Whitehaven

VICKERY AIR QUALITY AND GREENHOUSE GAS MANAGEMENT PLAN

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1 Introduction

1.1 Overview of Approved Operations

The Vickery Coal Mine (VCM) is located in the Gunnedah Coal Basin, approximately 25 kilometres (km) north of Gunnedah in New South Wales (NSW). The VCM is operated by Vickery Coal Pty Limited (VCPL) (a wholly owned subsidiary of Whitehaven Coal Limited [WHC]).

Development Consent (SSD-7480) was granted to VCPL on 12 August 2020 by the NSW Independent Planning Commission as a delegate of the NSW Minister for Planning under Section 75J of the NSW *Environmental Planning and Assessment Act, 1979* (EP&A Act). The Development Consent allows for the development of an open cut mine and associated infrastructure with a 25 year mine life, extracting run-of-mine (ROM) coal at up to 10 million tonnes per annum (Mtpa) and processing the coal, as well as coal from WHC's Tarrawonga Mine, at an on-site coal handling and processing plant (CHPP) for off-site transport by rail.

A full project description, including history of operations, current operating approach and mining methods are outlined within the Vickery Extension Project Environmental Impact Assessment and previous Annual Reviews for the site. These documents can be found on the Whitehaven Coal website.

1.2 Baseline Data

Baseline air quality monitoring for the VCM commenced in 2012 with detailed baseline data available in the VCM Project Environmental Assessment.

Particulate Matter <10µm (PM10) and Particulate Matter <10µm (PM2.5)

Annual average PM_{10} and $PM_{2.5}$ concentrations for the Will-gai tapered element oscillating microbalance (TEOM) monitor are presented in Table 1.

Table 1 - Annual Average PM10 and PM2.5

Pollutant	2013	2014	2015	2016	2017	2018
PM_{10} concentration (µg/m^3)	12.0	13.8	9.6	12.5	12.1	18.0
$PM_{2.5}$ concentration (µg/m^3)	5.3	4.6	4.1	5.3	3.8	3.0

Note: µg/m^3 = micrograms per metre cubed.

Total Suspended Particulate (TSP)

TSP concentrations are not measured in the vicinity of the VCM, however annual average TSP concentrations can be derived based on typical ratios of PM_{10}/TSP. A PM_{10}/TSP ratio of 0.5 has been applied, consistent with the ratio applied for other WHC mines in the region. This ratio has been applied to the annual average PM_{10} concentrations to derive a representative TSP background concentration ranging from 19.2 micrograms per cubic metres (µg/m³) to 27.7 µg/m³.

1.3 Purpose

The purpose of this Air Quality & Greenhouse Gas Management Plan (AQGGMP) is to provide an overview of, and direction to the systems, processes and documentation that have been established to:

- ensure compliance with operating conditions of all active approvals;
- minimise the impact of dust from mining activity on the environment and nearby residences;
- minimise the release of greenhouse gas (GHG) emissions and prevent the emission of offensive odours; and
- evaluate and report on the effectiveness of the air quality management system; and maintain an effective response mechanism to deal with exceedances and complaints.

1.4 Scope

The scope of the AQGGMP applies to all activities at VCM, including mining, handling, transport and storage of coal that have the potential to increase dust levels of the immediate and surrounding receiving environment. It covers:

- Topsoil recovery using scrapers, excavators, dozers and trucks;
- Drill and blast activities;
- Open cut mining using predominantly hydraulic excavators and haul trucks;
- Haul road maintenance using dozers and graders;
- Overburden shaping and dozer push;
- Coal loading;
- Commuter vehicles using public roads;
- Land rehabilitation activities and project related earthworks and civil works;
- Ancillary activities such as pumping;
- Maintenance activities; and,
- Coal exploration drilling activities.

1.5 Management Systems

VCM; as a Whitehaven Coal operation, has established management systems. These management systems provide the framework to support the planning, implementation, monitoring and review to achieve continual improvement in air quality management. To minimise the air quality impacts of these activities, a risk-based approach has been established, which includes mechanisms for predictive forecasting and particulate monitoring, providing feedback on the effectiveness of controls and enabling adaptive management.

2 Legislative Requirements

Requirements and commitments associated with air quality and GHG are defined within the following approvals:

- Vickery Development Consent (SSD -7480); and
- Environmental Protection Licence (EPL) 21283.

Standards, guidelines and additional legislation relevant to the preparation this AQGHGMP and the management of emissions from VCM are available in section 11, references.

Condition B32, Schedule 2 of SSD-7480 requires that WHC shall ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the development do not cause exceedances of the criteria listed in Table 2 - at any residence on privately-owned land, excluding property ID 127.

In reference to Condition B33, the VCM do not have any current agreements permitting exceedance of the air quality criteria noted with any private landowners at the point in time of this document been prepared for approval. If any such agreements are entered into the Department (DPHI) will be notified through the Major Projects portal.

VCPL will implement this Management Plan in accordance with SSD7480 Sch 2 Condition 37.

Table 2 - Vickery Coal Mine air quality and dust deposition criteria

Pollutant	Averaging period	Impact assessment	
		Criterion	Basis
TSP	Annual	[a]90µg/m^3	Cumulative
PM_{10}	Annual	[a, b] 25µg/m3	Cumulative
PM_{10}	24-hour	[a]50µg/m^3	Cumulative
$PM_{2.5}$	Annual	[a, b] 8µg/m3	Cumulative
$PM_{2.5}$	24-hour	[a, b] 25µg/m3	Cumulative

Notes to Tables -

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

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

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

As per Condition B34, Schedule 2 of SSD-7480 requires that particulate matter emissions generated by the development must not exceed the criteria listed in Table 2 at any occupied residence on mine-owned land (including land owned by another mining company) unless:

a) *the tenant and landowner (if the residence is owned by another mining company) have been notified of any health risks associated with such exceedances*

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

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

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

3 Consultation and Communication

This Air Quality Management Plan (AQGHGMP) has been prepared by Todoroski Air Sciences (TAS) with input and compilation completed by WHC. TAS are experienced and qualified air quality experts endorsed by the Secretary of the Department of Planning, Infrastructure and Environment [DPIE] on 21 10 2020 to satisfy the requirements of Condition B36, Schedule 2 of SSD 7480. The AQGHGMP (Rev 1.2) was approved by DPIE prior to the commencement of construction on 17th January2022. In addition, VCM has extensive consultation and communication processes, including but not limited to:

- A comprehensive community engagement program which includes a Community Consultative Committee (CCC);
- Ongoing consultation with relevant government agencies including Department of Planning, Housing and Infrastructure (DPHI) and Environmental Protection Agency (EPA) achieved through submission of the document through the Major Projects portal;
- A community response line (1800 942 836) which enables members of the community to contact environment and community staff to discuss concerns about air quality; and,

- Publicly available project approvals, environmental and other related documentation (environmental assessments, annual reports, complaints register, CCC minutes) via the Whitehaven Coal website Whitehaven Coal.

