# DURALIE COAL MINE
# AIR QUALITY AND GREENHOUSE GAS MANAGEMENT PLAN


## Revision Status Register

| Section/Page/ Annexure | Revision Number | Amendment/Addition | Distribution | DPIE Approval Date |
|---|---|---|---|---|
| All | AQMP-R01-A | Original | OEH, DP&E | - |
| All | AQMP-R01-B | Edits to original | OEH, DP&E | - |
| All | AQMP-R02-A | Edits made to:<br>• reflect amended Project Approval conditions by Order of The Land and Environment Court of NSW dated 10 November 2011;<br>• consider recommendations (where relevant) of independent environmental audit dated November 2011;<br>• consider any outcomes of the Annual Review for the Duralie Coal Mine (dated September 2011); and<br>• reflect conditions of EPL 11701 varied by Notice 1502222 on 30 December 2011. | OEH, DP&E | - |
| Section 5.1, Section 7.6 | AQMP-R02-B | Edits made to reflect DP&E comments. | DP&E | - |
| Section 6.1.2, Section 7.6 | AQMP-R02-C | Edits made to reflect DP&E comments. | DP&E | 29-3-2012 |
| All | AQMP-R02-D | Annual Review | DoPI | - |
| All | AQMP-R02-E | Annual Review | DP&E | 27-9-2013 |
| All | AGGQMP-R02-F | Annual Review (2013) and recommendations from DP&E Audit December 2013 | DP&E | 23-4-2015 |
| All | AQGGMP-R03-A | December 2014 Modification Approval | DP&E | 23-6-2015 |
| All | AQGGMP-R04-A | Updated to reflect current status of DCM and mine closure planning. | EPA, DPIE | TBC |

October 2021
Document No. AQGGMP-R04-A
ID: 01102774-004

# TABLE OF CONTENTS

## LIST OF TABLES



## LIST OF FIGURES



## LIST OF APPENDICES

# 1 INTRODUCTION

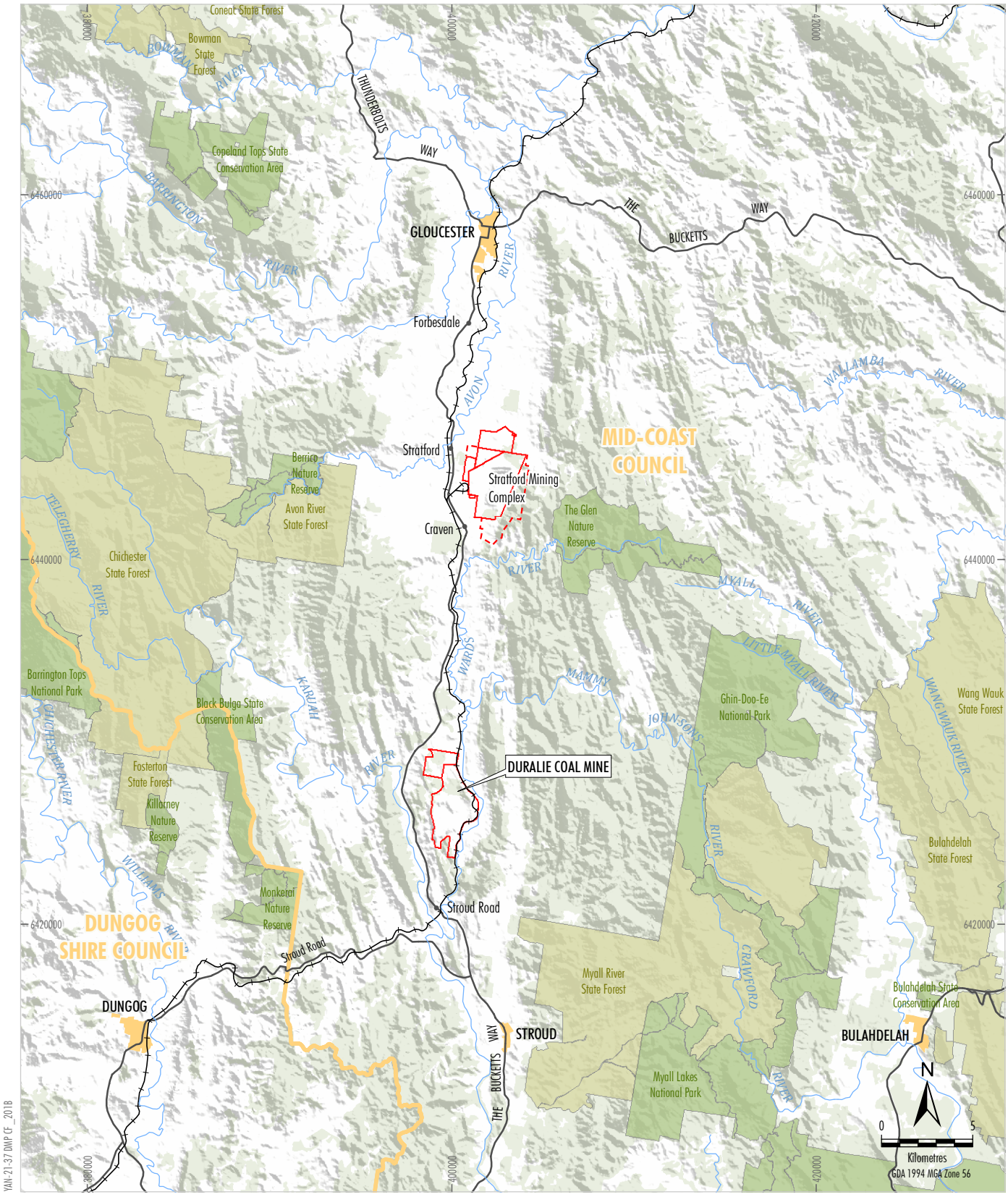
## 1.1 DURALIE COAL MINE

The Duralie Coal Mine (DCM) is an existing mine situated approximately 35 kilometres (km) south of Gloucester in the Gloucester Valley, New South Wales (NSW) (Figure 1). Duralie Coal Pty Ltd (DCPL) (a wholly owned subsidiary of Yancoal Australia Limited [Yancoal]) owns and operates the DCM. The NSW Minister for Urban Affairs and Planning granted Development Consent for the DCM in August 1997 and coal production commenced in 2003.

The Duralie Extension Project (DEP) involves the extension and continuation of mine operations at the DCM. DCPL was granted approval for the DEP under section 75J of the NSW *Environmental Planning and Assessment Act, 1979* (EP&A Act) on 26 November 2010 (NSW Project Approval [08_0203]) and under sections 130 and 133 of the Commonwealth *Environment Protection and Biodiversity Conservation Act, 1999* (EPBC) on 22 December 2010 (Commonwealth Approval [EPBC 2010/5396]). On 10 November 2011, the NSW Project Approval (08_0203) was amended by Order of The Land and Environment Court of NSW. On 1 November 2012, the NSW Project Approval (08_0203) was modified as a result of the Duralie Rail Hours Modification. On the 5 December 2014, NSW Project Approval (08_0203) was modified to reflect approval of the Duralie Open Pit Modification. A copy of the consolidated NSW Project Approval (08_0203) and the Commonwealth Approval (EPBC 2010/5396) is available on the Duralie Coal website (http://www.duralie coal.com.au).

The main activities associated with the approved DEP (as modified) include:

- continued development of open cut mining operations at the DCM to facilitate a total run-of-mine (ROM) coal production rate of up to approximately 3 million tonnes per annum (Mtpa), including:
  - extension of the existing approved open pit in the Weismantel Seam to the north-west (i.e. Weismantel open pit) within Mining Lease (ML) 1427 and ML 1646; and
  - open cut mining operations in the Clareval Seam (i.e. Clareval open pit) within ML 1427 and ML 1646;
- ongoing exploration activities within existing exploration tenements;
- progressive backfilling of the open pits with waste rock as mining develops, and continued and expanded placement of waste rock in out-of-pit waste rock emplacements;
- increased ROM coal rail transport movements on the North Coast Railway between the DCM and the Stratford Mining Complex (SMC) in line with increased ROM coal production;
- continued disposal of excess water through irrigation (including development of new irrigation areas within the existing ML 1427 and ML 1646) (refer below regarding status of irrigation at the DCM);
- construction of Auxiliary Dam No. 2 to relative level (RL) 100 metres (m) to provide 2,900 megalitres of on-site storage capacity to manage excess water on-site;
- progressive development of dewatering bores, pumps, dams, irrigation infrastructure and other water management equipment and structures;
- development of new haul roads and internal roads;
- upgrade of existing surface facilities and supporting infrastructure as required in line with increased ROM coal production;
- continued development of soil stockpiles, laydown areas and gravel/borrow pits;
- establishment of the permanent Coal Shaft Creek Diversion alignment adjacent to the existing DCM mining area;
- ongoing surface monitoring and rehabilitation; and
- other associated minor infrastructure, plant, equipment and activities.




YAN-21-37 DMP CF_2018


LEGEND

- Mining Lease Boundary
- NSW State Forest
- National Park, Nature Reserve or State Conservation Area
- Local Government Area Boundary

*Source: Geoscience Australia (2006);*
*NSW Department of Planning & Environment (2017)*

DURALIECOAL
Part of the Yancoal Australia Group

DURALIE COAL MINE

**Regional Location**

**Figure 1**

The activities associated with the approved Duralie Open Pit Modification include:

- an increase in the maximum depth of the Clareval open pit;
- a minor increase in the extent of surface development of the DCM of approximately 2.5 hectares, resulting from:
  - a reduction in low wall angles of the Clareval open pit and the removal of a pillar between the Clareval and Weismantel open pits to improve geotechnical stability; and
  - associated relocation of the up-catchment diversion to the west of the Clareval open pit;
- revision of mining sequence (i.e. progression of mining in the Clareval and Weismantel open pits); and
- an increase in height of the waste rock emplacement (i.e. the backfilled open pit) from approximately 110 m Australian Height Datum (AHD) to approximately 135 m AHD.

The general arrangement of the DCM, showing modifications, is provided in Figure 2.

***Current Status of the DCM***

Condition 5, Schedule 2 of Project Approval (08_0203) authorises mining operations to be carried at the DCM until 31 December 2021.

Accordingly, DCPL is planning for the commencement of the mine closure phase (i.e. after the cessation of mining operations on 31 December 2021) and has revised this Air Quality and Greenhouse Gas Management Plan to reflect the current stage of operations and to describe anticipated mine closure activities and air quality management at the DCM for the mine closure phase.

Operations at the DCM now reflect the transition towards mine closure:

- **Clareval Open Pit:** mining of the Clareval Open Pit has now been completed, and dewatering of the pit has ceased. Partial backfilling with waste rock mined from the Weismantel Open Pit has commenced, along with shaping of the pit area to its final landform design. Mining of the Clareval Open Pit was finalised to a shallower depth than the maximum approved depth as modelled in 2014 DCM Open Pit Modification.
- **Weismantel Open Pit:** mining of the Weismantel Open Pit will continue until 31 December 2021, however, will also not occur to the maximum approved depth as modelled in 2014 DCM Open Pit Modification. Progressive backfilling of completed areas of the Weismantel Open Pit has been undertaken.
- **DCM Water Management System Changes:**
  - Following the cessation of mining of the Clareval Open Pit (now final void) and the Clareval void becoming available as a water storage, Weismantel Open Pit dewatering is now preferentially transferred to the Clareval void and not stored within the Main Water Dam. As a result, all irrigation activities for the purpose of reducing the total site water inventory at the DCM have now ceased and the DCM's Irrigation Area irrigation system has been decommissioned and removed.
  - Decommissioning of other redundant water management structures has also commenced. Consistent with the approved DCM final landform design, Auxiliary Dam No. 1 has been dewatered, decommissioned and rehabilitated.
- **Vegetation Clearance:** No new disturbance areas (within approved surface disturbance areas) are proposed.


