MALABAR

AIR QUALITY AND GREENHOUSE GAS MANAGEMENT PLAN

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1 INTRODUCTION

1.1 Background

Maxwell Ventures (Management) Pty Ltd (Maxwell), a wholly owned subsidiary of Malabar Resources Limited (Malabar) owns and operates the Maxwell Underground Project (the site). The site is located in the Upper Hunter Valley of New South Wales (NSW), east-southeast of Denman and south-southwest of Muswellbrook. The site is approved to extract a maximum of 8 million tonnes of run-of-mine coal per year over a period of 26 years. The site boundary is shown in **Figure 1**.

The site consists of the following areas:

- Underground area comprising the proposed area of underground mining operations and the mine entry area to support underground mining and coal handling activities and provide for personnel and materials access;
- Maxwell Infrastructure (formerly Drayton mine) comprising previous open cut mining areas, existing coal handling and preparation plant (CHPP), train load-out facilities and rail loop, Antiene rail spur and other infrastructure and services; and
- Transport and services corridor between the underground area and Maxwell Infrastructure comprising the proposed site access road, covered overland conveyor, power supply and other ancillary infrastructure and services.

The area within and surrounding the site, which has previously been known as Mt Arthur South, Saddlers Creek and Drayton South, has long been identified as having a significant in-situ coal resource. Prospecting for coal commenced in the late 1940s, with exploration intensifying during the 1960s and 1970s. Open cut coal extraction and mining activities commenced at Maxwell Infrastructure in 1983 and ceased in October 2016. The previous open cut mining area is currently in the rehabilitation phase of the mine operations.

The development consent for State Significant Development 9526 (SSD 9526) was granted on 22 December 2020 under clause 8A of the *State Environmental Planning Policy (State and Regional Development) 2011* and section 4.5(a) of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The site also incorporates the development formerly authorised under the Maxwell Infrastructure Project Approval (PA) 06_0202. Development Consent DA 106-04-00 for the existing rail loop and Antiene Rail Spur was granted on 2 November 2000 under Section 76(A)9 and 80 of the EP&A Act and is still current.

1.2 Purpose and Scope

The purpose of this Air Quality and Greenhouse Gas Management Plan (AQGGMP) is to detail the statutory requirements and to outline the controls to be implemented to manage air quality and greenhouse gas at the site. This AQGGMP is one of a series of Environmental Management Plans that together form the Environmental Management System for the site.

This AQGGMP applies to all activities within the SSD 9526 development application area and the Antiene Rail Spur Development Consent DA 106-04-00 boundary. This AQGGMP is also the Dust Management Plan in accordance with Condition 5.1 of DA 106-04-00.

In accordance with Schedule 2, Part A, Condition A24(a) of SSD 9526, this AQGGMP has been prepared for stage 1 activities only. Stage 1 activities include early preparatory works, construction and first workings (as defined in SSD 9526). A copy of the approval from the Planning Secretary to stage this plan is provided in **Appendix 1**. This plan will be updated prior to the commencement of second workings. At this time, a *Centralised Gas Management Plan* as required under Schedule 2, Part B, Condition B23(d) of SSD 9526 will be included.

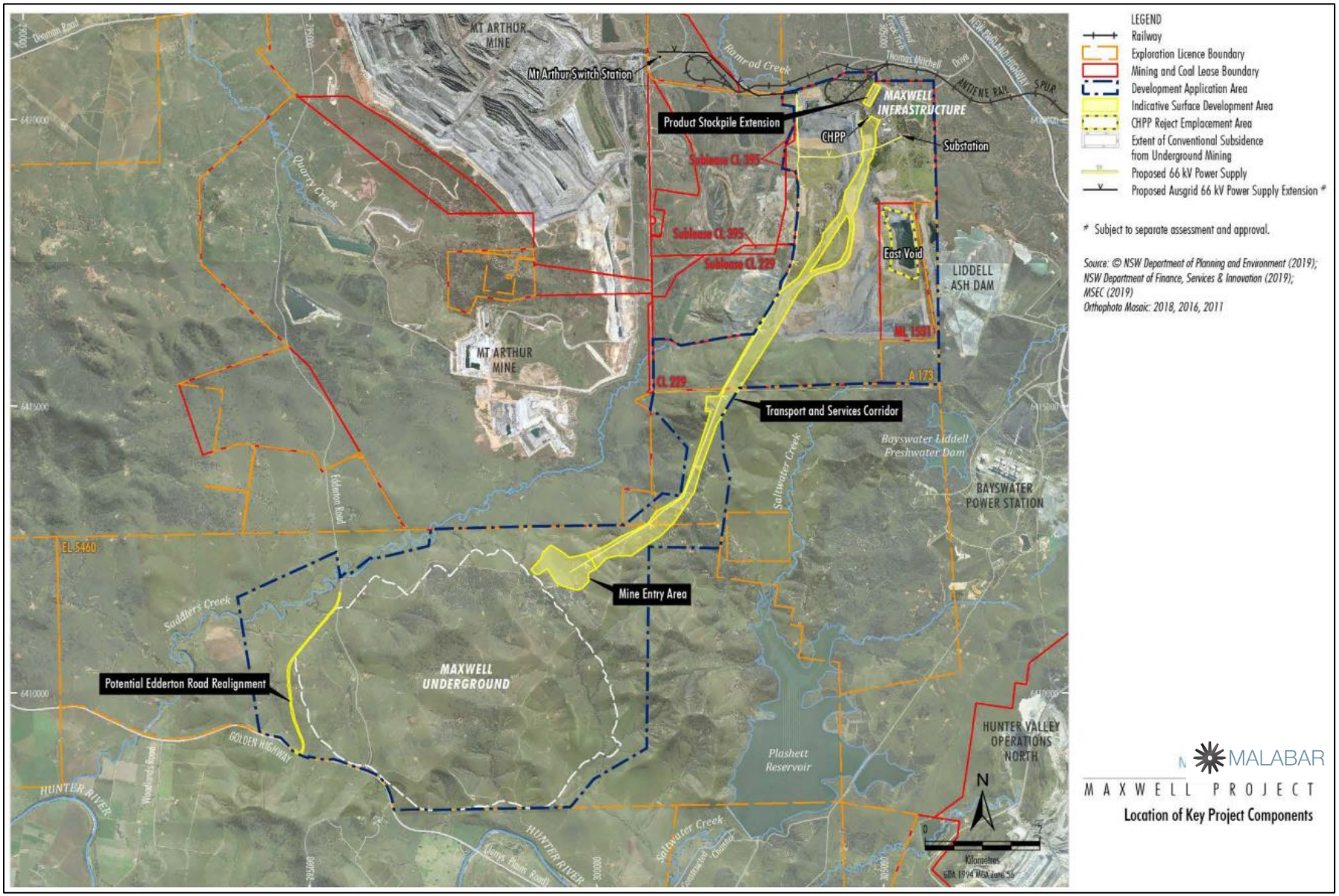

Figure 1. Maxwell Underground Project

The management of blasting and spontaneous combustion to minimise air quality impacts are covered separately in the *Noise and Blasting Management Plan* and *Spontaneous Combustion Management Plan*. Occupation health and safety risks associated with airborne contaminants are addressed in the *Air Quality, Dust or Other Contaminants Principal Hazard Management Plan*.

Maxwell will not commence construction until this AQGGMP is approved by the Planning Secretary. Maxwell will notify the Department of Planning, Industry and Environment (DPIE) in writing of the date of commencement of construction at least two weeks before the commencement date in accordance with Condition A13(b), Schedule 2, SSD 9526. Maxwell will implement this AQGGMP, following approval by the Planning Secretary.

1.3 Objectives

The objectives of this AQGGMP are to:

- Detail all relevant statutory requirements to be met;
- Identify potential air quality impacts;
- Describe the air quality management system and detail the controls to be implemented;
- Describe energy efficiency measures and the minimisation of greenhouse gas emissions from the site;
- Describe the air quality monitoring program and criteria for the site;
- Detail the protocol for distinguishing dust emissions from neighbouring developments;
- Detail the procedure for reporting air quality related exceedances and incidents to relevant stakeholders; and
- Manage complaints related to air quality in a timely and effective manner.

2 PLANNING

2.1 Regulatory Requirements

This AQGGMP describes the management of air quality and greenhouse gas to meet relevant statutory requirements within SSD 9526, DA 106-04-00, Environment Protection Licence (EPL) 1323, Mining Lease 1531 and Coal Lease 229. The various conditions that relate to air quality and greenhouse gas management and where they are addressed in this document are detailed in **Appendix 2**.

2.2 Maxwell Project EIS and Supporting Document Commitments

An air quality and greenhouse gas assessment was undertaken for the Maxwell Underground Project Environmental Impact Statement (EIS) (published on 14 August 2019) and included assessment of potential impacts with respect to air quality and predicted greenhouse gas emissions. Commitments in the Maxwell Underground Project EIS and supporting documents that relate to air quality and greenhouse gas management, and where they are addressed in this document, are detailed in **Appendix 3**.

2.3 Preparation and Consultation

Schedule 2, Part B, Condition B23(a) of SSD 9526, requires that this plan be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary. Maxwell has engaged Philip Henschke (Senior Atmospheric Physicist at Todoroski Air Sciences) and Aleks Todoroski (Director at Todoroski Air Sciences) to assist with the preparation of this plan. A copy of the endorsement by the Planning Secretary is included in **Appendix 4**.

2.4 Baseline Data

Baseline environmental air quality data has been collected from the Maxwell Infrastructure site and included in the EIS. This data provides an indication of the air quality and meteorological conditions prior to the commencement of the Maxwell UG Project.

A graphical summary of the following baseline data is provided in **Appendix 5:**

- Measured 24-hour average particulate matter less than 10 micrometres in diameter (PM_{10}) concentrations during January 2013 to December 2019.
- Measured annual average total suspended particle (TSP) concentrations during January 2013 to December 2019.
- Annual average deposited dust levels during January 2013 to December 2019.