4 Risk Management

Vickery Coal Mine implements a comprehensive risk management system as documented in the Whitehaven Coal HSE Risk Management Standard (WHC-STD-HSE Risk Management) and the Whitehaven Coal HSE Risk Management Procedure (WHC-PRO-HSE Risk Management). Air Quality and GHG risks and their associated control measures are documented in the Vickery Broadbrush Risk Assessment; the control measures are summarised in section 5 of this Management Plan. Operational and project related changes that have the potential to materially alter the air quality risk profile are managed through the Whitehaven Coal Management of Change Standard (WHC-STD-Management of Change).

5 Control Measures

Development Consent (SSD-7480) and EPL 21283 requires Vickery Coal Mine to implement reasonable and foreseeable avoidance and mitigation measures' regarding dust or particulate matter emissions. Key operational control measures are included in Table 3.

Table 3 - Planning Control Measures

Risk	Source	Mitigation Measures	Responsibility	Timing
Dust exceeds criteria	Areas disturbed by mining activity (surface disturbance)	Disturb minimum area necessary for mining as per Rehabilitation Management Plan (RMP) and Forward Program	Technical Services Superintendent	Ongoing
		Reshape, topsoil and rehabilitate completed overburden emplacement areas as soon as practicable	Operations Manager	Ongoing

Risk	Source	Mitigation Measures	Responsibility	Timing
		Soil stripping is undertaken with dust mitigation measures in place such as dust suppression deployed by water carts	Operations Manager	Ongoing
		Activate Trigger Action Response Plan (TARP) (See 5.3 TARP, Appendix 2 and 3)	OCE	As required
Excessive dust lift-off	Hardstand areas	Site speed limits apply	Operations Manager	Ongoing
		Apply dust suppressant on hardstand areas used regularly for access.	Environmental Superintendent	As required
Excessive dust lift-off and community complaints	Overburden emplacement and coal handling	Ripping of softer overburden material is avoided during adverse weather conditions	Operations Manager	As required
		Temporarily vegetate exposed surface	Operations Manager	As required

Risk	Source	Mitigation Measures	Responsibility	Timing
		of unused overburden emplacement areas		
		Maintain unsealed coal handling areas in a moist condition	ROM Supervisor/Production Superintendent	As required
Excessive dust lift-off	Unsealed roads/ Wheel generated dust	All roads are speed limited	Production Superintendent	Ongoing
		Apply dust suppression on major haul roads	Operations Manager	As required
		Apply dust suppression/suppressant on minor roads used regularly for access	Environmental Superintendent	As required
Excessive dust lift-off	Drilling & Blasting	Minimisation of blast area by appropriate blast design. Consideration of dust risk in blast design.	Drill & Blast Superintendent/ Engineer	Ongoing
		Assessment of weather conditions prior to blasting	Drill & Blast Superintendent/ Environmental Superintendent	Ongoing
Excessive dust		Dust suppres	ROM Supervi	Ongoing

Risk	Source	Mitigation Measures	Responsibility	Timing
lift-off and community complaints	Coal Processing	sion is applied at the feed hopper, crusher, conveyor transfer and discharge points	sor/Production Superintendent	
		Conveyors are shielded and cleaned where practical	ROM Supervisor/Production Superintendent	Ongoing
		Trucks transporting coal offsite from the Coal Processing Area are covered	ROM Supervisor/Production Superintendent	Ongoing
Excessive dust lift-off	Adverse meteorological conditions *Extraordinary events per B35 d) will also be considered regarding managing site contribution	Scheduling of additional watercart(s) in advance and in response to meteorological forecast and ambient dust levels from daily air quality monitoring summary	OCE	Ongoing
		Scheduling of amended working hours or working locations during unfavourable dispersi	OCE	Ongoing

Risk	Source	Mitigation Measures	Responsibility	Timing
		on conditions		
		Review of the elevation and wind exposure of activities and, where possible, relocating the activity to a sheltered area or undertaking an alternative activity	OCE	Ongoing
		Temporary cessation of work within an area or a particular activity until more favourable conditions return.	OCE	Ongoing
Excessive GHG emissions	GHG from fuel burn from mining equipment	Trucks and plant on-site will be well maintained.	Maintenance Superintendent	Ongoing
		Unnecessary idling for trucks and plant will be avoided	Production Superintendent	Ongoing
		Ensure dump trucks	Production	Ongoing

Risk	Source	Mitigation Measures	Responsibility	Timing
		are fully loaded for each load prior to hauling	Superintendent	
		Optimisation of fleet and haulage routes to ensure efficiency of equipment travel where possible	Production Superintendent/ Technical Services Superintendent	Ongoing
		Turn off any unnecessary lighting	Production Superintendent/ OCE	Ongoing
Odour generated	Spontaneous Combustion	Minimise time coal is in the stockpile through planning of haulage to align with ROM coal production	ROM Supervisor/Production Superintendent	Ongoing
		Doze down sides and compact with a track dozer	ROM Supervisor/Production Superintendent	Ongoing
		Monitor the stockpile on regular basis by visual means	ROM Supervisor/Production Superintendent	Ongoing

*Dust suppressants is inclusive of water and chemical suppressants

Key operational control procedures supporting the above air quality management measures as a result of mining activity include:

5.1.1 WHC-PRO-OC-Load, Haul and Dumps

This procedure outlines the controls for prevention and mitigation of dust from operations for the preparation, loading and transportation of coal, overburden, or other material to a ROM pad, dump or stockpile, and applies to operational areas in Open Cut Operations.

