on the ambient air quality surrounding Narrabri Mine;
- describe the measures to be implemented to ensure compliance with relevant air quality criteria and operating conditions of the Project Approval;
- describe the air quality management system in detail;
- include an air quality monitoring program that:
  - supports the proactive and reactive air quality management system;
  - evaluates the effectiveness of the air quality management system and compliance with the air quality operating conditions; and
  - defines what constitutes an air quality incident, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any air quality incidents.
- detail the regulatory reporting requirements;
- describe the protocol for periodic review of this Plan; and
- identify the roles and responsibilities for implementation of this Plan.

1.4 Preparation and consultation

NCOPL have been preparing the draft AQMP for the site to comply with the conditions of the approved Narrabri Mine Stage 3 Extension Project (SSD 10269). However, due to an unexpected delay in receiving Commonwealth approval for the Stage 3 Project, NCOPL have revised the secondary approval strategy to ensure the continuation of mining operations under the current Stage 2 Project Approval (PA 08_0144). This requires the Stage 2 AQMP to be prepared in accordance with Schedule 4 Condition 7A of the Project Approval, which will replace the existing Air Quality Monitoring Program (May, 2015).

In accordance with Schedule 4 Condition 7A, the draft AQMP (Rev 0) was provided to the NSW Environment Protection Authority (EPA) for review and comment on 6 July 2023. Appendix A provides the EPA consultation correspondence letter dated 11 July 2023.

1.5 Access to information

In accordance with Schedule 6 Condition 10 of the Project Approval, the approved AQMP, audits and reports, and summaries of all monitoring data (where relevant) will be made publicly available on the WHC website. All information will be kept up to date. Note that any printed copies of this AQMP are uncontrolled.

2. Roles and responsibilities

All NCOPL employees and contractors (and their sub-contractors) are responsible for the environmental performance of their activities and for complying with all legal requirements and obligations. All personnel will be required to comply with the statutory approval requirements of the activities they undertake, and any potential environmental impacts from all activities will be managed in accordance with the relevant strategies, plans and programs.

In accordance with Schedule 6 Condition 1 of the Project Approval, the EMS sets out the roles, responsibilities, authorities and accountabilities of all key personnel involved in the environmental management of operations at Narrabri Mine, which encompasses the requirements and obligations under this AQMP.

3. Statutory requirements

3.1 Environmental Planning and Assessment Act 1979

The EP&A Act provides the statutory basis and framework for planning and environmental assessment in NSW. The EP&A Act includes provisions to ensure that the potential environmental impacts of a development are assessed and considered in the decision-making process. The original approvals for the Narrabri Mine were obtained under the Part 3A, 'Major Projects' provisions of the EP&A Act. While Part 3A has since been repealed, it remains applicable to NCOPL under transitionary provisions.

3.1.1 Project Approval

This Plan has been developed in accordance with Schedule 4 Condition 7A of the Project Approval. In accordance with Schedule 6 Condition 2(b), Appendix B, Table B-1 provides a summary of the relevant Project Approval conditions relating to air quality and outlines the section of the AQMP in which each of these conditions have been addressed.

In accordance with Schedule 6 Condition 2 of the Project Approval, the AQMP must include:

- relevant limits or performance measures/criteria and specific performance indicators for air quality;
- a description of the measures to comply with the relevant statutory requirements, limits, or performance measures/criteria;
- a program to monitor and report on the:
  - impacts and environmental performance of the air quality management system; and
  - effectiveness of any management measures.
- a contingency plan to manage any unpredicted impacts and their consequences; and
- a program to investigate and implement ways to improve the environmental performance of the project over time.

The Statement of Commitments (**SoCs**) (Appendix 3 to the Project Approval) relating to air quality are detailed in Appendix B, Table B-2 which includes a cross reference to the section of the AQMP where each of these commitments have been addressed.

3.2 Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* (**POEO Act**) regulates pollution from a facility or activity through the placement of conditions in an EPL. Activities requiring an EPL are listed in Schedule 1 of the POEO Act and include mining for coal and coal works.

Section 124 of the POEO Act makes it an offence to operate any plant (other than domestic plant) at those premises in such a manner as to cause air pollution from those premises if the air pollution is caused by the occupier's failure to maintain the plant in an efficient condition, or to operate the plant in a proper and efficient manner. Section 129 of the POEO Act states that the occupier of a premises must not cause or permit the emission of any offensive odour. Under section 148 of the POEO Act, duties are imposed on employers and employees to notify the EPA where a pollution incident causes or threatens material harm to the environment.

The *Protection of the Environment Operations (Clean Air) Regulation 2021* is the key regulatory mechanism in NSW for reducing emissions of harmful pollutants in the air and is integral to the administration of the POEO

Act. The *Protection of the Environment Operations (General) Regulation 2021* gives effect to, and requires compliance with, the *National Environment Protection (National Pollutant Inventory) Measure 1998*. The regulation establishes reporting requirements for industrial facilities in NSW and also prescribes the offences for which penalty notices may be issued.

3.2.1 Environment protection licence

NCOPL is the holder of EPL 12789. In accordance with Schedule 6 Condition 2(b) of the Project Approval, Appendix B, Table B-3 provides a summary of the relevant EPL conditions relating to air quality and outlines the section of the AQMP in which each of these conditions have been addressed.

3.3 Mining Act 1992

The Mining Act 1992 (Mining Act) provides an integrated framework for the effective regulation of authorisations for prospecting and mining operations and compensation to landholders for loss or damage resulting from such operations. The Act also encourages ecologically sustainable development by ensuring mineral resources are identified and developed in ways that minimise impacts on the environment.

3.3.1 Mining lease

NCOPL are the holder of ML 1609 issued in January 2008. NCOPL are required to implement all practicable measures to prevent and/or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the development.

3.4 Relevant guidelines and standards

The following guidelines have been utilised during the preparation of this AQMP:

- *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (EPA, 2022) (**Approved Methods [Modelling and Assessment]**);
- *Approved Methods for Sampling and Analysis of Air Pollutants in NSW* (EPA, 2022) (**Approved Methods [Sampling and Analysis]**);
- AS 3580.1.1 "*Methods for Sampling and Analysis of Ambient Air: Guide to Siting Air Monitoring Equipment"*;
- AS 3580.9.6 "*Methods for sampling and analysis of ambient air – Determination of suspended particulate matter PM_{10} high volume sampler with size–selective inlet – Gravimetric Method*"; and
- AS 3580.10.1 *"Methods for sampling and analysis of ambient air - Part 10.1: Determination of particulates - Deposited matter - Gravimetric method".*

4. Existing environment

4.1 Background air quality

Particulate Matter (**PM_{10}**) and dust deposition data has historically been collected from a number of air quality monitors in the vicinity of Narrabri Mine. PM_{10} concentrations are measured by two high volume air samplers (**HVAS**), located to the southwest of the Narrabri Mine Pit Top Area. Deposited dust is measured by dust deposition gauges, primarily located on mine-owned land.

Measured PM_{10} data captured over nine years (2014 to 2021) by two HVAS located near the Pit Top Area recorded 11 exceedances of the EPA criteria (for 24-hour and annual average periods), however these results were influenced by agricultural activities, roadworks and extraordinary events that are not mine related such as regional dust events and/or bushfires etc. Since 2014, all deposited dust monitoring locations have been below the annual average EPA criteria of 4 grams per square metre per month (g/m^2/month).

Table 4-1 details the background levels (representative of the underground mine and contributions from all sources) that were used to assess potential air quality impacts from the Narrabri Mine. These background levels apply to all sensitive receptors.