The 24-hour average particulate matter less than 2.5 micrometres in diameter ($PM_{2.5}$) concentrations during January 2013 to December 2019 is also provided. This data has been sourced from the Spur Hill monitor and the Upper Hunter Air Quality Monitoring Network site in Muswellbrook as $PM_{2.5}$ was not previously monitored at the Maxwell Infrastructure site.

Seasonal trends are apparent in the 24-hour average PM_{10} data which show higher readings in the spring and summer months with the warmer weather elevating the potential for drier ground conditions and the occurrence of windblown dust, bushfires and plant pollen. The 24-hour average $PM_{2.5}$ data shows elevated levels occurring in the cooler months for the Muswellbrook monitoring station which is likely influenced by wood heaters.

Annual and seasonal windroses are also provided in **Appendix 5** and have been prepared based on data from 2015. Analysis of the windroses show that on an annual basis the predominant wind flows are along the northwest to southeast axis, which is typical of the Hunter Valley. The summer winds are predominately from the southeast and east-southeast. The autumn and spring wind distribution is similar to the annual distribution with winds from the southeast, northwest, and west-northwest. During winter, winds are primarily from the northwest and west-northwest.

3 IMPLEMENTATION

3.1 Context

The results of the air quality and greenhouse gas assessment indicated that the dust levels were predicted to be below the relevant criteria at the assessed privately-owned and mine-owned residences. It also found that there were no likely adverse air quality impacts associated with nitrogen dioxide emissions from diesel powered equipment and gas management activities.

The main sources of particulate matter in the area surrounding the site include other mining operations, agriculture, commercial and industrial (including power generation) activities, urban activity and emissions from local anthropogenic activities such as motor vehicle exhaust and domestic wood heaters.

3.2 Dust Management

The air quality management system includes a comprehensive set of both proactive and reactive control measures and monitoring tools to maintain compliance with the air quality criteria for particulate matter less than 10 µm (PM_{10}) and particulate matter less than 2.5 µm ($PM_{2.5}$) (outlined in **Table 2** in **Section 4.1)**. These measures and tools are designed to minimise the potential for generation of wind-blown dust (including PM_{10} and $PM_{2.5}$) from disturbed surfaces and mining activities, and to enable effective control of episodic dust events.

Reasonable and feasible measures for minimising particulate emissions (including for PM_{10} and $PM_{2.5}$) from the operation have been developed with reference to the *NSW Coal Mining Benchmarking Study: International Best Practice Measures to Prevent and/or Minimise Emissions of Particulate Matter from Coal Mining* (Katestone Environmental Pty Ltd, 2011) and are provided in **Table 1.**

Table 1. Air quality control measures

Dust Source	Control Measure	Responsible Person
Rehabilitation activities	Disturbed areas will be rehabilitated as soon as practicable.	HSEC Manager
	Progressive rehabilitation.	HSEC Manager
Construction activities	Regular inspections of stockpiles.	Supervisors
	Application of water to stabilise the surface of stockpiles.	Supervisors
	Regular inspections of exposed areas.	Supervisors
Vehicle movements on unsealed roads causing wheel-generated haul road emissions	Unsealed roads will be watered as required to maintain wheel generated dust to acceptable levels.	Supervisors
	Unsealed roads will be maintained to minimise dust generation.	Supervisors
	All roads will be speed limited. Speed limits will be enforced so that excessive vehicle speeds do not contribute to unacceptable dust generation.	Supervisors
	Obsolete roads will be rehabilitated as soon as practicable.	HSEC Manager
Vehicle movements on sealed roads	In accordance with Schedule 2, condition A9, the full length of the access road between the mine entry area and the CHPP will be sealed, to the satisfaction of the Planning Secretary, no later than 6 months after the date of commencement of first workings as notified under Schedule 2, condition A13(c) of SSD 9526.	Infrastructure Manager
Coal handling	The coal hopper will be enclosed with water sprays.	Infrastructure Manager
	Conveyors and transfer points will be enclosed with water sprays as required.	Infrastructure Manager
	Application of water to stabilise the surface of stockpiles.	Infrastructure Manager
Train loading	Conveyors and transfer points will be enclosed with water sprays as required.	Infrastructure Manager
	The coal loaded into wagons will have a streamlined and consistent profile.	Infrastructure Manager
	Coal spillages will be minimised with regular collection and cleaning of any spills.	Infrastructure Manager
All areas	Visual dust levels will be monitored by the Supervisor.	Supervisors
	Equipment operators will be responsible to assess their activities and call for a watercart or notify their Supervisor if dust emissions cannot be controlled.	Operators
	Coordinate air quality management with nearby mines.	Supervisors

3.2.1 Weather Forecast

Localised weather forecasts for the day will be reviewed by the Supervisor. The Upper Hunter Air Quality Monitoring Network will be used to assess regional dust levels. The Supervisor will advise the relevant operational personnel during the pre-shift briefing, if the forecast is for strong winds, elevated temperatures or adverse weather conditions. Operations will be monitored, assessed and modified accordingly.

3.2.2 Real Time Meteorological Monitoring

Real-time meteorological monitoring triggers will be used to identify conditions conducive to elevated dust levels. A short message service (SMS) alarm function will be configured to alert the Supervisor of high wind speed readings at the on-site weather stations. This alarm is a trigger for the Supervisor to increase surveillance of operations and modify or suspend operations as required. Changes will be made in accordance with the site *Dust Trigger Action Response Plan*. SMS alarms for high wind speeds readings will not be generated during periods of rainfall.

3.2.3 Real Time Air Quality Monitoring

The objective of the real time air quality monitoring program is to ensure compliance with impact assessment criteria outlined in **Table 2** in **Section 4.1**. Real time air quality monitoring will be designed to alert the Supervisor of short-term dust concentrations that could potentially lead to an exceedance of the $PM_{2.5}$ or PM_{10} impact assessment criteria. An SMS alarm function will be configured to alert the Supervisor of consecutive elevated short-term readings. This alarm is a trigger for the Supervisor to increase surveillance of operations and modify or suspend operations as required. Changes will be made to operations based on the real time air quality monitoring alerts, in accordance with the site *Dust Trigger Action Response Plan*. During periods of extraordinary events operations will be monitored, assessed and modified accordingly. Project personnel would also undertake visual monitoring of stockpiles and exposed areas. In the event that any substantial dust plumes are observed, additional dust management measures would be implemented.

3.3 Greenhouse Gas Management

Maxwell will quantify greenhouse gas emissions for the site. Greenhouse gas emissions will be kept to the minimum practicable level. In accordance with *National Greenhouse and Energy Reporting Act 2007* (NGER Act), Maxwell will quantify greenhouse gas emissions attributable to its operations, including emissions from fuel and electricity consumption. Maxwell would manage its contribution to Australian greenhouse gas emissions inventories through participation in the National Greenhouse and Energy Report Scheme, as well as other applicable government initiatives and policies implemented to manage emissions at the national level under Australia's progressive Nationally Determined Contributions.

During second workings (Stage 2 activities) pre-mining gas drainage and goaf gas drainage will occur underground to reduce the gas content in the coal seams. Gas will be drained from the coal seams, and adjacent strata, by drilling in-seam (i.e. horizontal) boreholes into the coal seam in advance of mining. Pre-mining gas drainage will generally be facilitated by underground cross-panel drilling. Gas would be drained through an underground collection system and delivered to the centralised gas management infrastructure at the surface.

As discussed in **Section 1.2**, a *Centralised Gas Management Plan* describing the beneficial use of methane produced will be included in this Plan prior to the commencement of second workings (stage 2 activities). No greenhouse gas abatement (e.g. flaring) will occur during first workings (stage 1 activities) due to the expected low inherent methane levels in the expelled ventilation air.

Maxwell has included methods to reduce energy and fuel usage in the project design undertaken so far. Maxwell will continue to investigate ways to reduce energy consumption and fuel use during future during project planning phases.

Maxwell will utilise various management measures to reduce the overall generation of greenhouse gas emissions by:

- Investigating ways to reduce energy consumption during project planning phases and reviewing energy efficient alternatives.
- Undertaking regular maintenance of plant and equipment.
- Monitoring the consumption of fuel and regularly maintaining diesel powered equipment to provide operational efficiency.
- Monitoring the total site electricity consumption and investigating avenues to reduce the requirement.
- Sourcing electricity from renewable resources where available, and economically reasonable and feasible.

In accordance with Schedule 2, Part B, Condition B19(b) of SSD 9526, Maxwell will ensure that all 'non-road' mobile diesel equipment commissioned into service and used in undertaking the development complies with any applicable exhaust emission standards specified under an EPL, unless otherwise agreed by the Environment Protection Authority (EPA).

3.4 Odour Management

Experience and analysis (Metford Laboratories 1998) have shown that emissions from spontaneous combustion outbreaks include components that contain sulphur, which cause odour. The primary potential source of odour for the site is spontaneous combustion. In accordance with Schedule 2, Part B, Condition B15 of SSD 9526, Maxwell shall ensure no offensive odours, as defined under the *Protection of the Environment Operations Act 1997* (POEO Act), are emitted from site through implementation of control measures for spontaneous combustion. The prevention and remediation measures of spontaneous combustion outbreaks are detailed within the *Spontaneous Combustion Management Plan* and summarised below.

Extensive rehabilitation has been undertaken at the Maxwell Infrastructure site, following the cessation of mining operations in 2016. As such, the primary focus of spontaneous combustion management is on the prevention of spontaneous combustion outbreaks in the final landform, as well as the detection and remediation of outbreaks in the old open-cut areas. Remediation is prioritised for outbreaks in areas where there is a potential for fumes and odour to migrate off-site.

Maxwell will continue to prevent spontaneous combustion outbreaks in overburden emplacement areas by reducing oxygen access to carbonaceous material. This is generally achieved through:

- Compaction and shaping of the surface.
- Application of inert material to a specified depth.
- Appropriate surface treatment including water management and vegetation establishment.