5.1.2 WHC-PRO-OC-GOC-Clearing Operations

This procedure provides for the safe clearing of trees and topsoil within defined and approved open cut areas, in accordance with the Development Consent (SSD-7480). The document outlines the ground disturbance permit process for Vickery Coal Mine and details control measures to be implemented during vegetation clearing, topsoil stripping and topsoil stockpiling to ensure activities are undertaken in an environmentally responsible manner and in accordance with statutory requirements and site environmental management plans.

5.1.3 WHC-PRO-OC-Safe Operation of a Watercart

This procedure outlines a standard work practice for the identification of risks associated with the operation of water carts and the suppression of dust on roads.

5.1.4 WHC-STD-OC-Conveyors

This procedure defines the requirements for conveyors with regards to covers, sprays and maintenance activities to prevent and mitigate dust emissions.

5.1.5 WHC-STD-OC-Road and Dump Design

This procedure outlines the processes to ensure roads and dumps are designed and maintained to acceptable standards to prevent and mitigate dust emissions. This includes but not limited to material used for road construction, stockpile heights and drainage considering dust generation potential.

5.2 Trigger Action Response Plan (TARP)

Vickery Coal Mine use visual dust monitoring, real time monitoring results and meteorological monitoring as the primary means for proactive and reactive air quality management. The Dust TARP is comprised of a visual dust inspection TARP and a meteorological TARP (Appendix 2 and 3).

5.2.1 Visual Dust Trigger Action Response Plan

Visual inspection of dust will be conducted at all times by personnel at VCM to determine whether visible dust levels are within appropriate levels, or if further mitigation is required. A TARP has been developed for the site which provides visual dust trigger indicators, (normal, level 2 and level 3), and sets out the corresponding response/actions if the trigger is reached. This is provided in Appendix 2.

5.2.2 Meteorological Risk Response Matrix

A meteorological risk/response matrix has been developed for the site to identify operational practices or weather conditions that require specific action to mitigate potential impacts. The intent behind the risk response matrix is to understand the prevailing conditions and implement management practices accordingly to avoid subsequent air quality impacts. Meteorological data is obtained from MET1 and MET2 weather stations and site alerts have been set up in the event that wind speed measurements are high enough to increase the risk of dust generation. Real time monitors provide for site alerts in the event that dust measurements of PM10 and PM2.5 approach compliance thresholds. This is provided in Appendix 3.

5.3 Greenhouse Gas Management

The main sources of GHG emissions at VCM and considered in the AQGHGMP are:

- Fuel consumption (diesel) during mining operations (mine haulage fleet and heavy vehicle equipment and generator use) – Scope 1; and
- Release of fugitive emissions from the mining of coal seams – Scope 1.

VCM is not connected to the electricity grid and relies on generators for power generation. A small amount of electricity is purchased for VCM owned properties that contain monitoring equipment. VCM has transitioned to utilising a carbon neutral power utility supplier for all electricity used across site.

The GHG management for the Project will focus on emissions management and reductions associated with energy efficiency and diesel consumption.

Emissions during operations will be minimised as follows:

- consideration of the fuel efficiency of all mobile and fixed equipment during procurement;
- ensure dump trucks are fully loaded for each load prior to hauling to maximise productivity and efficiency with regard to the amount of fuel used per unit of material moved;
- maintaining the mobile fleet in good operating order (e.g. regular maintenance and scheduling, implementation of high efficiency motors, reduction of engine idle times); and
- optimisation of fleet and haulage routes including gradient management and minimisation of track resistance to ensure efficiency of equipment travel where possible;
- consideration of the energy efficiency of all new major electrical equipment during procurement; and
- turning off unnecessary lighting around the mine site consistent with safety requirements

In addition, in accordance with Condition B35(b), Schedule 2 of SSD-7480, WHC will ensure that all 'non-road' mobile diesel equipment include reasonable and feasible diesel emissions reduction technology.

WHC is investigating technologies to reduce mine haulage fleet diesel emissions in the short to medium term and are engaging with Original Equipment Manufacturers (OEMs) in relation to low-carbon truck technology development pathways. Based on this engagement, WHC do not anticipate low-carbon truck electrified solutions suitable for our open cut mines to be commercially available before 2030. VCM conducts regular reviews and monitors GHG emissions through an internal purpose-built tracking system further detail on this can be found in Whitehaven Sustainability report published annually.

Fugitive emissions are quantified in accordance with the National Greenhouse and Energy Reporting (NGER) Scheme. VCM has been characterised with a low fugitive emissions profile which have been shown to contribute <3% of VCM's overall greenhouse gas emissions in previous NGER scheme reports.

5.4 Odour Management

It is a requirement of the Develop Consent that no offensive odours are emitted from the site, as defined under the Protection of the Environment Operations Act 1997 (NSW). The primary potential sources of odour at Vickery Coal Mine are spontaneous combustion and blast fume.

Blasting at the VCM would be conducted in accordance with the Blast Management Plan. Secondary sources include potential odour emissions from hydrocarbons and effluent discharge areas, or the use of manures and bio-solids during rehabilitation.

The management of spontaneous combustion is achieved through monitoring of stockpiles at the ROM. Any report of excessive heating or smoke in coal stockpiles will be investigated and heated material will be managed according to site procedures. The primary management method is to remove the heated material using site equipment. Drones can also be used with infra-red technology to detect and monitor heated material within coal stockpiles.

The application of any discharge from systems to effluent discharge areas on site will be in accordance with applicable approval requirements to operate the on-site systems, and application of any manure / biosolids for the purpose of rehabilitation will be in consideration to adjacent operational areas and weather conditions.

Management of odour and fumes from blasting are outlined in the Blast Management Plan (WHC-PLN-VCM-Blast Management Plan) and include measures to manage blasting with respect to meteorological conditions, applying appropriate blasting design practices and product selection, and ensuring appropriate exclusion distances for blasting. Other odour sources are unlikely to generate impacts outside of the site and are not considered further in this AQGHGMP.

6 Air Quality Monitoring Program

6.1 Monitoring Program

An Air Quality Monitoring Program has been established to evaluate and report on:

- the effectiveness of the management of emissions to air;
- compliance with air quality criteria; and
- compliance with air quality operating conditions.

