WHC_PLN_VCM_AIR QUALITY AND GREENHOUSE GAS MANAGEMENT PLAN

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1 INTRODUCTION

The Vickery Coal Mine (VCM) is located in the Gunnedah Coal Basin, approximately 25 kilometres (km) north of Gunnedah in New South Wales (NSW) (Figure 1-1). 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). 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.

1.1 PURPOSE AND SCOPE

This Air Quality Management Plan (AQMP) has been prepared by WHC (with input from experienced and qualified air quality experts [Todoroski Air Sciences] 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 (Table 1).

Table 1 – 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 1.1
(b) be prepared in consultation with the EPA;	Section 1.2
(c) be submitted to the Planning Secretary for approval prior to carrying out development under this consent;	Section 1.2
(d) describe the measures to be implemented to ensure:	-
(i) compliance with the air quality criteria and operating conditions of this consent;	Sections 4, 7 and 8
(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 7.1 and 7.4
• *minimise the development's Scope 1 and 2 greenhouse gas emissions; and*	Section 7.5
• *improve the development's energy efficiency; and*	Section 7.5
(iii) the air quality impacts of the development are minimised during adverse meteorological conditions and extraordinary events;	Section 7.1, 7.2 and 7.3
(e) describe the air quality management system in detail; and	Section 7
(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 8

VCM Development Consent (SSD-7480) Schedule 2	Relevant AQMP Section
(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 3.2 and 8.3
(ii) adequately supports the air quality management system; and	Section 8
(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 5, 8.3, 9 and 11
B37. The Applicant must implement the Air Quality and Greenhouse Gas Management Plan as approved by the Planning Secretary.	Section 2

This AQMP has been prepared in accordance with the standard requirement for management plans listed in Condition E4, Schedule 2 of SSD-7480 (see Table 2). Table 2 presents these requirements and indicates where each is addressed within this AQMP.

Table 2 – 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 3
(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 4
(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 5
(c) any relevant commitments or recommendations identified in the document/s listed in condition A2(c);	
(d) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	Section 7
(e) a program to monitor and report on the:	Section 8
(i) impacts and environmental performance of the development; and	Section 10
(ii) effectiveness of the management measures set out pursuant to paragraph (d);	Section 8.3
(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 9
(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:	Section 11
(i) incident, non-compliance or exceedance of any impact assessment criterion or performance measure;	Section 11.1
(ii) complaint; or	Section 11.2
(iii) failure to comply with other statutory requirements;	Section 11.3
(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 10.1

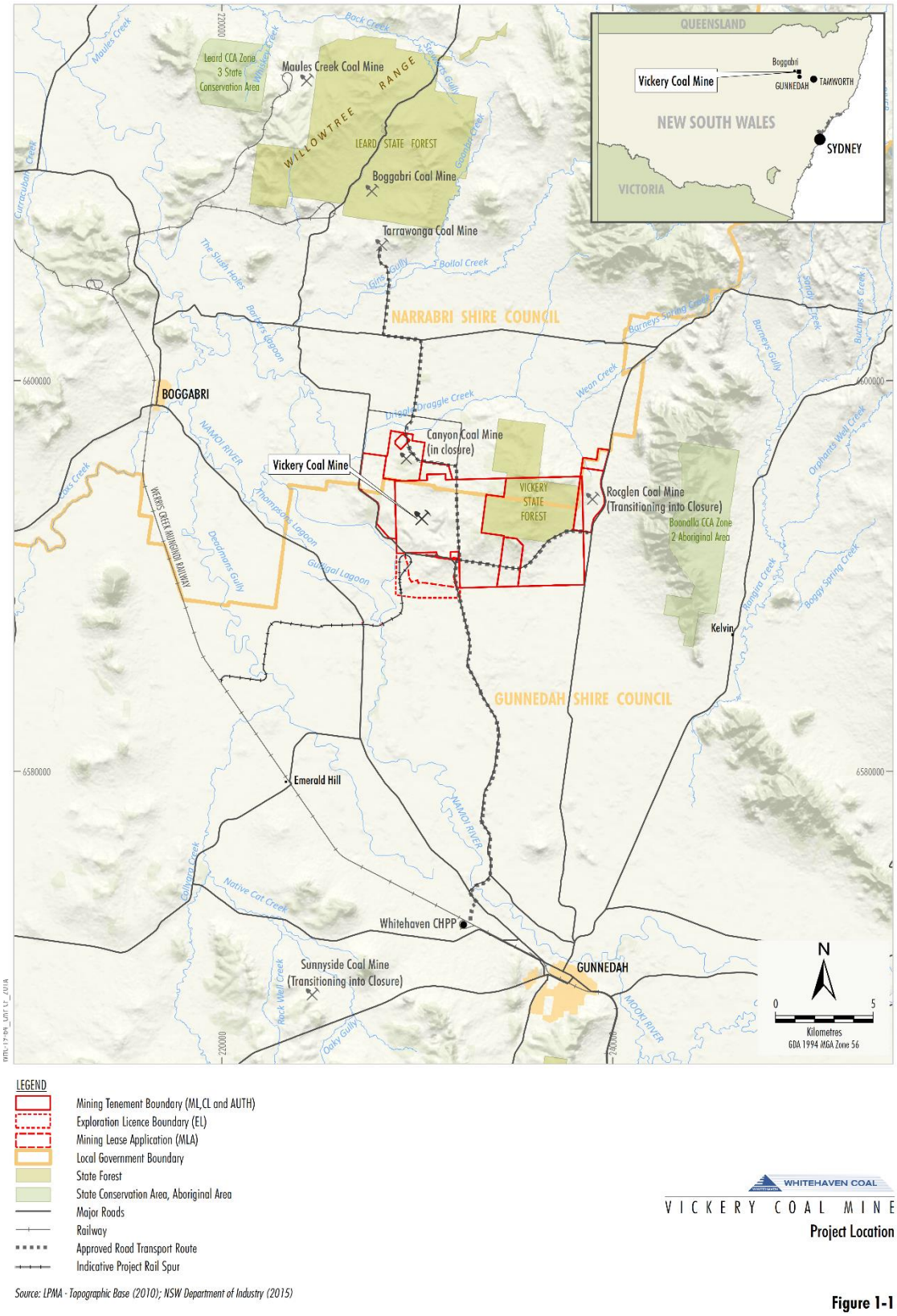


Figure 1-1 Regional Location

On 11 December 2020 the Secretary approved the progressive submission of environmental management plans for the VCM in accordance with Condition A25(a), Schedule 2 of SSD-7480. The scope of this AQMP is specifically related to the VCM construction and initial mining activities.

The construction and initial mining stage is anticipated to take approximately 30 months based on sequencing of the major construction activities, with the bulk of significant construction earthworks to occur within a 12 - 18 month period, and will include:

- construction of the CHPP;
- construction of the rail spur and loop and train load-out facility;
- construction of the mine industrial area (MIA);
- construction of ROM and product coal stockpile pads;
- initial development of the box cut;
- construction of temporary infrastructure facilities;
- construction of temporary ROM coal stockpiles;
- construction of workshops and offices;
- construction of water supply bores and Namoi River pump station and pipelines;
- construction of dams, sediment dams, up-catchment diversions, channels and other water management infrastructure;
- construction of soil stockpile areas;
- construction of access roads and internal roads;
- closure of a portion of Braymont Road;
- construction of connection to the existing 66 kilovolt powerline and construction of substations and power supply;
- construction of ancillary infrastructure including consumable storage areas, laydown areas, explosives storage facilities;
- ongoing exploration activities; and
- other associated minor infrastructure construction, use of other plant and other activities.

The general arrangement of the VCM is shown on Figures 1-2 and 1-3. The VCM layout at the end of the construction and initial mining stage is shown on Figure 1-4.

Earthworks associated with the development of the above infrastructure would include the excavation of waste rock, gravel and coal material from within the VCM open cut footprint. The earthworks would include the initial development of the box cut, with a small volume of ROM coal extracted for stockpile pad treatment, commissioning activities and transport to the Gunnedah CHPP. Additionally, a small volume of coal from WHC's other mines may be delivered to the VCM for stockpile pad treatment and CHPP commissioning activities.

1.2 CONSULTATION

In accordance with Condition B36(b), Schedule 2 of SSD-7480, this AQMP has been prepared in consultation with the NSW Environment Protection Authority (EPA). Comments received during the specific time period have been considered during finalisation of the AQMP and prior to lodgement with the Secretary for approval.

1.3 STRUCTURE OF THE AIR QUALITY MANAGEMENT PLAN

The remainder of this AQMP is structured as follows:

Section 2 Outlines the relevant statutory requirements and policies relevant to this AQMP.

Section 3 Describes the existing environment including baseline data.

Section 4 Outlines the relevant air quality criteria applicable to the VCM.