Historic monitoring data and an inspection using a thermal camera will be undertaken to determine if heating is present. The degree of carbonaceous material will be assessed visually. This technique has been evaluated against an analytical technique and found to be a conservative estimate of spontaneous combustion propensity (Beamish 2017).

Overburden emplacement areas that have reached their nominal landform height and contain carbonaceous material or show signs of heating will be compacted and shaped, where practical. Final surfaces of overburden emplacement areas will be covered with a layer of inert material and compacted. Inert material is sourced from dedicated stockpiles consisting mostly of clays that were established during the mining process. Areas will be assessed by the Mining Engineer and/or Environmental Coordinator as part of the rehabilitation planning process to determine the depth of inert material required.

Surface treatment is required to maintain the effectiveness of the inert capping on overburden emplacement areas. Surface treatment involves the management of water to reduce erosion and the establishment of vegetation.

Remediation is required when outbreaks occur on existing rehabilitated land. The remediation measure that will be implemented for isolated outbreaks includes the loading out and/or pushing out of carbonaceous material to remove the ignition source. Remediation measures that will be implemented for larger outbreaks include reshaping and capping with inert material and or track rolling to reduce potential airflow through material. Inert capping will be compacted where access allows.

Coal stockpiles at the mine entry area and coal handling and preparation plant will be regularly monitored for signs of spontaneous combustion which include heat-haze, smoke and/or spontaneous combustion odours. If monitoring indicates self-heating of coal is occurring, then the stockpile will be recirculated. If possible, the affected coal will be isolated and water will be used to saturate the coal.

3.5 Fume Management

The prevention of fume generation is detailed within the *Noise and Blasting Management Plan* and summarised below.

Maxwell will minimise the need for surface blasting during construction, with material preferentially removed (where practicable) with dozers and excavators. The requirement for construction blasting will be influenced by the geotechnical properties of the material being excavated.

The following controls will be implemented where blasting is required:

- Any blasts required for construction activities will be limited to a Maximum Instantaneous Charge (MIC) of approximately 500 kg. This is substantially smaller than blasting in an open cut mining operation which would typically have a MIC in the order of 2,000 kg to 4,000 kg.
- A suitably qualified person will be engaged to manage any blasting operations.
- All personnel involved in planning or undertaking blasting will be appropriately trained and qualified.
- The parameters required for any blasting activities will be designed with a high margin of conservatism to meet the applicable criteria at the nearest privately-owned receivers or any proximal infrastructure.
- Each blast will be designed to maximise the blast efficiency while minimising dust impacts, fume generation, ground vibration, air blast overpressure and the potential for flyrock.
- Blasts will be designed to ensure the following:
    - Adequate height, quantity and type of stemming is utilised in the blasting process to maximise confinement of explosives.
    - Geology that may affect the blast i.e. reactive ground, faults and any other geological considerations, is considered in planning blasts.
    - Appropriate blast products (wet/dry products) will be selected based on the ground and weather conditions for each blast to minimise fume generation.

4 MEASUREMENT AND EVALUATION

4.1 Air Quality Criteria

In accordance with Schedule 2, Part B, Condition B16 of SSD 9526, Maxwell will implement all reasonable and feasible avoidance and mitigation measures so that particulate matter emissions generated by the site do not cause exceedances of the criteria listed in **Table 2** at any residence on privately-owned land.

The criteria do not apply if Maxwell has an agreement with the owner/s of the relevant residence or land to exceed the criteria and has advised DPIE in writing of the terms of the agreement. Currently Maxwell has no such agreements because results of the air quality assessment in the project EIS indicated that the dust emissions generated by the development are not likely to be greater than the air quality criteria in **Table 2** at any time during the life of the development at the assessed privately-owned and mine-owned residences. However, if Maxwell enters into an agreement with the owner/s of the relevant residence or land to exceed the criteria, the DPIE will be advised in writing, in accordance with Schedule 2, Part B, Condition B17 of SSD 9526.

Table 2. Air quality criteria

Pollutant	Averaging Period	Criteria	
Particulate matter < 10 µm (PM_{10})	Annual	[a, c] 25 µg/m^3	
	24 hour	[b] 50 µg/m^3	
Particulate matter < 2.5 µm ($PM_{2.5}$)	Annual	[a, c] 8 µg/m^3	
	24 hour	[b] 25 µg/m^3	
Total suspended particulate (TSP) matter	Annual	[a, c] 90 µg/m^3	
[d] Deposited dust	Annual	[b] 2 g/m^2/month	[a] 4 g/m^2/month

Notes:
[a] Total impact (i.e. incremental increase in concentrations due to the 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.
[d] Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method.

4.2 Mine-owned Land

Particulate matter emissions from the site shall not exceed the criteria listed in **Table 2** at any occupied residence on mine owned land (including land owned by another mining company) unless:

- the tenant and landowner (if the residence is owned by another mining company) have been notified of any health risks associated with such exceedance in accordance with the notification requirements under Part D, Condition D3 and D4 of SSD 9526;
- the tenant of any land owned by Maxwell can terminate their tenancy agreement without penalty at any time, subject to giving 14 days' notice;
- 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
- 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.

The results of the air quality assessment in the project EIS indicated that the dust emissions generated by the development are not likely to be greater than the air quality criteria in **Table 2** at any time during the life of the development at the assessed privately-owned and mine-owned residences. Therefore, Condition B18, D3 and D4 of SSD 9526 are not triggered

4.3 Monitoring

The site air quality and meteorological monitoring program is undertaken in accordance with the *Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales* (DEC, 2007). The program includes compliance monitoring (required by a consent or licence) and internal monitoring (for operational purposes).

Monitoring equipment includes dust deposition gauges (dust gauges), E-Samplers, Tapered Element Oscillating Microbalance (TEOM) and automatic weather stations. A summary of the monitoring sites is provided in **Table 3** and their location is shown in **Appendix 6**. Compliance monitoring sites have been selected to represent privately-owned receivers.

Table 3. Summary of air quality and meteorological monitoring locations

Instrument	Site name	Monitored variable	Frequency	Type	Coordinates (GDA 94 Zone 56)	Comments
Dust gauge	2175	Insoluble Solids	30 days (+/- 2 days)	Compliance	E305734, N6421511	Monitoring site representative of northern receivers.
	2230	Insoluble Solids	30 days (+/- 2 days)	Compliance	E303990, N6421853	Monitoring site representative of northern receivers.
	2235	Insoluble Solids	30 days (+/- 2 days)	Compliance	E305560, N6421931	Monitoring site representative of northern receivers.
	2247	Insoluble Solids	30 days (+/- 2 days)	Compliance	E304687, N6421997	Monitoring site representative of northern receivers.
TEOM	TEOM-1	$PM_{2.5}$, PM_{10} and TSP	Continuous	Compliance	E305694, N6421072	Monitoring site representative of northern receivers.
	TEOM-2*	$PM_{2.5}$, PM_{10} and TSP	Continuous	Internal	E298813, N6407512	Monitoring site representative of southern receivers.
Anemometer Wind vane Rain gauge Temperature, humidity and solar radiation sensors	AWS-1	Wind speed and direction Temperature Relative humidity Precipitation Atmospheric pressure Solar radiation Sigma theta	Continuous	Compliance	E305406, N6420475	Monitoring site representative of northern receivers.
	AWS-2		Continuous	Internal	E296458, N6408768	Monitoring site representative of southern receivers.
E-Samplers	ES-01	PM_{10}	Continuous	Internal	E303404, N6420313	Required under EPL 1323.
	ES-02	PM_{10}	Continuous	Internal	E305573, N6415968	Required under EPL 1323.
	ES-03	PM_{10}	Continuous	Internal	E305162, N6419038	Required under EPL 1323.
	ES-04	PM_{10}	Continuous	Internal	E304203, N6417889	Required under EPL 1323.

*Note: * TEOM-2 will be installed within 12 months of the approval date for SSD 9526.*

4.3.1 Depositional Dust

Dust gauges record monthly average dust deposition rates. These are utilised to assess nuisance dust impacts and determine the amount of dust that settles in a fixed area.

4.3.2 $PM_{2.5}$, PM_{10} and TSP

TEOMs will measure off-site $PM_{2.5}$ and PM_{10} concentrations in real time. E-Samplers will measure on site PM_{10} concentrations in real time. The data will be downloaded to a central repository, whereby information can be utilised to assist in day-to-day operations as well as long-term analysis of environmental data.

PM_{10} monitoring data is used to calculate annual average TSP levels. Based on the relative contribution of dust sources at a surface mine, 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.

4.3.3 Meteorological

Meteorological monitoring provides the site with information to allow for the most appropriate response to changes in weather conditions. Meteorological monitoring stations have been installed north of the infrastructure area (AWS-1) and south of the mine entry area (AWS-2). The location of the meteorological monitoring stations are shown in **Appendix 6.** As per Condition B26(a) the meteorological stations are capable of measuring meteorological conditions in accordance with the *Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales* (DEC, 2007). As per Condition B26(b) the meteorological stations are capable of measuring meteorological conditions in accordance with the *NSW Noise Policy for Industry* (EPA, 2017), unless a suitable alternative is approved by the Planning Secretary following consultation with the EPA.

4.4 Cumulative Impacts

In accordance with Schedule 2, Part B, Condition B19(e) of SSD 9526 Maxwell will make all reasonable and feasible endeavours to coordinate air quality management on the site with air quality management at nearby mines (particularly Mt Arthur Coal) to minimise air quality impacts.