Monitoring is conducted in accordance with relevant standards as outlined in *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (EPA, 2022). All statutory monitoring locations will conform to the requirements of *AS 3580.1.1:2007 Methods for sampling and analysis of ambient air – Part 1.1: Guide to siting air monitoring equipment*, subject to local site constraints. The effectiveness of the monitoring program will be evaluated each year upon the review of this plan as per the requirements of section 9.2 and reported on each year in the annual review.

Note that direct monitoring of TSP is not conducted as the TSP values are determined by multiplying measured PM_{10} values by a factor of 2. This approach was accepted by DPE for all Whitehaven sites in a letter dated 5th August 2011.

As described in Condition E13 of SSD 7480 air quality monitoring may be undertaken at suitable representative monitoring locations instead of at privately owned residences. To assess compliance with the relevant criteria in Table 2 and Table 7, air quality monitoring will be conducted at various locations that are considered representative of relevant residences in the areas that may be potentially influenced by construction and initial mining activities as well as operations (Table 4 and Figure 1). VCM's air quality monitoring network includes two compliance real-time TEOMs at private residences, one observation TEOM at a private residence (PM4) and one observation TEOM on a mine-owned property. Additional monitoring may be deployed at other locations in the future to accommodate construction of the rail spur and CHPP. Monitoring at the historic sites PM3 and PM4 (Figure 1) may also be relocated closer to the Vickery operation (remaining on the eastern side of mining lease CL316) once monitoring at the closed site, Rocglen Coal Mine, is no longer required.

Table 4 - Air Monitoring Locations

Monitor*	Description	Easting	Northing	Residence/Property	Parameter	Frequency
MET1	Automatic Weather station	229349	6596516	Vickery Mine Site/1h	Meteorological data	**Continuous**
MET2	Automatic Weather station	230888	6589692	Vickery Mine Site/1z	Meteorological data	**Continuous**
PM1	TEOM	227751	6588284	131a	PM_{10}, $PM_{2.5}$	**Continuous & monthly**
PM2	TEOM	225762	6592528	125	PM_{10}, $PM_{2.5}$	**Continuous & monthly**
Will-gai	TEOM Not used for compliance	231807	6596402	1x	PM_{10}, $PM_{2.5}$	**Continuous**
PM3	HVAS Not used for compliance	238945	6590485	98	PM_{10}	**Every six days & monthly**

Monitor*	Description	Easting	Northing	Residence/Property	Parameter	Frequency
PM4	TEOM Not used for compliance	238939	6590463	98	PM_{10}	**Continuous**
*** See Figure 1**						

6.1.1 Particulate Matter

PM_{10} and $PM_{2.5}$ will be monitored continuously in the vicinity of the VCM (Figure 1 and Table 5). Monitoring of PM_{10} and $PM_{2.5}$ will be conducted in accordance with relevant Australian Standards (e.g. *AS 3580.9.8-2008: Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – $PM_{2.5}$ beta attenuation monitors; AS 3580.9.13-2013: Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – $PM_{2.5}$ continuous direct mass method using a tapered element oscillating microbalance monitor)*.

6.1.2 Total Suspended Particulate

TSP concentrations are not directly measured in the vicinity of the VCM, however annual average TSP concentrations are derived based on typical ratios of PM_{10}/TSP. A PM_{10}/TSP ratio of 0.5 has been applied, consistent with the ratio applied for other WHC mines in the region.

6.1.3 Meteorological Monitoring

Meteorological data will be collected at the on-site meteorological monitoring stations (Figure 1). The weather stations are sited in accordance with the requirements in SSD-7480 and EPL 21283,[1] and consistent with Condition B38. Both weather stations will be used for the purposes of air quality monitoring and will both be maintained to meet the required standard in *Approved Methods for Sampling of Air Pollutants in NSW* (NSW EPA, 2022).

Table 5 provides the meteorological monitoring parameters for which data would be collected at the onsite meteorological monitoring station.

Table 5 - Meteorological Monitoring Parameters

Parameter	Units	Frequency	Average Period	Method
Wind speed @2m	Metres per second	Continuous	5 minute	AM-2 & AM-4
Wind speed @10m	Metres per second	Continuous	5 minute	AM-2 & AM-4
Wind direction @10m	Degrees	Continuous	5 minute	AM-2 & AM-4
Temperature @ 10 m	Degrees Celsius	Continuous	5 minute	AM-4
Temperature @ 2 m	Degrees Celsius	Continuous	5 minute	AM-4
Relative humidity	Percentage	Continuous	5 minute	AM-4
Rainfall	millimetres	Continuous	5 minute	AM-4
Solar radiation	Watts / m2	Continuous	5 minute	AM-2 & AM-4
Sigma theta	Degrees	Continuous	5 minutes	AM-2 & AM-4

[1] *AM-2, Guide for measurement of horizontal wind for air quality applications* (AS 2923-1987 or AS/NZS 3580. 14-2014) and *AM-4, Meteorological monitoring guidance for regulatory modelling applications EPA 454/R-99-005* (US EPA, 2000).

6.1.4 Greenhouse Gas Emissions

VCM forms a facility as part of the WHC's National Greenhouse and Energy Reporting Scheme (NGERS) reporting requirements. Under NGERS requirements, relevant sources as discussed in Section 5.3 of GHG emissions and energy consumption must be measured and reported on an annual basis, allowing major sources and trends in emissions/energy consumption to be identified.

Each financial year, WHC's NGER data is independently assured. During this assurance process the VCM GHG emissions data collection, record keeping and verification are audited to ensure compliance with Section 19 of the *National Greenhouse and Energy Reporting Act 2007* (Cth).

GHG emissions and performance for each calendar year will be reported within the VCM Annual Review. This will include reporting on any new energy and emissions savings projects that have been implemented by VCM or are planned to be implemented in the following year.

7 Responsibilities

Table 6 - Roles and Responsibilities

Role	Responsibility
Environmental Superintendent, Officer or delegate	Maintenance and update of this plan; and Monitoring program implementation, review and reporting, as required.
Operations Manager, Statutory Open Cut Examiner (OCE), Production Superintendent, ROM Supervisor, Drill & Blast Superintendent and Maintenance Superintendent (or equivalent roles).	Implementation of operational controls listed in Table 2
All employees	All employees at VCM share the responsibility of following site procedures and legal requirements which includes the management of Air Quality and are referenced where applicable in operational control documentation and training materials.