Table 4-1 Background levels that apply at sensitive receptors

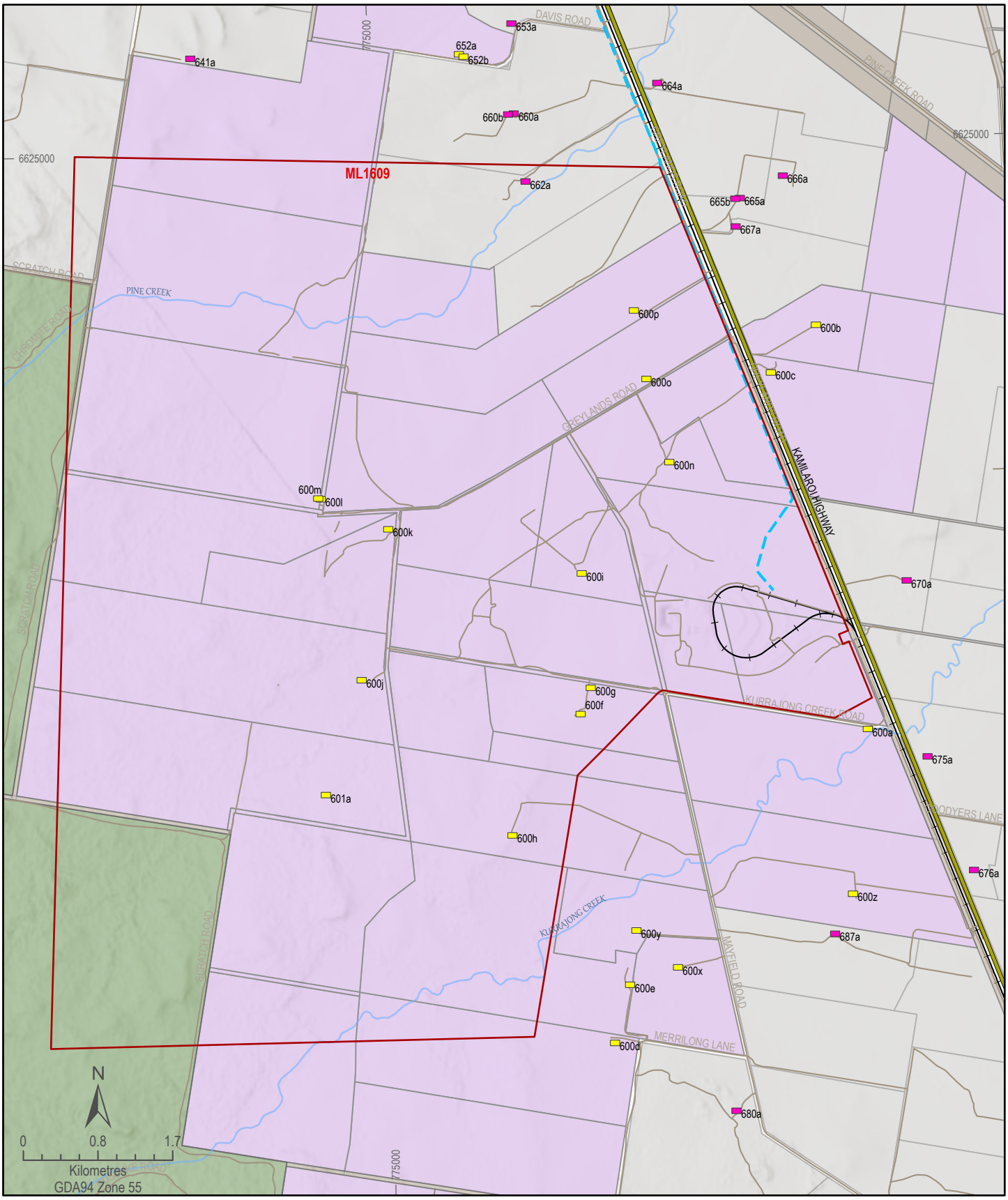
Pollutant	Averaging time	Background levels at sensitive receptors
Particulate matter (PM_{10})	24-hour	Variable by day
	Annual	11 µg/m^3
Deposited dust	Annual	1.7 g/m^2/month

Source: Jacobs (2020)

4.2 Sensitive receptors

The Approved Methods (Modelling and Assessment) defines a sensitive receptor as “a location people are likely to work or reside; this may include a dwelling, school, hospital, office or public recreational area”. This has also been interpreted as places of near-continuous occupation.

The sensitive receivers identified in and around the Narrabri Mine are shown in Figure 4-1.



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LEGEND

- ML 1609
- NCOPL-owned land
- Privately-owned land and other land
- Private dwelling
- NCOPL-owned dwelling
- Crown land
- Namoi River pipeline
- Highway
- Roads
- Railway
- Watercourse
- State forest

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Figure 4-1

Nearest Sensitive Receivers

5. Air quality management system

5.1 Performance measures and indicators

Schedule 6 Condition 2 of the Project Approval requires that management plans include;

- relevant limits or performance measures/criteria; and
- specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the project or any management measures.

Table 5-1 Performance measures and indicators establishes performance indicators for each performance measure listed under Schedule 4 Condition 7 of the Project Approval.

Section 7 details actions to be undertaken when a performance measure or indicator is not met, and section 8 details methods of evaluation.

Table 5-1 Performance measures and indicators

Performance measure	Performance indicator	Review timing	Review method
Implement all reasonable and feasible measures to minimise odour, fume and dust emissions.	No odour complaints received.	As required	Complaints management (section 9)
	No exceedances of air quality criteria.	Dust deposition – monthly HVAS – every six days	Continuous and monthly monitoring (section 5.5.3)
	Management measures listed in section 5.3 are implemented. Annual reviews and independent audits confirm successful implementation and management.	Annually	Annual report Independent Environmental Audit (section 8)
Implement all reasonable and feasible measures to minimise release of greenhouse gas emissions.	Management measures listed in section 5.3 are implemented. Annual reviews and independent audits confirm successful implementation and management.	Annually	Annual report Independent Environmental Audit (section 8)
Operate a comprehensive air quality management system that uses a combination of predictive meteorological forecasting and real-time air quality monitoring data to guide the day-to-day planning of operations.	Meteorological monitoring described in section 5.5.4 is operational. TARP (Appendix C) is activated when conditions require.	Daily	Shift change and toolbox talks
Implement proactive and reactive air quality mitigation measures to ensure compliance with the relevant conditions of the Project Approval.	No exceedances of air quality criteria.	Dust deposition – monthly HVAS – every six days	Continuous and monthly monitoring (section 5.5.3)
	Management measures listed in section 5.3 are implemented. Annual reviews and independent audits confirm successful implementation and management.	Annually	Annual report Independent Environmental Audit (section 8)
Minimise any visible air pollution.	No complaints received.	As required	Complaints management (section 9)
Minimise the air quality impacts of the development during adverse meteorological conditions and extraordinary events.	No exceedances of air quality criteria.	Dust deposition – monthly HVAS – every six days	Continuous and monthly monitoring (section 5.5.3)

5.2 Potential air quality impacts and criteria

No exceedances of the EPA criteria are predicted at any sensitive receptor for:

- 24-hour average PM_{10} concentrations;
- annual average PM_{10} concentrations;
- total suspended solids concentrations or;
- dust deposition levels.

Therefore, it is expected that the development and operation of Narrabri Mine will not lead to adverse air quality impacts at any private sensitive receptor.

5.2.1 Air quality criteria

In accordance with Schedule 4 Condition 6 of the Project Approval, NCOPL will ensure that dust emissions generated by mining operations do not cause additional exceedances of the criteria listed in Table 5-2, Table 5-3 and Table 5-4 at any residence on privately-owned land.

Table 5-2 Long term impact assessment criteria for particulate matter

Pollutant	Averaging period	[d] Criterion
Total suspended particulate (TSP) matter	Annual	[a] 90 µg/m^3
Particulate matter < 10 µm (PM_{10})	Annual	[a] 30 µg/m^3

Notes:
a Total impact (i.e. incremental increase in concentrations due to the project plus background concentrations due to all other sources).
d Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents or any other activity agreed by the Secretary.

Table 5-3 Short term impact assessment criteria for particulate matter

Pollutant	Averaging period	[d] Criterion
Particulate matter < 10 µm (PM_{10})	24-hour	[a] 50 µg/m^3

Notes:
a Total impact (i.e. incremental increase in concentrations due to the project plus background concentrations due to all other sources).
d Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents or any other activity agreed by the Secretary.

Table 5-4 Long term impact assessment criteria for deposited dust

Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level
[c] Deposited dust	Annual	[b] 2 g/m^2/month	[a] 4 g/m^2/month

Notes:
a Total impact (i.e. incremental increase in concentrations due to the project plus background concentrations due to all other sources).
b Incremental impact (i.e. incremental increase in concentrations due to the project on its own).
c Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, *AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method*.