YAN-21-37 DMP CF _202A

LEGEND

- Mining Lease Boundary
- Approximate Extent of Existing/Approved Surface Development
- Existing/Approved First Flush Protocol Pump Back System
- Existing/Approved Up-catchment Diversion System

*Source: © NSW Spatial Services (2019)*
*Orthophoto: Google Earth CENS/Airbus (2020)*

DURALIECOAL
Part of the Yancoal Australia Group

DURALIE COAL MINE

DCM General Arrangement

**Figure 2**

- **Closure Planning:** The DCM's Mine Closure Planning Program (described in the DCM Mining Operations Plan and Rehabilitation Management Plan [1 January 2020 – 31 December 2021]) includes technical assessments and works that will be undertaken and implemented as the DCM progresses towards and commences the mine closure phase. Key components of the Mine Closure Planning Program (as relevant to this Air Quality and Greenhouse Gas Management Plan) include:
  - Preparation of a detailed final landform design.
  - Undertaking Stakeholder Engagement to communicate the DCM's mine closure process with relevant stakeholders.
  - Review and update as required, existing environmental management plans for the rehabilitation and mine closure stage of operations.

DCPL is progressively completing components of the Mine Closure Planning Program, with the various technical assessments currently being completed based on the refined final landform design. The outcomes from these reviews and Mine Closure Planning Program technical assessments and works will be incorporated into a DCM Closure Plan.

***DCM Activities after Cessation of Mining Operations***

DCPL anticipates that bulk earthworks to facilitate rehabilitation of the DCM in accordance with the refined final landform design would be completed in 2023. As described in Section 1.1, the completion of mining operations on 31 December 2021 will mean that ROM coal handling and rail transport movements also cease. Once bulk rehabilitation earthworks are complete, all major fleet will be removed from site and the mining workforce reduced to support completion of revegetation activities and post-closure monitoring and maintenance activities.

After the cessation of key activities contributing to air emissions (i.e. mining operations, coal handling, rail movements and bulk rehabilitation earthworks), the requirement for air quality controls, management measures and monitoring would reduce as the potential impact pathway no longer exists.

Further, post-closure, and particularly once revegetation and groundcover establishes, exposed mine disturbance areas would be limited to access roads, similar to surrounding land uses. Light vehicle movements/usage of the access roads would also be relatively infrequent, similar to usage of access roads on surrounding agricultural properties. As a result, the majority of sources of particulate matter emissions to air and GHG emissions (as described in Section 3.1.2) will no longer be present at the DCM.

At this stage, DCPL would seek the NSW Department of Planning, Industry and Environment's (DPIE's) agreement/approval of redundancy of the Air Quality and Greenhouse Gas Management Plan and associated conditions of the Project Approval.

## 1.2 PURPOSE AND SCOPE

This Air Quality and Greenhouse Gas Management Plan (AQGGMP) has been prepared by DCPL in accordance with Condition 23, Schedule 3 of Project Approval (08_0203).

As described in Section 1.1, operational changes as the DCM transitions towards and commences the mine closure phase will include the cessation of mining operations, rail movements and bulk rehabilitation earthworks that will result in significant reductions in air emission sources. Consequently, the requirement and scope of air quality and GHG management and monitoring would gradually be refined, and would become redundant once final landform revegetation develops.

Accordingly, this revision of the AQGGMP has been prepared by DCPL to:

- describe the current status of operations at the DCM and describe anticipated site activities during the mine closure phase;
- describe changes to air quality and greenhouse gas management at the DCM that have occurred as a result of the transition towards mine closure or are anticipated to occur following the cessation of mining operations and into the mine closure phase; and
- include administrative updates to contemporise the plan.

### 1.3 STRUCTURE OF THE AQGGMP

The remainder of the AQGGMP is structured as follows:

Section 2: Outlines the statutory requirements applicable to the AQGGMP.

Section 3: Describes key sources of emissions.

Section 4: Details the criteria and performance indicators that will be used to assess air quality impacts at the DCM.

Section 5: Provides detailed baseline data.

Section 6: Describes management measures.

Section 7: Describes the dust monitoring program.

Section 8: Provides dust management protocols and a Contingency Plan to manage any unpredicted impacts and their consequences.

Section 9: Describes the annual review and improvement of environmental performance process.

Section 10: Describes the management and reporting of incidents, complaints and non-compliances.

Section 11: Lists the references cited.

# 2 STATUTORY REQUIREMENTS

DCPL's statutory obligations are contained in:

(i) the conditions of NSW Project Approval (08_0203);

(ii) the conditions of Commonwealth Approval (EPBC 2010/5396);

(iii) relevant licences and permits, including conditions attached to mining leases; and

(iv) other relevant legislation.

Obligations relevant to this AQGGMP are described below.

A comprehensive list of all conditions in the NSW Project Approval relevant to air quality management, and a description of where they are referenced in this AQGGMP, is provided in Appendix A.

## 2.1 EP&A ACT PROJECT APPROVAL

### 2.1.1 Air Quality and Greenhouse Gas Management Plan

Condition 23, Schedule 3 of NSW Project Approval (08_0203) requires the preparation of an AQGGMP for the DCM. The requirements of Condition 23, and where they are addressed in this AQGGMP, are outlined in Table 1.

**Table 1**
**Air Quality and Greenhouse Gas Management Plan Requirements**

| NSW Project Approval (08_0203) Condition | AQGHGMP Section |
|---|---|
| ***Air Quality & Greenhouse Gas Management Plan*** | |
| *23. The Proponent shall prepare and implement an Air Quality & Greenhouse Gas Management Plan for the project to the satisfaction of the Secretary. This plan must:* | This AQGGMP |
| *(a) be prepared in consultation with EPA, and submitted to the Secretary for approval within 3 months of the date of this approval, unless otherwise agreed by the Secretary; and* | Section 2.1.3 |
| *(b) describe the measures that would be implemented to ensure compliance with conditions 17-22 of Schedule 3 of this approval, including the proposed real-time air quality management system; and* | Sections 4 to 9 |
| *(c) include an air quality monitoring program that* | Section 7 |
| • *uses a combination of real-time monitors, high volume samplers and dust deposition gauges to evaluate the performance of the project; and* | |
| • *includes a protocol for determining exceedances with the relevant conditions of this approval.* | |
| *Note: The effectiveness of the Air Quality & Greenhouse Gas Management Plan is to be reviewed and audited in accordance with the requirements in Schedule 5. Following this review and audit the plan is to be revised to ensure it remains up to date (see Condition 4 of Schedule 5).* | Section 9 |

### 2.1.2 Management Plan Requirements

Condition 2, Schedule 5 of NSW Project Approval (08_0203) outlines the management plan requirements that are applicable to the preparation of the AQGGMP. Table 2 presents these requirements and indicates where they are addressed within this AQGGMP.

**Table 2**
**Management Plan Requirements**

| NSW Project Approval Condition | AQGGMP Section |
|---|---|
| *2. The Proponent shall ensure that the management plans required under this approval are prepared in accordance with any relevant guidelines, and include:* | |
| *a) detailed baseline data;* | Section 5 |
| *b) a description of:* | |
| • *the relevant statutory requirements (including any relevant approval, licence or lease conditions);* | Section 2 |
| • *any relevant limits or performance measures/criteria;* | Section 4 |
| • *the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the project or any management measures;* | |
| *c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;* | Sections 6 |
| *d) a program to monitor and report on the:* | Sections 7 |
| • *impacts and environmental performance of the project;* | |
| • *effectiveness of any management measures (see (c) above);* | |
| *e) a contingency plan to manage any unpredicted impacts and their consequences;* | Section 8.2 |
| *f) a program to investigate and implement ways to improve the environmental performance of the project over time;* | Section 9 |
| *g) a protocol for managing and reporting any;* | Section 10 |
| • *incidents;* | |
| • *complaints;* | |
| • *non-compliances with statutory requirements; and* | |
| • *exceedences of the impact assessment criteria and/or performance criteria; and* | |
| *h) a protocol for periodic review of the plan.* | Section 9 |
| *Note: The Secretary may waive some of these requirements if they are unnecessary or unwarranted.* | |

### 2.1.3 Consultation

In accordance with Condition 23(a), Schedule 3 of NSW Project Approval (08_0203), the AQGGMP is to be prepared in consultation with the EPA. This revised AQGGMP has been provided to the EPA for comment. The EPA requested the AQGGMP include a statement that consultation will be undertaken with the EPA prior to the rationalisation of the air quality monitoring network during the mine closure phase and that DCPL submit a variation to EPL 11701 to reflect any agreed changes. The EPA's correspondence is included in the Record of Consultation provided in Appendix B. DCPL has included this commitment in Section 7 of this AQGGMP. The revision status of this AQGGMP is provided on the title page of this plan.

## 2.2 LICENCES, PERMITS AND LEASES

In addition to the NSW Project Approval (08_0203) and Commonwealth Approval (EPBC 2010/5396), all activities at DCM will be conducted in accordance with a number of licences, permits and leases which have been issued or are pending issue. Key licences, permits and leases pertaining to the DCM include:

- ML 1427 issued under Part 5 of the NSW *Mining Act, 1992* and approved by the NSW Minister for Mineral Resources in April 1998.
- ML 1646 issued under Part 5 of the NSW *Mining Act, 1992* and approved by the NSW Minister for Primary Industries in January 2011.
- Environment Protection Licence (EPL) 11701 issued under Part 3 of the NSW *Protection of the Environment Operations Act, 1997* (PoEO Act) by the EPA in September 2002 (as modified by subsequent licence variations).
- Water Access Licence (WAL) 41518 for extraction of groundwater from the DCM open cut pits issued by the DPIE-Water (originally granted 22 September 2002 under former Groundwater Licence 20BL168404).
- Mining Operations Plan (or Rehabilitation Management Plan) as approved by the NSW Resources Regulator.
- Water Supply Works Approval (20WA202053) under the NSW *Water Management Act, 2000* issued by the then Department of Water and Energy (now DPIE-Water) on 15 May 2009 for the Coal Shaft Creek diversion and various on site water management structures[1].
- Mining and occupational health and safety related approvals granted by the Resources Regulator and SafeWork NSW.

## 2.3 OTHER LEGISLATION

DCPL will operate the DCM consistent with the requirements of NSW Project Approval (08_0203), the Commonwealth Approval (EPBC 2010/5396) and any other legislation that is applicable to an approved Part 3A Project under the EP&A Act.

In addition to the Acts referred to above and in Section 2.2, the following NSW Acts may be applicable to the conduct of the DCM:

- *Contaminated Land Management Act, 1997;*
- *Dangerous Goods (Road and Rail Transport) Act, 2008;*
- *National Parks and Wildlife Act, 1974;*
- *Biosecurity Act, 2015;*
- *Roads Act, 1993;*
- *Biodiversity Conservation Act, 2016;*
- *Work Health and Safety (Mines and Petroleum Sites) Act, 2013;*
- *Work Health and Safety Act, 2011;*
- *Crown Land Management Act, 2016;*
- *Dams Safety Act, 2015;*
- *Fisheries Management Act, 1994;* and
- *Petroleum (Onshore) Act, 1991.*

[1] This approval replaced the previous *Water Act, 1912* Licence 20SL060324 for these structures.