Section 5 Details the specific performance indicators WHC proposes to use to guide the implementation of the air quality management measures and assess their performance.

Section 6 Describes potential dust generating sources at the VCM.

Section 7 Describes the air quality management and control measures to be implemented at the VCM.

Section 8 Describes the air quality monitoring program components including locations, frequency and parameters.

Section 9 Describes the contingency plans to manage unprecedented impacts and their consequences.

Section 10 Describes the review and improvement of environmental performance.

Section 11 Describes the procedures in place for management and reporting of incidents, complaints and non-compliance's with statutory requirements.

Section 12 Provides references cited in this AQMP.

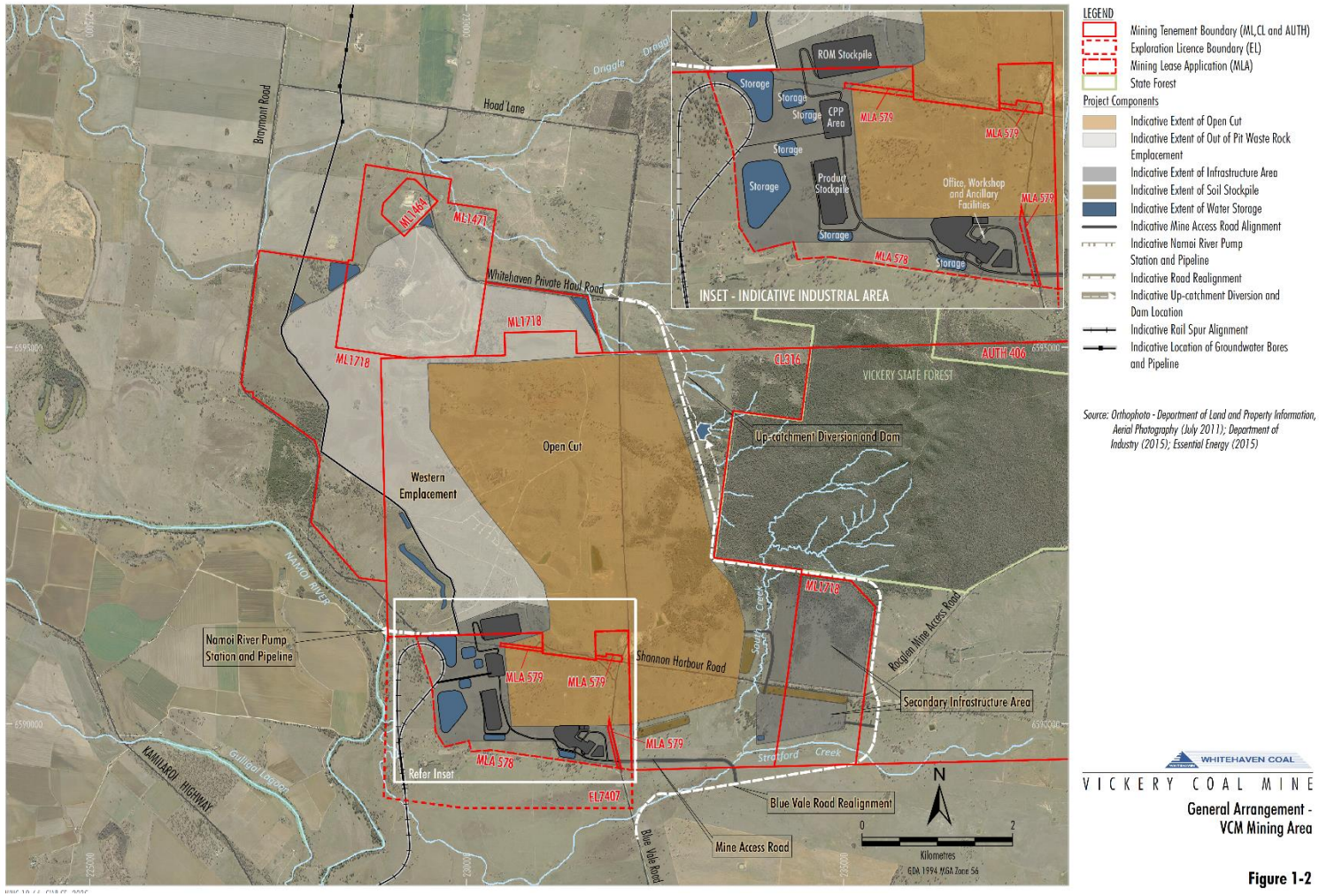


Figure 1-2 General Arrangement – VCM Mining Area

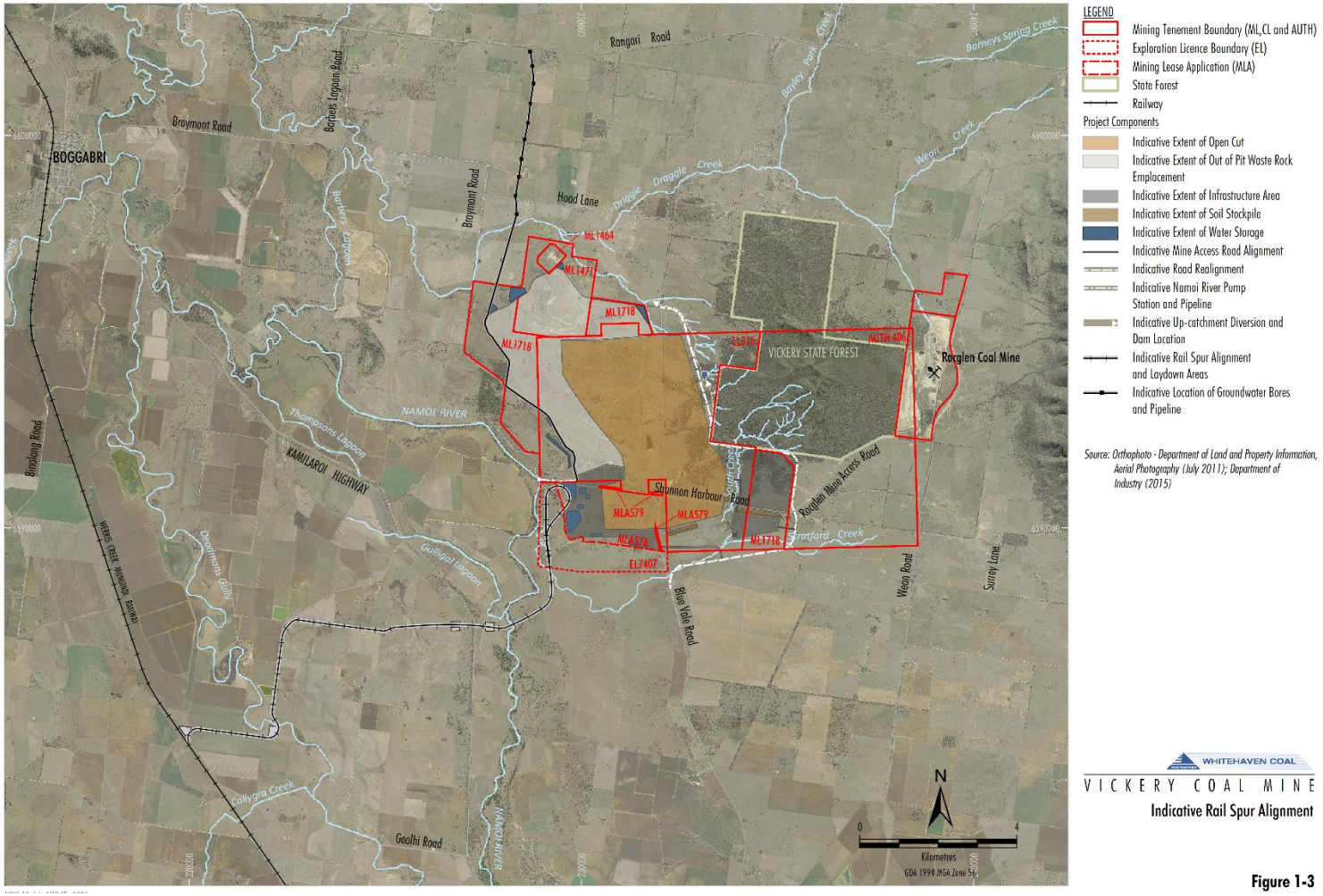


Figure 1-3 Indicative Rail Spur Alignment

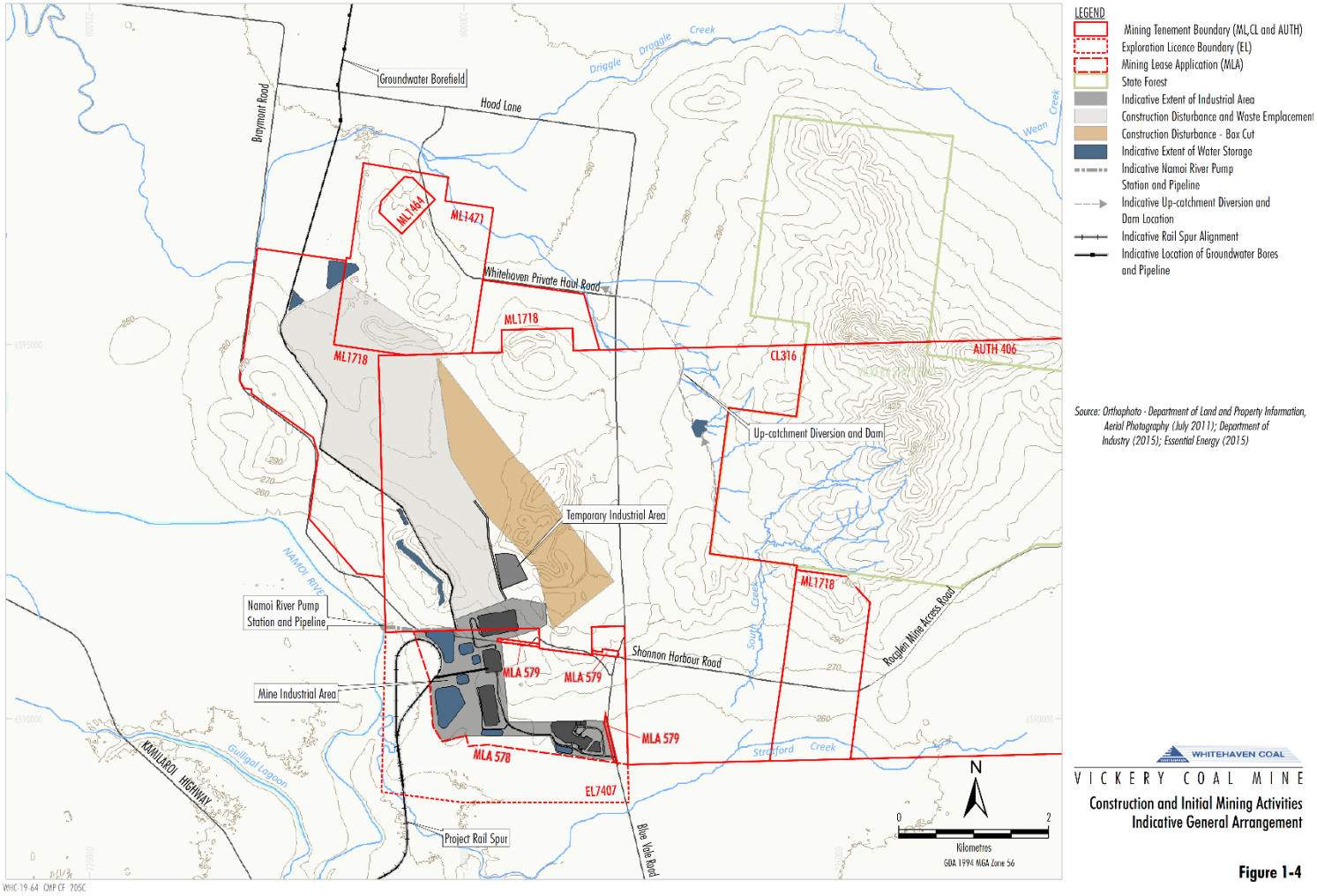


Figure 1-4Construction and initial mining Activities General Arrangement

2 RELEVANT STATUTORY REQUIREMENTS AND POLICIES

WHC's statutory obligations relevant to air quality management are contained in:

- the conditions of SSD-7480;
- the relevant licences and permits, including conditions attached to mining leases; and
- other relevant legislation.

Obligations relevant to this AQMP are described below.

2.1 DEVELOPMENT CONSENT (SSD-7480)

The conditions of SSD-7480 relevant to the content and structure of this AQMP are described below. A comprehensive list of all conditions in SSD-7480 relevant to Air Quality is provided in Appendix A.

2.1.1 Air Quality Management Plan Requirements

Condition B36, Schedule 2 of SSD-7480 requires the preparation of an AQMP (refer to Table 1). In accordance with Condition B37, the AQMP will be implemented as approved by the Planning Secretary.

2.1.2 General Management Plan Requirements

This AQMP has been prepared in accordance with the standard requirement for management plans listed in Condition E4, Schedule 2 of SSD-7480 (see Table 2).

2.2 LICENSES, PERMITS AND LEASES

In addition to SSD-7480, activities associated with the VCM will be undertaken in accordance with the following licences, permits and leases:

- Coal Lease (CL) 316, Mining Leases (MLs) 1718, 1471, 1464 and MLA 578.
- The VCM Construction Mining Operations Plan.
- Environment Protection Licence (EPL) No. 21283.
- Mining and workplace health and safety related approvals.