5.3 Potential odour impacts and criteria

NCOPL identified that algae and bacteria in the existing brine storage ponds have previously led to off-site odour impacts. Specifically, this occurred from anaerobic areas of the dam due to no circulation or agitation below the water surface. Control measures implemented to reduce potential for off-site odour impacts include the introduction of algaecide to brine and mechanical aeration of the brine ponds.

Additionally, odour and other substances can be generated from the spontaneous combustion of coal via self-heating when coal and other carbonaceous materials undergo an exothermic reaction when exposed to oxygen in the air, to generate heat. This process causes the temperature of the material to rise which, in turn, accelerates the oxidation and the heat generation process. As the material temperature rises above about 70ºC, the temperature acceleration is rapid enough to result in ignition of the material. This ignition is referred to as spontaneous combustion and results in the emission of noxious gases including carbon dioxide, carbon monoxide, sulphur dioxide, hydrogen sulphide, nitrogen oxides and a range of volatile organic compounds. These emissions can lead to nuisance odour effects.

NCOPL has not reported any issues relating to the spontaneous combustion of coal that would have led to off-site odour impacts, and Narrabri Mine does not have a history of material spontaneous combustion issues. Therefore, it is not predicted that offsite odour impacts will occur as a result of spontaneous combustion.

Other potential odour impacts may occur from the ventilation system which have previously been quantified. Computer-based dispersion modelling was used to predict off-site odour levels due to emissions from ventilation, goaf gas and pre-drainage ventilation points. Model predictions (up to 0.5 odour units compared to a criterion of 6 odour units) showed that the odour impacts due to the ventilation system are negligible. It is anticipated that adverse odour impacts from this source would not arise from the ventilation system.

5.3.1 Odour criteria

NCOPL must ensure that no offensive odours, as defined under section 129 of the POEO Act, are emitted from the site.

5.4 Management measures

5.4.1 Air quality

Dust mitigation

Air quality impacts during surface development activities will largely result from dust generated during earthworks and associated construction of services corridors and access tracks, mine ventilation infrastructure, gas management infrastructure, and water management infrastructure. Implementation of the proactive controls listed below will be applied during mining operations and infrastructure development activities and are consistent with the SoCs (Appendix B):

- enclosure of the Coal Handling and Preparation Plant (**CHPP**), rotary breaker and conveyors (where practicable);
- construction of a perimeter amenity bund and windbreaks;
- water sprays on ROM and product coal stockpiles and transfer points;
- surface conveyors fitter with appropriate cleaning and collection devices to minimise the amount of material falling from the return conveyor belts;

- regular maintenance and application of water on unsealed surfaces including haul roads and minor unsealed roads;
- water sprays on all continuous miners, longwall unit and breaker feeder;
- drillers to assess dust source and wet down affected area (i.e. water truck) during drilling activities;
- conduct soil stripping at a time when there is sufficient soil moisture to prevent significant lift-off of dust (where practicable);
- soil stripping and handling activities will cease during adverse meteorological conditions when dust controls are ineffective (e.g. use of water as suppressant);
- only disturb the minimum area necessary for mining operations at any time;
- progressively rehabilitate of areas of disturbance;
- retain cleared trees and branches on the margins of cleared areas for use in stabilising disturbed areas once they are no longer required;
- review site-specific predictive weather forecasts and real-time data (i.e. wind speed, wind direction and air quality conditions[2]) to assist day-to-day planning and planning during adverse meteorological conditions and extraordinary events;
- minimise the length of time coal is held in stockpiles;
- monitor coal for signs of spontaneous combustion;
- in the event spontaneous combustion is identified, extinguish fire in accordance with the relevant site procedure (WHC-TARP-NAR-Stockpile heating and spontaneous combustion); and
- maintaining an underground ventilation system to provide fresh air to employees.

Reactive dust control measures are detailed in the Trigger Action Response Plan (**TARP**) in Appendix C.

[2] Live air quality and meteorological data from https://www.dpie.nsw.gov.au/air-quality/air-quality-maps/greater-nsw-map (Greater NSW air quality map)

Greenhouse gas emissions

NCOPL will incorporate flaring of pre-drainage gas (which contains methane) in parts of the underground mining area containing sufficient gas content and methane composition.

Flaring also has the potential to produce oxides of nitrogen emissions. The key mitigation measures to reduce potential impacts of oxides of nitrogen emission on the local air quality environment will include:

- operation of a maximum of three flaring units at any one time; and
- location of the infrastructure away from any sensitive receptors.

The following measures represent all identified reasonable and feasible avoidance and mitigation measures to improve energy efficiency at the Narrabri Mine and minimise Scope 1 and Scope 2 emissions:

- regularly maintain plant and equipment to minimise fuel/electricity consumption and associated emissions;
- optimise and schedule vehicle operations to minimise vehicle movements;
- maintain engines according to manufacturers' guidelines;
- minimise vehicle idling time;
- continue to select plant and equipment that are energy efficient; and
- train relevant staff on continuous improvement strategies regarding efficient use of plant and equipment, including maintaining equipment to retain high levels of energy efficiency.

5.4.2 Odour

Management options to mitigate brine storage odour include:

- minimising the anaerobic zones in the dam through mechanical aerator devices and circulation of water via pumps; and
- limiting algal growth to limit food sources for odour generating bacteria through dosing of algaecide.

5.5 Monitoring program

The NCOPL air quality monitoring program has been designed to monitor performance of the proactive and reactive mitigation measures (section 5.4 and Appendix C) to ensure compliance with the relevant air quality criteria (section 5.2.1) and operating conditions of the Project Approval.

Section 8 details the evaluation and reporting requirements to assess the effectiveness of the air quality management system.

5.5.1 Monitoring locations

The Narrabri Mine air quality monitoring network includes:

- two PM_{10} HVAS;
- eight dust deposition gauges; and
- a meteorological monitoring station (weather station and inversion tower).

Table 5-5 provides detail on the air quality monitoring locations and associated parameters. Figure 5-1 shows the air quality monitoring network.

Table 5-5 Air quality monitoring locations

Monitoring point	Coordinates (MGA94, Zone 55)		Location	Parameters
	Easting	Northing		
ND1**	779661	6619348	"Turrabaa" property	Deposited dust
ND2**	777057	6619739	"Claremont" property	Deposited dust
ND3*	780000	6620698	"Bow Hills" property	Deposited dust
ND4**	777871	6621820	"Matoppo" property	Deposited dust
ND5**	777568	6620631	"Willarah" property	Deposited dust
ND6**	776955	6620780	"Willarah" property	Deposited dust
ND7**	775179	6620093	"Claremont" property	Deposited dust
ND8**	776755	6619159	"Claremont" property	Deposited dust
ND9	777047	6619621	"Claremont" property	PM_{10}
ND10	779775	6619367	"Turrabaa" property	PM_{10}
W1	777573	6619790	Pit Top Area	Weather analysis
W2	777523	6619622	Pit Top Area	Measurement of inversion conditions

Note:
* NCOPL has a private agreement in place in respect to air quality
** Sites are located on NCOPL owned land and are monitored for internal purposes only. Compliance measures do not apply.

Notwithstanding the above, air quality monitoring may be undertaken at suitable representative monitoring locations instead of at privately-owned residences providing that these representative monitoring locations are set out in the respective management plan/s.

NCOPL are currently siting real-time air quality monitoring station/s to guide the planning of mining operations. Real-time monitoring for PM_{10} will be conducted, with the proposed locations to consider the predominant wind direction, location of sensitive receptors and requirements for siting air monitoring equipment on the advice of a suitably qualified person. NCOPL have engaged a suitably qualified person to undertake this work, with proposed locations expected in September 2023.

This Plan will be updated to include the location of the newly installed real time monitors following installation. Prior to the real-time monitors being installed, the Greater NSW air quality map described in Section 5.4.1 will be used to access real-time air quality monitoring data from Narrabri and Gunnedah to assess regional dust levels.