## 2.4 GREENHOUSE GAS AND ENERGY LEGISLATION

### 2.4.1 National Greenhouse and Energy Reporting Act, 2007

Yancoal has participated in the *National Greenhouse and Energy Reporting Act, 2007* (NGER) reporting since 2009. Yancoal will continue to assess and report the following for the DCM in accordance with NGER reporting requirements:

- Annual scope 1 GHG emissions, which are the direct result of activities at a facility under the operational control of Yancoal and its subsidiaries (i.e. DCPL), such as onsite diesel combustion.
- Annual scope 2 GHG emissions, which are the emissions associated with the generation of electricity that is purchased by Yancoal. These emissions are not under the operational control of Yancoal.
- Annual energy consumption, such as diesel and electricity consumption.
- Annual energy production, such as the energy in the extracted coal.

Assessment and reporting of the above will be conducted in accordance with the following legislation subordinate to NGER:

- *National Greenhouse and Energy Reporting Regulations, 2008; and*
- *National Greenhouse and Energy Reporting (Measurement) Determination, 2008.*

### 2.4.2 National Pollutant Inventory

DCPL also provides annual National Pollutant Inventory (NPI) reports to the EPA (established under the *National Environment Protection (National Pollutant Inventory) Measure, 1998*). Emissions data for the DCM is publicly available on the Commonwealth NPI website (www.npi.gov.au) and is also reported in the DCM's Annual Reviews (Section 9.1).

# 3 SOURCE OF AIR EMISSIONS

## 3.1 AIR QUALITY

### 3.1.1 Substances Considered

With respect to ambient air quality, particulate matter and deposited dust are considered in this AQGGMP, as per the requirements of NSW Project Approval (08_0203). This includes the following:

- total suspended particulate matter (TSP);
- particulate matter with diameter less than 10 micrometres (μm) ($PM_{10}$); and
- deposited dust.

No criteria exist for particulate matter with diameter less than 2.5 μm ($PM_{2.5}$) in NSW, nor is it a relevant parameter in NSW Project Approval (08_0203). Therefore, $PM_{2.5}$ is not further considered in this AQGGMP. However, it should be noted that the management measures described in Section 6 will be relevant for the minimisation and control of all dust, including $PM_{2.5}$, $PM_{10}$ and TSP.

### 3.1.2 Sources of Particulate Matter

Sources of particulate matter emissions to air, generated as a result of DCM operations during the mining operations phase, are primarily due to (DCPL, 2007):

- soil stripping, stockpiling and stockpile management;
- drilling and blasting;
- waste rock removal, handling and stockpiling;
- coal mining, handling, crushing, sizing, conveying and stockpiling;
- loading of trains;
- wheel generated dust from vehicle movement on unsealed roads (e.g. hauling of coal and waste);
- wind erosion of exposed, active surfaces (including disturbed areas and stockpiles); and
- gravel extraction.

In addition, during DCM mining operations, a small fraction of particulate matter emissions are generated from the combustion of diesel in mining equipment and vehicles. However, background concentrations of combustion-related particulates in the local area are low, due to the absence of significant combustion sources within the immediate region (Heggies Australia, 2009).

Other sources of anthropogenic and naturally occurring particulate matter emissions that affect air quality in the Gloucester Valley, but are not associated with DCM operations, include (DCPL, 2007):

- agricultural activities;
- regional vehicle movement;
- bushfires; and
- dust storms.

Other industrial sources (e.g. minor quarries and the Barrington Lime Mine) were considered by Heggies Australia (2009), who concluded that there is no significant potential for cumulative impacts with the DCM due to these sources.

***Mine Closure Phase***

Sources of particulate matter emissions to air generated as a result of activities at the DCM following the cessation of mining operations and during the mine closure phase would primarily be due to:

- dust generated during bulk rehabilitation earthworks (including blasting required to achieve the final landform design and geotechnical safety, final landform shaping and soil movements from soil stockpiles and placement on rehabilitation areas);
- wheel generated dust from vehicle movement on unsealed roads (associated with ongoing monitoring and maintenance activities); and
- wind erosion of exposed disturbed areas where revegetation has not yet established.

Once revegetation of mine disturbance areas establishes, exposed surfaces would be limited to access roads, similar to surrounding land uses. Light vehicle movements on the access roads would be significantly reduced compared with the mining operations phase and would be associated with conducting monitoring and maintenance activities, and would of a similar nature to usage of access roads on surrounding agricultural properties in the local region.

## 3.2 GREENHOUSE GASES

### 3.2.1 Substances Considered

The following greenhouse gases are considered in this AQGGMP, as per the requirements of the *National Greenhouse and Energy Reporting (Measurement) Determination, 2008*:

- carbon dioxide ($CO_2$);
- methane ($CH_4$); and
- nitrous oxide ($N_2O$).

### 3.2.2 Sources of Greenhouse Gas Emissions

Sources of greenhouse emissions associated with DCM operations during the mining operations phase include:

- diesel combustion in mining equipment and vehicles (scope 1);
- fugitive emissions of $CH_4$ released during mining of coal (scope 1);
- use of explosives (scope 1); and
- electricity generated off-site that is consumed by DCPL (scope 2).

***Mine Closure Phase***

Greenhouse emissions released from the mining of coal and diesel combustion in mining equipment and vehicles and equipment associated with mining operations would cease following the cessation of mining operations on 31 December 2021. Emissions from the use of explosives would cease following the completion of blasting activities during bulk rehabilitation earthworks (anticipated by end 2023).

A small fraction of particulate matter emissions would be generated from the combustion of diesel in the fleet, equipment and vehicles used for bulk rehabilitation earthworks. However, the concentration of combustion-related particulates from bulk rehabilitation earthworks would be significantly lower than that generated during mining operations, and would cease once bulk rehabilitation earthworks are completed. Combustion-related particulate generation during the mine closure phase would then be similar to that generated by surrounding agricultural enterprises in the local region.

Electricity usage at the DCM would also gradually reduce as mine closure activities are completed (e.g. as infrastructure decommissioning and removal is completed and as the DCM workforce is reduced to support post-closure monitoring and maintenance activities). A significant proportion of electricity usage is due to the operation of the CHP and train loading facilities. These activities will cease on 31 December 2021.

### 3.3 ODOUR AND FUME

Spontaneous combustion events and self-heating of potentially acid forming (PAF) material have the potential to give rise to odour emissions. A small percentage of mined waste rock at the DCM is PAF and is managed by selective mining and management in accordance with the DCM's Potentially Acid Forming Material Management Plan included within the DCM's Water Management Plan. DCPL will continue to undertake PAF material rehandling activities to emplace all identified PAF material in pit below the predicted post-mining groundwater table level, consistent with the Potentially Acid Forming Material Management Plan.

Measures to prevent spontaneous combustion are described in the DCM's Spontaneous Combustion Principle Mining Hazard Management Plan (PMHMP). Management and mitigation practices as outlined in Section 6.3 will be continued during the mine closure phase.

Blasting has the potential to generate nitrogen oxide fumes and result in fugitive fume emissions (e.g. when the explosive product is incorrectly formulated [Australian Explosives Industry and Safety Group Inc., 2011]). The management of blast fume is described in the DCM Blast Management Plan and associated DCM Blast Fume Management Procedure (Attachment 1 of the Blast Management Plan).

# 4 AIR QUALITY CRITERIA AND PERFORMANCE INDICATORS

## 4.1 NSW PROJECT APPROVAL CONDITIONS

NSW Project Approval (08_0203) conditions relevant to air quality and greenhouse gas management, and details of where these conditions are addressed in this AQGGMP, are provided in Appendix A.

### 4.1.1 Air Quality Assessment Criteria and Air Quality Assessment Acquisition Criteria

Air quality assessment criteria and air quality acquisition criteria are provided in Conditions 19 and 20 of Schedule 3 of NSW Project Approval (08_0203) (Appendix A).

### 4.1.2 Greenhouse Gas Emissions

Condition 18, Schedule 3 of NSW Project Approval (08_0203) states the requirements for DCPL to minimise the release of greenhouse gas emissions from the DCM operations (Appendix A).

### 4.1.3 Odour

Condition 17, Schedule 3 of NSW Project Approval (08_0203) states the requirements for DCPL to prevent the release of offensive odours from the DCM (Appendix A).

### 4.1.4 Additional Dust Mitigation Measures

Additional dust mitigation measures required to be implemented if systematic exceedances of the air quality criteria occur are detailed in Condition 21, Schedule 3 of NSW Project Approval (08_0203) (Appendix A).

The Duralie Rail Dust Study prepared in accordance with Condition 21A, Schedule 3 of NSW Project Approval (08_0203) is available on the Duralie Coal website (www.duraliecoal.com.au).

### 4.1.5 Operating Conditions

The operating conditions relating to air quality are detailed in Condition 22, Schedule 3 of NSW Project Approval (08_0203) (Appendix A).

## 4.2 ENVIRONMENT PROTECTION LICENCE 11701 CONDITIONS

In relation to air quality, Condition O3.1 of EPL 11701 states:

> *Activities occurring in or on the premises must be carried out in a manner that will minimise the generation, or emission from the premises, of wind-blown or traffic generated dust.*

# 5 BASELINE DATA

## 5.1 AIR QUALITY MONITORING DATA

A detailed description of baseline air quality is provided in the Duralie Extension Project Air Quality Assessment (Heggies Australia, 2009) which is available on the Duralie Coal website (www.duraliecoal.com.au).

## 5.2 METEOROLOGICAL MONITORING

A detailed description of baseline meteorology is provided in the Duralie Extension Project Air Quality Assessment (Heggies Australia, 2009) which is available on the Duralie Coal website (www.duraliecoal.com.au).

# 6 MANAGEMENT MEASURES

## 6.1 AIR QUALITY

Air quality management at the DCM during the lead up to closure and post-closure will continue to involve a combination of proactive and reactive management strategies, as well as at-source control measures. These measures will continue to be supported by a network of air quality monitoring stations (Section 7). However, following the cessation of mining operations and rail movements and bulk rehabilitation earthworks, when the key air quality emissions sources cease, DCPL would refine and reduce these measures and monitoring stations to reflect the reduction or cessation of emissions due to the change and reduction of activities at the DCM.

### 6.1.1 Proactive Measures and Dust Controls

Proactive dust management measures and dust emissions controls will be adopted to minimise dust emissions from the following key dust-generating activities:

- wind blown dust from exposed areas; and
- dust generated from mining activities or activities at the DCM during the rehabilitation and mine closure phase.

These management measures are listed in Table 3 for both mining operations and mine closure phases. The requirement for proactive dust management and controls is anticipated to become redundant once the DCM final landform revegetation has established, as guide by the rehabilitation area monitoring program described in the DCM Rehabilitation Management Plan. At this stage, management requirements are likely to be no greater than for surrounding land uses.