2.3 OTHER LEGISLATION

In addition to the statutory obligations described above, the following NSW Acts and Regulations may be applicable to the conduct of the VCM:

- *Protection of the Environment Operations Act, 1997* (PoEO Act)*;*
- *Protection of the Environment Operations (General) Regulation, 2009;*

- *Protection of the Environment Operations (Clean Air) Regulation, 2010;*
- *Work Health and Safety Act, 2011;*
- *Work Health and Safety Regulation, 2011;*
- *Work Health and Safety (Mines and Petroleum Sites) Act, 2013;* and
- *Work Health and Safety (Mines and Petroleum Sites) Regulation, 2014.*

Other guidelines and standards that were considered during the preparation of this AQMP include, but are not limited to:

- *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (EPA, 2017) (the Approved Methods).

3 EXISTING ENVIRONMENT

3.1 CONSIDERATIONS OF SUSPENDED PARTICULATE MATTER

The substances considered in this AQMP are those identified in SSD-7480 that have potential to affect the general health and amenity of the community and the surrounding environment. This includes particulate matter, which refers to particles of varying size and composition that are defined as follows:

- Total *Suspended Particulate matter (TSP) – refers to the total dust particles that are suspended in the air and nominally defined with an upper size range of 30 micrometres (µm).*
- *PM10 – refers to particulate matter with an aerodynamic diameter less than or equal to 10 µm.*
- *PM2.5 – refers to particulate matter with an aerodynamic diameter less than or equal to 2.5 µm.*

Other substances relevant to mining and processing operations during construction and initial mining, such as oxides of nitrogen, as well as odour, are also considered in this management plan.

3.2 BASELINE DATA

3.2.1 Site-specific Monitoring Data

PM_{10} and $PM_{2.5}$

Annual average PM_{10} and $PM_{2.5}$ concentrations for the Will-gai tapered element oscillating microbalance (TEOM) monitor are presented in Table 3.

Table 3 – Annual Average PM_{10} and $PM_{2.5}$

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.

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.

3.3 METEOROLOGICAL CONDITIONS

WHC operates an on-site meteorological monitoring station at the VCM (Figure 3-1) that records 15 minute averages of wind speed and direction, temperature, rainfall and relative humidity.

Annual wind roses generated of the on-site meteorological monitoring station present wind speed and direction as a percentage of time for 2014 to 2019 (Figure 3-2).

