MALABAR COAL

MAXWELL INFRASTRUCTURE

AIR QUALITY AND GREENHOUSE GAS MANAGEMENT PLAN

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Malabar Coal Management System Standard

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1 COMMITMENT AND POLICY

1.1 Background

Maxwell Ventures (Management) Pty Ltd, a wholly owned subsidiary of Malabar Coal Ltd (Malabar) owns and operates the Maxwell Infrastructure site located on Thomas Mitchell Drive, Muswellbrook. The Maxwell Infrastructure site (formerly Drayton Mine) includes the open cut workings, rehabilitation, coal handling and preparation facilities and the Antiene rail spur and loop. The Maxwell Infrastructure site is bordered by Mt Arthur Coal (MAC) to the west with Macquarie Generation's Bayswater Power Station adjoining the eastern and southern boundaries. The Antiene rural residential area exists to the north of the site.

Open cut coal extraction and mining activities commenced at the Maxwell Infrastructure site in 1983 and ceased in October 2016. The Maxwell Infrastructure site is currently in the closure phase of the operation with rehabilitation activities and some ancillary mining activities such as grading of roads and maintenance of equipment occurring.

1.2 Purpose

The purpose of this Air Quality and Greenhouse Gas Management Plan (AQMP) is to ensure that statutory requirements are met, and to outline the controls to be implemented for the management of air quality and greenhouse gas (GHG) aspects associated with the Maxwell Infrastructure site. This AQMP is one of a series of Environmental Management Plans that together form the Environmental Management System for the Maxwell Infrastructure site.

1.3 Scope

This Plan applies to all activities within the Maxwell Infrastructure site. It addresses the relevant conditions of the Maxwell Infrastructure Development Consent PA 06_0202, Antiene Rail Spur Development Consent DA 106-04-00 as well as conditions of the Environmental Protection Licence (EPL) 1323 and relevant Mining Lease approvals.

As per Schedule 2, Condition 5 of PA 06_0202, no mining operations can take place on site after 31 December 2017. Mining operations includes all coal extraction, processing and transportation activities. As such, some conditions of DA 106-04-00 may not be applicable. However, the conditions associated with PA 06_0202 are anticipated to address all relevant aspects of DA 106-04-00.

1.4 Objectives

The objectives of this AQMP are to:

- Identify the potential air quality impacts;
- Ensure all relevant statutory requirements are met;
- Detail the controls that are implemented to minimise air quality impacts;
- Detail the air quality monitoring system to assess the air quality impacts;
- Provide a protocol to assess monitoring results against air quality impact assessment criteria to evaluate compliance;
- Manage air quality-related community complaints in a timely and effective manner; and
- Detail the procedure for reporting air quality impact assessment criteria exceedances to relevant stakeholders.

1.5 Statutory Requirements

Current statutory requirements are set out in Development Consent PA 06_0202 and 106-04-00, Environmental Protection Licence (EPL) 1323 and relevant Mining Lease conditions. The various conditions that relate to air quality management and where they are referenced in this document are detailed in ***Appendix 1***.

2 PLANNING

2.1 Potential Impacts

The key air quality issues managed at the Maxwell Infrastructure site include dust from mining and railing activities and odour from spontaneous combustion.

Dust emissions are from a variety of sources, including material handling such as loading and dumping of overburden and topsoil, material transport including wheel generated dust and conveyors, and wind erosion from exposed areas.

Spontaneous combustion of coal and other carbonaceous materials is the main potential source of odour. Odour is managed at the Maxwell Infrastructure site as part of the Spontaneous Combustion Management Plan (SCMP), available on the Malabar Website at http://malabarcoal.com.au/maxwell-infrastructure-downloads.

2.2 Air Quality Criteria

Impact Assessment Criteria

The impact assessment criteria for the Maxwell Infrastructure site are detailed in Schedule 3, Condition 21 of PA 06_0202 and outlined in ***Table 1***. The criteria apply for all residences on privately owned land.

Table 1. Impact Assessment Criteria

Pollutant	Averaging Period	Criteria
Long Term Impact Assessment Criteria for Particulate Matter		
Total Suspended Particulate (TSP) matter	Annual	90 µg/m^3
Particulate Matter < 10 µm (PM_{10})	Annual	30 µg/m^3
Deposited Dust (annual average)	Annual	4 g/m2/month
Deposited Dust (maximum increase)	Annual	2 g/m2/month
Short Term Impact Assessment Criteria for Particulate Matter		
Particulate Matter < 10 µm (PM_{10})	24 Hour	50 µg/m^3

Land Acquisition Criteria

The land acquisition criteria for the Maxwell Infrastructure site are detailed in Schedule 3, Condition 22 of PA 06_0202 and outlined in ***Table 2***. The criteria apply for all residences on privately owned land.