8 Data Quality Assurance

- Real-time data is accessed by a web interface that provides notifications and/or indicates when equipment is not operating as required or a dust trigger level is reached. Additional quality checks are undertaken when a dust alert is reached. Validations on the monthly air quality data are undertaken by an external contractor.
- HVAS samples are analysed monthly by a National Association of Testing Authorities accredited laboratory to determine the mass deposition rate of insoluble solids, ash, combustible matter, soluble solids and total solids from ambient air.
- Monitoring equipment is maintained and calibrated in accordance with manufacturer's specifications and relevant standards.
- Random audits of operating responses to real time air quality management systems are undertaken as required.

9 Compliance Obligations

9.1 Protocol for determining exceedances

A protocol for managing and reporting non-compliances with statutory requirements has been developed as a component of the VCM's EMS and is described below.

Where monitoring results are above the air quality criteria listed in Table 2, an investigation will be conducted to validate the monitoring data. If the data is valid the investigation will continue by estimating the contribution from Vickery Coal Mine mining activities and the recording of the reasonable and feasible mitigation measures implemented. The method for estimating the incremental contribution from Vickery Coal Mine mining activities includes determining the surrounding dust concentrations for the 24-hour period using upwind and downwind concentrations together with meteorological data. An incident is defined when the contribution from Vickery Coal Mine mining activities (incremental contribution) exceeds the criteria. If an incident is identified the reporting timeframes will be followed as per section 9.3, Incident Notification. DPHI will be notified of the exceedance event and the result of the investigation in the event that an incident is not identified.

Affected landowners and the CCC of an identified exceedance incident of air quality criteria will be notified as soon as practical and no longer than 7 days following receipt of results in accordance Schedule 4 Condition

D6 SSD-7480 and provide them with the details of the exceedance and the latest version of the 'Mine Dust and You' fact sheet issued by NSW health.

9.2 Non-compliance Notification

A written report on a non-compliance with required contents will be provided to the DPHI via the major projects website within 7 days of becoming aware of the non-compliance (or as otherwise directed by the DPHI) as per Condition E8 of SSD 7480. The notification will set out the condition/s of SSD-7480 which the VCM is non-compliant with, why it is non-compliant and what actions have or will be taken to address the non-compliance. A report on a non-compliance with any condition of EPL 21283 or any provisions of the *Protection of the Environment Operations Act 1997* (POEO Act) will be provided to the EPA as required and reported in the Annual Return.

9.3 Incident Notification

In accordance with Condition E7 of SSD-7480 and relevant conditions of EPL 21283 and under Part 5.7 of the POEO Act the Secretary of DPHI and representatives of all relevant regulatory agencies will be informed of any incident that;

- has caused, or threatens to cause, material harm to the environment; and
- breaches or exceeds the limits or performance measures/criteria in this approval.

A notification will be provided to the DPHI and the EPA immediately after becoming aware of an incident via the major project portal and the EPA 'hub' email address/pollution phone line. Follow up reports will be submitted to the EPA and DPHI as required.

If a non-compliance has been notified to the DPHI as an incident, it does not also need to be notified as a non-compliance. Detailed records of all incidents, investigations and corrective actions shall be managed according to WHC-STD-Incident and Hazard Management which includes the use of the WHC360 database.

9.4 Complaint Handling

Whilst all endeavours will be made by VCM to avoid adverse air quality impacts on local landowners / residents, it is acknowledged that impacts may occur. In order to ensure an appropriate and consistent level of reporting, response and follow-up to any complaints is adopted by VCM, the following complaints management protocol will be followed:

- a publicly advertised telephone complaints line will be in place to receive complaints;
- initial response is provided where practical within 24 hours of receipt of a complaint;
- an investigation will be initiated as per for an exceedance (Section 9.1);
- all details regarding the complaint including investigation outcomes and follow up actions will be documented in a complaints register.

A copy of the Complaints Register will be made available to the CCC and the complainant (on request) and updated monthly on the VCM website. A summary of complaints received every 12 months will be included in the Annual Review.

In accordance with Condition D8, SSD 7480 if a landowner requests an independent review of the air quality impacts of the development on their land VCM will work with the department to ensure completion of an independent review to the satisfaction of the Planning Secretary.

9.5 Land Acquisition

In accordance with condition D11 of SSD 7480 if a written request is received for acquisition from a landowner with acquisition rights VCM will make a binding offer to the landowner based on the market value of the landowner's interest in the land in accordance with the full requirements of Condition D11.

9.6 Contingency Plan

In the event that there are any unpredicted air quality impacts above the impact assessment criteria, WHC will implement the following Contingency Plan for the VCM:

- The Environmental Superintendent or appropriate delegate will report the event as an incident, in accordance with Section 9.3 and consult with DPHI regarding the provision of any additional information as requested by the Secretary. Additionally, VCM will undertake the notification protocol to the affected landowners and the CCC outlined in section 9.1.
- WHC will undertake an investigation into the unpredicted air quality impacts. As outlined in Section 9.3, records of all incidents, investigations and corrective actions shall be managed according to WHC-STD-Incident and Hazard Management which includes the use of the WHC360 database.
- WHC where applicable will apply adaptive management including;
    - taking all reasonable and feasible steps to ensure that the non-compliance does not recur;
    - undertaking supplementary air quality monitoring if appropriate;
    - reviewing relevant site procedures including the Dust TARP; and
    - considering all reasonable and feasible options for remediation (where relevant). and submit a report to the Secretary describing those options and any preferred remediation measures or other courses of action; and
    - implementing remediation measures as directed by the Secretary, to the satisfaction of the Secretary.
- WHC will identify the appropriate course of action with respect to the identified impact(s), in consultation with technical specialists, the Secretary and any other relevant agencies, as necessary. For example, contingency measures, such as, but not limited to;
    - Consulting with affected landowners considered to be impacted above predicted criteria and providing them with options for modifying construction and mining activities (e.g. amending activities at certain times of the day).
    - investigating and implementing further management measures and controls, if monitoring results indicate this is required. This could include additional dust suppression or mitigation measures employed at the affected residence.
- WHC will, in the event there is a dispute over the proposed remedial course of action or if the actions conflict with current approvals, submit the appropriate course of action to the Secretary for approval.