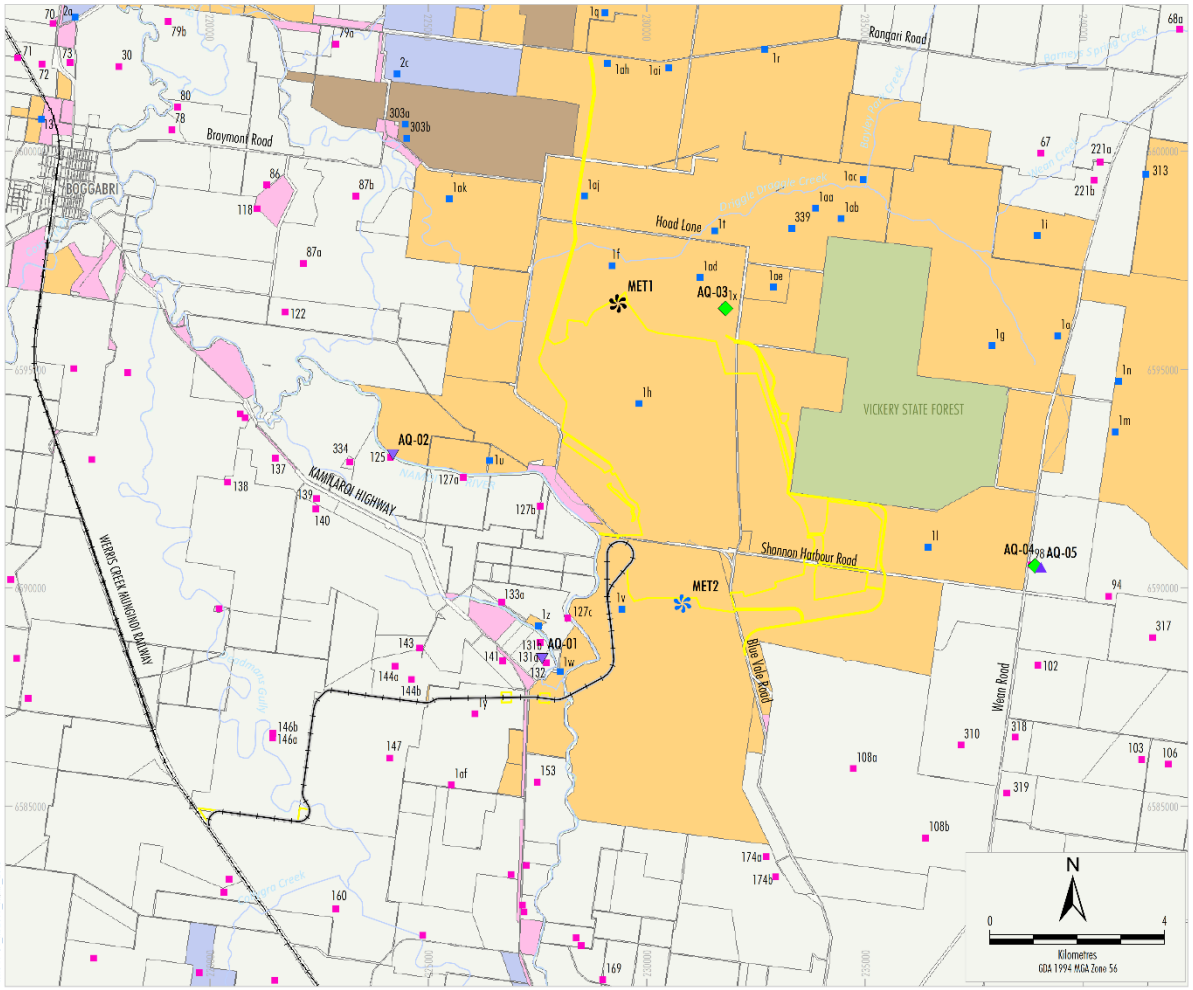
The prevailing wind direction for the on-site weather station is from the south-east quadrant with annual average wind speeds of approximately 3 metres per second (m/s). Winds from the west north-west are prevalent in spring. Lighter winds from the north-east quadrant are prevalent in winter.

3.4 RELEVANT RECEPTORS

Relevant private residences that may experience air quality impacts due to the construction and initial mining of the VCM are shown on Figure 3-1. These include residences on privately-owned land and tenants on mine-owned land.

Given the progressive nature of the construction activities associated with the rail spur, residences in the vicinity of the rail spur would be unlikely to be exposed to significant air quality impacts.

Per Condition D11, within three months of receiving a written request for acquisition from a landowner with acquisition rights as specified within the Project Approval, an offer to the landholder is required consistent with Condition D11 a).



LEGEND

- Approximate Extent of Vickery Coal Mine
- State Forest
- Crown Land
- Whitehaven Owned Land
- Whitehaven/Idemitsu Boggabri Coal Joint Owned Land
- Idemitsu Boggabri Coal Owned Land
- Privately Owned Land
- Railway
- Mine-owned Dwelling
- Private Dwelling
- Indicative Rail Spur Alignment
- Meteorological Station
- Indicative Meteorological Station
- HVAS
- TEOM
- Indicative TEOM

Source: Department of Land and Property Information - Land Tenure (2016); Department of Industry (2017); Whitehaven Coal (2016)

WHITEHAVEN COAL

VICKERY COAL MINE

Air Quality and Meteorological Monitoring System

Figure 3-1

Figure 3-1

Air Quality and Meteorological Monitoring System

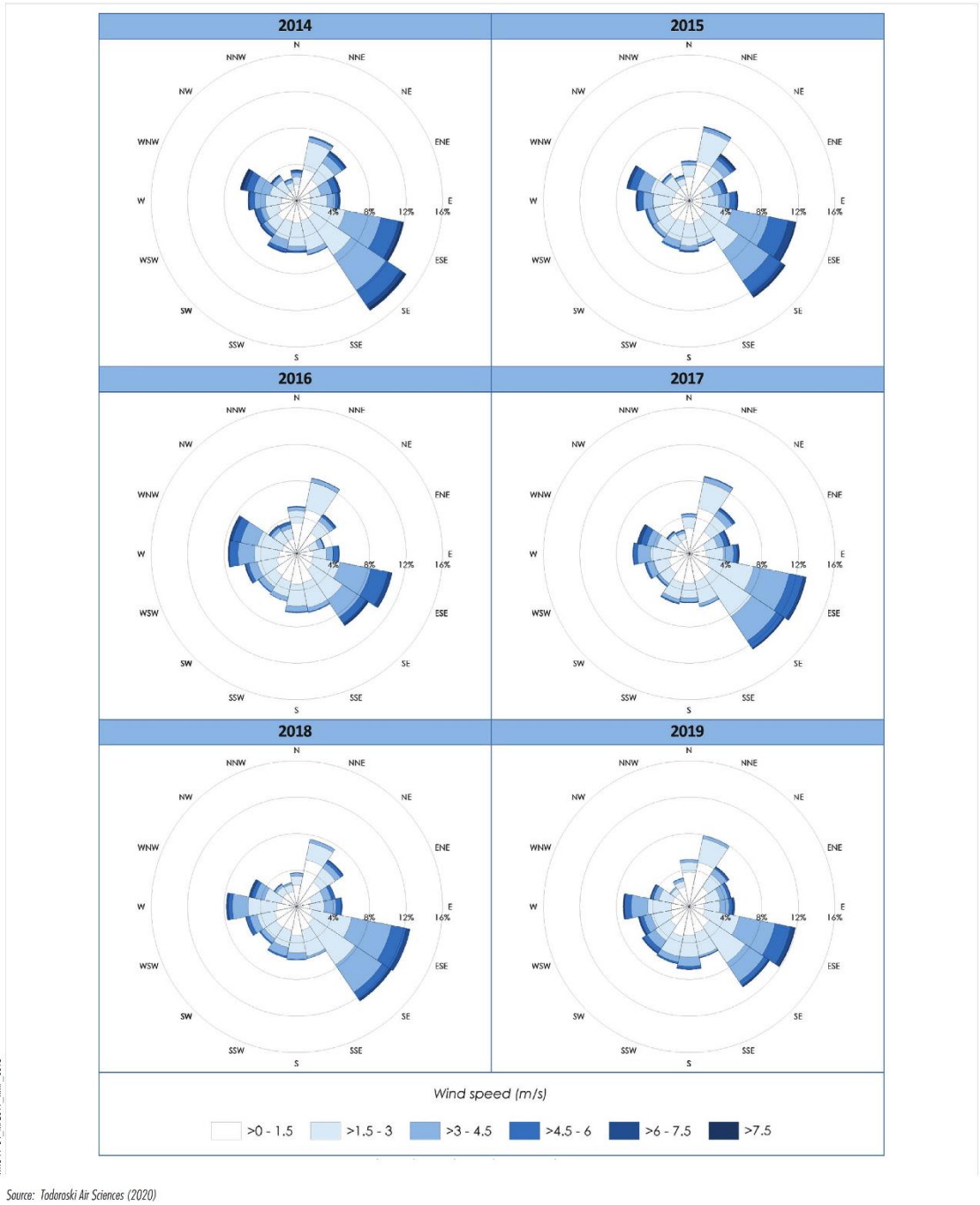


Figure 3-2 Annual Wind-Rose Data

4 AIR QUALITY CRITERIA

4.1 DEVELOPMENT CONSENT (SSD-7480)

4.1.1 Air Quality Criteria

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 Tables 4 and 5 at any residence on privately-owned land, excluding property ID 127.

In reference to Condition B33, the VEP do not have any current 7.2s noted with respect to air quality criteria with relevant private owners at the point in time of this document been prepared for approval.

Table 4 – Long Term Criteria for Particulate Matter

Pollutant	Averaging Period	[c] Criterion
TSP Matter	Annual	[a] 90 µg/m^3
Particulate Matter < 10 µm (PM_{10})	Annual	[a, b] 25µg/m^3
Particulate Matter < 2.5 µm ($PM_{2.5}$)	Annual	[a, b] 8µg/m^3

Source: SSD-7480

Table 5 – Short Term Criteria for Particulate Matter

Pollutant	Averaging Period	[c] Criterion
Particulate Matter < 10 µm (PM_{10})	24 hour	[a] 50 µg/m^3
Particulate Matter < 2.5 µm ($PM_{2.5}$)	24 hour	[a, b] 25µg/m^3

Source: SSD-7480

Notes to Tables 4 and 5

[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).