Maxwell's closest mining neighbour is Mt Arthur Coal which shares an operational boundary to the west and the Antiene rail spur to the north. Maxwell meets with Mt Arthur Coal on a regular basis. A joint Community Consultative Committee (CCC) meeting with Mt Arthur Coal is conducted every six months where air quality monitoring results and community complaints specific to the rail spur are presented. In the event any exceedances of the criteria are recorded, the results of the investigation are presented to the CCC at this meeting. Maxwell meets with other nearby mining companies on a regular basis to discuss shared learnings from incidents and any new technology and or trials being undertaken. Maxwell also participates in the Upper Hunter Mining Dialogue which brings together nearby mines and the community to discuss various aspects including air quality management.

During periods when real-time meteorological monitoring indicates conditions conducive to elevated regional dust levels, supervisors will increase surveillance of operations and modify or suspend operations as required. Changes will be made to operations in accordance with the site *Dust Trigger Action Response Plan*, to reduce the cumulative impacts of dust emissions. In the event that any substantial dust plumes from nearby mines are consistently observed leaving their site boundary or a community complaint is received about dust generation along a shared operational boundary with a nearby mine, Maxwell will notify the other mining company so that they can undertake their own investigation.

Maxwell will use wind directional data during the analysis of elevated dust readings to distinguish dust emissions from Maxwell operations or if appropriate, neighbouring developments. Wind direction recorded at the nearest meteorological monitoring station (AWS-1 or AWS-2) would be used to determine the proportion of time during the day that wind was coming from Maxwell operations. The daily dust concentration for that day would be multiplied by the proportion of the day wind was blowing from Maxwell operations to calculate site contribution to the daily air quality concentration.

4.5 Incident and Non-Compliance Notification

An incident is defined in SSD 9526 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.

In accordance with Schedule 2, Part E, Condition E9 of SSD 9526, Maxwell shall immediately notify DPIE and any other relevant agencies, immediately after it becomes aware of an incident. The notification shall be in writing to compliance@planning.nsw.gov.au and identify the development (including the development application number and name) and set out the location and nature of the incident.

A *Pollution and Incident Response Management Plan* (PIRMP) is maintained in accordance with the requirements of the Part 5.7A of the POEO Act and Chapter 7, Part 3A of the *Protection of the Environment Operations* (General) Regulation 2009. Any pollution incident that causes actual or potential material harm will be reported to the relevant agencies immediately after it is identified, as described in the PIRMP. A copy of the PIRMP is located on Malabar's website at https://malabarresources.com.au/sustainability/documentation.

In accordance with Schedule 2, Part E, Condition E10 of SSD 9526, Maxwell shall notify DPIE within seven days of becoming aware of a non-compliance. The notification shall be in writing to compliance@planning.nsw.gov.au and identify the development (including the development application number and name), set out the condition of SSD 9526 that the Project is non-compliant with, why it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance. A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.

In accordance with Schedule 2, Part D, Condition D5 of SSD 9526, as soon as practicable and no longer than seven days after obtaining monitoring results showing an exceedance of any of the criteria in **Table 2**, Maxwell will provide the detail of the exceedance to any affected landowners, tenants and the CCC. In accordance with Schedule 2, Part D, Condition D6 of SSD 9526, affected landowners and tenants will be provided with a copy of the fact sheet "Mine dust and You" (NSW Health, 2017), as soon as practicable and no longer than seven days after obtaining monitoring results showing an exceedance of any of the criteria in **Table 2.**

4.6 Independent Review by Landowner

In accordance with Schedule 2, Part D, Condition D7 of SSD 9526, if a landowner considers the development to be exceeding any relevant air quality criterion in **Table 2**, they may ask the Planning Secretary in writing for an independent review of the impacts of the development on their residence or land. In accordance with Schedule 2, Part D, Condition D9(c) of SSD 9526 Maxwell shall comply with any written requests made by the Planning Secretary to implement any findings of the review.

4.7 Adaptive Management and Contingency Plan

In accordance with Schedule 2, Part E, Condition E4 of SSD 9526, where any exceedance of performance measures has occurred, Maxwell shall, at the earliest opportunity:

- Take all reasonable and feasible steps to ensure that the exceedance ceases and does not recur;
- Consider all reasonable and feasible options for remediation (where relevant) and submit a report to DPIE describing those options and any preferred remediation measures or other course of action; and
- Implement reasonable remediation measures as directed by the Planning Secretary.

In accordance with Schedule 2, Part E, Condition E5 (f) of SSD 9526, the following contingency plan is used 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:

- Review the unpredicted impact with consideration of any relevant activities and monitoring data;
- Identify the most likely source of the unpredicted impact;
- Review the existing process and current dust controls; and
- Implement appropriate mitigation measures.

4.8 Complaints Handling

If a complaint or enquiry is received regarding air quality, it is investigated as soon as reasonably practicable and managed in accordance with Maxwell'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 enquiry 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. A summary of complaints is presented to the CCC and included in the Annual Review and EPL Annual Return.

If a landowner considers the development to be exceeding any relevant air criterion in **Table 2**, they may ask the Planning Secretary in writing for an independent review of the impacts of the development on their residence or land. If the Planning Secretary is not satisfied that an independent review is warranted, the Planning Secretary will notify the landowner in writing of that decision, and the reasons for that decision, within 21 days of the request for a review. If the Planning Secretary is satisfied that an independent review is warranted, within three months, or other timeframe agreed by the Planning Secretary and the landowner, of the Planning Secretary's decision, Maxwell shall:

- commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Planning Secretary, to;
    - consult with the landowner to determine their concerns;
    - conduct monitoring to determine whether the development is complying with the relevant criteria in PART B or PART C of SSD 9526; and
    - if the development is not complying with the relevant criterion, identify measures that could be implemented to ensure compliance with the relevant criterion; and
- give the Planning Secretary and landowner a copy of the independent review; and
- comply with any written requests made by the Planning Secretary to implement any findings of the review.

5 AUDIT, REVIEW AND IMPROVEMENT

5.1 Review Schedule

The suitability of this AQGGMP will be reviewed in accordance with Schedule 2, Part E, Condition E7 of SSD 9526, that is within three months of:

- the submission of an incident notification under condition E9;
- the submission of an Annual Review under condition E11;
- the submission of an Independent Environmental Audit under condition E13;
- the approval of any modification of the conditions of SSD 9526; or
- notification of a change in development phase under condition A13.

In accordance with Condition E8, if necessary, to improve the environmental performance of the site, cater for a modification or comply with a direction, this plan will be revised. The revised plan will be submitted to DPIE for approval within six weeks of the review.

5.2 Reporting, Auditing and Access to Information

An Annual NGER data check will be undertaken by Maxwell determine if the site has triggered the reporting thresholds. If the reporting thresholds are triggered, a report will be submitted in accordance with NGER legislation.

In accordance with Schedule 2, Part E, Condition E11 of SSD 9526, by the end of March in each year after the commencement of the development, or other timeframe agreed by the Planning Secretary, an Annual Review report will be submitted to DPIE. The Annual Review will include the following:

- A description of the development that was carried out in the previous calendar year and the development proposed to be carried out over the current calendar year.
- A comprehensive review of air quality and greenhouse gas results and complaints over the previous calendar year.
- A description of non-compliances which occurred in the previous calendar year and actions that were (or are being) taken to rectify the non-compliance and avoid reoccurrence.
- Evaluation of the effectiveness of air quality and greenhouse gas management measures.
- Trends in monitoring data and any discrepancies between predicted and actual impacts.
- Measures to be implemented over the next calendar year to improve the environmental performance of the development.

In accordance with Schedule 2, Part E, Condition E12 of SSD 9526 copies of the Annual Review shall be submitted to Muswellbrook Shire Council and made available to the CCC and any interested person upon request.

In accordance with Schedule 2, Part E, Condition E17(a) of SSD 9526, the Annual Review will be publicly available on Malabar's website at https://malabarresources.com.au/sustainability/documentation.

In accordance with Schedule 2, Part E, Condition E13 of SSD 9526 within one year of commencement of development under this consent, and every three years after, unless the Planning Secretary directs otherwise, Maxwell will commission and pay the full cost of an Independent Environmental Audit of the development. The audit shall:

(a) be led by a suitably qualified, experienced and independent auditor whose appointment has been endorsed by the Planning Secretary;

(b) be conducted by a suitably qualified, experienced and independent team of experts (including any expert in field/s specified by the Planning Secretary) whose appointment has been endorsed by the Planning Secretary;

(c) be carried out in consultation with the relevant agencies and the CCC;

(d) assess the environmental performance of the development and whether it is complying with the relevant requirements in this consent, water licences and mining leases for the development (including any assessment, strategy, plan or program required under these approvals);

(e) review the adequacy of any approved strategy, plan or program required under the abovementioned approvals and this consent;

(f) recommend appropriate measures or actions to improve the environmental performance of the development and any assessment, strategy, plan or program required under the abovementioned approvals and this consent; and

(g) be conducted and reported to the satisfaction of the Planning Secretary.

In accordance with Schedule 2, Part E, Condition E14 of SSD 9526, within three months of commencing an Independent Environmental Audit, or other timeframe agreed by the Planning Secretary. Maxwell shall 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. The recommendations shall be implemented to the satisfaction of the Planning Secretary.

In accordance with Schedule 2, Part E, Condition E17 of SSD 9526 before the commencement of construction until the completion of all rehabilitation required under SSD 9526, Maxwell will make the following information and documents (as they are obtained, approved or as otherwise stipulated within the conditions of SSD 9526) that are relevant to this plan publicly available on Malabar's website:

- this AQGGMP;
- the proposed staging plans for the development if the construction, operation or decommissioning of the development is to be staged;
- minutes of CCC meetings;
- regular reporting on the environmental performance of the development in accordance with the reporting requirements in any plans or programs approved under the conditions of this consent;
- a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs;
- a summary of the current phase and progress of the development;
- contact details to enquire about the development or to make a complaint;
- a complaints register, updated monthly;
- the Annual Reviews of the development; and
- audit reports prepared as part of any Independent Environmental Audit of the development and the Applicant's response to the recommendations in any audit report.

This information shall be kept up to date, to the satisfaction of the Planning Secretary.