Table 2. Land Acquisition Criteria

Pollutant	Averaging Period	Criteria	Percentile	Basis
Long Term Land Acquisition Criteria for Particulate Matter				
Total Suspended Particulate (TSP) matter	Annual	90 µg/m	-	-
Particulate Matter < 10 µm (PM10)	Annual	30 µg/m	-	-
Short Term Impact Assessment Criteria for Particulate Matter				
Particulate Matter < 10 µm (PM10)	24 Hour	150 µg/m	99	Total
Particulate Matter < 10 µm (PM10)	24 Hour	50 µg/m	98.6	Incremental
Long Term Assessment Criteria for Depositional Dust				
Deposited Dust (annual average)	Annual	4 g/m^2/month		
Deposited Dust (maximum increase)	Annual	2 g/m^2/month		

3 IMPLEMENTATION

The Maxwell Infrastructure air quality management system includes a comprehensive set of both proactive and reactive control measures and monitoring tools designed to minimise the generation of wind-blown dust from disturbed surfaces and mining activities and to enable effective control of episodic dust events (see ***Section 3.1***).

Maxwell Infrastructure maintains an active GHG and energy efficiency management program to effectively measure and minimise GHG emissions whilst providing a platform to meet future legislative requirements (see ***Section 4.6***).

3.1 Air Quality Control Measures

Air quality control measures for sources of wind-blown and activity generated dust due to mining operations include:

- Disturbed areas will be rehabilitated as soon as practicable.
- Obsolete roads will be ripped and revegetated, as soon as practicable.
- Rehabilitation activities including topsoil spreading will be limited in adverse weather conditions to minimise dust generation.
- Haul roads will be watered as required to maintain wheel generated dust to acceptable levels.
- All roads are speed limited. Speed limits will be enforced to ensure excessive vehicle speeds do not contribute to unacceptable dust generation.

Additional proactive and reactive air quality control measures utilised at the Maxwell Infrastructure site are broadly categorised into the following areas:

- Visual assessment;
- Weather forecast data;
- Real time weather; and
- Real time air quality monitoring.

Visual Assessment

Visual dust levels shall be monitored by the Open Cut Examiner (OCE) to ensure that all trafficable areas, rehabilitation activities, former coal storage areas and equipment manoeuvring areas are maintained in a condition that minimises the emissions of wind-blown or traffic generated dust. Operators are also responsible to assess their activities and call for a watercart or notify the OCE in the event dust emissions cannot be controlled.

Weather Forecast data

Weather forecasts for the day are obtained from the Bureau of Meteorology for the Muswellbrook area and are presented in the Pre-Shift meeting delivered by the OCE to the site to ensure all personnel are aware of the expected weather conditions. In the event the forecast is for strong winds, hot or adverse conditions, the operational equipment will be assessed and modified accordingly.

Real Time Weather

Real-time meteorological monitoring triggers are used to identify conditions conducive to elevated dust events. A short message service (SMS) alarm function is configured to alert the OCE when four consecutive 5-minute wind speed readings occur that are greater than 10 m/s. This alarm is to alert the OCE that wind conditions are conducive to dust generation and that operations should be assessed and modified accordingly. Alarms will not be generated during periods of rainfall, as dust is unlikely to be generated during rainfall events.

Real Time Air Quality Monitoring

Real time air quality monitoring is designed to alert the OCE of an episodic dust event that could potentially lead to an exceedance of the 24-hour PM_{10} impact assessment criteria. An SMS alarm function is configured to alert the OCE when four consecutive 5-minute readings greater than 80 $\mu g/m^3$ are recorded (and the wind direction is from the direction of the Maxwell Infrastructure site). This alarm is a trigger to the OCE to increase surveillance of the operation and modify or suspend operations as required.

4 MEASUREMENT AND EVALUATION

4.1 Air Quality Monitoring

All air quality monitoring is undertaken in accordance with the statutory requirements associated with the Maxwell Infrastructure Development Consent conditions, EPL requirements and Australian Standards which specify required methods of sampling, analysis and frequency of monitoring.

The Maxwell Infrastructure air quality monitoring program includes a combination of compliance and management (for internal purposes only) units including Dust Deposition Gauges (dust gauges) and continuous PM_{10} monitoring units including Tapered Element Oscillating Microbalance (TEOMs) and E-Samplers. Air quality monitoring currently focuses on the northern areas of the Maxwell Infrastructure site as these are the nearest privately-owned lands.

Maxwell Infrastructure also operates an automatic weather station, which updates current weather conditions on a five-minute basis. Real time information is downloaded to a central repository, whereby information can be utilised to assist in the day-to-day operational issues as well as long-term analysis of environmental data.