4.1.2 Conditions for Mine-Owned Land

As per Condition B34, Schedule 2 of SSD-748 requires that particulate matter emissions generated by the development must not exceed the criteria listed in Tables 4 and 5 at any occupied residence on mine-owned land (including land owned by another mining company) unless:

a) *the tenant and landowner (if the residence is owned by another mining company) have been notified of any health risks associated with such exceedances in accordance with the notification requirements outlines in* Section 9.2 *of this plan;*

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.*

Prior to entering into a tenancy agreement on any mine-owned land which is predicted to experience exceedances of the recommended dust criteria, WHC will advise the prospective tenants of the potential health and amenity impacts associated with living on the land and provide a copy of the NSW Health fact sheet *Mine Dust and You* (NSW Health, 2017). This fact sheet will also be provided to any existing tenants of any mine-owned land where the Project EIS predicted that dust emissions generated by the Project are likely to be greater than the relevant air quality criteria (Section 4.1.1) at any time during the life of the VCM.

4.1.3 Operating Conditions

Condition B35, Schedule 2 of SSD-7480 requires that WHC:

(a) take all reasonable steps to:

(i) minimise odour, fume and particulate matter (including PM_{10} and $PM_{2.5}$) emissions of the development, paying particular attention to minimising wheel-generated haul road emissions;

(ii) improve energy efficiency and reduce greenhouse gas emissions of the development;

(iii) minimise any visible off-site air pollution generated by the development; and

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

(b) ensure that all 'non-road' mobile diesel equipment used in undertaking the development includes reasonable and feasible diesel emissions reduction technology;

(c) operate a comprehensive air quality management system that uses a combination of meteorological forecasts, predictive air quality modelling and real-time monitoring to guide the day to day planning of mining operations and the implementation of both proactive and reactive air quality mitigation measures to ensure compliance with the relevant conditions of this consent;

(d) minimise air quality impacts of the development during adverse meteorological conditions and extraordinary events (see Note c to Table 7 above);

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

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

4.2 EPL CONDITIONS

Air quality criteria and other air quality related conditions stipulated in EPL 21283 are generally consistent with those prescribed in SSD-7480.

5 DUST GENERATING SOURCES

Typically, dust generation associated with construction and initial mining activities of the VCM would be due to:

- disturbed areas:
  - wind erosion from exposed areas; and
  - clearing of vegetation and topsoil stripping;
- material stockpiling and handling:
  - loading and unloading of materials;
  - re-handling of materials;
  - dozers operating on material; and
  - stockpiling materials, including topsoil and gravels;
- roads:
  - traffic on unsealed roads, or across unsealed surfaces; and
  - grading roads;
- drilling and blasting of materials.

Relative to mining operations, the scale of emissions generating during construction and initial mining activities will be limited and there is low risk for any exceedance of criteria to occur at private receptors.

5.1 GREENHOUSE GAS EMISSIONS

WHC will implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions (in accordance with Condition B35(a), Schedule 2 of SSD-7480). The specific control measures implemented to minimise greenhouse gas emissions at the VCM are detailed in Section 7.5.

WHC reports on its hydrocarbon use, greenhouse gas emissions and energy usage annually through the National Pollution Inventory and National Greenhouse and Energy Reporting Scheme.

6 PERFORMANCE INDICATORS

The following air quality related performance indicators will be used to assess the performance of the VCM:

- effective implementation of the Real-time Response Protocol for air quality (Section 7.3);
- results of monitoring are compliant with the air quality criteria in Section 4; and
- air quality related complaints are minimised and appropriate management actions are implemented following receipt of a complaint (Section 11.2).

Section 9 details the Contingency Plan to be implemented to manage any unpredicted impacts. Sections 10 and 11 detail the reporting that will be undertaken by WHC.

7 AIR QUALITY MANAGEMENT AND CONTROL MEASURES

WHC will implement best practice management including all reasonable and feasible measures to minimise the VCM's generation of dust emissions, surface disturbance and greenhouse gas emissions of the development in accordance with Condition B36(d), Schedule 2 of SSD-7480.

The effectiveness of air quality management and control measures at the VCM will be assessed and continually improved through the air quality monitoring network (Section 8). The effectiveness of greenhouse gas management and control measures at the VCM will be assessed and continually improved through annual reporting (Section 7.5).

7.1 DUST MANAGEMENT AND CONTROL MEASURES

The primary measures that will be implemented to control and/or minimise dust emissions from the construction and initial mining activities of the VCM are summarised in Table 6.

Table 6 – Dust Management and Control Measures

Target	Management and Control Measure
General	• Site inductions will include air quality requirements to ensure employee and contractor awareness of potential dust impacts. • Construction and initial mining activities will be reviewed following a real-time response trigger and dust generating activities will be modified, relocated and/or temporarily paused where required. • All machinery and plant used on-site will be maintained and operated in a proper and efficient manner in order to minimise dust generation. • Direct placement of waste rock and soil where possible. • Visual monitoring generally in accordance with the NSW EPA dust assessment handbook. • Use of water injection for drilling operations, if necessary.
Disturbed Areas	• Avoiding disturbance where practicable. • The extent of disturbance will be limited to that required for construction and initial mining activities and will be appropriately staged. • Overburden emplacement areas will be designed to minimise the disturbance area. • Cleared areas will be watered during construction and initial mining activities, as required. • Where any exposed areas, stockpiles, etc. are predicted to be inactive for three months or more, a cover crop will be established, if practicable.
Material Stockpiling and Handling	• Long-term stockpiles will be revegetated as soon as practicable following completion. • Water carts will be used on stockpile areas to minimise dust generation as necessary. • Minimisation of travel speed and distance travelled for bulldozing. • Material handling and stripping/ripping will be modified or postponed during adverse conditions. Material with low moisture content will be sprayed with water prior to and/or during handling if necessary to control visible dust. • The drop height will be minimised when loading material as far as practicable.

Target	Management and Control Measure
Roads	• Consideration will be given to using the largest practical and cost-effective truck size for transporting coal and overburden. • Roads will be constructed in a proper manner. • Speed limits will be imposed on all roads. • Water carts and/or chemical suppressants will be utilised as necessary to minimise excessive visible dust. • Water and/or dust suppression (where necessary) will be applied to roads to achieve a 90% or greater reduction in average dust emissions from all haul roads overall (relative to no controls). • Road vehicles will remain on formed roads and tracks where practicable.
Blasting	• Adherence to all measures outlined in the Blast Management Plan with consideration given to prevailing wind conditions and residential receivers. • Limitation of blasting during adverse weather conditions as described in the Blast Management Plan. • Minimisation of blast area by appropriate blast design.
Adverse Condition and Contingency Actions * Extraordinary events per B35 d) will also be considered regarding managing site contribution	• Mitigation will be implemented by the relevant contractors as required. Inspections of dust levels and weather conditions will continue regularly to assess the effectiveness of controls (Section 10). • Potential mitigating measures that will be implemented during adverse conditions include: - scheduling of additional watercart(s) in advance; - scheduling of amended working hours or working locations during unfavourable dispersion conditions; - review of the elevation and wind exposure of activities and, where possible, relocating the activity to a sheltered area or undertaking an alternative, non-dusty activity until more suitable conditions return; and/or - temporary cessation of work within an area or a particular activity when it is identified to be a likely contributor to elevated dust measurements, until more favourable conditions return. • Operations would be progressively shutdown as required in accordance with EPL 21283 (Section 4.2).

7.2 PREDICTIVE MODELLING

WHC will operate two predictive models which will be used in conjunction with the real-time response protocols (Section 7.3) as part of the comprehensive air quality management system at the VCM:

- predictive meteorological forecasting – to predict the presence of favourable or unfavourable conditions based on meteorological data; and
- predictive air quality forecasting – to identify the potential for increased dust levels at nearby receivers based on meteorological conditions, operating locations equipment information.

The predictive systems will assist operators to proactively manage emissions and mitigate potential impacts from the VCM. The predictive air quality forecasting system will use predicted meteorological data and exposed operational areas to predict the risk of dust dispersion as a result of operations at the VCM.

The predictive air quality forecasting system will be primarily used to plan activities for the day and as an alert of possible elevated dust levels due to the operations, allowing WHC to temporarily modify proposed operations, where relevant, to minimise the risk of elevated dust emissions.

The predicted meteorological and air quality forecasting systems will be available at any time to environmental employees and shift supervisors. The latest available forecasts will be reviewed at the start of each shift and reported to the shift supervisor.