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LEGEND

- ML 1609
- Namoi River pipeline
- Stage 2 underground mining layout
- Deposited dust monitoring site (compliance)
- Deposited dust monitoring site (internal)
- PM10 monitoring site
- Meteorological station
- Highway
- Roads
- Railway
- Watercourse
- State forest

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Figure 5-1

Air Quality Monitoring Locations

5.5.2 Monitoring method

Monitoring will be conducted according to the Approved Methods (Sampling and Analysis) and the following Australian Standards:

- AS 3580.1.1 "*Methods for Sampling and Analysis of Ambient Air: Guide to Siting Air Monitoring Equipment"*;
- AS 3580.9.6 "*Methods for sampling and analysis of ambient air - Determination of suspended particulate matter PM_{10} high volume sampler with size-selective inlet - Gravimetric Method*"; and
- AS 3580.10.1 *"Methods for sampling and analysis of ambient air - Part 10.1: Determination of particulates - Deposited matter - Gravimetric method".*

Table 5-6 summarises the monitoring method. A summary of the monitoring results will be provided as part of the Annual Return prepared for EPL 12789, the EPL monthly reports, the quarterly Community Consultative Committee (**CCC**) meetings, and the Narrabri Mine Annual Review.

Table 5-6 Air quality monitoring requirements

Parameter	Units of measure	Method	Frequency
Particulate matter - PM_{10}	Micro grams/cubic meter	HVAS (PM_{10} gravimetric method) Real-time measurement method ^	Every six days Continuous
Particulates – deposited matter	Grams/per square meter/per month	Dust deposition gauge (Deposited matter gravimetric method)	Monthly (min. of 4 weeks)

^ Measurement method will be determined based on the type of real-time air quality instrumentation installed according to proposed changes to the air quality monitoring network outlined in section 5.5.1.

5.5.3 Data collection and analysis

HVAS

Once every six days, each HVAS pre-weighed filter will be removed, replaced, and sent to a NATA accredited laboratory for analysis. If there is a technical fault, power outage or any other unplanned event that may cause delays in the HVAS unit replacement (e.g. adverse weather event), NCOPL will remove and replace the pre-weighted filter as soon as reasonable practicable following the unplanned event.

Dust deposition

Once every four weeks, the dust deposition gauge is switched out and the bottle sent to a NATA accredited laboratory for analysis.

Data records

Condition M1.3 of EPL 12789 requires the following records to be kept for all samples:

- the date(s) on which the sample was taken;
- the time(s) at which the sample was collected;
- the point at which the sample was taken; and
- the name of the person who collected the sample.

In addition to the above, the following will be recorded at the time of sample collection:

- evidence of sample contamination;
- conditions at or around the monitoring location;
- site activities that could impact on air quality results; and
- any relevant regional conditions (e.g. bushfires, dust storms) etc.

5.5.4 Meteorological conditions

NCOPL utilise a software system that combines regional forecasts and historical weather monitoring to produce a site-specific weather forecast. The software produces a report, automatically emailed to key personnel, displaying wind predictions relative to the TARP categories provided in Appendix C. This empowers the key personnel to plan activities outside of forecast high-risk periods.

NCOPL have an established site-specific meteorological monitoring station and meteorological tower (collectively referred to as the meteorological station) installed and operated in close proximity to the Pit Top Area (Figure 5-1). Real time data of meteorological conditions is collected to determine the direction and rate at which emissions from a source will disperse. The meteorological station complies with the requirements of the Approved Methods (Sampling and Analysis) and the Noise Policy for Industry (EPA, 2017).

The meteorological station is checked daily to ensure its functionality in collecting and recording the following data:

- temperature;
- humidity;
- rainfall; and
- wind.

Table 5-7 details the method and criteria for meteorological monitoring in accordance with EPL 12789 Condition M4.1. Temperature lapse rates are recorded at W2 Inversion Tower at 10 m and 60 m in accordance with the NSW Noise Policy for Industry (EPA, 2017).

Table 5-7 Meteorological monitoring method

Parameter	Units of measure	Frequency	Averaging period	Sampling method*
Rainfall	mm	Continuous	1 hour	AM-4
Wind speed @ 10 metres	m/s	Continuous	15 minute	AM-2 & AM-4
Wind direction @ 10 meters	^{o}	Continuous	15 minute	AM-2 & AM-4
Temperature @ 2 metres	^{o}C	Continuous	15 minute	AM-4
Temperature @ 10 metres	^{o}C	Continuous	15 minute	AM-4
Sigma theta @ 10 metres	^{o}	Continuous	15 minute	AM-2 & AM-4
Solar radiation	W/m^2	Continuous	15 minute	AM-4

Note:
* Approved Methods (Sampling and Analysis) (EPA, 2022).

6. Trigger Action Response Plan

The TARPs provided in Appendix C have been developed to manage risk to operations, personnel and the environment. The TARPs will be used to identify, assess, and respond to triggers such as potential exceedances and mitigation measures to reduce the potential for dust emissions from operations during adverse meteorological conditions and extraordinary events.

The TARP includes measures for all major dust generating activities including:

- coal processing;
- stockpiling;
- surface drilling; and
- surface civil works.

In addition to the trigger points and associated control measures to be implemented, the TARPs also detail the delegation of responsibility at each trigger point.

7. Incidents and non-compliance

7.1 Incident notification

An incident is defined under the Project Approval as *a set of circumstances that causes or threatens to cause material harm, and/or breaches or exceeds the limits of performance measures/criteria*.

In the context of this AQMP, an air quality incident is a set of circumstances that causes or threatens to cause material harm, and/or breaches or exceeds the limits of performance measures/criteria established in section 5.

Material harm to the environment is defined under the Project Approval as *involving actual or potential harm to the health or safety of human beings or to the environment that is not trivial.* This definition excludes "harm" that is authorised under the Project Approval or any other statutory approval (e.g., the EPL).

In the event of any exceedance of the performance indicators (as detailed in section 5.1) or any other air quality event that constitutes an incident, NCOPL will advise the Secretary in writing via the Major Projects website and any other relevant agencies of any incident associated with the development as soon as practicable after becoming aware of the incident, in accordance with Schedule 6 Condition 4. Within 7 days of the event, NCOPL will also provide the Secretary and any relevant agencies a detailed report which will:

- describe the date, time and nature of the exceedance/incident;
- identify the cause (or likely cause) of the exceedance/incident;
- describe what action has been taken to date; and
- describe the proposed measures to address the exceedance/incident.

Notifications to the NSW Environment Protection Authority will be made by contacting the Environment Line on 131 555 and written details of the notification will be provided within 7 days of the date on which the incident occurred.

Incident reporting and emergency response is further described in NCOPLs EMS.

7.2 Non-compliance and adaptive management

In accordance with Schedule 6 Condition 2 of the Project Approval, where a non-compliance with a statutory requirement or an exceedance of the relevant criteria or performance measures has occurred, NCOPL will, at the earliest opportunity, take all reasonable and feasible steps to ensure that the exceedance ceases and does not recur. Once this has been achieved, all reasonable and feasible options for remediation (where relevant) will be considered.

In accordance with Schedule 6 Condition 4, within seven days of becoming aware of a non-compliance, NCOPL will notify DPE of the non-compliance[3]. The notification will be made in writing via the Major Projects website and identify the development (including the development application number and name), set out the condition or requirement that the development is non-compliant with, why it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.

[3] A non-compliance which has been notified as an incident under section 7.1 does not need to also be notified as a non-compliance under section 7.2.

NCOPL will implement any reasonable remediation measures as directed by the Secretary, to the satisfaction of the Secretary.

7.3 Notification of exceedance to landowners

In accordance with Schedule 7 Condition 1 of the Project Approval, if the results of the monitoring required under Schedule 4 of the Project Approval (section 5.2.1) identify that impacts generated by the development are greater than the relevant impact assessment criteria, except where a negotiated agreement has been entered into in relation to that impact, NCOPL will, within 2 weeks of obtaining the monitoring results, notify the Secretary, the affected landowners and tenants (including tenants of mine-owned properties) accordingly, and provide quarterly monitoring results to each of these parties until the results show compliance with the criteria under Schedule 4.

If the results of monitoring required under Schedule 4 identify that impacts generated by the development are greater than the relevant air quality impact assessment criteria under Schedule 4, NCOPL will send the relevant landowners and tenants (including tenants of mine-owned properties) a copy of the NSW Health fact sheet entitled “Mine Dust and You” (and associated updates) in conjunction with the notification required under Condition 1.

7.3.1 Independent review

If a landowner considers that the Narrabri Mine is exceeding the impact assessment criteria under Schedule 4, they can request an independent review from the Secretary in writing of the impacts of the development on his/her land. Any independent review requests will follow the process outlined under Schedule 7 Condition 3 and Condition 4 of the Project Approval.