## Table 3
## Management Measures and Controls

| Source | Activity | Management Measures During Mining Operations | Management Measures During Bulk Rehabilitation and Mine Closure Phase |
|---|---|---|---|
| Wind Blown Dust Sources | Areas disturbed by mining | • Only the minimum area necessary for mining will be disturbed.<br>• Exposed areas will be reshaped, topsoiled and revegetated as soon as practicable. | • Exposed areas will be reshaped, topsoiled and revegetated as soon as practicable following the completion of mining operations and infrastructure decommissioning and removal in accordance with the DCM Rehabilitation Management Plan. |
| | Waste rock emplacement areas | • Active waste emplacement surfaces that are hauled on will be watered to suppress dust.<br>• Progressive rehabilitation (i.e. reshaping, soil placement and revegetation) of waste emplacement areas will continue.<br>• Irrigation of the waste rock emplacements using a travelling and fixed irrigation system (including evaporative sprays).<br>• Inactive waste dumps will be watered if required to develop a crust and minimise wind erosion. Access will also be restricted to these areas | • Progressive rehabilitation (i.e. reshaping, soil placement and revegetation) of remaining waste emplacement areas will continue.<br>• Areas of waste dumps not yet revegetate will be watered if required to develop a crust and minimise wind erosion. Access will also be restricted to these areas. |
| | ROM coal handling areas | • Coal-handling areas will be kept in a moist state using water carts to minimise wind-blown and traffic generated dust. | • ROM coal rail transport will cease by 31 December 2021.<br>• ROM coal stockpiles will be depleted and transported by rail to the SMC prior to the 31 December 2021.<br>• ROM coal handling areas will be rehabilitated in accordance with DCM Rehabilitation Management Plan. |
| | Coal stockpiles | • ROM coal handling areas will be kept in a moist state using water carts to minimise wind-blown and traffic generated dust.<br>• Any temporary stockpiles of ROM coal will be kept to a minimum size and for a limited time. | |
| | Coal trains | • Water spraying of coal in wagons prior to departure from the DCM to the SMC. | • Coal train movements will cease on 31 December 2021. |
| Mining or DCM Activity Generated Dust Sources | Haul road dust | • All roads and trafficked areas will be watered using water carts to minimise the generation of dust.<br>• Obsolete roads will be ripped and revegetated. | • Former haul roads will be either reduced in size or ripped and rehabilitated during bulk rehabilitation earthwork activities. |
| | Minor roads | • Development of minor roads will be limited and the locations of these will be clearly defined.<br>• Regularly used minor roads will be watered.<br>• Obsolete roads will be ripped and revegetated. | • Minor access roads retained in the final landform will be reduced to the minimum extent necessary.<br>• Obsolete access roads will be ripped and revegetated. |
| | Soil stripping | • Access tracks used for soil stripping during the loading and unloading cycle will be watered. | • Soil stripping will no longer occur during the mine closure phase. |

## Table 3 (Continued)
## Management Measures and Controls

| Source | Activity | Management Measures During Mining Operations | Management Measures During Bulk Rehabilitation and Mine Closure Phase |
|---|---|---|---|
| Mining or DCM Activity Generated Dust Sources | Soil stockpiling | • Long term soil stockpiles will be revegetated with a cover crop. | • Soil stockpiles resources will be used and transported to and emplaced on rehabilitation areas during the bulk rehabilitation earthwork activities.<br>• Some small soil stockpiles may be temporarily retained as a contingency measure for any supplementary planting activities during the mine closure phase. |
| | Drilling | • Dust aprons will be lowered at all times during drilling, except when drills are tramming between holes.<br>• Water injection or dust suppression sprays will be used at all times when drilling. | • Drilling activities within the DCM MLs will cease after 31 December 2021, with the exception of any drill and blast required to achieve final landforms. |
| | Blasting | • Fine material collected during drilling will not be used for blast stemming.<br>• Adequate stemming will be used at all times.<br>• When practicable DCPL will consider options for benches to be watered prior to loading a blast if unacceptable levels of dust are being generated.<br>• Blasting will only occur following an assessment of weather conditions by the Environment and Community Superintendent to ensure that wind speed and direction will not result in excess dust emissions from the site towards adjacent residences (refer to the Blasting Management Plan for further information). No blasting will occur in the open cut when wind speeds exceed an average of 10 m/s over a 15 minute period. | • The blast management measures employed during mining operations would continue to be implemented for the infrequent blasting activities that may be undertaken to achieve the final landform design and geotechnical safety during the bulk rehabilitation earthwork activities.<br>• Following the completion of bulk rehabilitation earthworks, blasting at the DCM will permanently cease and the requirement for the DCM's Blast Management Plan will become redundant. |

A summary of the equipment used for at-source dust control during the mining operations phase is provided in Table 4.

**Table 4**
**At-source Control Equipment**

| Equipment Type | Typical Control Area |
|---|---|
| Water trucks | • Haul roads.<br>• Other trafficked surfaces (including minor roads).<br>• Waste emplacements.<br>• Coal handling areas. |
| Water sprays | • ROM dump hopper.<br>• Coal conveyor transfer points.<br>• Train loading bin chute. |
| Dust collection system | • Drill equipment. |

Post-closure, it is expected that the equipment required for at-source dust control will be limited to water trucks, for controlling dust on exposed surfaces prior to revegetation coverage. Once revegetation has developed across these areas, it is expected that the requirement for a water truck would be redundant.

The above mitigation/management measures are generally in accordance with the *NSW Coal Mining Benchmarking Study: International Best Practice Measures to Prevent and/or Minimise Emissions of Particulate Matter from Coal Mining* (Katestone, 2010) and the mitigation/management measures identified by Environment Australia (1998).

DCPL has prepared and implements the following pollution studies and reduction programs in accordance with EPL 11701:

- *Duralie Coal Mine – Particulate Matter Control Best Practice Pollution Reduction Program* (PAEHolmes, 2012);
- *Duralie Coal Mine PRP U2 Monitoring Plan – Wheel Generated Dust* (Pacific Environment Limited, 2013a); and
- *Duralie Coal Mine PRP U3 Plan – Overburden Handling in Adverse Weather* (Pacific Environment Limited, 2013b).

These pollution studies and reduction programs are available on the Duralie Coal website (www.duraliecoal.com.au).

The control of dust emissions during adverse weather conditions will be managed in accordance with the *Duralie Coal Mine PRP U3 Plan* available on the Duralie Coal website. This PRP Plan includes requirements for alarming based on adverse weather condition criteria and an associated response protocol with a hierarchy of management measures.

### 6.1.2 Rail Dust Mitigation Measures

ROM coal from the DCM is transported approximately 20 km via rail to the SMC. Trains sitting on the DCM siding (off the North Coast Railway) are loaded with ROM coal at the DCM rail loadout facilities. A dedicated train shuttle transports the ROM coal to the SMC, where the ROM coal is unloaded for further processing. The unladen train then travels back to the DCM.

The DCM currently employs a two-stage watering system to mitigate potential dust emissions generated during rail transport. The two-stage watering process consists of:

- The application of water to the coal surface as each wagon is loaded. Based on site inspection (Katestone, 2012), the rate of water application is approximately 1.5 litres per second, and is applied for approximately 60 seconds, delivering approximately 90 litres of water to the surface of the ROM coal in each wagon. This equates to an application rate of approximately 3 litres per square metre of ROM coal surface.
- Re-wetting of the coal surface via sprayers when the fully loaded trains depart from the DCM rail loadout facility. Based on site inspection (Katestone, 2012), this second spray system delivers approximately 1.5 litres per second to the coal surface. For faster train departure travel speeds (where water is applied to each wagon for approximately eight seconds), this equates to an additional 12 litres of water per wagon, or 0.4 litres per square metres.

To assess the effectiveness of the rail dust mitigation measures, laboratory testing was conducted, and is detailed in the Duralie Rail Dust Study (Katestone, 2012) in accordance with Condition 21A, Schedule 3 of NSW Project Approval (08_0203). On the 22 March 2012 the then DP&E accepted the Duralie Rail Dust Study, finding it adequate for the purpose and requirements of Condition 21A, Schedule 3 of NSW Project Approval (08_0203).

ROM coal transport from the DCM to the SMC will cease on 31 December 2021. Following the cessation of DCM coal loading and rail movements, rail dust mitigation measures will no longer be required.

### 6.1.3 Reactive Measures

The implementation of the measures listed in Section 6.1.1 will minimise dust generation and the need for responsive management measures. In instances where proactive management measure and dust controls, as described in Tables 3 and 4 respectively, fail to prevent significant dust generation (as identified by dust monitoring [Section 7], exceedance of the “medium” risk performance indicator described in Section 7.3, by visual observation or in response to a complaint), the following steps will be taken:

1. The Mine Manager and/or Environment and Community Superintendent will determine if excessive dust is being generated.
2. The Mine Manager will issue an instruction for the particular activity (mining or otherwise) causing the excessive generation of dust to cease immediately.
3. The Mine Manager and Environment and Community Superintendent will assess what additional mitigation measures can be applied, including intensive watering of the exposed or active surfaces, reducing the intensity of the activity (e.g. less vehicle movements, reduced vehicle speed and/or utilising a travel surface less prone to produce dust) or installation of mechanical measures (e.g. dust extractors on drill rigs). This assessment will include consideration of wind speed and direction in relation to receptors.

4. If the Mine Manager or Environment and Community Superintendent are not satisfied that the additional measures will reduce dust emissions to an acceptable level (due to the prevailing weather conditions) the activity will not recommence until the additional measures have been implemented and/or more favourable weather conditions occur.
5. The Environment and Community Superintendent will be responsible for monitoring the activity once it recommences to measure the effectiveness of control measures and to ensure dust emissions are acceptable.

It will be the responsibility of the Environment and Community Superintendent to inform residents in the vicinity of the DCM, and downwind of a potential source of excessive dust, of the potential for dust related impacts. Residents will be informed by telephone or in person (i.e. house visit by the Environment and Community Superintendent). An updated list of names, addresses and telephone numbers of all residents within a 1 km distance of the Project MLs will be maintained by the Environment and Community Superintendent.

The requirement for reactive measures are anticipated to gradually reduce following the cessation of mining operations and bulk rehabilitation earthworks, and are likely to be redundant once the DCM final landform is revegetated.

### 6.1.4 Additional Mitigation Measures

In accordance with Condition 21, Schedule 3 of NSW Project Approval (08_0203), DCPL will implement additional dust mitigation measures at residences (in consultation with the landholder) if air quality monitoring shows systemic exceedances of the criteria detailed in Section 4.1.1, or if requested by the landowners as detailed in Condition 21 (a), Schedule 3 of NSW Project Approval (08_0203).

## 6.2 GREENHOUSE GAS EMISSIONS

DCPL has implemented a number of reasonable and feasible measures to minimise GHG emissions from the DCM including the following measures:

- Regular maintenance of plant and equipment to minimise fuel consumption.
- Efficient mine planning (e.g. minimising rehandling of materials) to minimise fuel consumption.
- Consideration of energy efficiency in the plant and equipment selection phase.
- Implementation of a vegetation offset program.

The effectiveness of these measures to reduce DCPL's GHG emissions (and energy consumption) will be monitored, as DCPL will annually estimate GHG emissions and energy consumption in accordance with NGER requirements. The results of NGER reporting will also be used internally to identify the major sources of GHG emissions and energy consumption, and to inform future GHG management measures. A summary of the above will be included in the Annual Review.

The cessation of mining operations, removal of mining fleet and decommissioning of DCM infrastructure, and later removal of rehabilitation earthworks fleet, would result in a significant reduction in GHG emissions associated with the DCM. Emission contributions from activities during the mine closure phase will be of no greater scale than contributions from vehicles and equipment required to support surrounding agricultural land uses in the local region.

## 6.3 ODOUR AND FUME

Spontaneous combustion has the potential to generate odours. Proactive management measures are undertaken for the control of spontaneous combustion at the DCM. Any instances of spontaneous combustion will be managed in accordance with the DCM's Spontaneous Combustion PMHMP. Management and mitigation practices generally involve reducing the interaction of potentially reactive materials with water and oxygen by appropriate dumping practices, profiling and capping any materials likely to heat, and reducing the time coal faces are exposed prior to mining. These management measures would be continued, as applicable, during the mine closure phase.

Self-heating of PAF material also has the potential to generate odours. The proactive management of PAF material in accordance with the DCM's Potentially Acid Forming Material Management Plan, within the DCM's Water Management Plan, will be continued to reduce the potential for self-heating, odour emissions and/or acid rock drainage. DCPL will continue to undertake PAF material rehandling activities to emplace all identified PAF material in pit below the predicted post-mining groundwater table level, consistent with the Potentially Acid Forming Material Management Plan.

The DCM's Blast Management Plan describes the measures for the prevention of fumes from blasting activities at the DCM.

# 7 AIR QUALITY MONITORING PROGRAM

After the cessation of key activities contributing to air emissions (i.e. mining operations, coal handling, rail movements and bulk rehabilitation earthworks), the requirement for air quality controls, management measures and monitoring would reduce as the potential impact pathway no longer exists.