Predictive modelling for air quality management is not required during the VCM construction and initial mining period. Meteorological monitoring and predictive forecasting of weather conditions, and real time air quality monitoring systems, will be utilised during the commencement and construction period. Future iterations of this management plan to incorporate operational activities will detail the predictive modelling system that will be used at the VCM. The mining phase will see the implementation of the predictive air quality tool, similar to that of other operations within the region, that is developed to assist in planning and management measures and utilises forecast dust risk incorporating data from forecast meteorological monitoring, real time air quality monitoring units and utilisation of a suitable software package (ie Envirosuite or weatherzone application subscriptions as examples)

7.3 REAL-TIME RESPONSE PROTOCOLS

Whilst the predictive systems will be used to alert employees of the potential for elevated dust levels, allowing for preparation to reduce the magnitude of the predicted elevated levels, real-time air quality monitoring data will be used to identify when ambient levels of PM_{10} are actually elevated. Real-time response triggers will be established and designed to provide a system to warn operational personnel (via email and/or SMS) of levels approaching a relevant criterion and to provide management/control actions. The dust alarm triggers and positions of real-time air quality monitoring locations will be reviewed annually (i.e. as mining progresses) or as part of a contingency response, if required.

EPL 21283 defines ‘dust generating activities’ as drilling, blasting, earthworks, construction activities, all hauling activities on unsealed haul roads, all overburden and coal extraction operations including loading and dumping activities and grader, loader, dozer and dragline operations. Operation of watercarts is permitted at all times. Activities within the CHPP are not included as dust generating activities, provided all automated dust suppression spray systems at the ROM hopper, conveyor transfer points and product stockpiles are in use, at least one water cart is in use on the ROM stockpile and an adjustable chute is lowered onto rail wagons when loadings.

The preliminary real-time response trigger alert levels are shown in Table 7 and are applicable to the compliance monitoring points identified in Table 8 (shown on Figure 3-1). In the event that the real-time response trigger level is exceeded, email and/or SMS alarms will be directed to key staff/operational personnel. The adequacy of these alarms will be reviewed on a regular basis as required. To ensure best management of potential operational impacts, triggers will need to be continually refined based on factors such as actual performance and mine progression. It is anticipated that changes will be required over time to reflect the relative positions of the mining, monitoring and receptor location as the mine progresses.

In the event that a real-time response trigger is exceeded, WHC will implement the real-time reactive response management actions listed in Table 7 where appropriate (dependent upon the trigger level determined).

Table 7 – Preliminary Real-time Response Trigger Levels

Alert Level	Management/ Control Action
Amber	• Visually monitor dust from haul roads and, where required, allocate water carts. • Review meteorological conditions and real-time monitoring data. • Review predictive forecasting data. • Review operations, identify dominant mine dust sources and locations (including topographic location for operating equipment, loading heights and rates). • Check control measures outlined in Table 8 are in place. • Apply Response Management Measures outlined as appropriate. • Monitor conditions (air quality and wind) hourly until amber trigger level conditions cease. • Confirm if the site operations are contributing significantly to the elevated levels or not, and act accordingly. • Plan for temporary operational changes.
Red	• Implement steps from Amber alert level. • Maintain or implement additional water and suppression application on haul routes, stripping and dumping locations. • Make temporary operational changes as appropriate (e.g. modify loading activities and dumping locations, relocating and shutting down equipment, reducing vehicle speeds, avoid blasting). • Continue to monitor conditions (air quality and wind) hourly until red trigger level conditions cease.

7.4 ODOUR AND FUME MANAGEMENT AND CONTROL MEASURES

In accordance with Condition B31, Schedule 2 of SSD-7480, WHC will ensure no offensive odours will be emitted from the site, as defined under the PoEO Act, unless otherwise authorised by an EPL. No offensive odours are authorised by EPL 21283.

The primary potential odour and fume sources at the VCM are from blasting. 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 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 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 AQMP.

7.5 GREENHOUSE GAS EMISSION CONTROL MEASURES

In accordance with Condition B35(a)(ii), Schedule 2 of SSD-7480, WHC will improve energy efficiency and reduce the greenhouse gas emissions of the VCM.

The primary source of greenhouse gas emissions at the VCM is the release of carbon dioxide (CO_2) and methane (CH_4) during the combustion of diesel fuel by plant and equipment.

Greenhouse gas emissions at the VCM will be minimised through the efficient use of diesel fuel by the mobile construction and initial mining fleet. Efficient diesel use is promoted by:

- minimising the re-handling of material;
- 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
- optimising the design of roads and execution of efficient mine planning to minimise the distance travelled between working areas.

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.

Whitehaven currently employs methods to maximise efficiency of the mining fleet at its existing operations through regular maintenance scheduling, implementation of high efficiency motors, reduction of engine idle times and, where possible, minimising the gradient and length of loaded haul runs for the operating haul trucks. This is achieved by appropriate mine scheduling and planning, and these methods would be applied to VCM.

Whitehaven has transitioned to utilising a carbon neutral power utility supplier at other operations. The Vickery Project will equally assess the option of utilising the same power provider prior to the commencement of construction.

Ongoing monitoring and management of greenhouse gas emissions and energy consumption at VCM would occur through WHCs participation in the Commonwealth Government's *National Greenhouse and Energy Reporting Scheme* (NGERS) and National Pollutant Inventory, if the relevant reporting thresholds are met.

Under NGERS requirements, relevant sources of greenhouse gas emissions (scope 1 and 2) and energy consumption must be measured and reported on an annual basis, allowing major sources and trends in emissions/energy consumption to be identified.

8 AIR QUALITY MONITORING PROGRAM

To assess compliance with the relevant criteria in Tables 4 and 5, 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 (Figure 3-1). The air quality monitoring program uses a combination of both real-time monitors and supplementary monitors and is undertaken in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (EPA, 2017) and *Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales* (DEC, 2007), or relevant alternative method that is endorsed by the EPA.

If monitoring indicates potential exceedances of the relevant criteria (Section 4.1.1), real-time monitoring would be installed to monitor particulate matter concentrations.

The VCM air quality and meteorological monitoring network system is shown in Figure 3-1 and summarised in Table 8. Air quality monitoring locations are appropriate for the construction and initial mining phase. Consideration of the locations has been made in relation to prominent wind direction, vectors of nearby receivers and activities proposed. Monitoring locations will be reviewed upon the phasing out of construction activities and will be described in future revisions of the AQMP.

Table 8 – Air Quality and Meteorological Monitoring System

Site ID	General Description	Easting	Northing	Residence/ Property	Frequency	Parameter
MET1	Automatic Weather Station	229350	6596515	Canyon Coal Mine	Continuous	Meteorological data
MET2	Automatic Weather Station	230832	6589621	1z	Continuous	Meteorological data
PM1*	TEOM	227562	6588753	131a31a	Continuous & monthly	PM_{10}, $PM_{2.5}$
PM2*	TEOM	224132	6592990	125125	Continuous & monthly	PM_{10}, $PM_{2.5}$
Will-gai	TEOM - Existing Not used for compliance monitoring	231803	6596402	1x	Continuous	PM_{10}
PM3PM3	HVAS– Existing Not used for compliance monitoring	238887	6590504	98	Every six days & monthly	PM_{10}
PM4PM4	TEOM – Existing Not used for compliance monitoring	239027	6590476	98	Continuous	PM_{10}

* Subject to landholder agreement.

8.1 AIR QUALITY MONITORING METHODS

8.1.1 PM_{10} and $PM_{2.5}$

PM10 and PM2.5 will be monitored continuously in the vicinity of the VCM (Figure 3-1 and Table 9). Monitoring of PM10 and PM2.5 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 – PM2.5 beta attenuation monitors; AS 3580.9.13-2013: Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – PM2.5 continuous direct mass method using a tapered element oscillating microbalance monitor). Total Suspended Particulate

8.1.2 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.

8.2 METEOROLOGICAL MONITORING

Meteorological data will be collected at the on-site meteorological monitoring station (Figure 3-1). The weather station is sited in accordance with the requirements in SSD-7480, and relevantly consistent with Condition B38.

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).

Table 9 provides the meteorological monitoring parameters for which data would be collected at the onsite meteorological monitoring station.

Table 9 – Meteorological Monitoring Parameters

Parameter	Units	Frequency	Average Period	Method
Wind speed	Metres per second	Continuous	15 minute	AM-2 & AM-4
Wind direction	Degrees	Continuous	15 minute	AM-2 & AM-4
Temperature @ 10 m	Degrees Celsius	Continuous	15 minute	AM-4
Temperature @ 60 m	Degrees Celsius	Continuous	15 minute	AM-4
Relative humidity	Percentage	Continuous	15 minute	AM-4
Rainfall	milimetres	Continuous	1 hour	AM-4

8.3 DATA VALIDATION AND COMPLIANCE ASSESSMENT

Where monitoring indicates elevated readings above the prescribed criteria (Section 4.1.1) or an abnormally low reading, WHC will initiate an assessment of the data to determine the validity of the reading and whether an exceedance or equipment malfunction has occurred.

Data validation will be assessed according to the following escalating review and assessment process and will include consideration of prevailing meteorological conditions at the time, where relevant (note Level 2 and 3 validation assessment will be applied as necessary).