7.3.2 Land acquisition

Within 3 months of receiving a written request from a landowner with acquisition rights, NCOPL will make a binding written offer to the landowner in accordance with Schedule 7 Conditions 5 of the Project Approval.

8. Reporting, evaluation and review

8.1 EPL Annual Return

In accordance with Condition R1 of EPL 12789, NCOPL will submit an Annual Return to the EPA within 60 days after the end of the reporting period (anniversary date).

8.2 Annual Review

In accordance with Schedule 6 Condition 6, NCOPL will review the performance of its environmental management for the previous calendar year and report the relevant results within the Annual Review, to the satisfaction of the Secretary. The Annual Review will at minimum provide information regarding the effectiveness of the management measures to prevent, and if prevention is not reasonable and feasible, to minimise any impacts associated with air quality management.

Further, the Annual Review requires a number of items to be reviewed or assessed. In summary these are:

- monitoring results and complaints;
- non-compliances and incidents;
- compliance with performance measures;
- discrepancies between predicted and actual impacts; and
- measures to be implemented to improve environmental performance.

The Annual Review may also make recommendations for any additions, changes, or improvements to NCOPLs environmental management procedures.

The Annual Review will be made available on the WHC website.

8.3 Independent Environmental Audit

Prior to 13 September 2010, and every 3 years thereafter, unless the Secretary directs otherwise, NCOPL will commission and pay the full cost of an Independent Environmental Audit (**IEA**) of the development (Stages 1 and 2), to be conducted in accordance with the requirements of Schedule 6, Condition 7.

The audit team will be led by a suitably qualified auditor and the IEA will be conducted by suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary.

In accordance with Schedule 6 Condition 8, NCOPL will submit a copy of the audit report to the Secretary, together with its response to any recommendations contained in the audit report, within 6 weeks of the completion of the audit, or as otherwise agreed by the Secretary.

8.4 Record keeping

In accordance with EPL 12789 Condition M1.2, NCOPL will retain all monitoring and reporting records as follows:

- in a legible form, or in a form that can readily be reduced to a legible form;

- kept for at least 4 years after the monitoring or event to which they relate took place; and
- produced in a legible form to any authorised officer of the EPA who asks to see them.

8.5 AQMP review and evaluation

As required under Schedule 6 Condition 3 of the Project Approval, NCOPL will review, and if necessary, revise this Plan within three months of any of the following:

- submission of an IEA (as required by Schedule 6 Condition 7);
- submission of an Incident Report (as required by Schedule 6 Condition 4);
- submission of an Annual Review (as required by Schedule 6 Condition 6); and
- any modification to the conditions of the Project Approval (unless the conditions require otherwise).

This is to ensure that the strategies, plans and programs are updated on a regular basis, and incorporate any recommended measures to improve the environmental performance of the Narrabri Mine operations.

Schedule 6 Condition 3 further states that if the review determines that this AQMP requires revision, then this will be completed to the satisfaction of the Secretary. A dedicated review register will be maintained which will provide the details of the review of all relevant strategies, plans and programs that need to be reviewed as required under Schedule 6 Condition 3 of the Project Approval. The revision status of this AQMP is indicated in section 12.

8.6 Improvement measures

Project Approval Schedule 6 Condition 2(f) requires this Plan to include a program to investigate and implement ways to improve the environmental performance of the development over time. Improvement measures may be investigated through review of the following:

- monitoring data, and any assessment of trends;
- audit outcomes, including audits of the air quality management system; and
- incident reports, including any community complaints.

Reasonable and feasible improvement measures will be implemented and documented as a management measure in a revision to the Plan as described in section 8.5.

In accordance with Schedule 6 Condition 2(h) a protocol for periodic review of this Plan has been addressed under section 8.5.

9. Complaints management

Any complaints received in relation to air will be managed in accordance with the complaints management protocol as follows:

- publicly advertised telephone complaints line, 1800WHAVEN, will be in place to receive complaints.
- each complaint received will be recorded in a Complaints Register, which will include the following details:
  - date and time of complaint;
  - method by which a complaint was made;
  - personal details the complainant wishes to provide or, if no such details are provided, a note to that effect;
  - nature of the incident that led to the complaint;
  - action taken by NCOPL in relation to the complaint (i.e., any required remedial actions), including any follow-up contact with the complainant; and
  - if no action was taken, the reason why no action was taken.
- the Environmental Superintendent will be responsible for ensuring that an initial response is provided within 24 hours of receipt of a complaint (except in the event of complaints recorded when the mine is not operational or outside of usual business hours).
- once the identified measures are undertaken, the Environmental Superintendent will sign off on the relevant complaint within the Complaints Register.
- if necessary, follow-up monitoring will take place to confirm the source of the complaint is adequately mitigated.
- a summary of the complaints will be maintained by NCOPL and made available to the Community Consultative Committee, the complainant (on request) and on the WHC website. A summary of complaints received every 12 months will be provided in the Annual Review.

Condition M5.3 and M5.4 of EPL 12789 require NCOPL to retain all records of a complaint for at least four years after the complaint was made and the record must be produced to any authorised officer of the EPA who asks to see them.

In the event that any complainant considers that NCOPL has not adequately addressed their concerns, the NCOPL representative will convene additional meetings with the complainant. If the complainant believes the matter remains unresolved, and no further agreement can be reached as to additional measures to be undertaken, then they may refer the matter to DPE.

10. References

Jacobs (August, 2020) *Narrabri Underground Mine Stage 3 Extension Project – Air Quality and Greenhouse Gas Assessment.* Prepared for Narrabri Coal Operations Pty Ltd.

NSW Department of Planning, Industry and Environment (November, 2021). *Project Approval PA 08_0144 Narrabri Coal Project – Stage 2* (as varied).

NSW Environment Protection Authority (EPA) (October 2017). *Noise Policy for Industry.*

NSW Environment Protection Authority (EPA) (August, 2022). *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales.*

NSW Environment Protection Authority (EPA) (January, 2022). *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales.*

NSW Environment Protection Authority (September, 2022). *Environment Protection Licence 12879* (as varied).

Resource Strategies Pty Ltd (October, 2020) *Narrabri Underground Mine Stage 3 Extension Project – Environmental Impact Statement.* Prepared for Narrabri Coal Operations Pty Ltd.

11. Glossary

Term	Definition
Annual Review	The review required by Condition 6 of Schedule 6
Department	The NSW Department of Planning and Environment (DPE)
Development	The Stage 2 Narrabri Coal Project described in the EA
Environment	Includes all aspects of the surroundings of humans, whether affecting any human as an individual or in his or her social groupings
Feasible	Means what is possible and practical in the circumstances
Goaf	The mined-out area into which the immediate roof strata breaks
Incident	A set of circumstances that causes or threatens to cause material harm to the environment, and/or breaches or exceeds the limits of performance measures/criteria in the Project Approval
Land	In general, the definition of land is consistent with the definition in the EP&A Act. However, in relation to the noise and air quality conditions in Schedule 4 of the Project Approval it means the whole of a lot, or contiguous lots owned by the same landowner, in a current plan registered at the Land Titles Office at the date of the Project Approval
Material harm	Harm to the environment is material if it involves actual or potential harm to the health or safety of human beings or ecosystems that is not trivial
Mine owned land	Land owned by a mining, petroleum or extractive industry company (or its subsidiary or related party)
Minimise	Implement all reasonable and feasible mitigation measures to reduce the impacts of the Project
Mining operations	The extraction, processing and transportation of coal on the site, including the formation of mine access drifts and associated surface infrastructure such as gas and water drainage facilities
Minor	Not very large, important or serious
Mitigation	Activities associated with reducing the impacts of the development
Narrabri Mine	The development approved under the, together with the development approved under project approval 05_0102 and project approval 08_0144
Negligible	Small and unimportant, such as to be not worth considering
Non-compliance	An occurrence, set of circumstances or development that is a breach of the conditions of the statutory approvals
Plan	Air Quality Management Plan
Planning Secretary	Planning Secretary under the EP&A Act, or nominee
Pollution incident	Has the same meaning as in the POEO Act
Privately-owned land	Land that is not owned by a public agency, or a mining company (or its subsidiary)
Reasonable	Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements
Rehabilitation	The treatment or management of land disturbed by the project for the purpose of establishing a safe, stable and non-polluting environment including the remediation of impacts
Secretary	Planning Secretary under the EP&A Act, or nominee
Sensitive receptor	A location where people are likely to work or reside; this may include a dwelling, school, hospital, office or public recreational area.
Stage 2	Narrabri Mine Stage 2 approved under PA 08_0144

12. Review history

Revision	Comments	Author	Authorised by	Date
0B	Approved by the Department of Planning and Environment 24 August 2023	Onward Consulting	Environmental Superintendent	16 August 2023

Appendix A - Consultation records

DOC23/599662-1

11 July 2023

Shane Rily
Environmental Superintendent
Narrabri Coal Operations
Whitehaven Coal
10 Kurrajong Road
BAAN BAA NSW 2390
Email: SRily@whitehavencoal.com.au

Response to Air Quality Management Plan for Narrabri Mine

Dear Mr Rily,

Thank you for consulting the NSW Environment Protection Authority (EPA) on the Air Quality Management Plan for Narrabri Mine, prior to being submitted for approval to the Department of Planning and Environment.