The locations of air quality and meteorological monitoring equipment at the Maxwell Infrastructure site are shown in ***Figure 1***. The monitoring equipment, frequency of monitoring and relevant monitoring standards are summarised in ***Table 3****.*

Table 3. Air Quality and Meteorological Monitoring Equipment

Monitoring Site(s)	Indicator(s)	Frequency	Standard	Purpose
Dust Gauges 2235, 2247 2230, 2175	Insoluble Solids	Monthly	AS/NZS 3580.10.1:2016	Compliance
TEOM	TSP & PM_{10}	Continuous	AS/NZS 3580.9.8:2008	Compliance and Management
E-Samplers ES-01, ES-02, ES-03, ES-04	PM_{10}	Continuous	None	Management*
Meteorological Monitoring Station	Meteorology	Continuous	AS 3580.14:2011	Compliance

* Monitors required under EPL1323 only.

Figure 1: Air Quality Monitoring Locations

Meteorological Monitoring

Meteorological monitoring is undertaken at Maxwell Infrastructure in accordance with the Development Consents. The meteorological monitoring provides the site with information to allow for the most appropriate response to changes in weather conditions. The parameters monitored at the meteorological station are as follows:

- Wind Speed and Direction
- Temperature
- Relative Humidity
- Rainfall
- Barometric Pressure
- Sigma Theta

One (1) meteorological station is located to the north of the site near the CHPP (refer to ***Figure 1***). The weather station has been installed and operated in accordance with the requirements of Australian Standard AS2922-1987 Ambient Air – Guide for the siting of sampling units.

Depositional Dust Monitoring

A network of four (4) depositional dust gauges are monitored monthly to the north of the site (refer to ***Figure 1***). The gauges are utilised to assess air quality impacts and determine the amount of dust that settles in a predetermined area. This is then analysed for contamination through insects, bird droppings etc. with the non-contaminated results assessed against the criteria for depositional dust outlined in ***Table 1***.

Real Time Air Quality Monitoring

One (1) TEOM is in operation to the north of the site (refer to ***Figure 1***) to continuously monitor air quality in the community. This unit measures PM_{10} concentrations in real time and feeds the information back to the Maxwell Infrastructure site where it is used to assist with operational changes and potential impacts.

PM_{10} monitoring data from the real-time monitors is used to calculate annual average TSP levels. PM_{10} can account for between 24 and 52 per cent of TSP depending on the source of the particulate, as detailed within the National Pollutant Inventory Emission Estimation Techniques Manual for Mining, Version 2.3 (Commonwealth of Australia, 2001). Based on the relative contribution of dust sources at a surface mine (Pacific Environment) the PM_{10} contribution to TSP is conservatively estimated to be 40 per cent. Therefore, TSP results can be inferred by multiplying the annual average PM_{10} results by 2.5. The results can then be assessed against the relevant criteria in ***Table 1***.

The Upper Hunter Air Quality Monitoring Network (UHAQMN) will be used to assess regional PM_{10} dust levels and to identify areas of high dust levels based on wind direction. The Maxwell Infrastructure site relies on the UHAQMN Muswellbrook unit, which is located approximately 8km from the Maxwell Infrastructure site, to monitor the $PM_{2.5}$ levels. In accordance with the Office of Environment & Heritage (OEH) final report on the Upper Hunter Valley Particle Characterisation Study, the contribution of $PM_{2.5}$ particles from mining sources in the Muswellbrook area was determined to be in the order of 5 per cent with the majority of these emissions coming from the combustion of fuel in engines. Due to the small number of operational equipment at the Maxwell Infrastructure Site, the potential emission of $PM_{2.5}$ would be insignificant compared to other background sources and thus the need for an on-site monitoring unit is not required.

Maxwell Infrastructure has an additional four (4) E-Samplers that measure PM_{10} levels around the open cut pits. These monitors have been situated upwind and downwind of the operation in consideration of dominant wind directions for the Hunter Valley. These monitors are used for management (internal) purposes only and provide Maxwell Infrastructure with the ability to assess the operations contribution to dust levels and subsequently make operational changes.

4.2 Incident Reporting and Compliance Evaluation

If monitoring results identify an exceedance of the criteria outlined in ***Table 1*** or where a negotiated agreement has been entered into in relation to the impact, Maxwell Infrastructure will notify the Department of Planning and Environment (DPE). Notification will be undertaken within 24 hours of detecting the exceedance. Outcomes of the investigation will be provided to DPE (and any other

relevant agencies) in the form of a written report within six days of the of detecting the exceedance. The report will provide the following information:

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

Details of any non-compliances will also be included in the Annual Environmental Management Report (AEMR).

4.3 Land Acquisition

In the event monitoring results demonstrate that dust generated by the project exceed the criteria in ***Table 2*** at any residence on privately-owned land, or on more than 25 percent of any privately-owned land, Malabar, upon receiving a written request form the landowner, will acquire the land in accordance with the procedures in conditions 8-10 of Schedule 4 of PA 06_0202.