- Level 1: First pass data review and evaluation. For example, comparison of trends over a year, review against data from other monitoring sites in the vicinity or wider region or similar simple and effective means to identify potentially erroneous or outlier data. At this stage, it is also necessary to establish if an elevated reading has been influenced by one of the following factors:
  - Extreme events, such as:
    - dust storms;
    - bushfires;
    - prescribed burning;
    - fire incidents;
    - illegal activities; or
    - other activities agreed by the Secretary.
  - Irregular activities near monitoring sites, such as:
    - contamination from bird droppings, insects, etc.;
    - adjacent land use activities; and
    - exposed areas of soil around the monitoring site.
  - Reasonableness of data (e.g. is the equipment operating properly, providing reliable data and calibrated correctly?).
- Level 2: Where data is assessed to be potentially invalid, an analysis of the available data (e.g. field records, laboratory notes, fluctuating or highly variable results, etc.) will be undertaken, which may include site inspection of the monitoring equipment.
- Level 3: Where anomalous or potentially invalid data is found and the issue is significant (e.g. may indicate an exceedance or equipment fault) and a Level 1 and 2 evaluation cannot determine the cause, engage a professional air quality expert to examine the issue.

In the event that an exceedance of an air quality criterion is considered to have occurred, WHC will implement the Contingency Plan (Section 9).

9 CONTINGENCY PLAN

In the event air quality management criteria (detailed in Section 4) may not have been met or a performance indicator is considered to have been exceeded, WHC will implement the following Contingency Plan for the VCM:

- The Environmental Superintendent or authorised delegate will report the event as an incident, in accordance with Section 11.1.
- WHC will apply adaptive management (Section 9.1).
- WHC will identify the appropriate course of action with respect to the identified impact(s), in consultation with technical specialists, Secretary and any other relevant agencies, as necessary. For example, contingency measures, such as, but not limited to, those described in Section 9.2.
- 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 the approval.
- WHC will implement the appropriate course of action to the satisfaction of the Secretary.

9.1 ADAPTIVE MANAGEMENT

In accordance with Condition E3, Schedule 2 of SSD-7480, WHC will assess and manage risks to comply with the criteria and/or performance measures outlined in Schedule 2 of SSD-7480.

Where any exceedance of the criteria and/or performance measures occurs, at the earliest opportunity WHC will:

- take all reasonable and feasible steps to ensure that the non-compliance does not recur;
- consider 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
- implement remediation measures as directed by the Secretary, to the satisfaction of the Secretary.

9.2 POTENTIAL CONTINGENCY MEASURES

Potential contingency measures will be reviewed during revisions of this AQMP. Key potential contingency measures to be implemented may include the following:

- WHC will notify (in writing) the affected landowners and tenants of an exceedance/s confirmed to be derived from VCM operations as soon as practicable and provide them with regular air quality monitoring results, if requested.
- WHC will, on request, implement reasonable and feasible at-receiver controls, in accordance with Condition D2, Schedule 2 of SSD-7480, where a breach of the relevant criteria has occurred.
- WHC will investigate further air quality controls, if monitoring results indicate this is required.
- WHC will also implement any reasonable and feasible contingency measures identified to address an incident.

10 REPORTING AND REVIEW OF ENVIRONMENTAL PERFORMANCE

10.1 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.

In relation to air quality management, the Annual Review will (where relevant):

- describe the development that was carried out in the past calendar year, and the development that is proposed to be carried out over the current calendar year;
- include a comprehensive review of the monitoring results and complaints records of the development over the past year, which includes a comparison of these results against the:
  - relevant statutory requirements, limits or performance measures/criteria;
  - monitoring results of previous years; and
  - relevant predictions in the EIS;
- identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;
- identify any trends in the monitoring data over the life of the development;
- identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and
- describe what measures will be implemented over the next year to improve the environmental performance of the development.

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

10.2 AIR QUALITY AND GREENHOUSE GAS MANAGEMENT PLAN REVISION

In accordance with Condition E5, Schedule 2 of SSD-7480, this AQMP will be reviewed, and if necessary revised (to the satisfaction of the Secretary), within three months of the submission of:

- an Annual Review (Condition E9, Schedule 2);
- an incident report (Condition E7, Schedule 2);
- an Independent Environmental Audit (IEA) (Condition E10, Schedule 2); or
- any modification to the conditions of SSD-7480 (unless the conditions require otherwise).

The reviews would be undertaken to ensure this AQMP is updated on a regular basis and to incorporate potential measures to improve the environmental performance of the VCM.

In accordance with Condition E6, where revisions are required, the revised document must be submitted to the Planning Secretary for approval within six weeks of the review.

The revision status of this AQMP is indicated on the final page of each copy. The approved AQMP will be made publicly available on the WHC website, in accordance with Condition E14, Schedule 2 of SSD-7480.

10.3 INDEPENDENT ENVIRONMENTAL 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.

The IEA will include consultation with the relevant agencies and the CCC prior to the audit and assess the environmental performance of the VCM, including a review the adequacy of this AQMP. If necessary, appropriate measures or actions to improve the environmental performance of the VCM in regards to management of air quality and greenhouse gas emissions will be recommended. The recommendations will be implemented to the satisfaction of the Planning Secretary

In accordance with E11, within three months of commencing an IEA, or other timeframe agreed by the Planning Secretary, the VCM will submit a copy of the audit report to the Planning Secretary, and any other NSW agency that requests it, together with its response to any recommendations contained in the audit report, and a timetable for the implementation of the recommendations.

Within 1 years from the commencement of construction and every 3 years thereafter, WHC shall commission an IEA of the VCM. 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 REPORTING PROCEDURES

In accordance with Condition E4(j), Schedule 2 of SSD-7480, WHC has developed a protocol for 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 the VCM's Environmental Management Strategy (EMS).

In accordance with Condition E14(a), Schedule 2 of SSD-7480, WHC will provide regular reporting on the environmental performance of the VCM on the WHC website and keep information up to date in accordance with E14(b).

11.1 INCIDENT AND NON-COMPLIANCE REPORTING

An incident is defined as an occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be or cause a non-compliance. A non-compliance is define as an occurrence, set of circumstances or development that is a breach of the condition of SSD-7480.

In the event that review of air quality monitoring data indicates an incident has occurred, the incident will be reported in accordance with Condition E7, Schedule 2 of SSD-7480 and relevant conditions of EPL 21283 and MLA 578. WHC will immediately notify the Secretary and any other relevant agencies.

The notification will be provided to the Secretary in writing via compliance@planning.nsw.gov.au and will identify the VCM (including the development application number and name) and set out the location and nature of the incident.

Within seven days of the date of the incident or non-compliance as applicable, WHC will provide the Secretary and any other relevant agencies with a report on the incident. The report will include details required within the approval, including:

- 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 reasonable and feasible options to address the incident and identify the preferred option to address the incident (Section 9.1).

In accordance with D6, as soon as practicable and no longer than 7 days after obtaining monitoring results showing an exceedance of air quality criterion in Part B of the consent, the VCM will provide the details of the exceedance to any affected landowners tenants and the CCC. In accordance with Condition E8, within seven day of becoming aware of a non-compliance, the Department will be notified including the relevant condition, reasons (if

known), and what actions have been, or will be, undertaken to address the non-compliance. A non-compliance which has been notified as an incident will not be duplicated in a second notification as a non-compliance related to the same non-compliance.

11.2 COMPLAINTS

WHC will maintain a Community Complaints Line and online contact via the WHC website (www.whitehavencoal.com.au) for the sole purpose of receiving community complaints, or enquiries. The Community Complaints Line number will be available on the website. The Community Complaints Line will be staffed 24 hours a day, seven days a week during construction and operations. WHC will respond to callers on the next business day.

Detailed records of each complaint are kept in WHC's record management systems.

In accordance with Condition E14(ix), Schedule 2 of SSD-7480, a complaints register will be made available on the WHC website during the construction and operational stages of the VCM. The complaints register will include:

- the date and time of the complaint;
- the method by which engagement was made;
- any personal details provided or, if no such details were provided, a note to that effect;
- the nature of the complaint; and
- any actions (if any required) taken by WHC in relation to the complaint.

Investigations into complaints will generally commence within 24 hours of receipt, or as soon as practical. The cause of the complaint will be analysed and actions to attempt to address the complaint taken as soon as reasonably possible. In complex cases where resolution will take more than 48 hours, WHC will commit to updating the community member.

11.3 NON-COMPLIANCE WITH STATUTORY REQUIREMENTS

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.

Compliance with all approvals, plans and procedures is the responsibility of all personnel (staff and contractors) employed on or in association with WHC and the VCM.

A VCM representative will undertake required inspections during the construction and initial mining period and initiate directions to address any actions identified, if required, and areas of actual or potential non-compliance.

As described in Section 11.1, WHC will report incidents in accordance with Condition E7, Schedule 2 of SSD-7480 and dependent on the incident and potential environmental harm, in accordance with the protocol for industry notification of pollution incidents under Part 5.7 of the PoEO Act.