The EPA encourages the development of Environmental Management Plans and Programs to ensure that licensees have determined how they will meet their statutory obligations and environmental objectives as specified by any Project Approval (or other statutory approval) and/or the conditions of an environment protection licence. However, the EPA does not review these plans and programs (unless in circumstances deemed necessary) as the role of the EPA is to set conditions, or criteria, for environmental protection and management and not to be directly involved in the development of strategies to comply with such conditions or criteria.

In this instance, the EPA will not be providing any specific comment on the management plans. As a management tool, such plans and programs should assist Narrabri Coal Operations in meeting their commitment to statutory compliance and wider environmental management and where appropriate should be integrated with other management plans.

If you have any questions about this request, please contact Arron O'Connell on 6773 7000 or via email at info@epa.nsw.gov.au.

Yours sincerely

Daniel Stokes
Acting Unit Head
Regulatory Operations Regional West

Department of Planning and Environment

Our ref: MP08_0144-PA-51

Shane Rily
Environmental Superintendent
Narrabri Coal Operations Pty Ltd
10 Kurrajong Creek Road
Baan Baa, NSW, 2390

24/08/2023

Narrabri Coal- Stage 2: Air Quality Management Plan (AQMP)

Dear Mr. Rily

Thank you for submitting the Stage 2 AQMP in accordance with Condition 7A, Schedule 4 of the consent for the Narrabri Coal Stage 2 (MP08_0144-PA-51). I also acknowledge your response to the Department's review comments and request for additional information.

I note the Air Quality Management Plan has been prepared in consultation with the EPA and contains the information required by the conditions of approval.

Accordingly, as nominee of the Planning Secretary, I approve the Air Quality (Rev B, August 2023).

You are reminded that if there are any inconsistencies between the Plan and the conditions of approval, the conditions prevail.

Please ensure you make the document publicly available on the project website at the earliest convenience.

If you wish to discuss the matter further, please contact Charissa Pillay on 9995 5944.

Yours sincerely

Stephen O'Donoghue
Director
Resource Assessments
As nominee of the Planning Secretary

Appendix B - Compliance conditions relevant to this Plan

Table B-1 Project Approval conditions relevant to this Plan

Project Approval 08_0144 conditions		Document reference
Condition	**Requirement**	
Schedule 2, Condition 1	The Proponent shall implement all practicable measures to prevent and/or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the project.	Section 5 Section 6 Appendix C
Schedule 2, Condition 2	The Proponent shall carry out the project generally in accordance with the: (a) EA; and (b) conditions of this approval.	Section 5
Schedule 2, Condition 4	The Proponent shall comply with any reasonable and feasible requirements of the Secretary arising from the Department's assessment of:	
	(a) any reports, plans, programs, strategies or correspondence that are submitted in accordance with the conditions of this approval; and	Section 1.4
	(b) the implementation of any actions or measures contained in these reports, plans, programs, strategies or correspondence.	
Schedule 2 Condition 11	With the approval of the Secretary, the Proponent may submit any management plan or monitoring program required by this approval on a progressive basis. ***Note**: The conditions of this approval require certain strategies, plans, and programs to be prepared for the project. They also require these documents to be reviewed and audited on a regular basis to ensure they remain effective. However, in some instances, it will not be necessary or practicable to prepare these documents for the whole project at any one time, particularly as these documents are intended to be dynamic and improved over time. Consequently, the documents may be prepared and implemented on a progressive basis, subject to the conditions of this approval. In doing this however, the Proponent will need to demonstrate that it has suitable documents in place to manage the existing operations of the project.*	There is no staging of the AQMP proposed
Schedule 4, Condition 6	The Proponent shall ensure that dust emissions generated by the project do not cause additional exceedances of the criteria listed in Tables 4 to 6 at any residence on privately-owned land. ***Table 4. Long term impact assessment criteria for particulate matter***	Section 5.2.1

Pollutant	Averaging period	[d]Criterion
Total suspended particulate (TSP) matter	Annual	[a]90µg/m^3
Particulate matter < 10 µg (PM_{10})	Annual	[a]30µg/m^3

Table 5. Short term impact assessment criteria for particulate matter

Pollutant	Averaging period	[d]Criterion
Particulate matter < 10 µg (PM_{10})	24 hour	[a]50µg/m^3

<table>
<tr><th colspan="2">Project Approval 08_0144 conditions</th><th>Document reference</th></tr>
<tr><th>Condition</th><th>Requirement</th><th></th></tr>
<tr><td></td><td>Table 6. Long term impact assessment criteria for deposited dust
<table>
<tr><th>Pollutant</th><th>Averaging period</th><th>Maximum increase in deposited dust level</th><th>Maximum total deposited dust level</th></tr>
<tr><td>[c]Deposited dust</td><td>Annual</td><td>[b]2 g/m^2/month</td><td>[a]4 g/m^2/month</td></tr>
</table>
Notes to Tables 4-6
• a Total impact (i.e. incremental increase in concentrations due to the project plus background concentrations due to all other sources);
• b Incremental impact (i.e. incremental increase in concentrations due to the project on its own);
• c Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method; and
• d Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents or any other activity agreed by the Secretary.</td><td></td></tr>
<tr><td rowspan="6">Schedule 4, Condition 7</td><td>The Proponent shall:
(a) implement all reasonable and feasible measures to minimise the:</td><td></td></tr>
<tr><td>• odour, fume and dust emissions of the project; and</td><td>Section 5
Section 6
Appendix C</td></tr>
<tr><td>• release of greenhouse gas emissions from the project;</td><td>Section 5.4.1</td></tr>
<tr><td>(b) operate a comprehensive air quality management system that uses a combination of predictive meteorological forecasting and real-time air quality monitoring data to guide the day to day planning of operations and the implementation of both proactive and reactive air quality mitigation measures to ensure compliance with the relevant conditions of this approval;</td><td rowspan="3">Section 5
Section 6
Appendix C</td></tr>
<tr><td>(c) minimise any visible air pollution; and</td></tr>
<tr><td>(d) minimise the air quality impacts of the project during adverse meteorological conditions and extraordinary events (see note d to Tables 4-6 above).</td></tr>
<tr><td>to the satisfaction of the Secretary.</td><td></td></tr>
<tr><td rowspan="3">Schedule 4, Condition 7A</td><td>The Proponent shall prepare and implement an Air Quality Management Plan for the project to the satisfaction of the Secretary. This program must:</td><td></td></tr>
<tr><td>(a) be prepared in consultation with the EPA, and be submitted to the Secretary for approval prior to 30 December 2015, unless otherwise agreed with the Secretary;</td><td>Section 1.4</td></tr>
<tr><td>(b) describe the measures that would be implemented to ensure compliance with relevant air quality criteria and operating conditions of this approval;</td><td>Section 5
Section 6</td></tr>
</table>