4.4 Corrective Action

Table 4 summarises the potential air quality issues that may arise and the appropriate corrective action(s) that will be taken.

Table 4. Corrective Actions

Issue	Action(s)
Excessive visible dust emissions	OCE will investigate and modify or cease operations as required to ensure dust does not leave the site boundary. Operations may be modified by means of, but not limited to: • Suspending operations until conditions improve; • The source of the dust generating activity can be controlled by means of watering; or • The operations can be relocated to a less exposed area. OCE to notify Manger Environment and Community (E&C) if a breach of the licence conditions has occurred.
Dust emissions leaving the site	
Air quality monitors showing elevated dust levels	OCE will investigate to determine the dust source and modify or cease operations as required.
Exceedance of air quality criteria	Manager E&C to notify DPE, senior management and any impacted residents (if required). Manager E&C with assistance from the OCE will undertake an investigation and provide a report to DPE.
Community complaints	OCE will investigate the complaint and modify or cease operations as required. Manager E&C will provide a response back to the complainant. Where relevant, feedback will be provided to mine planning and production personnel. If the complaint relates to another site, the Manager E&C will pass the required details on.

4.5 Cumulative Impacts of Mining Operations

In accordance with the Development Consent PA 06_0202, Maxwell Infrastructure will use its best endeavours to coordinate air quality management with nearby mines to reasonably and feasibly minimise cumulative air quality impacts. Maxwell Infrastructure's closest mining operation is MAC which shares an operational boundary. MAC is situated on the western side of Maxwell Infrastructure with both operations sharing the Antiene rail spur that lies to the north of the Maxwell Infrastructure site. A joint MAC and Maxwell Infrastructure CCC meeting is conducted every six-months where air and noise monitoring results and community complaints specific to the Antiene rail spur are presented

and discussed. In the event any exceedances are recorded, the results of the investigation will be presented to the CCC at this meeting.

In circumstances where Maxwell Infrastructure's dust monitors, weather station and/or a visual inspection identifies the likely source of elevated dust levels to be coming from a nearby mining operation, Maxwell Infrastructure will notify that mine's environmental officer/s.

4.6 Independent Review

If a landowner considers the operation to be in exceedance of the impact assessment criteria, they may request an independent review of the effects of the operation on their land. Such a request must be made in writing to the Secretary of the DPE. If the Secretary determines that an independent review is to be undertaken, Maxwell Infrastructure must follow the procedures outlined in the Development Consent. Further independent investigations shall cease if the Director-General is satisfied that the relevant consent limits or relevant EPA dust amenity criteria are not being exceeded and are unlikely to be exceeded in the future.

4.7 Greenhouse Gas Management

Malabar Coal undertakes monitoring of GHG emissions for the Maxwell Infrastructure Site to ensure that GHG emissions are kept to the minimum practicable level. In accordance with National Greenhouse and Energy Reporting Act 2007 (NGER Act), Malabar Coal regularly quantifies GHG emissions attributable to its operations, including emissions from fuel and electricity consumption.

Although active mining has ceased at the Maxwell Infrastructure Site, progressive rehabilitation activities continue to be undertaken to meet the final landform designs. As the rehabilitation phase continues, Maxwell Infrastructure will continue to investigate and evaluate opportunities for improving greenhouse and energy performance. These measures will include:

- Consideration of specific energy or greenhouse emission targets during the rehabilitation and maintenance phase of the operation;
- Continued reduction in spontaneous combustion emissions by ongoing improvement in application of the spontaneous combustion management plan; and
- Reviewing monitoring and reporting requirements during the final landform development and rehabilitation and decommissioning phase to ensure this information continues to be reliably captured and reported.

Details of improvement measures implemented or trialled at a site level will be included in the AEMR.

4.8 Complaints Handling

In the event that a complaint or enquiry is received regarding air quality, it is immediately investigated and managed in accordance with Malabar Coal's Community Complaints and Enquiries procedure. Details such as complainant name, contact details, nature of concern, date, time and method of receival are recorded. While details of the complaint or enquiry may vary depending on the nature and source of the enquiry, the following actions may result:

- Confirmation of whether the complainant would like the matter raised as a complaint or an enquiry.
- Identify further details which may assist in determining the cause of the complaint.
- Carry out an inspection of the site or conduct an assessment of monitoring results to identify the source.
- Identify if there is an exceedance or non-compliance with any consent or licence condition.
- Identify, where necessary and practical, methods to manage the source of the complaint and minimise the chance of a recurrence or the potential to generate further complaints.

All enquiries and/or complaints are recorded in an enquiries database and are presented to the Community Consultative Committee (CCC) and included in the AEMR.