WHC will notify the Secretary and any other relevant agencies immediately after the authorised person becomes aware of the incident which causes or threatens to cause material harm to the environment. Within seven days (or other specified or approved time period) of the date of confirmation of the incident, WHC will provide the Secretary and any other relevant agencies with a report on the incident and any subsequent information that may be requested.

A review of compliance with all conditions in SSD-7480 and all other applicable approvals and licences will be included within each Annual Review (Section 10.1).

Additionally, in accordance with Condition E10, Schedule 2 of SSD-7480, an IEA (Section 10.3) would be conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary to assess whether WHC is complying with the requirements in SSD-7480, and any other relevant approval and tenement conditions.

11.4 INDEPENDENT REVIEW

In accordance with Condition D8, Schedule 8 of SSD 7480, if a privately-owned landholder considered the VCM to be exceeding any relevant air quality criteria, they may ask the Secretary in writing for an independent review of the impacts of the VCM on their residence and/or land.

The landholder will be notified in writing within 21 days of the request for a review if the Panning Secretary is not satisfied that an independent review is warranted, including reasons for that decision.

Condition D10, Schedule 2 of SSD-7480 requires that, if the Secretary is satisfied that an independent review is warranted, within three months of the decision, or other timeframe as agreed by the Secretary, WHC must:

- commission a suitably qualified, experiences and independent person, whose appointment has been approved by the Secretary, to;
  - consult with the landowner to determine their concerns;
  - conduct monitoring to determine whether the development is complying with the relevant criterion in PART B of this consent; and
  - if the development id not complying with the relevant criterion, identify measures that could be implemented to ensure compliance with the relevant criterion;
- give the Secretary and landowner a copy of the independent review; and
- comply with any written requests made by the Secretary to implement any findings of the review.

12 REFERENCES

New South Wales Environmental Protection Authority (2017) *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW*.

New South Wales Health (2017) *Mine Dust and You.*

US Environmental Protection Agency (2000) *Meteorological Monitoring Guidance for Regulatory Modelling Applications EPA 454/R-99-005.*

Appendix A Air Quality Related Conditions Development Consent SSD-7480

<table>
<tr><th>VCM Development Consent (SSD-7480)</th><th>AQMP Section</th></tr>
<tr><td colspan="2">AIR QUALITY AND GREENHOUSE GAS</td><td>-</td></tr>
<tr><td colspan="2">Odour</td><td>-</td></tr>
<tr><td>B31. Unless otherwise authorised by an EPL, the Applicant must ensure that no offensive odours, as defined under the POEO Act, are emitted from the site.</td><td>Section 7.4</td></tr>
<tr><td colspan="2">Air Quality Criteria</td><td>-</td></tr>
<tr><td>B32. The Applicant must 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 7 at any residence on privately-owned land.
Table 8: Air quality criteria
<table>
<tr><th>Pollutant</th><th>Averaging period</th><th>Criterion</th></tr>
<tr><td rowspan="2">Particulate matter < 10 µm (PM_{10})</td><td>Annual</td><td>[a, c] 25 µg/m³</td></tr>
<tr><td>24 hour</td><td>[b] 50 µg/m³</td></tr>
<tr><td rowspan="2">Particulate matter < 2.5 µm ($PM_{2.5}$)</td><td>Annual</td><td>[a, c] 8 µg/m³</td></tr>
<tr><td>24 hour</td><td>[b] 25 µg/m³</td></tr>
<tr><td>Total suspended particulate (TSP) matter</td><td>Annual</td><td>[a, c] 90 µg/m³</td></tr>
</table>
Notes:
[a] Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources).
[b] Incremental impact (i.e. incremental increase in concentrations due to the development on its own).
[c] Excludes extraordinary events such as bushfires, prescribed burning, dust storms, fire incidents or any other activity agreed by the Planning Secretary.</td><td>Section 7.1</td></tr>
<tr><td>B33. The air quality criteria in Table 7 do not apply if the Applicant has an agreement with the owner/s of the relevant residence or land to exceed the air quality criteria, and the Applicant has advised the Department in writing of the terms of this agreement.</td><td>-</td></tr>
<tr><td colspan="2">Mine-owned Land</td><td>-</td></tr>
<tr><td>B34. Particulate matter emissions generated by the development must not exceed the criteria listed in Table 7 at any occupied residence on mine-owned land (including land owned by another mining company) unless:</td><td rowspan="5">Sections 7 and 9</td></tr>
<tr><td>(a) the tenant and landowner (if the residence is owned by another mining company) have been notified of any health risks associated with such exceedances in accordance with the notification requirements under Part D of this consent;</td></tr>
<tr><td>(b) the tenant of any land owned by the Applicant can terminate their tenancy agreement without penalty at any time, subject to giving 14 days notice;</td></tr>
<tr><td>(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</td></tr>
<tr><td>(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.</td></tr>
<tr><td colspan="2">Air Quality Operating Conditions</td><td>-</td></tr>
</table>

B35.	*The Applicant must:*		-
	(a)	*take all reasonable steps to:*	-
		(i) *minimise odour, fume and particulate matter (including PM_{10} and $PM_{2.5}$) emissions of the development, paying particular attention to minimising wheel-generated haul road emissions;*	Section 7
		(ii) *improve energy efficiency and reduce Scope 1 and Scope 2 greenhouse gas emissions of the development;*	Section 7.5
		(iii) *minimise any visible off-site air pollution generated by the development; and*	Section 7.1
		(iv) *minimise the extent of potential dust generating surfaces exposed on the site at any given point in time;*	Section 7.1
	(b)	*ensure that all 'non-road' mobile diesel equipment used in undertaking the development includes reasonable and feasible diesel emissions reduction technology;*	Section 7.5
	(c)	*operate a comprehensive air quality management system that uses a combination of meteorological forecasts, predictive air quality modelling and real-time monitoring to guide the day to day planning of mining operations and the implementation of both proactive and reactive air quality mitigation measures to ensure compliance with the relevant conditions of this consent;*	Section 7.2 and 7.3
	(d)	*minimise air quality impacts of the development during adverse meteorological conditions and extraordinary events (see Note c to Table 7 above);*	Section 7.1, 7.2 & 7.3
	(e)	*carry out regular air quality monitoring to determine whether the development is complying with the relevant conditions of this consent; and*	Section 8
	(f)	*regularly assess meteorological and air quality monitoring data and modify operations on the site to ensure compliance with the relevant conditions of this consent.*	
Air Quality and Greenhouse Gas Management Plan			**-**
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 Document
	(a)	*be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;*	Section 1.1
	(b)	*be prepared in consultation with the EPA;*	Section 1.2
	(c)	*be submitted to the Planning Secretary for approval prior to carrying out development under this consent;*	Section 1.2
	(d)	*describe the measures to be implemented to ensure:*	-
		(i) *compliance with the air quality criteria and operating conditions of this consent;*	Sections 4, 7 and 8
		(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 7.1 and 7.4
		• *minimise the development's Scope 1 and 2 greenhouse gas emissions; and*	Section 7.5
		• *improve the development's energy efficiency; and*	Section 7.5
		(iii) *the air quality impacts of the development are minimised during adverse meteorological conditions and extraordinary events;*	Sections 7.1, 7.2 and 7.3
	(e)	*describe the air quality management system in detail; and*	Section 7
	(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:*	Sections 8
		(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 3.2 and 8.3
		(ii) *adequately supports the air quality management system; and*	Section 8
		(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 5, 8.3, 9 and 11

B37. *The Applicant must implement the Air Quality and Greenhouse Gas Management Plan as approved by the Planning Secretary.*	Section 2
Management Plan Requirements	**-**
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 3
(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 4
(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 5
(c) any relevant commitments or recommendations identified in the document/s listed in condition A2(c);	Section 2
(d) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	Section 7
(e) a program to monitor and report on the:	Section 8
(i) impacts and environmental performance of the development; and	Section 10
(ii) effectiveness of the management measures set out pursuant to paragraph (d);	Section 8.3
(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 9
(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:	Section 11
(i) incident, non-compliance or exceedance of any impact assessment criterion or performance measure;	Section 11.1
(ii) complaint; or	Section 11.2
(iii) failure to comply with other statutory requirements;	Section 11.3
(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 10.1
Note: *The Planning Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.*	-

Appendix B Consultation Log

Date	Consultee	Comment
29/10/20	EPA	Administrative items, detail on monitoring locations and non-road diesel equipment.
September 2021	DPIE	Feedback received from DPIE regarding the Management Plan
January 2022	DPIE	Feedback received from DPIE regarding the Management Plan

Document History

Edition	Rev.	Comments	Date
1	0	Initial draft following consultation as first submitted	5/01/21
1	1	Response to DPIE review	November 2021
1	2	Response to DPIE review	January 2022