Project Approval 08_0144 conditions		Document reference
Condition	**Requirement**	
		Appendix C
	(c) describe the proposed air quality management system; and	Section 5
	(d) include an air quality monitoring program that:	
	• adequately supports the proactive and reactive air quality management system;	Section 5.5
	• evaluates and reports on:	
	▪ the effectiveness of the air quality management system; and	Section 5.5
	▪ compliance with the air quality operating conditions; and	
	• defines what constitutes an air quality incident and includes a protocol for identifying and notifying the Department and relevant stakeholders of any air quality incidents.	Section 6 Section 7 Appendix C
Schedule 4, Condition 8	For the life of the project, the Proponent shall ensure that there is a meteorological station in the vicinity of the site that:	
	(a) complies with the requirements in Approved Methods for Sampling of Air Pollutants in New South Wales (DECC, 2007), or its latest version; and	Section 5.5.4
	(b) is capable of real-time measurement of temperature lapse rate in accordance with the NSW Industrial Noise Policy, unless a suitable alternative is approved by the Secretary following consultation with the EPA.	
Schedule 6, Condition 2	The Proponent shall ensure that the management plans required under this approval are prepared in accordance with any relevant guidelines, and include:	
	a) detailed baseline data;	Section 4
	b) a description of:	
	• the relevant statutory requirements (including any relevant approval, licence or lease conditions);	Section 3
	• any relevant limits or performance measures/criteria;	Section 5.1
	• the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the project or any management measures	Section 5.1 Section 5.2.1 Section 5.3.1
	c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria:	Section 5
	d) a program to monitor and report on the:	
	• impacts and environmental performance of the project;	Section 5.5
	• effectiveness of any management measures (see (c) above);	
	e) a contingency plan to manage any unpredicted impacts and their consequences;	Section 6 Section 7.2 Appendix C
	f) a program to investigate and implement ways to improve the environmental performance of the project over time;	Section 8.6

Project Approval 08_0144 conditions		Document reference
Condition	**Requirement**	
	g) a protocol for managing and reporting any:	
	• incidents;	Section 7
	• complaints;	Section 9
	• non-compliances with statutory requirements; and	Section 7.2
	• exceedances of the impact assessment criteria and/or performance criteria; and	
	h) a protocol for periodic review of the plan.	Section 8.5
Schedule 6 Condition 3	Within 3 months of the submission of an:	Section 8.3
	a) audit under condition 7 of Schedule 6;	
	b) incident report under condition 4 of Schedule 6; and	
	c) annual review under condition 5 of Schedule 6; and	
	d) any modification to the conditions of this approval (unless the conditions require otherwise),	
	the Proponent shall review, and if necessary revise, the strategies, plans, and programs required under this approval to the satisfaction of the Secretary.	
Schedule 6 Condition 4	The Proponent shall notify the Secretary in writing via the Major Projects website and any other relevant agencies of any incident associated with the project as soon as practicable after the Proponent becomes aware of the incident. Within 7 days of the date of the incident, the Proponent shall provide the Secretary and any relevant agencies with a detailed report on the incident.	Section 7.1
Schedule 6 Condition 5	The Proponent shall provide regular reporting on the environmental performance of the project on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this approval, and to the satisfaction of the Secretary.	Section 1.5 Section 8.2
Schedule 6 Condition 6	By the end of March each year, the Proponent must submit a review of the environmental performance of the project for the previous calendar year to the satisfaction of the Secretary.	Section 8.2
Schedule 6 Condition 7	Prior to 13 September 2010, and every 3 years thereafter, unless the Secretary directs otherwise, the Proponent shall commission and pay the full cost of an Independent Environmental Audit of the project (Stages 1 and 2).	Section 8.3
Schedule 6 Condition 10	The Proponent shall: (a) make copies of the following publicly available on its website: • the documents referred to in Condition 2 of Schedule 2; • all current statutory approvals for the project; • all approved strategies, plans and programs required under the conditions of this approval; • a comprehensive summary of the monitoring results of the project, reported in accordance with the specifications in any conditions of this approval, or any approved plans and programs; • a complaints register, updated on a monthly basis; • minutes of CCC meetings;	Section 1.5

Project Approval 08_0144 conditions		Document reference
Condition	**Requirement**	
	• the annual reviews of the project; • any independent environmental audit of the project, and the Proponent's response to the recommendations in any audit; • any other matter required by the Secretary; and	
	(b) keep this information up-to-date, to the satisfaction of the Secretary.	Section 1.5

Table A-2 Statement of Commitments

SoC	Commitment	Reference
11.1	Minimise the extent of clearing across the Mine Site including the campaigns to construct the area for reject emplacement and construct brine storage ponds.	Section 5.4.1
11.2	Retain cleared trees and branches on the margins of cleared areas for use in stabilising disturbed areas once they are no longer required.	
11.3	Undertake soil stripping at times when most appropriate (such as when there is sufficient soil moisture to prevent significant lift-off of dust and at times other than periods of high winds).	
11.4	Operate water sprays on all continuous miners, the longwall unit and the breaker feeder to minimise dust creation underground.	
11.5	Apply water to the coal at the feed hopper, crusher and at all conveyor transfer and discharge points.	
11.6	Fit all surface conveyors with appropriate cleaning and collection devices to minimise the amount of material falling from the return conveyor belts	
11.7	Enclose the rotary breaker (as per Commitment 10.10).	
11.8	Partly enclose all surface conveyors to minimise dust lift off.	
11.9	Cease construction of the brine storage ponds when the prevailing winds are from the northwest quadrant	
11.10	Apply water onto stockpiles and hardstand areas.	
11.11	Progressively rehabilitate areas of disturbance including gas drainage areas.	
11.12	Progressively rehabilitate areas no longer required for operational purposes.	
11.13	Minimise the length of time coal is held in stockpiles;	
11.14	Monitor coal for signs of spontaneous combustion.	
11.15	Immediately report incidents	Section 7.1
11.16	Extinguish fire by removal from stockpile, spreading and saturation with water.	Section 5.4.1
11.17	Install underground ventilation system to provide fresh air to employees.	
11.19	Optimise and schedule vehicle operations to minimise vehicle movements.	
11.20	Maintain engines according to manufacturers' guidelines.	
11.21	Minimise vehicle idling time.	
11.22	Monitor dust deposition levels at 8 sites (ND1 – ND8).	Section 5.5.1
11.23	Monitor PM_{10} levels at 2 sites (ND9 to ND10).	
11.24	Review and submit dust monitoring results to relevant government agency.	Section 8.2

Table A-3 EPL 12789 conditions relevant to this Plan

<table>
<tr><th>Condition</th><th>Requirement</th><th>Document reference</th></tr>
<tr><td colspan="3">Discharges to Air and Water and Applications to Land</td></tr>
<tr><td>P1</td><td>Location of monitoring/discharge points and areas
P1.1 The following points referred to in the table below are identified in this licence for the purposes of monitoring and/or the setting of limits for the emissions of pollutants to the air from the point.

<table>
<tr><th>EPA ID No.</th><th>Type of Monitoring Point</th><th>Type of Discharge Point</th><th>Location Description including NCOPL ID No.</th></tr>
<tr><td>3</td><td>Ambient Air Quality Monitoring</td><td></td><td>Monitoring point (ND3) located at “Bow Hills”.</td></tr>
</table></td><td>Section 5.5.1</td></tr>
<tr><td colspan="3">Dust</td></tr>
<tr><td>O3</td><td>All operations and activities occurring at the premises must be carried out in a manner that will minimise the emission of dust from the premises.</td><td>Section 5.4.1</td></tr>
<tr><td colspan="3">Monitoring and Recording Conditions</td></tr>
<tr><td>M1</td><td>Monitoring records
M1.1 The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition.

M1.2 All records required to be kept by this licence must be:
a) in a legible form, or in a form that can readily be reduced to a legible form;
b) kept for at least 4 years after the monitoring or event to which they relate took place; and
c) produced in a legible form to any authorised officer of the EPA who asks to see them.