The following monitoring program has been developed to ensure that potential air quality impacts are quantified to assist with the continued improvement of control measures.

The air quality monitoring program consists of dust deposition gauges, High Volume Air Samplers (HVASs) and real-time air quality monitoring. The results from these monitoring networks will be used to assess compliance with the criteria in Section 4.1.1 for dust deposition and concentrations of particulate matter.

In accordance with Condition 21(c), Schedule 3 of NSW Project Approval (08_0203), the monitoring program includes a real-time monitor (i.e. tapered element oscillating microbalance [TEOM] monitor).

Following the cessation of mining operations at the DCM, the dust monitoring program would cease in a staged manner, as follows:

- Real-time TEOM monitoring would cease following the cessation of bulk rehabilitation earthworks (anticipated by end 2023) i.e. cessation of key activities contributing to air emissions.
- Dust Deposition monitoring and HVAS monitoring would cease once revegetation of final landform/mine disturbance areas has established sufficiently as demonstrated by the rehabilitation monitoring program and dust generation from exposed surfaces has significantly reduced as demonstrated by dust deposition and HVAS monitoring results (anticipated timing for cessation – 2024).

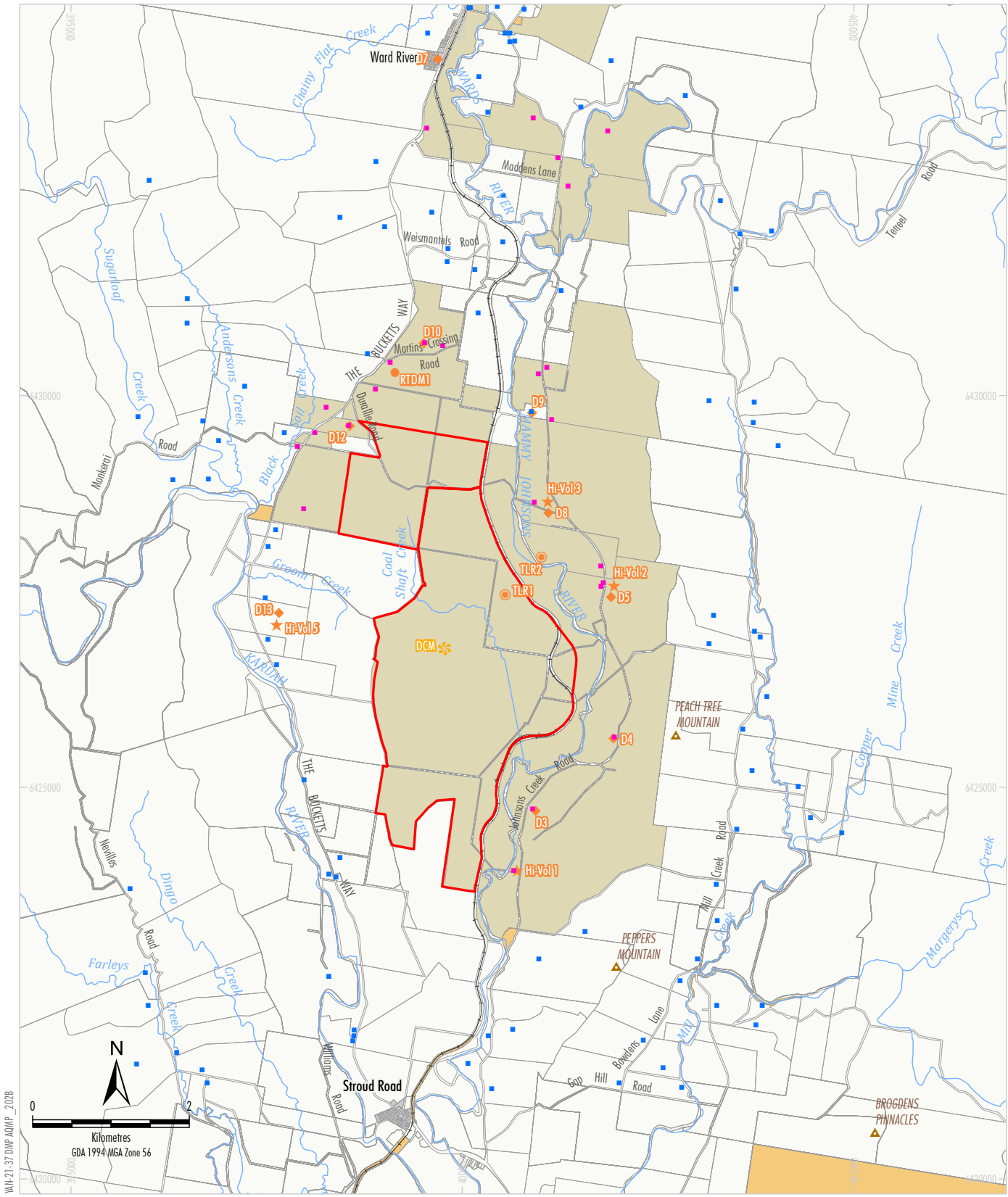
Prior to rationalisation or complete cessation of the dust monitoring program, DCPL will consult with the EPA regarding the proposed changes to the monitoring program. DCPL would then seek to vary EPL 11701 to reflect the changes agreed with the EPA. Following cessation of the air quality monitoring program, DCPL would also seek DPIE's agreement/approval of redundancy of the Air Quality and Greenhouse Gas Management Plan and associated conditions of the Project Approval.

## 7.1 DUST DEPOSITION

Dust gauges are located in all directions around the DCM, as shown in Figure 3. Dust gauges D1 and D2 have been removed in accordance with EPL 11701 as varied by Notice 1508851.

Dust deposition monitoring will continue to be conducted in accordance with the methods detailed in the *Approved Methods for the Sampling and Analysis of Air Pollutants in NSW* (EPA, 2021).

The dust collected by the deposition gauges will be analysed monthly for ash content, combustible matter and insoluble solids. The results will be compared with the dust deposition criteria in Section 4.1.1.




LEGEND

- Mining Lease Boundary
- Yancoal - Owned Land
- Private Landholders
- Crown Land
- Urban Dvelopment
- Dwelling - Yancoal Owned
- Dwelling - Privately Owned
- Meterological Station

Dust Monitoring

- Dust Gauge
- High Volume Sampler
- Real-time Dust Monitor (PM 10)
- Temperature Lapse Rate Monitoring Site

*Source: © NSW Spatial Services (2020)*

DURALIECOAL
Part of the Yancoal Australia Group

DURALIE COAL MINE

Dust Montoring Locations

*Note: Monitoring sites to be refined following cessation of mining operations and bulk rehabilitation earthworks at the DCM, in consultation with relevant regulatory agencies.*

**Figure 3**

## 7.2 HVAS

***$PM_{10}$***

A network of four HVASs will continue to measure $PM_{10}$ concentrations. One of the previous HVASs (HVAS 4) has been relocated to accommodate the real-time monitor. The locations of the HVASs are shown in Figure 3.

$PM_{10}$ concentrations are measured on a continuous basis at each site, on a six day cycle, in accordance with procedure OM-5 of the *Approved Methods for the Sampling and Analysis of Air Pollutants in NSW* (EPA, 2021).

HVAS results will be used to determine compliance with the 24 hour $PM_{10}$ concentration criteria in Section 4.1.1. The rolling annual average will also be determined and recorded, to determine compliance with annual $PM_{10}$ criteria.

***TSP***

Concentrations of TSP will be calculated, based on the results of the $PM_{10}$ HVASs and the assumption that 40% of TSP is $PM_{10}$, as per the relationship obtained from co-located TSP and $PM_{10}$ monitors operated in the Hunter Valley (NSW Minerals Council, 2000).

The calculated rolling annual average TSP concentrations will be used to assess compliance with the annual TSP criteria detailed in Section 4.1.1.

## 7.3 REAL-TIME AIR QUALITY MONITORING

In addition to the HVASs, a real-time monitor has been installed at the DCM (shown as RTDM1 on Figure 3), in accordance with Condition 23, Schedule 4 of NSW Project Approval (08_0203). The real-time monitor will continuously monitor $PM_{10}$ concentrations in accordance with procedure OM-5 of the *Approved Methods for the Sampling and Analysis of Air Pollutants in NSW* (EPA, 2021).

The real-time monitor is positioned to the north of the open pit (Figure 3). This location has been chosen as it is representative of private residences expected to receive the highest predicted emissions in the Duralie Extension Project EA Air Quality Assessment (Heggies Australia, 2009).

The real-time monitor records five minute instantaneous (i.e. real-time) $PM_{10}$ concentrations and rolling 24 hour average $PM_{10}$ concentrations.

***Performance Indicators***

Performance indicators have been developed to allow predictive dust management if dust levels are expected to approach the 24 hour $PM_{10}$ NSW Project Approval criteria (Section 4.1.1).

The performance indicators (Table 5) have been developed by Todoroski Air Sciences (TAS) (2013), for the purposes of managing potential air quality impacts from the DCM, following review of 12 months of 5-minute average $PM_{10}$ data from the TEOM and corresponding data from the HVASs and meteorological station.

**Table 5**
**Performance Indicators and Associated Responses**

| Performance Indicator | | Risk | Response |
|---|---|---|---|
| **Rolling 24-hour average $PM_{10}$ level ($\mu g/m^3$)** | **5-minute average $PM_{10}$ level ($\mu g/m^3$)** | | |
| ≤25 | - | Low | Normal operation, no response required. |
| >25 | >100, block of 3 or more readings | Medium | Implement measures described in Section 6.1.3 |
| - | >200 | | |
| >45, block of 3 or more hours | - | High | Implement measures described in Section 6.1.3 and/or Standard Protocol (Section 8.1) |

The review indicated:

- for the available data from the TEOM and HVASs for the 12 month period April 2012 to April 2013, no exceedances of the 24-hour average criterion of 50 $\mu g/m^3$ were recorded; and
- no clear relationship between the 5-minute instantaneous and the 24-hour average $PM_{10}$ concentrations recorded by the TEOM was identified (i.e. relatively elevated 5-minute instantaneous $PM_{10}$ concentrations do not necessarily correspond to elevated 24-hour $PM_{10}$ concentrations).

When a relevant performance indicator is triggered, the management measures described in the Standard Protocol (Section 8.1) will be implemented.

Following the completion of bulk rehabilitation earthworks, the real-time monitoring performance indicators will no longer be applicable. Similarly, the Standard Protocol (Section 8.1) will no longer be applicable.

## 7.4 METEOROLOGICAL MONITORING

DCPL operates an automated meteorological monitoring station on the Project site (Figure 3) capable of monitoring:

- air temperature;
- wind direction;
- sigma theta;
- rainfall;
- relative humidity; and
- evaporation.

Wind speed and wind direction data will be used in conjunction with all dust monitoring data, as described above, to further minimise the potential for dust emissions, and to provide useful information for review of the effectiveness of dust management practices.

In addition, DCPL has installed appropriate equipment to measure temperature lapse rates in accordance with Condition 24, Schedule 3 of NSW Project Approval (08_0203). In accordance with Condition M5.1 of EPL 11701, temperature lapse rates are continuously measured over a minimum vertical height interval of 50 m. This is achieved through the installation of two 10 m towers, located in positions with an elevation differential greater than 50 m, as shown on Figure 3. The continuous temperature lapse rate measurements are calibrated and validated with periodic measurement using a weather balloon.

DCPL will continue to conduct meteorological monitoring during the mine closure phase until surrender of the DCM's EPL.