5 REVIEW AND IMPROVEMENT

5.1 Review Schedule

This AQMP will be reviewed in accordance with the Maxwell Infrastructure Environmental Management Strategy, that is:

- Every three years;
- Following an independent environmental audit, with findings relevant to this Plan;
- Following an environmental incident or community complaint relevant to the control measures outlined in this Plan only if required; or
- Following relevant outcomes from a risk assessment or change management process.

If any significant modifications to the AQMP are required as an outcome of the review, relevant government agencies will be consulted regarding the changes and the revised Plan will be submitted to DPE for approval. Minor changes such as formatting edits may be made with version control on the Malabar Coal website www.malabarcoal.com.au.

5.2 Reporting

Environmental monitoring data summaries, compliance with consent and licence conditions and any other required modifications to air quality monitoring at Maxwell Infrastructure will be reported in the AEMR. Copies of the AEMR will be distributed to government agencies and CCC members. Summaries will be made available to the public via the Malabar Coal website (http://malabarcoal.com.au/maxwell-infrastructure-downloads) and air quality monitoring results will also be presented at CCC meetings.

An Annual NGER's report will be prepared by Maxwell Infrastructure to determine if the site has triggered the reporting thresholds.

5.3 Training and Communication

Generic air quality management training is provided to all employees and contractors through the Site Familiarisation process. From time to time, workforce communication and toolbox talks allow for discussion of the objectives and requirements of this and any other relevant Management Plans.

To ensure the effective implementation of air quality management controls, all Maxwell Infrastructure personnel involved in the supervisory and operator roles will undertake a more detailed air quality awareness training.

5.4 Records Management

All air quality monitoring data are maintained in accordance with the Environmental Management Strategy and maintained on the premise for a period of at least 4 years.

5.5 External consultation

A copy of the AQMP has been forwarded to the EPA for review. A copy of the consultation is provided in **Appendix 2**.

6 REVISION STATUS

A summary of the document history is outlined below in ***Table 5*.**

Table 5. Document Revision Status

Issue	Issue Date	Review Team	Details of Change
1	Feb 2003	P Simpson P Forbes T Hulme	Development of AQMP document
2	Nov 2005	P Simpson P Forbes H Hayes	Changes in this revision include: • Updating into Anglo Coal Australia procedure format • Reorganisation of procedure • Updating responsibilities of key personnel This management plan was forwarded to Muswellbrook Shire Council and the then Department of Environment and Conservation (EPA) on 19 September 2005 for review. No comments were received from either party consulted.
3	Jun 2008	P Simpson P Forbes M Heaton	Changes to the original AQMP as a result of new Project Approval from the Department of Planning NSW are as follows: • Updating with impact assessment criteria • Updating land acquisition criteria • Review of operating conditions • Referencing spontaneous combustion management • Implementation of air quality monitoring plan
4	Nov 2013	J Benson P Forbes C Robertson	Scheduled review undertaken. Changes include: change in position titles and accountabilities and changes in operational activities. This review also takes into account conditions from the Modification 2 approval and was revised to include recommendations from the 'Drayton 2012 Independent Environmental Compliance Audit' and the introduction of a new interactive dust management system. This revision also included additional commitments under the Drayton Pollution Reduction Program.
5	Jun 2017	B York N Dobbins M Lord D Pisters	This management plan was updated with the calibrated Trigger Action Response Plan.
6	Oct 2018	G Cook D McLaughlin R Hayes	This management plan was revised in response to the following: • Change of ownership of the site to Malabar Coal • Change in responsibilities • Change in operational aspects at the Maxwell Infrastructure site • Changes in the management of air quality related activities and controls (removal of the TARP) • Merging of the GHG requirements into this plan as per the Development Consent. • Removal of dust depositional gauges (2130, 2157, 2197 and 2208) and the HVAS monitoring unit to reflect the current operational activities of the site while still ensuring compliance is maintained.

7 RESPONSIBILITIES

Table 6 outlines the responsibilities associated with this management plan.