M1.3 The following records must be kept in respect of any samples required to be collected for the purposes of this licence:
a) the date(s) on which the sample was taken;
b) the time(s) at which the sample was collected;
c) the point at which the sample was taken; and
d) the name of the person who collected the sample.</td><td>Section 5.5.3
Section 8.4</td></tr>
<tr><td>M2</td><td>Requirement to monitor concentration of pollutants discharged
M2.1 For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:

M2.2 Air Monitoring Requirements

<table>
<tr><th colspan="4">Point 3</th></tr>
<tr><th>Pollutant</th><th>Units of measure</th><th>Frequency</th><th>Sampling Method</th></tr>
<tr><td>Particulates – Deposited Matter</td><td>Grams per square metre per month</td><td>Once a month (min. of 4 weeks)</td><td>AM-19</td></tr>
</table></td><td>Section 5.2.1
Section 5.5.2</td></tr>
<tr><td>M3</td><td>Testing methods – concentration limits</td><td>Section 5.5.2</td></tr>
</table>

Condition	Requirement	Document reference
	M3.1 Monitoring for the concentration of a pollutant emitted to the air required to be conducted by this licence must be done in accordance with: a) any methodology which is required by or under the Act to be used for the testing of the concentration of the pollutant; or b) if no such requirement is imposed by or under the Act, any methodology which a condition of this licence requires to be used for that testing; or c) if no such requirement is imposed by or under the Act or by a condition of this licence, any methodology approved in writing by the EPA for the purpose of that testing prior to the testing taking place. Note: The *Protection of the Environment (Clean Air) Regulation 2010* requires testing for certain purposes to be conducted in accordance with test methods contained in the publication "Approved Methods for the Sampling and Analysis of Air Pollutants in NSW".	
M4	**Requirement to monitor weather** M4.1 For each monitoring point specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the parameter specified in Column 1. The licensee must use the sampling method, units of measure, averaging period and sample at the frequency, specified opposite in the other columns:	Section 5.5.4

Point W1

Parameter	Units of measure	Frequency	Averaging Period	Sampling Method
Rainfall	mm	Continuous	1 hour	AM-4
Wind speed @ 10 metres	m/s	Continuous	15 minute	AM-2 & AM-4
Wind direction @ 10 metres	°	Continuous	15 minute	AM-2 & AM-4
Temperature @ 2 metres	°C	Continuous	15 minute	AM-4
Temperature @ 10 metres	°C	Continuous	15 minute	AM-4
Sigma theta @ 10 metres	°	Continuous	15 minute	AM-2 & AM-4
Solar radiation	W/m2	Continuous	15 minute	AM-4
Additional requirements siting measurement				AM-1 & AM-4 AM-2 & AM-4

Appendix C - Trigger Action Response Plan

Table C-1 CHPP and coal stockpile TARP (WHC-TARP-NAR-Surface Dust Control Rev1)

Trigger → Actions ↓	Normal Operation	Level 1 TARP	Level 2 TARP	Level 3 TARP	Level 4 TARP
	Wind speed < 5 m/s	Wind speed > 5 m/s but <9 m/s UNLESS Currently raining (noticeable ripples in still water); review if action required.	Wind speed > 9 m/s but < 11.5 m/s UNLESS Currently raining (noticeable ripples in still water); no action	Wind speed > 11.5 m/s but < 13.5 m/s UNLESS Constant rain (noticeable ripples in still water) for previous half hour; no action	Wind speed > 13.5 m/s UNLESS Constant rain (noticeable ripples in still water) for previous hour; no action
Automation	Normal operation.	Display a pop up on the CHPP Control room screen to alert the CHPP Control Room Operator to the change in TARP levels.	As per level 1	As per level 1	As per level 1
CHPP Control Room Operator	Normal operation.	• Acknowledge pop up alert and record TARP level and relevant detail in CoalTrak. • Alert all personnel over the two-way radio of the change in TARP level. • Ask all personnel for any relevant information regarding conditions e.g. dust leaving the stockpiles or road dust being generated from cars or trucks. • Verify stockpile spray system is healthy and available. • If reports of dust leaving ROM tripper, contact mine Surface Competent Person to verify underground belt sprays are operational.	As per level 1 AND • **Pulverized Coal Injection (PCI):** If dust from PCI conveyor is leaving stockpile footprint, commence thermal only production. • **Washed Thermal**: Turn on spray at transfer tower CV801 to CV802. • Move the tripper to the highest point on stockpile. • If dust still leaving stockpile footprint, reduce CHPP throughput to 800tph. • **Crushed thermal:** Turn on spray at transfer tower of CV107 to CV104 and reduce throughput to 800tph.	As per level 2 AND • **Washed Thermal:** Reduce throughput to 800tph. • Place tripper to a location on the stockpile >20m high (yellow leg markers are 23m). • If stockpile is below 20m, turn off spray at CV801 to CV802 tower and place tripper in dust chute. • **Bypass:** feed rate to drop to 500tph.	• Cease all processing operations. • Appropriate stockpile sprays to remain operational. • Train loading is approved with all reasonably practical dust control actions put in place.
Process Operator	Normal operation, follow **Stockpile Dozer** Operations procedure.	Dozer operator to report any dusty conditions on stockpile areas and instruct the CHPP control room operator the appropriate sprays to turn on to minimise dust.	As per level 1 AND • If dust generated from dozer operations is leaving coal handling area or rising above skyline then change strategy and report to Supervisor. • First gear when on ground/floor level to reduce dust when tramming. • Maximise height of all product stockpiles to reduce drop height of coal from conveyor.	As per level 2	• Train loading is approved with all reasonably practical dust control actions put in place. • Short shove dozer's operations allowed to ensure underground coal production is not stopped.

Trigger → Actions ↓	Normal Operation	Level 1 TARP	Level 2 TARP	Level 3 TARP	Level 4 TARP
	Wind speed < 5 m/s	Wind speed > 5 m/s but <9 m/s UNLESS Currently raining (noticeable ripples in still water); review if action required.	Wind speed > 9 m/s but < 11.5 m/s UNLESS Currently raining (noticeable ripples in still water); no action	Wind speed > 11.5 m/s but < 13.5 m/s UNLESS Constant rain (noticeable ripples in still water) for previous half hour; no action	Wind speed > 13.5 m/s UNLESS Constant rain (noticeable ripples in still water) for previous hour; no action
CHPP Supervisor	Shiftly inspections	Supervisor to drive around ROM and product stockpiles and roads in process area to identify appropriate response.	As per level 1 AND • **Washed Thermal coal**: If above controls implemented and dust still leaving footprint, reduce throughput to 600tph. • **At 600tph**: if dust still leaving footprint place tripper in dust chute and turn off sprays. • **Crushed thermal**: if throughput has been reduced to 800tph, the sprays are on and dust is still leaving stockpile footprint, drop to 500tph	As per level 2 AND • If dust leaving the stockpile when coal is landing on the stockpile above 20m, place tripper in dust chute. • If dust from bypass discharge leaving the stockpile footprint, take feed of Bypass until wind speed decreases or rain persists longer than 30 minutes. • If unable to control dust, cease processing operations.	• Ensure CHPP and Bypass plants are not operational. • Ensure appropriate stockpile sprays remain operational. • Notify CHPP Production Coordinator via text message.
CHPP Production Coordinator	No action	No action	No action required	No action required	Notify CHPP Superintendent

Table C-2 Drillers and Civil Services TARP

Trigger → / Actions ↓	Normal Operations	Level 1 TARP	Level 2 TARP	Level 3 TARP	Level 4 TARP
	Wind speed < 5 m/s **OR** No visible dust being generated.	Wind speed > 5 m/s but <9 m/s **OR** Dust being created from travel or works being carried out.	Wind speed > 9 m/s but < 11.5 m/s **OR** Visible airborne dust being generated and rising above work area.	Wind speed >11.5 m/s but <13.5m/s **OR** Dust being generated from excessive wind speed	Wind speed > 13.5 m/s **OR** Excessive dust is being generated rising above work area and traveling. Visibility is decreased due to dust.
Drillers	Normal operations	Operational dust – **STOP**, assess the dust source, and implement controls. Vehicle operators reduce speed to stop dust and notify water truck operator to wet road. Record actions on PLOD.	**As per level 1** **AND** Notify drilling coordinator	**As per Level 2** **AND** Notify water truck operator to wet down affected area. Wet down area using available resources.	**STOP work** Actions as per Level 2 and 3
Civil Services					
	Normal operations	Call up the water cart to wet down the travel roads or work area.	**As per level 1** **AND** Increased water cart runs. Reduce travel speeds of vehicles to minimises dust. Report to civil services coordinator any dust being excessively generated or leaving the work area.	**As per level 2** **AND** Reduce travel where possible to only operationally critical equipment with confirmation from Surface Operations Manager.	**As per Level 3** **AND** Stop Operations if dust cannot be bought under control. Notify site contact / NCOPL Supervisor