## 7.5 ASSESSMENT OF DATA VALIDITY

Where monitoring indicates a potential non-compliance against NSW Project Approval (08_0203) criteria, it is necessary to assess the potential for the influence of the following factors:

- Extreme events, such as:
  - bushfires;
  - prescribed burning;
  - dust storms;
  - fire incidents;
  - illegal activities; and
  - other activities agreed by the Secretary of the DPIE and the EPA.
- Irregular activities near monitoring sites such as:
  - exposed areas of soil around the monitoring site;
  - adjacent land use activities; and
  - contamination from bird droppings, insects, etc.
- Reasonableness of data (e.g. is the equipment operating properly, providing reliable data and within calibration).

The assessment of data validity will become redundant following the cessation of air quality monitoring.

## 7.6 PROTOCOL FOR DETERMINING EXCEEDANCES

Monitoring results will be used to assess the DCM performance against the criteria detailed in Section 4.1.1.

If a performance indicator has been exceeded, an assessment will be made of the data validity (refer to Section 7.5) as soon as practicable. Monitoring results above the criteria levels are not exceedances until the data has been assessed and validated. If an exceedance (i.e. non-compliance) of the criteria detailed in Section 4.1.1 is recorded, the Dust Management Protocols detailed in Section 8 will be triggered.

Dust deposition gauge and HVAS data will be assessed monthly until cessation of the air quality monitoring program, at which point this protocol will become redundant. EPL 11701 will be varied to reflect cessation of the monitoring program in consultation with, and subject to the approval of, the EPA, consistent with the EPA's recommendation in their correspondence dated 6 October 2021 provided in Appendix B.

## 7.7 REVIEW OF MONITORING RESULTS

The results of dust and meteorological monitoring will continue to be maintained in a database for examination and assessment. This data will be used to investigate relationships between short-term variations in dust levels, and the number and distribution of any dust-related complaints. Results of this investigation will then be used in the review of the monitoring program.

Monitoring results will continue to be reported annually in the Annual Review.

# 8 DUST MANAGEMENT PROTOCOLS AND CONTINGENCY PLAN

The dust management protocols outlined below have been formulated to facilitate the proactive and reactive management of dust emissions from the Project. As discussed in Section 7, the Standard Protocol and the Contingency Plan will cease following cessation of air quality monitoring at the DCM.

## 8.1 STANDARD PROTOCOL

The objective of the Standard Protocol is to facilitate the day-to-day management of dust emissions from Project activities, and will be triggered if the performance indicator described in Section 7.3 is exceeded. Dust control will be actively carried out as a standard operating procedure to facilitate a safe working environment using techniques outlined in Section 6. The Standard Protocol will be the responsibility of the Environment and Community Superintendent.

The Standard Protocol can be broken into four steps as follows:

1. Source Identification.
2. Management Strategy.
3. Implementation.
4. Review.

***Source Identification***

The first step of the protocol involves identification of the activities (mining or otherwise) with the potential for excessive dust generation. Consideration will be given to the following:

- methods and types of equipment that will be used;
- timing of the activity;
- location of the activity (including surrounding topography and land use);
- the results of recent air quality monitoring data; and
- prevailing climatic conditions.

The outcomes of the above process will determine whether there is the potential for exceedances of air quality criteria and therefore if it is necessary to implement the management strategy phase. Source identification is ongoing and conducted during the course of operations.

***Management Strategy***

The management strategy component involves determination of the dust control and management measures that will be used to minimise air quality emissions, based on the results of the identification stage. Potential air quality mitigation and management measures are presented in Section 6.

***Implementation***

This stage involves implementation of the dust control and management measures chosen in the management strategy process. The Environment and Community Superintendent will be responsible for the timely implementation of the selected measures (generally effective immediately once the management strategy is determined).

***Review***

An important component of the protocol is the review of dust control and management measures. These will be assessed by comparing the results of the air quality monitoring program detailed in Section 7 with the air quality criteria outlined in Section 4.1.1. Where necessary, the management strategy phase of the protocol will be reviewed.

## 8.2 CONTINGENCY PLAN

In the event that an air quality criteria detailed in Section 4.1.1 is considered to be exceeded and the protocol for determining exceedances as described in Section 7.6 of this AQGGMP is completed, DCPL will implement the following Contingency Plan:

- The Environment and Community Superintendent will immediately report the likely exceedance to the General Manager following assessment completion.
- DCPL will immediately report the exceedance of the air quality criteria to the EPA and the DPIE, in accordance with the protocol for industry notification of pollution incidents under Part 5.7 of the POEO Act (as amended in November 2011).
- DCPL will identify an appropriate course of action (e.g. additional mitigation measures) with respect to the identified impact(s), in consultation with specialists and the DPIE, as necessary.
- DCPL will, on request, submit the proposed course of action to the DPIE for approval.
- DCPL will implement the approved course of action to the satisfaction of the DPIE.

# 9 ANNUAL REVIEW AND IMPROVEMENT OF AQGGMP

## 9.1 ANNUAL REVIEW

In accordance with Condition 3, Schedule 5 of NSW Project Approval (08_0203), DCPL will prepare an Annual Review of the environmental performance of the Project by the end of December each year. The Annual Review will be made publicly available on the Duralie Coal website, in accordance with Condition 10, Schedule 5 of NSW Project Approval (08_0203).

The Annual Review will specifically address the following aspects of Condition 3, Schedule 5 of NSW Project Approval (08_0203), which are directly relevant to air quality and greenhouse gas management:

- include a comprehensive review of the monitoring results and complaints records for the DCM over the past year, including a comparison of these results against the:
  - relevant statutory requirements, limits or performance measures/criteria;
  - monitoring results of previous years; and
  - relevant predictions in the EA;
- identify any exceedance of criteria over the last year, and describe what actions were (or are being) taken to ensure compliance;
- identify any trends in the monitoring data over the life of the DCM;
- identify any discrepancies between the predicted and actual impacts of the DCM, and analyse the potential cause of any significant discrepancies; and
- describe what measures will be implemented over the next year to improve the environmental performance of the DCM.

This AQGGMP will be reviewed within three months of the submission of an Annual Review, and revised where appropriate, as described in Section 9.2 below.

## 9.2 AQGGMP REVIEW

In accordance with Condition 4, Schedule 5, of NSW Project Approval (08_0203), this AQGGMP will be reviewed, and if necessary revised to the satisfaction of the Secretary of the DPIE within three months of the submission of:

- an Annual Review, in accordance with Condition 3, Schedule 5 of Project Approval (08_0203);
- an incident report, in accordance with Condition 6, Schedule 5 of Project Approval (08_0203);
- an audit, in accordance with Condition 8, Schedule 5 of Project Approval (08_0203); or
- any modification to the conditions NSW Project Approval (08_0203).

In addition, the AQGGMP will be revised to the satisfaction of the Secretary of the DPIE if necessary, to ensure the plan is updated on a regular basis and to incorporate any recommended measures to improve environmental performance. The revision status of this AQGGMP is indicated on the title page of each copy.

This AQGGMP will be made publicly available on the Duralie Coal website, in accordance with Condition 10, Schedule 5, of NSW Project Approval (08_0203). A hard-copy will also be kept at the DCM.

# 10 REPORTING PROTOCOLS

In accordance with Condition 2 (g), Schedule 5 of NSW Project Approval (08_0203), DCPL has developed protocols for managing and reporting the following:

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

The management of incidents is described in the Pollution Incident Response Management Plan. The management of complaints and non-compliances is described in detail in the Environmental Management Strategy. The management of exceedances of the air quality criteria is described in Sections 7.5 to 7.7 and Section 8 of this AQGGMP.

# 11 REFERENCES

Australian Explosives Industry and Safety Group Inc. (2011) *Codes of Good Practice : Blast Guarding in an Open Cut Mining Environment.*

Duralie Coal Pty Ltd (2007) *Duralie Coal Mine Air Quality Monitoring Program*.

Duralie Coal Pty Ltd (2013) *Annual Review – Duralie Coal Mine*.

Environment Australia (1998) *Best Practice Environmental Management in Mining: Dust Control.* Department of the Environment.

Environmental Protection Authority (2021) *Approved Methods for the Sampling and Analysis of Air Pollutants in NSW.*

Heggies Australia (2009) *Duralie Extension Project Air Quality Assessment*, November 2009.

Katestone Environmental Pty Ltd (2010) *NSW Coal Mining Benchmarking Study: International Best Practice Measures to Prevent and/or Minimise Emissions of Particulate Matter from Coal Mining*, prepared for the New South Wales Department of Environment, Climate Change and Water (now Office of Environment and Heritage), December 2010.

Katestone Environmental Pty Ltd (2012) *Duralie Extension Project, Study of Dust Emissions from Rail Transport*.

NSW Minerals Council (2000) *Technical Paper – Particulate Matter and Mining Interim Report*.

Pacific Environment Limited (2013a) *Duralie Coal Mine PRP U2 Monitoring Plan – Wheel Generated Dust* (Pacific Environment Limited, 2013a).

Pacific Environment Limited (2013b) *Duralie Coal Mine PRP U3 Plan – Overburden Handling in Adverse Weather*.

PAEHolmes (2012) *Duralie Coal Mine – Particulate Matter Control Best Practice Pollution Reduction Program.*

Todoroski Air Science (2013) *Real-time Air Quality Trigger Investigation – Duralie Coal Mine*

# APPENDIX A

# SUMMARY OF PROJECT APPROVAL CONDITIONS RELEVANT TO AIR QUALITY AND GREENHOUSE GAS MANAGEMENT

## Table A-1
## Summary of Project Approval Conditions Relevant to Air Quality and Greenhouse Gas Management

<table>
<tr><th>Schedule</th><th>Section</th><th>Condition</th><th>Description</th><th>Section of AQGGMP</th></tr>
<tr><td rowspan="3">3<br>Environmental Performance Conditions</td><td>Odour</td><td>17</td><td>The Proponent shall ensure that no offensive odours are emitted from the site, as defined under the POEO Act.</td><td>4.1.3</td></tr>
<tr><td>Greenhouse Gas Emissions</td><td>18</td><td>The Proponent shall implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions from the site to the satisfaction of the Secretary.</td><td>6.2</td></tr>
<tr><td>Air Quality Assessment Criteria</td><td>19</td><td>The Proponent shall ensure that particulate matter emissions generated by the project do not exceed the criteria listed in Tables 5, 6 or 7 at any residence on privately-owned land or on more than 25 percent of any privately-owned land.<br><br>Table 5: Long term criteria for particulate matter
<table>
<tr><th>Pollutant</th><th>Averaging Period</th><th>d Criterion</th></tr>
<tr><td>Total suspended particulate (TSP) matter</td><td>Annual</td><td>[a] 90 µg/m$^3$</td></tr>
<tr><td>Particulate matter < 10 µm (PM10)</td><td>Annual</td><td>[a] 30 µg/m$^3$</td></tr>
</table>
Table 6: Short term criterion for particulate matter
<table>
<tr><th>Pollutant</th><th>Averaging Period</th><th>[d] Criterion</th></tr>
<tr><td>Particulate matter < 10 µm (PM10)</td><td>24 hour</td><td>[a] 50 µg/m$^3$</td></tr>
</table>
Table 7: Long term criteria for deposited dust
<table>
<tr><th>Pollutant</th><th>Averaging Period</th><th>Maximum increase in deposited dust level</th><th>Maximum total deposited dust level</th></tr>
<tr><td>[c] Deposited dust</td><td>Annual</td><td>[b] 2 g/m$^2$/month</td><td>[a] 4 g/m$^2$/month</td></tr>
</table>
Notes to Tables 5-7:<br><br>
[a] Total impact (i.e. incremental increase in concentrations due to the project plus background concentrations due to all other sources);<br>
[b] Incremental impact (i.e. incremental increase in concentrations due to the project on its own);<br>
[c] Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method.<br>
[d] Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities or any other activity agreed by the Secretary in consultation with EPA.</td><td>4.1.1</td></tr>
</table>