WHC will implement the appropriate course of action to the satisfaction of the Secretary.

10 Reporting and Review

10.1 Performance Indicators

In accordance with Condition E4(b)(iii), Schedule 5 of SSD-7480, WHC has developed protocols for monitoring, managing and reporting the following:

- incidents;
- complaints;
- non-compliances with statutory requirements; and
- exceedances of the impact assessment criteria and/or performance criteria.

These protocols are described in Section 9 and the VCM's Environmental Management Strategy (EMS).

If monitoring of these performance indicators evidences a trend towards increasing occurrence additional management measures may be taken following an internal review of the data. A discussion regarding data trends in relation to the performance indicators will be included in the Annual Review if relevant as described in section 10.2.4.

10.2 Reporting

10.2.1 Regular Monitoring Reports on Webpage

In accordance with Condition E14 of SSD-7480, the following reports are updated as per requirements and available on the WHC website, including:

- Weather forecasts for the week;
- Real-time (non-validated air quality monitoring data);
- Operational responses to noise, weather and dust levels;
- Monthly reporting results as per the Approval; and
- Summary reports available on a monthly basis required under the POEO Act.

10.2.2 Compliance Reporting

An overview of any non-compliances or incidents received during the reporting year are included in VCM's annual review. Refer to section 10.2.4 for further detail on the annual review.

10.2.3 CCC Reporting

A Community Consultative Committee (CCC) has been established and will continue to be operated for the duration of operations on site. Regular briefings to the CCC will be provided, including a summary of results from the VCM air quality monitoring network.

10.2.4 Annual Review

In accordance with Condition E9, Schedule 2 of SSD 7480, WHC will review the environmental performance of the VCM for the previous calendar year and report results within the Annual Review to the satisfaction of the Secretary. The air quality component of the Annual Review includes the required detail as per the DPE *Annual Review Guideline* (2015). The Annual Review will be sent to the relevant regulatory agencies for review and made publicly available on the WHC website.

The latest five Annual Reviews will be made publicly available on the WHC website in accordance with Condition E14, Schedule 2 of SSD 7480.

10.3 Review

This AQGHMP will be reviewed and evaluated to assess its adequacy and effectiveness, to the satisfaction of the Secretary (in consultation with relevant government agencies) in accordance with Condition E5, Part E of SSD 7480. This requires that this is undertaken within 3 months of:

a) The submission of an incident report;

b) The submission of the annual review;

c) The submission of an independent environmental audit; and

d) Any modifications to the conditions of the Development Consent.

If necessary, the AQGHMP will be revised to incorporate any recommended measures to improve the environmental performance of VCM resulting from audits, community complaints and incident investigation findings. In addition, the review process will include ongoing evaluation of operational modifications, alternative methodologies and new technologies that become available for their potential to lessen air quality impacts. In accordance with condition E6, Part E of SSD 7480 any review of the management plan in response to a modification or to improve the environmental performance will be submitted to the Planning Secretary for approval within 6 weeks of the review.

10.4 Independent Audit

In accordance with Condition E10, Schedule 2 of the SSD 7480, an IEA of the VCM will be conducted by a suitably qualified, experienced and independent auditor and team of experts whose appointment has been endorsed by the Secretary. A copy of the audit report will be provided to the Planning Secretary within 3 months of the commencement of the audit in accordance with Condition E11 of SSD 7480.

Within 1 years from the commencement of construction and every 3 years thereafter, WHC shall commission an IEA of the VCM. The IEA includes a review of the air quality performance of VCM, assess compliance with the requirements in this plan, and implementation of air quality management measures, as per the Independent Audit Post Approval Requirements (2020) or the most up to date version of this document. The IEA and WHC's response to recommendations in the Audit, will be made publicly available on WHC's website as per Condition E14, Schedule 2 of SSD 7480.

11 References

Commonwealth of Australia (2014), Clean Energy Legislation (Carbon Tax Repeal).

Commonwealth of Australia (1979), Environmental Planning and Assessment Act 1979 (EP&A Act).

Commonwealth of Australia (1998), National Environment Protection (Ambient Air Quality) Measure

Commonwealth of Australia (1998), National Environment Protection (National Pollutant Inventory) Measure.

Commonwealth of Australia (2007), National Greenhouse and Energy Reporting Act (NGER Act).

Commonwealth of Australia (2008), National Greenhouse and Energy Reporting (Measurement) Determination.

Commonwealth of Australia (1997), Protection of the Environment Operations Act 1997 (POEO Act).

Commonwealth of Australia (2010), Protection of the Environment Operations (Clean Air) Regulation 2010.

Commonwealth of Australia (2012), National Pollutant Inventory Emission Estimation Techniques Manual for Mining, Version 3.1.

Development Consent (2020), Vickery Coal – SSD 7480

Environment Protection Authority (2022), Approved methods for the modelling and assessment of air pollutants

Environmental Protection Licence 12365.

Standards Australia (2008) AS 3580.9.8-2008: Methods for sampling and analysis of ambient air - Determination of suspended particulate matter - PM10 continuous direct mass method using a tapered element oscillating microbalance analyser.

Standards Australia (2007) AS 3580.1.1:2007: Methods for sampling and analysis of ambient air - Guide to siting air monitoring equipment.

Standards Australia (1987) AS 2923-1987: Ambient air - Guide for measurement of horizontal wind for air quality applications.