Table 6. Responsibilities

Position	Responsibilities
Operations Manager	• Provide adequate resources for the implementation of this Plan.
Manager Environment and Community	• Oversee the implementation of the AQMP. • Coordinate monitoring in accordance with this Plan. • Notify regulatory authorities and affected landholders of any air quality related exceedance and undertake the associated reporting. • Coordinate periodic reviews of this Plan. • Ensure all personnel are trained in accordance with this Management Plan.
Environmental Coordinator	• Assist the Manager Environment and Community as required in implementation of this Plan. • Assist the Manager Environment and Community with investigations of air quality criteria exceedances, incidents or complaints. • Liaise with the Manager Environment and Community to maintain the environmental hotline. • Coordinate the implementation of the air quality monitoring program in accordance with this Plan. • Coordinate the management of records and reporting of air quality monitoring results. • Manage air quality related complaints in accordance with the complaints management procedure. • Provide training to all relevant personnel.
Mine Planner	• Plan rehabilitation activities as soon as practicable following mining operations. • Identify obsolete roads for rehabilitation.
Mining Supervisor / Open-Cut Examiner (OCE)	• Respond to potential exceedances of air quality criteria as identified by the continuous monitoring system. • Review operations in response to alerts and modify operations as appropriate. • Report to Environmental Coordinator on response to alerts. • Conduct regular inspections and reviews of open cut operations for potential and actual dust generation. • Continually assess the need for dust control measures according to operational and climate conditions. • Assist the Environment and Community Coordinator with investigations into dust exceedances, incidents or complaints.
All Personnel	• Comply with the requirements of this Plan. • Report any activity which is generating excessive dust to the equipment operator (in the first instance) or OCE. • Ensure their own activities are not generating excessive dust, if so, call a water cart or advise the OCE.

8 DEFINITIONS

Term	Definition
AEMR	Annual Environmental Management Report
Air Quality	The ambient levels of particulate matter and its constituents, which remain in the atmosphere
AQMP	Air Quality and Greenhouse Gas Management Plan
AS	Australian Standard
CCC	Community Consultative Committee
CHPP	Coal Handling Preparation Plant
DA	Development Approval
DPE	NSW Department of Planning and Environment
E-Sampler	Monitoring device to assess real time dust emissions for PM_{10}
E&C	Environment and Community
EPA	NSW Environmental Protection Authority
EPL	Environment Protection Licence
g/m^2/month	Grams per square meter per month
GHG	Greenhouse Gas
HVAS	High Volume Air Sampler
MAC	Mt Arthur Complex
NGER	National Greenhouse and Energy Reporting
OCE	Open Cut Examiner
OEH	Office of Environment and Heritage
PM	Particulate Matter – measured in micrograms per cubic meter (µg/m^3)
$PM_{2.5}$	Particulate Matter <2.5 µg/m^3
PM_{10}	Particulate Matter <10 µg/m^3
SCMP	Spontaneous Combustion Management Plan
SMS	Short Message Service
TARP	Trigger Action Response Plan
TEOM	Tapered Element Oscillating Microbalance
Toolbox Talk	A forum where information is presented to the crews
TSP	Total Suspended Particulates
µg/m^3	Micrograms per cubic meter
UHAQMN	Upper Hunter Air Quality Monitoring Network

9 REFERENCES

- Project Approval 06-0202 – Drayton Mine Extension (inc Mod 1 and Mod 2)
- Development Consent 106-04-00 – Drayton Rail Loop and Antiene Rail Spur
- Drayton Mine Environmental Assessment 2007
- Drayton Mine Environmental Assessment Modification 1 (2009)
- Drayton Mine Environmental Assessment Modification 2 (2012)
- Environment Protection Licence 1323
- Mining Lease 1531
- Coal Lease 229
- Australian Standard 3580.9.3 – 2003 Methods for Sampling and Analysis of Ambient Air – Determination of Suspended Particulate Matter – Total Suspended Particulate Matter (TSP) – High Volume Sampler Gravimetric Method
- Australian Standard 3580.9.6 – 2003 Methods for Sampling and Analysis of Ambient Air – Determination of Suspended Particulate Matter – PM (sub) 10 High Volume Sampler with Size-Selective Inlet – Gravimetric Method
- Australian Standard 3580.10.1 – 2003 – Methods for Sampling and Analysis of Ambient Air – Determination of Particulate Matter – Deposited Matter – Gravimetric Method
- National Pollutant Inventory Emission Estimation Techniques Manual for Mining, Version 2.3 (Commonwealth of Australia, 2001).
- DRA_6-012_PRO_Community Complaints and Enquiries Procedure
- DRA_8-083_MP_Spontaneous Combustion Management Plan
- Coal Mine Pollution Reduction Program – Assessment and Best Practice – PAE Holmes 2012
- Upper Hunter Valley Particle Characterisation Study Final Report – Office of Environment and Heritage (OEH).