## Table A-1 (Continued)
## Summary of Project Approval Conditions Relevant to Air Quality and Greenhouse Gas Management

<table>
<tr><th>Schedule</th><th>Section</th><th>Condition</th><th>Description</th><th>Section of AQGGMP</th></tr>
<tr><td>3<br>Environmental Performance Conditions</td><td>Air Quality Acquisition Criteria</td><td>20</td><td>
If particulate matter emissions generated by the project exceed the criteria in Tables 8, 9 or 10 at any residence on privately-owned land or on more than 25 percent of any privately-owned land, then upon receiving a written request for acquisition from the landowner the Proponent shall acquire the land in accordance with the procedures in Conditions 5-6 of Schedule 4.<br><br>
Table 8: Long term acquisition criteria for particulate matter
<table>
<tr><th>Pollutant</th><th>Averaging period</th><th>[d]Criterion</th></tr>
<tr><td>Total suspended particulate (TSP) matter</td><td>Annual</td><td>[a]90 µg/m$^3$</td></tr>
<tr><td>Particulate matter < 10 µm ($PM_{10}$)</td><td>Annual</td><td>[a]30 µg/m$^3$</td></tr>
</table>
Table 9: Short term impact assessment criteria for particulate matter
<table>
<tr><th>Pollutant</th><th>Averaging period</th><th>[d]Criterion</th></tr>
<tr><td>Particulate matter < 10 µm ($PM_{10}$)</td><td>24 hour</td><td>[a]150 µg/m$^3$</td></tr>
<tr><td>Particulate matter < 10 µm ($PM_{10}$)</td><td>24 hour</td><td>[b] 50 µg/m$^3$</td></tr>
</table>
Table 10: Long term impact assessment criteria for deposited dust
<table>
<tr><th>Pollutant</th><th>Averaging period</th><th>Maximum increase in deposited dust level</th><th>Maximum total deposited dust level</th></tr>
<tr><td>[c]Deposited dust</td><td>Annual</td><td>[b]2 g/m$^2$/month</td><td>[a]4 g/m$^2$/month</td></tr>
</table>
Notes to Tables 8-10:<br><br>
[a] Total impact (i.e. incremental increase in concentrations due to the project plus background concentrations due to all other sources);<br>
[b] Incremental impact (i.e. incremental increase in concentrations due to the project on its own);<br>
[c] Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air – Determination of Particulate Matter – Deposited Matter – Gravimetric Method;<br>
[d] Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities or any other activity agreed by the Secretary in consultation with EPA.
</td><td>4.1.1</td></tr>
</table>

## Table A-1 (Continued)
## Summary of Project Approval Conditions Relevant to Air Quality and Greenhouse Gas Management

| Schedule | Section | Condition | Description | Section of AQGGMP |
|---|---|---|---|---|
| 3<br>Environmental Performance Conditions | Additional Dust Mitigation Measures | 21 | *Upon receiving a written request from the owner of any residence:*<br>*(a) on the land listed as 125(1) and 125(2) in the figure in Appendix 3; or*<br>*(b) on privately-owned land where subsequent air quality monitoring shows that the dust generated by the project is greater than or equal to the applicable criteria in tables 5, 6 or 7 on a systemic basis,*<br>*the Proponent shall implement additional dust mitigation measures (such as a first flush roof system, internal or external air filters, and/or air conditioning) at the residence in consultation with the owner. These measures must be reasonable and feasible.*<br>*If within 3 months of receiving this request from the owner, the Proponent and the owner cannot agree on the measures to be implemented or there is a dispute about the implementation of these measures, then either party may refer the matter to the Secretary for resolution.* | 6.1.4 |
| | | 21A | *Within 3 months of the date of this approval, the Proponent shall submit a study of the dust emissions from the laden trains associated with the Project to the Secretary. This study must:*<br>*(a) be carried out by a suitably qualified and experienced expert whose appointment has been endorsed by the Secretary;*<br>*(b) include consultation with the EPA, the Department and the residents in close proximity to the railway line;*<br>*(c) assess the scale, nature and significance of the dust emissions of the laden trains;*<br>*(d) identify any reasonable and feasible mitigation measures that could be implemented to reduce the dust emissions from these trains;*<br>*(e) recommend the implementation of any specific measures; and*<br>*(f) be accompanied by the Proponent's response to any recommendations in the study.*<br>*If, following review of the study, the Secretary directs the Proponent to implement additional mitigation measures to reduce the dust emissions of the laden trains associated with the Project, then the Proponent shall implement these measures to the satisfaction of the Secretary and, within one month of such direction, update the Air Quality & Greenhouse Gas Management Plan for the Project to include a detailed program for the implementation of these measures and monitoring of compliance.* | 6.1.2 |
| | Operating Conditions | 22 | *The Proponent shall:*<br>*(a) implement best practice air quality management on site, including all reasonable and feasible measures to minimise the off-site odour, fume and dust emission generated by the development, including any emission from spontaneous combustion;*<br>*(b) minimise any visible air pollution generated by the project;*<br>*(c) regularly assess the real-time air quality monitoring and meteorological forecasting data and relocate, modify and/or stop operations on site to ensure compliance with the relevant conditions of this approval,*<br>*to the satisfaction of the Secretary.* | 6.1<br>7.3, 7.4, 8 |

**Table A-1 (Continued)**
**Summary of Project Approval Conditions Relevant to Air Quality and Greenhouse Gas Management**

| Schedule | Section | Condition | Description | Section of AQGGMP |
|---|---|---|---|---|
| 3<br>Environmental Performance Conditions | Air Quality & Greenhouse Gas Management Plan | 23 | *The Proponent shall prepare and implement an Air Quality & Greenhouse Gas Management Plan for the project to the satisfaction of the Secretary. This plan must:* | |
| | | | *(a) be prepared in consultation with EPA, and submitted to the Secretary for approval within 3 months of the date of this approval, unless otherwise agreed by the Secretary; and* | |
| | | | *(b) describe the measures that would be implemented to ensure compliance with the conditions 17-22 of Schedule 3 of this approval,* | 6.1 |
| | | | *including the proposed real-time air quality management system; and* | 7.3 |
| | | | *(c) include an air quality monitoring program that:* | |
| | | | • *uses a combination of real-time monitors, high volume samplers and dust deposition gauges to evaluate the performance of the project; and* | 7.1, 7.2, 7.3 |
| | | | • *includes a protocol for determining exceedances with the relevant conditions in this approval.* | 7.6 |
| | | | *Note: The effectiveness of the Air Quality & Greenhouse Gas Management Plan is to be reviewed and audited in accordance with the requirements in Schedule 5. Following this review and audit the plan is to be revised to ensure it remains up to date (see Condition 4 of Schedule 5).* | |
| | Meteorological Monitoring | 24 | *During the life of the development, the Proponent shall ensure that there is a suitable meteorological station operating in the vicinity of the site that:* | |
| | | | *(a) complies with the requirements in Approved Methods for Sampling of Air Pollutants in New South Wales guideline; and* | 7.4 |
| | | | *(b) is capable of continuous real-time measure of temperature lapse rate in accordance with the NSW Industrial Noise Policy.* | |

LAND OWNERSHIP PLANS [NSW PROJECT APPROVAL APPENDIX 3 – FIGURE 5 {FIGURES 1-3A & 1-3B}]

(Note, since the grant of Project Approval (08_0203) on 10 November 2011 some landownership details as shown on Figure 5 of Appendix 3 of Project Approval (08_0203) have changed. Figure 3 of this revised AQGGMP shows contemporary landownership as at August 2021).