11.1 Version Control

Revision	Description	Author	Authorised by	Date
1	Document Developed	Todoroski Air Services/WHC	WHC	2021
1.2	Document updated in response to consultation and approved by DPIE	Todoroski Air Services/WHC	WHC	17/1/22
1.3	Updated to new template with amended monitoring locations.	Todoroski Air Services/WHC	Env Supt	9/7/2025

Figure 1: VCM's Air Quality Monitoring Locations

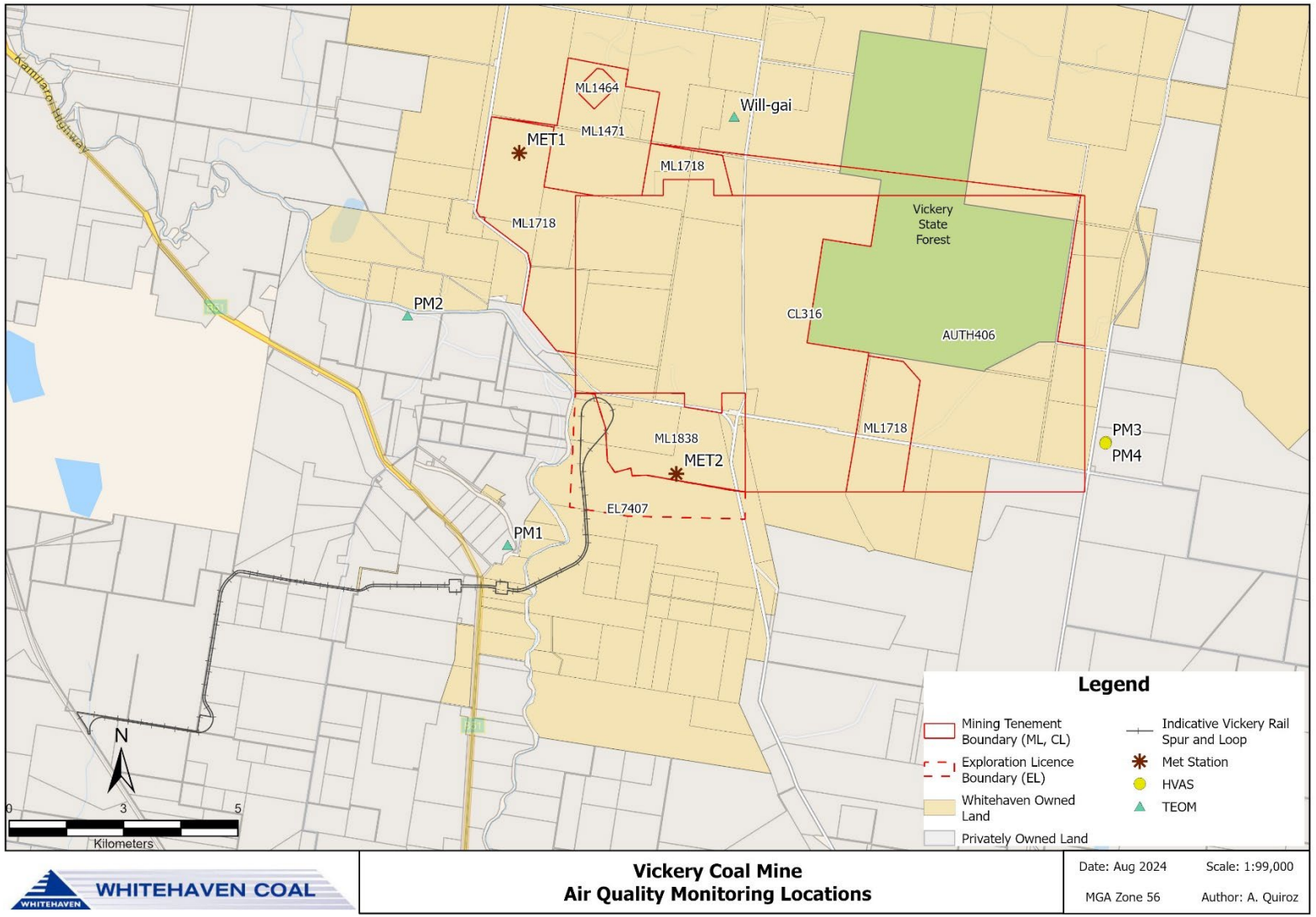


Figure 1 - Air Quality Monitoring Locations

Appendix 1: Development Consent (SSD-7480) Conditions

Table 7 -Specific Air Quality Management Conditions in SSD-7480

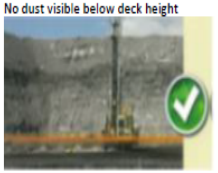
VCM Development Consent (SSD-7480) Schedule 2	Relevant AQMP Section
B36. The Applicant must prepare an Air Quality and Greenhouse Gas Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:	This AQMP
(a) be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;	Section 3 and 11.1
(b) be prepared in consultation with the EPA;	Section 3
(c) be submitted to the Planning Secretary for approval prior to carrying out development under this consent;	Section 3
(d) describe the measures to be implemented to ensure:	-
(i) compliance with the air quality criteria and operating conditions of this consent;	Sections 4,5 and 6
(ii) best practice management is being employed (including in respect of minimisation of greenhouse gas emissions from the site and energy efficiency) to:	-
• *minimise the development's air quality impacts;*	Sections 4,5 and 6
• *minimise the development's Scope 1 and 2 greenhouse gas emissions; and*	Section 5.3
• *improve the development's energy efficiency; and*	Section 5.3
(iii) the air quality impacts of the development are minimised during adverse meteorological conditions and extraordinary events;	Section 5
(e) describe the air quality management system in detail; and	Sections 4,5 and 6
(f) include an air quality monitoring program, undertaken in accordance with the Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales (DEC, 2007), that:	Section 6
(i) uses monitors to evaluate the performance of the development against the air quality criteria in this consent and to guide day to day planning of mining operations;	Sections 5.2 and 6
(ii) adequately supports the air quality management system; and	Section 6
(iii) includes a protocol for identifying any air quality-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of these events.	Sections 9 and 10
B37. The Applicant must implement the Air Quality and Greenhouse Gas Management Plan as approved by the Planning Secretary.	Section 2

Table 8 - General Management Plan Requirements

VCM Development Consent (SSD-7480) Schedule 2	Relevant AQMP Section
E4. Management plans required under this consent must be prepared in accordance with relevant guidelines, and include where relevant:	Entire Document
(a) summary of relevant background or baseline data;	Section 1.2
(b) details of:	-
(i) the relevant statutory requirements (including any relevant approval, licence or lease conditions);	Section 2
(ii) any relevant limits or performance measures and criteria; and	Section 2