5.3 Records Management

All air quality and greenhouse gas data is maintained in accordance with the Environmental Management Strategy and maintained on the premises for a period of at least four years.

5.4 Continuous Improvement

Feedback from the monitoring results and any complaints will be used to assess impacts and determine where improvements or mitigation measures are required. These measures will be reported on in the Annual Review.

5.5 Document Review History

A summary of the document history is outlined in **Table 4**.

Table 4. Document Revision Status

Issue	Issue Date	Review Team	Details of Change / Communication
1	May 2021	Philip Henschke Aleks Todoroski Alex Newton Robyn Skinner Donna McLaughlin	Document prepared following approval of SSD Consent 9526 for the Maxwell UG Project.

6 INFORMATION, TRAINING AND INSTRUCTION

6.1 Competent Persons

Suitably qualified, competent and experienced persons shall be involved in the design, planning and implementation of this plan and related procedures.

6.2 Training

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.

All site personnel involved in supervisory roles will undertake a more detailed awareness training package to assist in the effective implementation of air quality management controls.

7 RESPONSIBILITIES

Responsibilities associated with this management plan are outlined **Table 5**.

Table 5. Responsibilities

Position	Responsibilities
General Manager	• Provide adequate resources for the implementation of this Plan.
HSEC Manager	• Oversee the implementation of this Plan • Notify regulatory authorities and affected stakeholders of incidents in accordance with this Plan. • Coordinate periodic reviews of this Plan. • Facilitate training in accordance with this Plan.
Environmental Coordinator	• Assist the HSEC Manager as required in the implementation of this Plan. • Coordinate investigations of air quality and greenhouse gas related incidents or complaints. • Coordinate the implementation of the air quality monitoring program in accordance with this Plan. • Coordinate the management of records and reporting of air quality and greenhouse gas data. • Manage air quality and greenhouse gas related complaints in accordance with the complaints management procedure. • Provide training to all relevant personnel.
Supervisors	• Notify the Environmental Coordinator of any incidents and exceedances involving air quality and greenhouse gas. • Implement air quality control measures as defined in this Plan.
All Personnel	• Undertake works in accordance with the objectives and principles of this Plan. • Report any incidents and exceedances involving air quality and greenhouse gas.

8 DOCUMENT INFORMATION

8.1 References

Air Quality, Dust or Other Contaminants Principal Hazard Management Plan

Beamish (2017) Review of Spontaneous Combustion Assessment and Characterisation of Overburden at Drayton Coal Mine

Community Complaints and Enquiries Procedure

Department of Environment and Conservation (2007) Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales

Dust Trigger Action Response Plan

Environment and Protection Licence 1323

Katestone Environmental Pty Ltd (2011) NSW Coal Mining Benchmarking Study: International Best Practice Measures to Prevent and/or Minimise Emissions of Particulate Matter from Coal Mining

Metford Laboratories (1998) Spontaneous Combustion Smoke Analysis

Noise and Blasting Management Plan

NSW Government Health (2017) Mine dust and You

Pollution and Incident Response Management Plan

Spontaneous Combustion Management Plan

8.2 Definitions and Abbreviations

Term	Definition
AQGGMP	Air Quality and Greenhouse Gas Management Plan
CCC	Community Consultative Committee
CHPP	Coal Handling and Preparation Plant
DA	Development Approval
DPIE	NSW Department of Planning, Industry and Environment
EPA	NSW Environment Protection Authority
EP&A	Environmental Planning and Assessment
EPL	Environment Protection Licence
NSW	New South Wales
NGER	National Greenhouse and Energy Reporting
PA	Project Approval
PIRMP	Pollution Incident Response Management Plan
$PM_{2.5}$	Particulate matter less than 2.5 micrometres in diameter
PM_{10}	Particulate matter less than 10 micrometres in diameter
SSD	State Significant Development
SMS	Short message service
TEOM	Tapered Element Oscillating Microbalance
Toolbox Talk	A forum where information is presented to the crews
TSP	Total suspended particulate

APPENDIX 1 – STAGING ACTIVITIES

Planning, Industry & Environment

Alex Newton
Environment and Approvals Coordinator
Malabar Coal Ltd
Thomas Mitchell Drive (PMB 9)
Muswellbrook, NSW, 2333

22/02/2021

Dear Mr. Newton

Maxwell Underground (SSD 9526)
Water Management Plan and Air Quality and Greenhouse Gas Management Plan

I refer to you letter dated 4 February 20201 requesting the staged submission of the Water Management Plan (WMP) and Air Quality and Greenhouse Gas Management Plan (AQGGMP) for the Maxwell Underground Mine (SSD 9526). The submission proposes that Stage 1 of these plans will include early preparation works, construction works and first workings.

Early preparation work activities at the Mine Entry Area (MEA) are listed in Section 3.4.2 of the EIS (SSD 9526).

Construction is in accordance with the definitions provided in SSD 9526 Conditions of Consent, involve all physical works to enable mining operations to be carried out, including demolition and removal of buildings or works, and erection of buildings and other infrastructure permitted by this consent. This includes the establishment of the MEA, construction of the access road and overland conveyor between the MEA and Coal Handling Preparation Plant (CHPP), upgrading of plant and infrastructure at the Maxwell Infrastructure site, and the realignment of Edderton Road, but does not include preparatory works described in Section 3.4.2. of the EIS.

First workings include activities listed as 'first workings' in accordance with the definitions provided in SSD 9526 Conditions of Consent, being development of main headings, long walls gate roads, related cut throughs and other workings for mine access and ventilation.

The Department has reviewed the information provided and does not object to the proposal. Accordingly, the Planning Secretary has agreed to stage the submission of the Water Management Plan and Air Quality and Greenhouse Gas Management Plan, as per the early preparation works, construction works and first workings.

The staging and timing for early preparation works, construction works and first workings will be generally consistent with the program schedule in Figure 3-4 of the EIS (SSD 9526).

If you wish to discuss the matter further, please contact Charissa Pillay on 99955944.

Yours sincerely

Matthew Sprott
Director
Resource Assessments (Coal & Quarries)
As nominee of the Planning Secretary

4 Parramatta Square, 12 Darcy Street, Parramatta 2150 | dpie.nsw.gov.au | 1

APPENDIX 2 – REGULATORY REQUIREMENTS

State Significant Development Consent 9526

<table>
<tr><th>Clause</th><th>Requirement</th><th>Section of Plan</th></tr>
<tr><td>A9</td><td>The Applicant must seal the full length of the access road between the MEA and the CHPP, to the satisfaction of the Planning Secretary and by no later than 6 months after the date of commencement of first workings as notified under condition A13(c) of this Schedule.</td><td>3.2 – Table 1.</td></tr>
<tr><td>B15</td><td>Odour
The Applicant must ensure that no offensive odours, as defined under the POEO Act, are emitted from the site.</td><td>3.4</td></tr>
<tr><td>B16</td><td>Air Quality Criteria
The Application 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 exceedance of the criteria listed in Table 3 at any residence on privately-owned land.
Table 3: Air quality criteria
<table>
<tr><th>Pollutant</th><th>Averaging period</th><th colspan="2">Criterion</th></tr>
<tr><td rowspan="2">Particulate matter < 10 µm (PM_{10})</td><td>Annual</td><td colspan="2">[a, c] 25 µg/m³</td></tr>
<tr><td>24 hour</td><td colspan="2">[b] 50 µg/m³</td></tr>
<tr><td>Particulate matter < 2.5 µm ($PM_{2.5}$)</td><td>Annual</td><td colspan="2">[a, c] 8 µg/m³</td></tr>
<tr><td rowspan="2"></td><td>24 hour</td><td colspan="2">[b] 25 µg/m³</td></tr>
<tr><td>Total suspended particulate (TSP) matter</td><td>Annual</td><td colspan="2">[a, c] 90 µg/m³</td></tr>
<tr><td>[d] Deposited dust</td><td>Annual</td><td>[b] 2 g/m²/month</td><td>[a] 4 g/m²/month</td></tr>
</table>
[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.
[d] Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method.</td><td>3.2, 4.1</td></tr>
<tr><td>B17</td><td>The criteria in Table 3 do not apply if the Applicant has an agreement with the owners/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>4.1</td></tr>
<tr><td>B18</td><td>Particulate matter emissions generated by the development must not exceed the criteria listed in Table 3 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 under PART D of this consent;
(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;
(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.</td><td>4.2</td></tr>
</table>

Clause	Requirement	Section of Plan
B19	**Air Quality Operating Conditions** 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; (ii) Eliminate or minimise the risk of spontaneous combustion; (iii) Improve energy efficiency and reduce fugitive greenhouse gas emissions of the development; (iv) Implement greenhouse gas abatement measures (including beneficial reuse and/or flaring) with respect to methane produced by underground coal mining; (v) Minimise any visible off-site air pollution generated by the development; and (vi) Minimise, to the greatest extent practicable, 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 complies with any applicable exhaust emission standards specified under an EPL, unless otherwise agreed by the EPA; (c) operate a comprehensive air quality management system that uses a combination of predictive meteorological forecasting and real-time air quality monitoring data to guide the day to day planning of mining operations and the implementation of both proactive and reactive air quality management mitigation measures to ensure compliance with the relevant conditions of this consent; (d) minimise the air quality impact of the development during adverse meteorological conditions and extraordinary events (see Note c to Table 3 above); (e) make all reasonable and feasible endeavours to co-ordinate air quality management on the site with the air quality management at nearby mines (particularly the Mt Arthur Coal Complex) to minimise cumulative air quality impacts; (f) carry out regular air quality monitoring to determine whether the development is complying with relevant conditions of this consent; and (g) regularly assess the air quality monitoring data and modify operations on site to ensure compliance with the relevant conditions of this consent.	**3.4, 3.5, 3.2 – Table 1** **3.4** **3.3** **1.2, 3.3** **3.2** **3.2** **3.3** **3.2** **3.2** **4.4** **4.3** **3.2.3**
B23	**Air Quality and Greenhouse Gas Management Plan** 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: (a) be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary; (b) Describe the measures to be implemented to ensure: (i) compliance with the air quality criteria and operating conditions in this consent; (ii) best practice management is being employed (including in respect of minimisation of greenhouse gas emissions from the site and energy efficiency); and (iii) the air quality impacts of the development are minimised during adverse meteorological conditions and extraordinary events; (c) Describe the air quality management system in detail; (d) Include a Centralised Gas Management Plan which describes the measures implemented to:	**2.3** **3.2** **3.3** **3.2** **3.2** **1.2** **N/A**