Appendix *1 - Statutory Requirements for Air Quality Management*

Statutory Requirements for PA 06_0202

Condition	Details	Reference
Schedule 3 Condition 21	**Impact Assessment Criteria:** *The Proponent shall ensure that the dust emissions generated by the project do not cause additional exceedences of the air quality impact assessment criteria listed in Tables 6. 7 and 8 of PA 06_0202 at any residence, on privately-owned land, or on more than 25 percent of any privately-owned land.*	***This AQMP***
Schedule 3 Condition 22	**Land Acquisition Criteria:** *If the dust emissions generated by the project exceed the criteria in Table 8. 9 and 10 of PA 06_0202 at any residence on privately-owned land, or on more than 25 percent of any privately-owned land, the Proponent shall, upon receiving a written request form the landowner, acquire the land in accordance with the procedures in conditions 8-10 of Schedule 4.*	***Section 4.3***
Schedule 3 Condition 23	**Operating Conditions:** *The Proponent shall:* *a) ensure any visible air pollution generated by the project is assessed regularly, and that mining operations are relocated, modified, and/or stopped as required to minimise air quality impacts on privately owned land;* *b) ensure that the real-time air quality monitoring and metrological monitoring data are assessed regularly, and that mining operations are relocated, modified and/or stopped as required to ensure compliance with the relevant air quality criteria; and* *c) implement all practicable measures to minimise the off-site odour and fume emissions generated by any spontaneous combustion on site,* *to the satisfaction of the Director-General.*	 ***Section 3.1*** ***Section 3.1*** ***Section 2.1 & SCMP***
Schedule 3 Condition 24	**Spontaneous Combustion:** *The Proponent shall prepare and implement a Spontaneous Combustion Management Plan for the project to the satisfaction of the Director-General. This must be:* *a) prepared in consultation with the OEH and DRE by suitable qualified expert/s whose appointment/s have been approved by the Director-General; and* *b) submitted to the Director-General for approval within 6 months of this approval.*	***Refer to SCMP***
Schedule 3 Condition 25	**Air Quality Management Plan:** *The Proponent shall prepare and implement an Air Quality and Greenhouse Gas Management Plan for the project to the satisfaction of the Director-General. This plan must:* *a) be submitted to the Director-General by 31 October 2012 for approval;* *b) describe the measures that would be implemented (including a real time air quality management system that employs both reactive and proactive mitigation measures) to ensure:* • *best management practice is being employed;* • *compliance with the relevant conditions of this approval:* *c) describe the proposed air quality management system;* *d) include an air quality monitoring program that;* • *uses a combination of real-time monitors and supplementary monitors to evaluate the performance of the development;* • *adequately supports the proactive and reactive air quality management system;* • *includes PM2.5 monitoring (although this obligation may be satisfied be the regional air quality monitoring network if sufficient justification is provided);* • *evaluates and reports on the effectiveness of the air quality management system;* • *includes a protocol for determining any exceedances of the relevant conditions of this consent; and* *e) include a protocol that has been prepared in consultation with the owners of nearby mines (including the Mt Arthur mine) to minimise the cumulative air quality impacts of the mines.*	 ***Section 0*** ***Section 3.1*** ***Section 4.1*** ***This AQMP*** ***Section 4.5***

Statutory Requirements for Development Consent 106-04-00

Condition	Details	Reference
5.1	**Air Quality Management and Monitoring:** <u>*Dust Management Plan*</u> *a) The Applicant shall, within 3 months of this consent, prepare a Dust Management Plan for the Drayton rail loading facility, detailing air quality safeguards and procedures for dealing with dust emissions to the satisfaction of the Director-General. The Plan shall be prepared in consultation with the owners of the Bayswater rail loading facilities with the aim of achieving a consistent approach in the preparation of the Dust Management Plans for the Drayton and Bayswater rail facilities respectively. The plan shall include, but not limited to, details of:* • *The identification of dust affected properties and the relevant dust limits consistent with the EIS;* • *Specifications of the procedures for the dust monitoring program for the purposes of undertaking independent dust investigations, including joint investigations with the owners of the Bayswater rail loading facility and rail loop where necessary;* • *Outline the procedure to notify property owners and occupiers likely to be affected by dust from the operations* • *The establishment of a protocol for handling dust complaints that include recording, reporting and acting on complaints.* • *Appropriate mechanisms for community consultation.* • *Outlining mitigation measures to be employed to minimise dust emissions.* • *Equipment to be available and used to control dust generation.* • *Methods to determine when and how operations are to be modified to minimise the potential for dust emissions if the relevant criteria are exceeded.* • *Identification of longer-term strategies directed towards mitigating dust levels that exceed the relevant EPA dust amenity criteria.* • *Details of locations for dust monitoring and deposition gauges (including existing Drayton monitoring locations if proposed to be used.) at residential areas and frequency of monitoring, as agreed with the EPA.* • *A program to continue baseline monitoring undertaken prior to development consent.* • *Details of the integration of this plan with the Drayton mine dust management plan and this plan's inter-relationship with the Bayswater rail facilities dust management plan.* <u>*Air Quality and Dust Monitoring*</u> *b) The Applicant shall:* *(i) Undertake monitoring at locations described in the Dust Management Plan (Condition 5.1(a));* *(ii) Use existing relevant Drayton dust deposition and total suspended particulate (TSP) monitoring gauges for the Drayton Rail Loop and Antiene Rail Spur operations, including sites for monitoring impacts of dust at the nearest non-mined owned residences, and any additional locations as may be determined by the Dust Management Plan referred to in Condition 5.1(a);and* *(iii) Provide all results and analysis of air quality monitoring in the AEMR, including a determination of the annual dust deposition rate in gm/m 2 /month, which shall be plotted in the AEMR.* *c) Monitoring of dust deposition and the concentration of PM10 particulate matter in ambient air must be carried out at*	As per Schedule 2, Condition 5 of PA 06_0202, no mining operations can take place on site after 31 December 2017. Mining operations includes all coal extraction, processing and transportation activities. As such, some conditions of DA 106-04-00 may not be applicable. However, the conditions associated with PA 06_0202 are anticipated to address all relevant aspects of DA 106-04-00.