VCM Development Consent (SSD-7480) Schedule 2	Relevant AQMP Section
(iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;	Section 10.1
(c) any relevant commitments or recommendations identified in the document/s listed in condition A2(c);	Entire Document
(d) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	Section 5
(e) a program to monitor and report on the:	Section 6
(i) impacts and environmental performance of the development; and	Sections 6 and 10
(ii) effectiveness of the management measures set out pursuant to paragraph (d);	Sections 6 and 10
(f) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;	Section 6
(g) a program to investigate and implement ways to improve the environmental performance of the development over time;	Section 10
(h) a protocol for managing and reporting any:	Sections 9 and 10
(i) incident, non-compliance or exceedance of any impact assessment criterion or performance measure;	Section 9
(ii) complaint; or	Section 9.4
(iii) failure to comply with other statutory requirements;	Section 9
(i) public sources of information and data to assist stakeholders in understanding environmental impacts of the development; and	Section 10
(j) a protocol for periodic review of the plan.	Section 10.3

Appendix 2: Visual Dust Trigger Action Response Plan

	Normal State		Level 2 Triggers		Level 3 Triggers	
Work Area/ Equipment	**Trigger**	**Action/ Response**	**Trigger**	**Action/ Response**	**Trigger**	**Action/ Response**
Haul trucks / haul roads	Dust below wheel height 	• Continue work/ tasks as normal. Maintain dust suppression activities. • Continue to monitor operation.	Dust above wheel height, but below tray height. 	• Truck Operator to reduce speed & notify water cart operators for additional dust suppression. • Limit grading activities. • Consolidate haul roads and dumps in use. • Reduce haul distance if possible. Shut non-essential roads.	Dust above tray height 	• Truck Operator to notify Mining Supervisor and STOP work. • Mining Supervisor to call for additional dust suppression. • Work to resume once water cart operator has advised roadway is adequately watered.
Water carts	Normal operation	• Water carts to be manned as required. Services to be planned for night shifts. • Zone watering technique to be applied where possible.	Minor breakdown(s) - (duration less than 10% of shift) weather dependant	• Water carts to be hot seated during crib breaks. Limit grading activities. • Consolidate haul roads and dumps in use. Reduce haul distance if possible. • Shut non-essential roads.	Major breakdown(s) - (50% or more of carts unavailable over shift) weather dependant	• Water truck operators to inform supervisor if they cannot control dust. • Work to resume once water cart operator has advised roadway is adequately watered.
Dozers/ Dumps		• Continue work/ tasks as normal. Continue to monitor operation.		• Dozer Operator/ Supervisor to limit activity to leeward side of area. • Reduce drop height of materials. • Cease non-essential activities and operations in wind exposed areas. • Limit travel speeds. • Water work areas		• Limit dumping to paddock dumping only. • Dozer operators to notify Mining Supervisor and Stop where paddock dump unavailable. • Work to resume only when controls are sufficient or weather conditions permit.
Loaders/ Excavators		• Continue work/ tasks as normal. • Continue to monitor operation.		• Limit tramming or pushing distances. • Limit number of operations being conducted. • Increase watering of area. • Change material type.		• Loader/excavator operator to notify Mining Supervisor and STOP work. • Only recommence work with supervisor approval or if weather conditions permit. • Change material type.
Drills	No dust visible below deck height 	• Continue work/ tasks as normal. Monitor dust suppression activities. • Continue to monitor operation.	Dust visible at deck height. Sporadic event. 	• Drill Operators to ensure dust suppression system functioning correctly. • Mining Supervisor monitor conditions. • Assess impact of weather conditions and modify operations required.	Persistent emissions of dust above deck height. 	• Drill operator STOP operations. • Dust suppression system checked for operational and maintenance requirements. • Only recommence work if the dust suppression system if operable, site preparation is adequate and weather conditions permit.

Appendix 3: Meteorological Risk Response Matrix

Location/Activity	**Wind Speed <7m/s** **No SMS Alarm Received** **(Normal – Low risk conditions)**	**Wind Speed above 7m/s SMS received** **AND/OR** **1 hr average Dust Alert SMS received**	**Wind Speed >10m/s SMS Alert Received** **AND/OR** **24 hr dust average SMS alert received**			
Wind Direction	**All**	**All**	**North**	**South**	**East**	**West**
Highest dump close to southern/western boundary	No specific action required. Visible dust TARP operates at all times when inspecting the pit/operational areas	Formal visible dust check/inspection of operations is triggered. Record inspection and any actions taken. Slow trucks down on haul roads until dust generation reduces to acceptable level (Level 1 on visual TARP) Slow GBH trucks accessing the rejects dump areas and ROM pad until dust generation reduces to acceptable level Suspend activities according to priority/location/dust generation risk if emissions cannot be controlled. Utilise lower dump locations **Monitor 1 hr dust average level to ascertain if controls have been effective**	**Stop activity** and send equipment to lower dumps/operational areas			
Elevated dump area close to Southern boundary			**Stop activity** relocate equipment	Level 2 TARP response	**Stop activity** relocate equipment	**Stop activity** relocate equipment
Elevated dump area close to Northern boundary			**Stop activity** relocate equipment			
Elevated central dump area			Level 2 TARP response			
Soil stripping and vegetation clearing			**Stop activity** relocate equipment			
Crusher and/or loader ROM Pad			**Stop activity** relocate equipment	Level 2 TARP response	**Stop activity** relocate equipment	Level 2 TARP response
Excavators and Truck fleets in lower/sheltered areas of the operation			Level 2 TARP response			

Department of Planning, Housing and Infrastructure

Our ref: SSD-7480-PA-79

Tony Dwyer
Group Manager – Approvals and Biodiversity
Vickery Coal Pty Ltd

18/07/2025

Vickery Coal 2 – Air Quality Greenhouse Gas Management Plan (AQGGMP)

Dear Mr. Dwyer

Thank you for submitting in accordance with Condition B36, Schedule 2 of the consent for the Vickery Coal 2 (SSD-7480). I also acknowledge your response to the Department's review comments and request for additional information.

I note the AQGGMP has been prepared in consultation with EPA; and contains the information required by the conditions of approval.

Accordingly, as nominee of the Planning Secretary, I approve the revised AQGGMP (Rev, 1.3 July 2025).

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 02 99955944.

Yours sincerely

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