Clause	Requirement	Section of Plan
	(i) maximise the beneficial use of methane produced by underground coal mining; and (ii) ensure that air quality impacts on nearby residences associated with the flaring or venting of gases produced by underground coal mining are minimised to the greatest extent practicable; and (e) 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: (i) uses monitors to evaluate the performance of the development against air quality criteria in this consent and to guide day to day planning of operations; (ii) adequately supports the air quality management system; (iii) includes a protocol for distinguishing the dust emissions of the development from any neighbouring developments; and (iv) includes a protocol for identifying an air quality incident and notifying the Department and relevant stakeholders of any such incident. ***Note:*** *"Methane produced by underground coal mining" does not include methane within mine ventilation air.*	**4.3** **3.2.3** **4.3** **4.4** **4.5**
B24	The Applicant must not commence construction until the Air Quality and Greenhouse Gas Management Plan is approved by the Planning Secretary.	**Noted**
B25	The Applicant must implement the Air Quality and Greenhouse Gas Management Plan as approved by the Planning Secretary.	**Noted**
B26	**Meteorological Monitoring** Prior to the commencement of construction and for the life of the development, the Applicant must ensure that there is a suitable meteorological station operating in the vicinity of the site that: (a) Complies with the requirements in the *Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales* (DEC, 2007); and (b) Is capable of measuring meteorological conditions in accordance with the *NSW Noise Policy for Industry* (EPA, 2017), unless a suitable alternative is approved by the Planning Secretary following consultation with the EPA.	**4.3.3** **4.3.3**
D3	Within one month of the date of this consent, the Applicant must: (c) send a copy of the fact sheet entitled *"Mine Dust and You"* (NSW Health, 2017) to the owners and/or existing tenants of any land (including mine-owned land) where the predictions in the document/s listed in condition A2(c) identify that dust emissions generated by the development are likely to be greater than the relevant air quality criteria identified in condition B16 at any time during the life of the development.	**4.2**
D4	Prior to entering into any tenancy agreement for any land owned by the Applicant that is predicted to experience exceedances of the recommended dust and/or noise criteria, the Applicant must: (a) advise the prospective tenants of the potential health and amenity impacts associated with living on the land, and give them a copy of the fact sheet entitled *"Mine Dust and You"* (NSW Health, 2017); and (b) advise the prospective tenants of the rights they would have under this consent, to the satisfaction of the Planning Secretary.	**4.2** **4.2**

Clause	Requirement	Section of Plan
D5	As soon as practicable and no longer than 7 days after obtaining monitoring results showing an exceedance of any noise or air quality criterion in PART B of this consent, the Applicant must provide the detail of the exceedance to any affected landowners, tenants and the CCC.	**4.5**
D6	For any exceedance of any air quality criterion in PART B of this consent, the Applicant must also provide to any affected land owners and tenants a copy of the fact sheet "*Mine dust and You*" (NSW Health, 2017).	**4.5**
E5	Management plans required under this consent must be prepared in accordance with relevant guidelines, and include: (a) a summary of relevant background or baseline data; (b) details of: (i) the relevant statutory requirements (including any relevant approval, licence or lease conditions); (ii) any relevant limits or performance measures and criteria; and (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; (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; (e) a program to monitor and report on the: (i) impacts and environmental performance of the development; and (ii) effectiveness of the management measures set out pursuant to condition E5(c); (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; (g) a program to investigate and implement ways to improve the environmental performance of the development over time; (h) a protocol for managing and reporting any: (i) incident, non-compliance or exceedance of any impact assessment criterion or performance criterion); (ii) complaint; or (iii) failure to comply with other statutory requirements; (i) public sources of information and data to assist stakeholders in understanding environmental impacts of the development; and (j) a protocol for periodic review of the plan. ***Note:*** *The Planning Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.*	**2.3, Appendix 4** **2.1** **4.1** **4.1** **Appendix 2** **3** **4, 5.2** **4.7** **5.4** **4.5** **4.8** **4.5** **5.2** **5.1**
E6	The Applicant must ensure that management plans prepared for the development are consistent with the conditions of this consent and any EPL issued for the site.	**Appendix 1**
E7	**Revision of Strategies, Plans and Programs** Within three months of: (i) the submission of an incident report under condition E9;	**5.1**

Clause	Requirement	Section of Plan
	(ii) the submission of an Annual Review under condition E11; (iii) the submission of an Independent Environmental Audit under condition E13; (iv) the approval of any modification of the conditions of this consent (unless the conditions require otherwise); or (v) notification of a change in development phase under condition A13; The suitability of existing strategies, plans and programs required under this consent must be reviewed by the Applicant.	
E8	If necessary, to either improve the environmental performance of the development, cater for a modification or comply with a direction, the strategies, plans and programs required under this consent must be revised, to the satisfaction of the Planning Secretary. Where revisions are required, the revised document must be submitted to the Planning Secretary for approval within six weeks of the review.	**5.1**
E9	The Applicant must immediately notify the Department and any other relevant agencies immediately after it becomes aware of an incident. The notification must be in writing to compliance@planning.nsw.gov.au and identify the development (including the development application number and name) and set out the location and nature of the incident.	**4.5**
E10	Within seven days of becoming aware of a non-compliance, the Applicant must notify the Department of the non- compliance. The notification must be in writing to compliance@planning.nsw.gov.au and identify the development (including the development application number and name), set out the condition of this consent that the development is non-compliant with, why it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance. Note: A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.	**4.5**
E13	Within one year of commencement of development under this consent, and every three years after, unless the Planning Secretary directs otherwise, the Applicant must commission and pay the full cost of an Independent Environmental Audit of the development. The audit must: (a) be led by a suitably qualified, experienced and independent auditor whose appointment has been endorsed by the Planning Secretary; (b) be conducted by a suitably qualified, experienced and independent team of experts (including any expert in field/s specified by the Planning Secretary) whose appointment has been endorsed by the Planning Secretary; (c) be carried out in consultation with the relevant agencies and the CCC; (d) assess the environmental performance of the development and whether it is complying with the relevant requirements in this consent, water licences and mining leases for the development (including any assessment, strategy, plan or program required under these approvals); (e) review the adequacy of any approved strategy, plan or program required under the abovementioned approvals and this consent; (f) recommend appropriate measures or actions to improve the environmental performance of the development and any assessment, strategy, plan or program required under the abovementioned approvals and this consent; and (g) be conducted and reported to the satisfaction of the Planning Secretary.	**5.2**
E14	Within three months of commencing an Independent Environmental Audit, or other timeframe agreed by the Planning Secretary, the Applicant must submit a copy of the audit report to the Planning Secretary, and any other NSW agency that requests it,	**5.2**

Clause	Requirement	Section of Plan
	together with its response to any recommendations contained in the audit report, and a timetable for the implementation of the recommendations. The recommendations must be implemented to the satisfaction of the Planning Secretary.	
E16	Noise and/or air quality monitoring under this consent may be undertaken at suitable representative monitoring locations instead of at privately-owned residences or other locations listed in Part B, providing that these representative monitoring locations are set out in the respective management plan/s	**Figure 1**
E17	Before the commencement of construction until the completion of all rehabilitation required under this consent, the Applicant must: (a) make the following information and documents (as they are obtained, approved or as otherwise stipulated within the conditions of this consent) publicly available on its website: (i) the documents referred to in condition A2(c) of this consent; (ii) all current statutory approvals for the development; (iii) all approved strategies, plans and programs required under the conditions of this consent; (iv) the proposed staging plans for the development if the construction, operation or decommissioning of the development is to be staged; (v) minutes of CCC meetings; (vi) regular reporting on the environmental performance of the development in accordance with the reporting requirements in any plans or programs approved under the conditions of this consent; (vii) a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs; (viii) a summary of the current phase and progress of the development; (ix) contact details to enquire about the development or to make a complaint; (x) a complaints register, updated monthly; (xi) the Annual Reviews of the development; (xii) audit reports prepared as part of any Independent Environmental Audit of the development and the Applicant's response to the recommendations in any audit report; (xiii) any other matter required by the Planning Secretary; and (b) keep such information up to date, to the satisfaction of the Planning Secretary.	**5.2**

Development Consent 106-04-00

Clause	Requirement	Section of Plan
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:	**Section 1.2** clarifies this AQGGMP is the Dust Management Plan. Bayswater rail loading facility is now part of the Mt Arthur Coal operations. Maxwell has consulted with Mt Arthur Coal during the preparation of this plan. Management of cumulative impacts with nearby mines is discussed in **Section 4.4.**

Clause	Requirement	Section of Plan
	• 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: (a) 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 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	**Section 4.1, Table 2.** **4.3, 4.6, 4.4.** **4.2** **4.8** **5.2** **3.2** **3.2** **3.2** **3.2** **4.3.1** **2.4** **1.2** **1.2** **4.3** **5.2** **4.1**

Clause	Requirement	Section of Plan
	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. • conduct follow up investigations to the satisfaction of the Director-General, where necessary 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.	EPA dust amenity criteria is no longer applicable. National Environment Protection (Ambient Air Quality) Measures are used by the NSW Government and are consistent with the criteria specified in SSD 9526. As such this condition is superseded by Schedule 2, Part D, Condition D7 of SSD 9526, addressed in **Section 4.6.**
	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.	As noted above.
	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.	As noted above.
5.2	**<u>Dust Suppression and Control</u>** a) Activities occurring at the premises must be carried out in a manner that will minimise emissions of dust from the premises.	**Section 3.1**