Condition	Details	Reference
	locations agreed to in consultation with the EPA. The sampling method, units of measure, interval and frequency of monitoring will be as set out in the "Approved Methods for Sampling and Analysis of Air Pollutants in NSW", or its latest version. *d) In the event that a landowner or occupier considers that dust from the project at their dwelling or over more than 25% of their vacant land is in excess of the relevant EPA dust amenity criteria, and the Director-General is satisfied that an investigation is required, the Applicant shall upon the receipt of a written request:* *(i) Consult with the landowner or occupants affected to determine their concerns;* *(ii) Make arrangements for and bear the cost of, in consultation with the owner of the Bayswater rail loading facility and rail loop, appropriate independent dust investigations in accordance with the Dust Management Plan, and to the satisfaction of the Director-General, to quantify the impact and determine the source of the effect;* *(iii) Modify the operation in accordance with the Dust Management Plan if exceedences are demonstrated to result from the operation. This shall include:* • *Introduction of additional controls, either of dust generation from individual sources on the site or on site operations or modify operations, to ensure that the dust criteria are achieved; and / or* • *Enter into an agreement with the landowner, or provide such forms of benefit or amelioration as may be agreed between the parties as providing acceptable amelioration/benefit for the dust levels experienced. The agreement may also be made in consultation with the owner of the Bayswater rail loading facility and rail loop.* *Note: Vacant land in this condition means the whole of the lot in a current plan registered at the Land Titles Office as at the date of this consent that does not have a dwelling situated on the lot and is permitted to have a dwelling on that lot.* *e) If the independent dust investigations in sub-clause (e) above confirm that dust limits are in excess of the relevant EPA dust amenity criteria, the Applicant shall, at the written request of the owner, acquire the relevant property. Acquisition shall be in accordance with the procedures set out in Condition 10.1, 10.2 and 10.3.* f) *Further independent investigations shall cease if the Director-General is satisfied that the relevant consent limits or relevant EPA dust amenity criteria are not being exceeded and are unlikely to be exceeded in the future.*	
5.2	**<u>Dust Suppression and Control</u>** *c) Activities occurring at the premises must be carried out in a manner that will minimise emissions of dust from the premises.*	***Section 3.1***

Environmental Protection Licence 1323 and Mining Lease Conditions

Condition	Details	Reference
EPL O3.1	*The premises must be maintained in a condition which minimises or prevents the emission of dust from the premises.*	***Section 3.1***

Condition	Details	Reference
EPL O3.2	*All trafficable areas, coal storage areas and vehicle manoeuvring areas in or on the premises must be maintained, at all times, in a condition that will minimise the generation, or emission from the premises, or wind-blown, or traffic generated dust.*	***Section 3.1***
CL 229 Condition 17 **ML 1531 Condition 17**	*the lease holder shall take such precautions as are necessary to abate any dust nuisance.*	***Section 3.1***

Appendix 2 – Regulatory Correspondence regarding this Air Quality and GHG Management Plan

Planning Services
Resource Assessments
Contact: Jack Murphy
Phone: 8217 2016
Email: jack.murphy@planning.nsw.gov.au

Mr Glenn Cook
Environmental Coordinator
Malabar Coal Limited
Thomas Mitchell Drive
Muswellbrook NSW 2333

Email: gcook@malabarcoal.com.au

Dear Mr Cook,

Maxwell Infrastructure (PA 06_0202 and DA 106-04-00)
Air Quality and Greenhouse Gas Management Plan

I refer to your email dated 9 October 2018, submitting the revised Air Quality and GHG Management Plan for approval.

The Department has reviewed this plan and considers that it meets condition 25 of Schedule 3 of PA 06_0202 and condition 5.1 of Schedule 2 of DA 106-04-00. Consequently, the Secretary has approved this plan.

Please ensure a finalised copy of this plan is made available on the company's website.

Should you have any enquiries in relation to this matter, please contact Jack Murphy at the details above.

Yours sincerely,

9/10/18

Megan Dawson
A/Director
Resource Assessments
As nominee of the Secretary

Department of Planning & Environment
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