**APPENDIX 3**
**LAND OWNERSHIP PLANS**

LAND OWNERSHIP PLANS

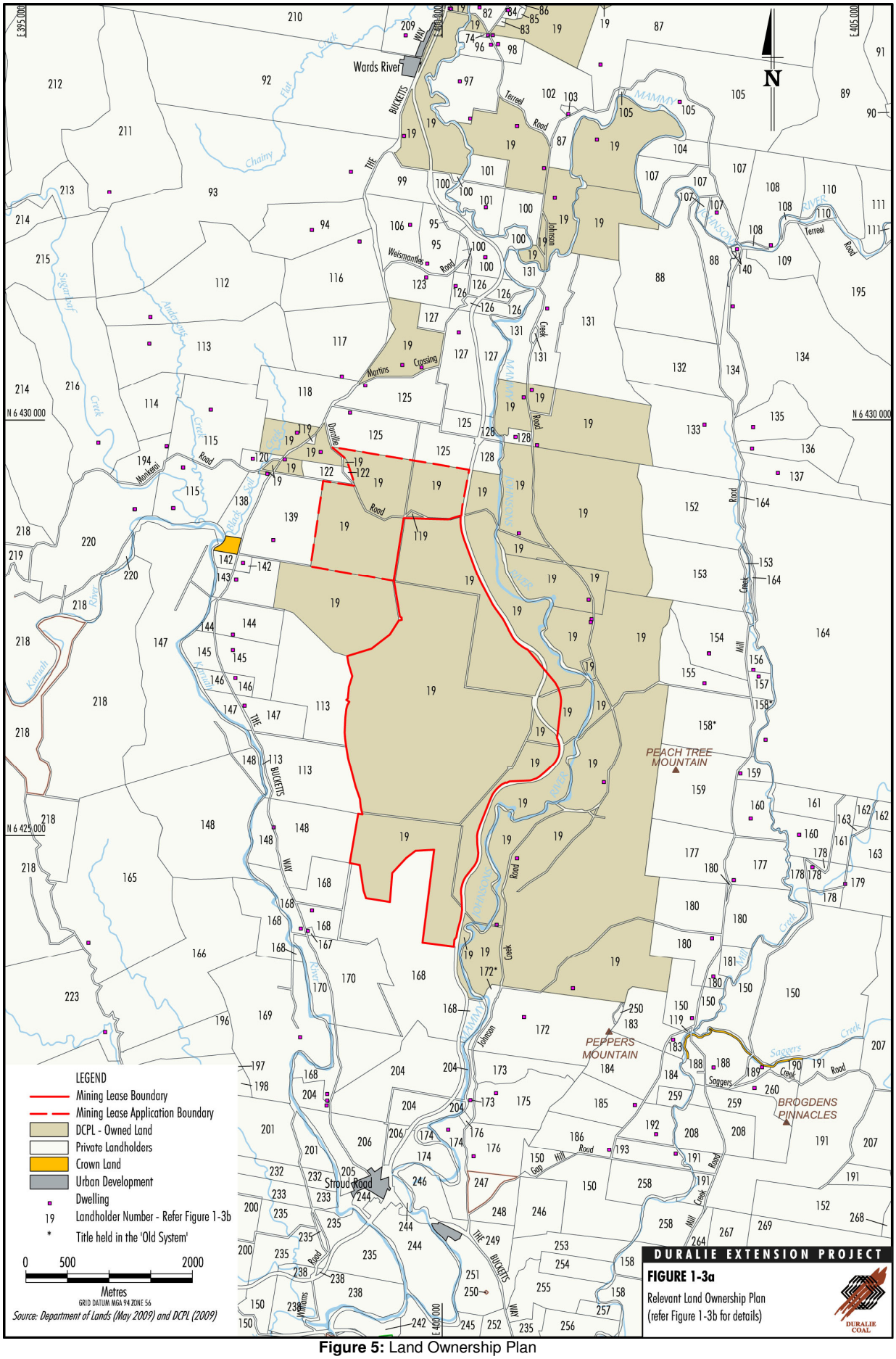



**Figure 5:** Land Ownership Plan

| | |
|---|---|
| 19 | Gloucester Coal Ltd |
| 74 | D. L. & D. W. Melmeth |
| 82 | S. A. & J. E.Wright |
| 83 | Cemetery |
| 84 | A.W. & C.M. Hart |
| 85 | R. A. & D. Shaw |
| 86 | J. Andersen |
| 87 | Pacific Property Investments Ltd |
| 88 | V. S. Edwards |
| 89 | D. J. Robertson |
| 90 | W. A. & J. A.Thomson |
| 91 | Hunter Water Corporation |
| 92 | Sejon No 4 Pty Ltd |
| 93 | K. V. & P. M. Howard |
| 94 | B. V. & P. O. Howard |
| 95 | D. J. Smith & S. Ransley |
| 96 | H. T. & M. B. Turnbull |
| 97 | S. W. Davis |
| 98 | I. D. Partelle & M. M. Ramsay |
| 99 | K. MacFarlane |
| 100 | K. S. Richards |
| 101 | K. M. & D. B. Holloway |
| 102 | W. R. Kerslake |
| 103 | G. L. Macedo |
| 105 | R. M. Edwards |
| 106 | R. A. James |
| 107 | P. G. Spencer |
| 108 | A. G. & M. A. Tersteeg |
| 109 | R. J. Bathgate & M. L. Levey |
| 110 | G. W. Lewis & A. J. Moore |
| 111 | T. J. Somerville & C. D. Martin |
| 112 | S. R. Hogeveen |
| 113 | C. W. & J. I. Edwards |
| 114 | H. Paliokas |
| 115 | P. W. M. & B. D. & G. O. & M. J. Moylan & S. C. M. Newton |
| 116 | G. R. Weismantel |
| 117 | E. D. Holmes and L. M. Holmes |
| 118 | P. W. M. Moylan |
| 119 | Great Lakes Council |
| 120 | M. J. & C. A. Mahony |
| 122 | S. White |
| 123 | J. L. Oleksiuk & K. P. Carmody |
| 125 | T. & K. Zulumovski |
| 126 | H. L. & M. R. Hamann - Pixalu Pty Limited |
| 127 | A. J. Fisher-Webster |
| 128 | D. R. & B. Hare-Scott |
| 131 | W. L. Relton |
| 132 | A. T. Gorton |
| 133 | R. J. Gorton |
| 134 | Duzmen Pty Ltd |
| 135 | P. J. Ayliffe |
| 136 | D. P. Pickles |
| 137 | T. J. Lord |
| 138 | P. W. M. Moylan, B. D. Moylan, G. O. Moylan, S. C. M. Newton & M. J. Moylan |
| 139 | M. S. Juttner |
| 140 | D. C. Bennett & D. M. Stark |
| 142 | P. G. Madden |
| 144 | D. J. Wielgosinski |
| 145 | D. H. & S. W. Owens |
| 146 | M. A. Bragg |
| 147 | J. I. Edwards |
| 148 | D. J. McAndrew |
| 150 | R. N. & T. E. Rumbel |
| 152 | D. M. Lowrey |
| 153 | L. & R. K. Paul |
| 154 | J. R. Morgan |
| 155 | M. & R. Guberina |
| 156 | T. R. J. & B. Hope |
| 157 | C. N. & S. D. Stephenson |
| 158 | B. Gilbert |
| 159 | T. R. Waterer |
| 160 | P. & M. E. Kenney |
| 161 | D. G. Hutchison |
| 162 | L. S. Miller |
| 163 | M. A. & C. H. Hockings & C. H. Willcox |
| 164 | Gorton Timber Co. Limited |
| 165 | ESOR Nominees Pty Limited |
| 166 | A. J. & A. L. Daniel |
| 167 | M. & S. M. Ravagnani |
| 168 | V. R. & E. K. Schultz |
| 169 | R. D. K. & N. L. Williams |
| 170 | I. K. & M. J. Schultz |
| 172 | S. J. & J. E. Lyall |
| 173 | S. M. Trigg, J. M. Trigg, M. J. Holland, B. J. Holland, M. Trigg & S. C. Trigg |
| 174 | D. C. Carroll |
| 175 | R. J. & S. J. Woodley |
| 176 | P. G. & L. J. Billett |
| 177 | W. J. Thompson |
| 178 | N. E. Hitchcock & E. E. Coldham |
| 179 | I. Mellar |
| 180 | B. R. & G. J. & K. G. & K. J. & W. J. Thompson |
| 181 | G. J. Thompson |
| 183 | M. H. & E. V. Elfick |
| 184 | B. J. & M. C. Gay |
| 185 | A. W. Raine & T. Hilleard |
| 186 | K. B. & J. N. Farnham |
| 188 | T. E. Rumbel |
| 189 | H. J. Gillard |
| 190 | B. Clayton |
| 191 | A. M. Mokeeff |
| 192 | S. & A. F. Vajda |
| 193 | N. & C. M. Smith |
| 194 | J. & C. L. Kellehear |
| 195 | Shulgin Investments Pty Ltd |
| 196 | E. D. Sanders |
| 197 | H. R. & D. A. Moorehouse |
| 198 | Aspenview Enterprises Pty Limited |
| 200 | G. J .& S. G.Trappel |
| 201 | I. G. Wilson |
| 204 | M. C. Jones |
| 205 | J. S. & K. L. Bratfield |
| 206 | D. E. Allen |
| 207 | P. Trenchev |
| 208 | C. A. Bowden |
| 209 | D. M. Chapman |
| 210 | Heatscape Pty Limited |
| 211 | B. & B. I. Irwin |
| 212 | P. & N. V. Makaroff |
| 213 | E. A. & P. Hillard |
| 214 | K. G. Sneddon |
| 215 | Monkerai Holdings Pty Limited |
| 216 | D. M. Matcham |
| 218 | D. K. & J. A. Holdings Pty. Limited |
| 219 | C. A. Olsen |
| 220 | T. G. Lindfield and Associates Pty. Limited |
| 223 | F., E., R., D. M. & G. Ferraro |
| 232 | I. G. Wilson |
| 233 | R. G. Wilson |
| 235 | M. J. Bratfield |
| 238 | H. R. Kerr |
| 242 | M. M. Gorton |
| 244 | R. R. & M. J. Lawrence |
| 245 | N. Curtis |
| 246 | P. & S. A. Margery |
| 247 | D. C. Hawkins |
| 248 | R. B. & J. M. Eastoe |
| 249 | P. Margery |
| 250 | Midcoast County Council |
| 251 | B. R. Warner |
| 252 | D. K. Pritchard |
| 253 | E. & J. A. Allan |
| 254 | D. N. & D. T. Young |
| 255 | J. P. Miles |
| 256 | M. I. Butler |
| 257 | P. R. Garland |
| 258 | G. K. & A. G. Brown |
| 259 | C. A. Bowen |
| 260 | D. & J. Roberts |
| 264 | K. Pepper & S. M. Lyall |
| 267 | D. L. & T. L. Fordham |
| 268 | Hudrow Pty Limited |
| 269 | The Minister for Forestry |

*Source: DCPL (2009) and Department of Lands (2009)*

**DURALIE EXTENSION PROJECT**

**FIGURE 1-3b**

Relevant Land Ownership List

ResourceStrategies

DURALIE COAL

# APPENDIX B

# RECORD OF CONSULTATION WITH EPA

DOC21/863123-02; EF13/2892

Planning and Assessment Division
Department of Planning, Industry and Environment
Locked Bag 5022
PARRAMATTA NSW 2124

Attention: The Planning Officer

06 October 2021

**EPA Submission on Post Approval Planning Advice Request PAE-29194227**

Dear Sir/Madam,

Thank you for the request for advice for Post Approval Consultation (PAE-29194227), requesting a review by the NSW Environment Protection Authority (EPA) of the Updated Air Quality & Greenhouse Gas Management Plan (AQGHGMP) and supporting Appendices, dated September 2021. The document was prepared in accordance with Condition 23, Schedule 3 of the Duralie Coal Mine (DCM) Project Approval (MP08_0203).

The EPA understands that operations at the DCM now reflect the transition towards mine closure. The AQGHGMP has been amended by Duralie Coal Pty Ltd (DCPL) to reflect the current stage of operations and to describe anticipated mine closure activities and the anticipated change to environmental impacts, mitigation measures and monitoring programs (as relevant to air quality and greenhouse gases) for the mine closure phase.

Key changes as a result of mine closure include:

- Weismantel Open Pit - mining of the Weismantel Open Pit will continue until 31 December 2021, however, will not occur to the maximum approved depth as modelled in the 2014 DCM Open Pit Modification. Progressive backfilling of the Weismantel Open Pit has been undertaken.
- Water Management System Changes - following the cessation of mining of the Clareval Open Pit (now final void) and the Clareval void becoming available as a water storage, Weismantel Open Pit dewatering is now preferentially transferred to the Clareval void and not stored within the Main Water Dam. As a result, all irrigation activities for the purpose of reducing the total site water inventory at the DCM have now ceased and the DCM's Irrigation Area irrigation system has been decommissioned and removed.
- Decommissioning of other redundant water management structures has also commenced. Consistent with the approved DCM Mining Operations Plan and Rehabilitation Management Plan, Auxiliary Dam No. 1 has been dewatered, decommissioned and rehabilitated.
- No new disturbance areas are proposed.
- Following the completion of mining operations on 31 December 2021, bulk rehabilitation earthworks will be undertaken during 2022 and 2023. This may involve some infrequent blasting activities to achieve the final landform design and satisfy geotechnical requirements.
- Once bulk rehabilitation earthworks are complete, blasting activities at the DCM will cease.

**Phone** 131 555 **TTY** 133 677 Locked Bag 5022 4 Parramatta Square **info@epa.nsw.gov.au**
**Phone** +61 2 9995 5555 **ABN** 43 692 285 758 Parramatta 12 Darcy St, Parramatta **www.epa.nsw.gov.au**
(from outside NSW) NSW 2124 Australia NSW 2150 Australia

The EPA has reviewed the documentation and has the following comments and recommendations:

**1. Matters to be addressed post approval**

a. Licence Variation May Be Required

The EPA notes that the Updated AQGHGMP and appendices do not currently propose any amendments that will immediately impact on the monitoring undertaken in accordance with Environment Protection Licence (EPL) 11701.

DCPL state that air quality management at the DCM during the lead up to closure and post-closure will continue to involve a combination of proactive and reactive management strategies, as well as at-source control measures. These measures will continue to be supported by a network of air quality monitoring stations.

However, following the cessation of mining operations, rail movements and bulk rehabilitation earthworks, DCPL would refine and reduce these measures and monitoring stations to reflect the reduction or cessation of emissions due to the change and reduction of activities at the DCM.

The EPA acknowledges that there will likely be a reduction in the emissions to air as a result of the cessation of activities at the premises and subsequent ongoing rehabilitation, a rationalisation of the air quality monitoring undertaken is therefore considered reasonable.

DCPL suggest the cessation of real-time TEOM monitoring following the completion of bulk earthworks (anticipated by end 2023) and that dust deposition and HVAS monitoring would cease upon completion of revegetation (anticipated by end 2024). The EPA advises that the rationalisation of air quality monitoring will need to be considerate of current air emissions at the time and must be undertaken in consultation with the EPA.

DCPL is reminded of its ongoing responsibility to minimise emissions to air in accordance with condition O3 of EPL 11701.

**Recommendation:** The EPA recommends that upon determination of PAE-29194277, and prior to reducing the air quality monitoring undertaken at the premises, that consultation is undertaken with the EPA regarding rationalisation of the air quality monitoring and variation of EPL 11701 to reflect any agreed changes.

This concludes the EPA's submission on the proposal.

If you have any questions about this request, please contact Emma Coombs on (02) 4908 6831 or via email at EPA.Northopsregional@epa.nsw.gov.au.

Yours sincerely

**ROB HUGHES**
**Unit Head – Regulatory Operations Regional North**
**Environment Protection Authority**