Environment Protection Licence 1323 (To be updated following EPL 1323 variation)

<table>
<tr><th>Clause</th><th>Requirement</th><th>Section of Plan</th></tr>
<tr><td>O3.1</td><td>The premises must be maintained in a condition which prevents or minimises the emission of air impurities, including dust.</td><td>3.2</td></tr>
<tr><td>O3.2</td><td>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.</td><td>3.2</td></tr>
<tr><td>M2.1</td><td>For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:</td><td>Noted</td></tr>
<tr><td>M2.2</td><td>Air Monitoring Requirements
POINT 8,9,10,11
<table>
<tr><th>Pollutant</th><th>Units of measure</th><th>Frequency</th><th>Sampling Method</th></tr>
<tr><td>PM10</td><td>micrograms per cubic metre</td><td>Continuous</td><td>Special Method 1</td></tr>
</table>
Note. Special Method 1 requires the Licensee to undertake the monitoring of PM10 concentration in strict accordance with the manufacturer's operating manual supplied with the continuous monitoring equipment and titled "E-Sampler Particulate Monitor Operation Manual - Revision J".</td><td>4.3</td></tr>
<tr><td>M8.2</td><td>The Licensee must record the average PM_{10} concentration at Monitoring Points 8, 9, 10 and 11 at intervals of 10 minutes. This data must be made available upon request by any Authorised Officer of the EPA who asks to see them.</td><td>4.3</td></tr>
</table>

Mining Lease 1531

Clause	Requirement	Section of Plan
Condition 17	The lease holder shall take such precautions as are necessary to abate any dust nuisance.	**3.2**

Coal Lease 229

Clause	Requirement	Section of Plan
Condition 17	The lease holder shall take such precautions as are necessary to abate any dust nuisance.	**3.2**

APPENDIX 3 – MAXWELL PROJECT EIS AND SUPPORTING DOCUMENT COMMITMENTS

Source	Details	Reference
EIS Section 6.10.5	Key dust mitigation measures that would be implemented for the Project, commensurate with the Best Practice Report, include: • application of water to stabilise the surface of stockpiles; • conveyors and transfer points would be enclosed and water sprays would be operated at transfer points, if required; • minimising fall height of materials where practicable; • enclosure of the ROM coal hopper at the CHPP on three sides and activation of fogging sprays during unloading of ROM coal; and • application of water and regular maintenance of unsealed surfaces.	**Table 1**
EIS Section 6.10.5 and 8.2.7	***Real-time Air Quality Monitoring*** The real-time monitoring network would be reviewed for the operation of the Project and detailed in the Air Quality and Greenhouse Gas Management Plan. Trigger levels would be determined to facilitate the implementation of adaptive management in response to elevated particulate matter concentrations being identified.	**3.2**
EIS Section 6.10.5 and 8.2.7	***Air Quality and Greenhouse Gas Management Plan*** An Air Quality and Greenhouse Gas Management Plan would be prepared for the Project and would include: • details of the air quality mitigation measures to be implemented for the Project; • measures to avoid potential spontaneous combustion events, including mine planning, risk identification and assessment and identification of hot spots; • measures to control dust emissions from rail wagons, such as streamlining, consistent profiling and regular collection of coal spillages, • the real-time air quality monitoring program; • details of trigger levels for the investigation of additional mitigation measures; and • adaptive management response protocols.	**3.2** **3.4** **Table 1** **3.2** **3.2** **4.7**
EIS Section 6.10.6 and 8.3.6	***Adaptive Measures*** When the real-time air quality monitoring system indicates specified short-term trigger levels are reached or exceeded, a message would be delivered to a Maxwell representative, alerting them to the elevated short-term dust levels. The Project meteorological station would report wind conditions at the time, allowing personnel to evaluate the likely origin of the elevated dust levels (i.e. on-site or off-site sources), enabling appropriate mitigation and response measures to be implemented. Project personnel would also undertake visual monitoring of stockpiles and exposed areas. In the event that any substantial dust plumes are observed, additional dust management measures would be implemented. Project air quality adaptive management measures would include response to any community issues of concern or complaints, including discussions with relevant landowners and/or refinement of on-site air quality mitigation measures and mine operating procedures.	**3.2.3** **3.2.2** **3.2.3** **4.8**

APPENDIX 4 – PLANNING SECRETARY ENDORSEMENT

Planning, Industry & Environment

Alex Newton
Environment and Approvals Coordinator
Thomas Mitchell Drive
Muswellbrook, NSW, 2333

10/02/2021

Dear Mr Alex

Maxwell Underground (SSD 9526-PA-6)
Air Quality and Greenhouse Management Plan

I refer to your request (SSD 9526-PA-6) for the Planning Secretary's approval of suitably qualified persons to prepare the Air Quality and Greenhouse Gas Management Plan for the Maxwell Underground (SSD-9526).

The Department has reviewed the nominations and information you have provided and is satisfied that these experts are suitably qualified and experienced. Consequently, I can advise that the Planning Secretary approves the appointment of Philip Henschke to prepare the Air Quality and Greenhouse Gas Management Plan. Furthermore, the Planning Secretary approves Aleks Todoroski as the reviewer of the Air Quality and Greenhouse Gas Management Plan.

If you wish to discuss the matter further, please contact Charissa Pillay on 02 99955944.

Yours sincerely

Matthew Sprott
Director
Resource Assessments (Coal & Quarries)
As nominee of the Planning Secretary

4 Parramatta Square, 12 Darcy Street, Parramatta 2150 | dpie.nsw .gov.au | 1

APPENDIX 5 – BASELINE DATA

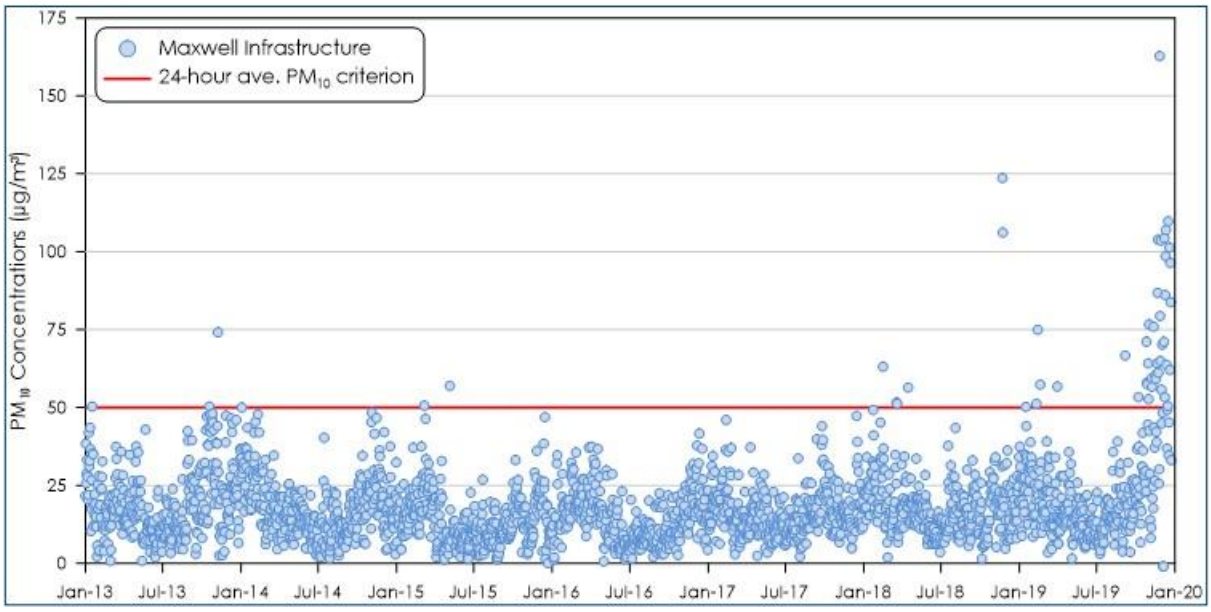

Figure 2: 24-hour average PM_{10} concentrations at Maxwell Infrastructure

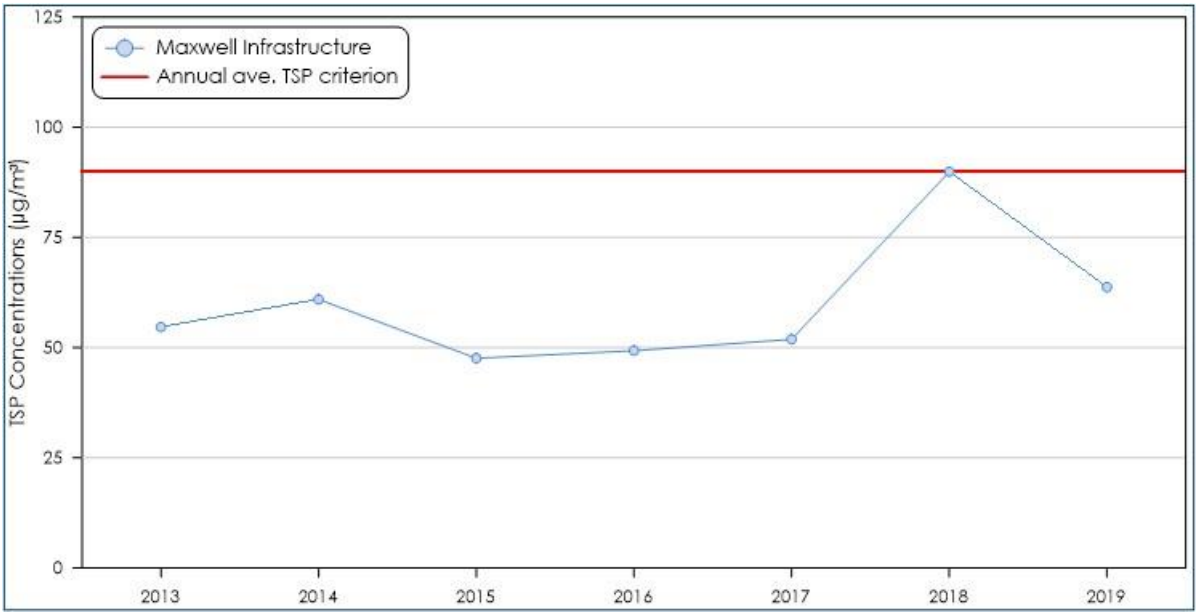

Figure 3: HVAS 24-hour TSP concentrations at Maxwell Infrastructure

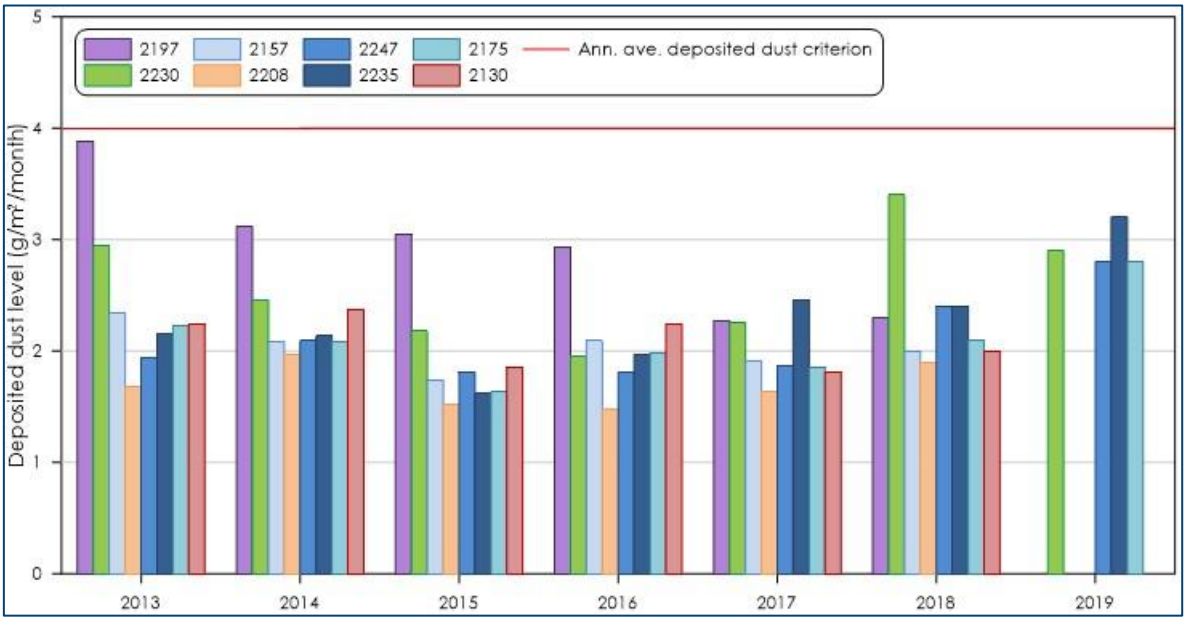

Figure 4: Annual average deposited dust levels at Maxwell Infrastructure

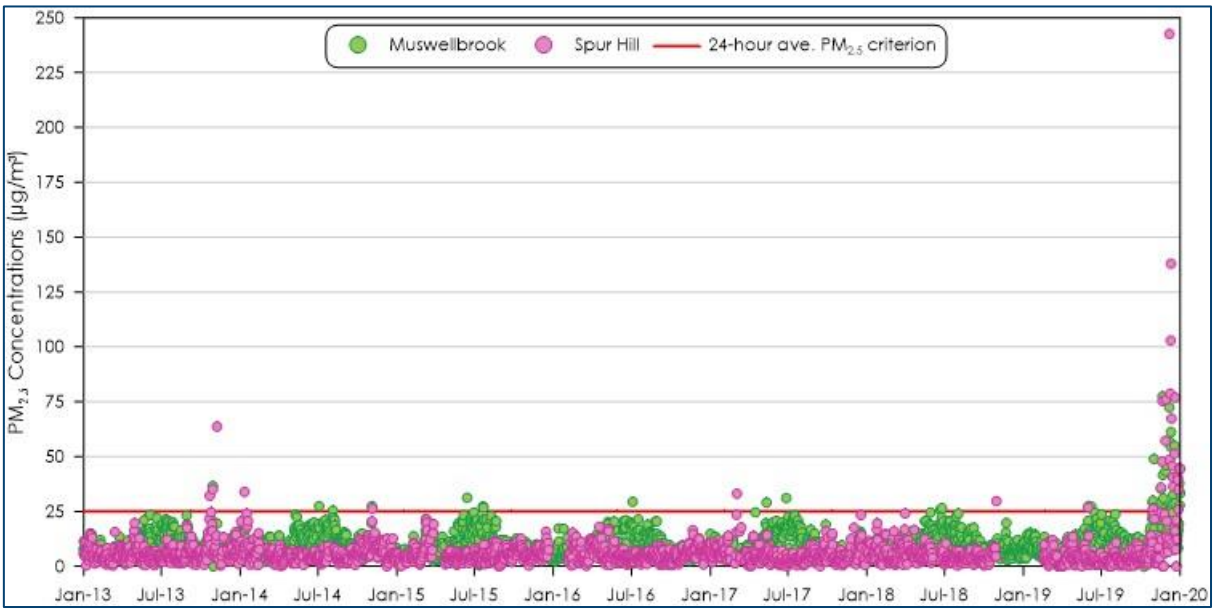

Figure 5: 24-hour average $PM_{2.5}$ concentrations at Spur Hill and UHAQMN Muswellbrook

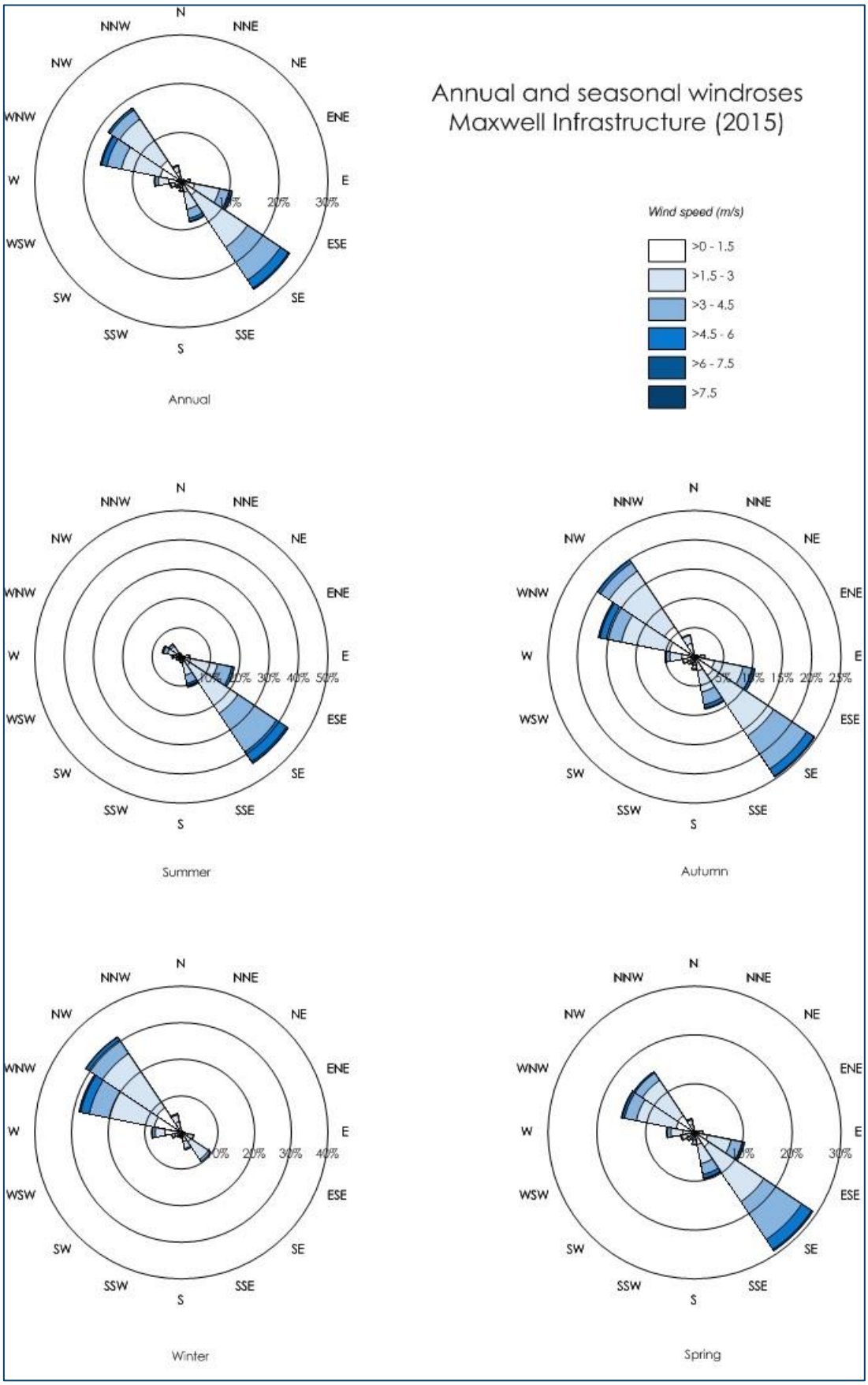

Figure 6: Annual and seasonal windroses for Maxwell Infrastructure

APPENDIX 6 – AIR QUALITY MONITORING LOCATIONS

APPENDIX 7 – PLANNING SECRETARY APPROVAL