



DENDROBIUM MINE AIR QUALITY AND GREENHOUSE GAS MANAGEMENT PLAN

<i>This document UNCONTROLLED once printed</i>				Page 1 of 48
Document ID	DENMP0037	Version	9.0	
Last Date Updated	August 2023	Next Review Date	August 2026	



Table of Contents

1. INTRODUCTION.....	5
1.1 Objectives	5
1.2 Scope	6
1.3 Environmental Management System	7
1.4 Consultation	7
2. ROLES AND RESPONSIBILITIES	7
3. LEGISLATION AND PLANNING	8
3.1 Consent Conditions	8
3.2 Wollongong City Council Consent	9
3.3 Environment Protection Licence Requirements	9
3.4 Mining Leases	9
3.5 Relevant Legislation	9
3.6 Guidelines and Standards	10
4. BASELINE ASSESSMENT.....	10
4.1 General	10
4.2 MOD 3.....	12
4.3 MOD 9.....	13
5. AIR QUALITY MANAGEMENT AND MITIGATION	13
5.1 Odour	13
5.2 Greenhouse Gas Emissions	13
5.3 Particulate Matter	17
6. AIR QUALITY MONITORING PROGRAM.....	20
6.1 Odour Monitoring.....	20
6.2 GHG Monitoring	20
6.3 Particulate Matter Monitoring.....	21
7. COMPLAINTS AND NON-COMPLIANCE MANAGEMENT	25
7.1 Complaints and Dispute Resolution.....	25
7.2 Events, Non-Compliance, Corrective Action, and Preventative Action	25
7.3 Independent Review.....	27
8. REPORTING AND REVIEW	27
8.1 Reporting.....	27
8.2 Incident, Non-compliance and Exceedance Notifications.....	28
8.3 Review of AQMP	29

<i>This document UNCONTROLLED once printed</i>				Page 2 of 48
Document ID	DENMP0037	Version	9.0	
Last Date Updated	August 2023	Next Review Date	August 2026	



8.4 Audits30

9. SUMMARY OF COMMITMENTS.....31

10. ACRONYMS32

11. REFERENCES34

12. PLANS.....35

 Plan 1: Dendrobium Mine Locality Plan.....35

13. APPENDICES.....37

 Appendix 1: Particulate matter monitoring program.....37

 Appendix 2: Consent Conditions: Air Quality and GHG Management.....38

 Appendix 3: Agency Consultation.....46

 Appendix 4: Management Plan Approval48

This document UNCONTROLLED once printed

Document ID	DENMP0037	Version	9.0	Page 3 of 48
Last Date Updated	August 2023	Next Review Date	August 2026	



DOCUMENT REVISION LOG

Persons authorising this Plan

NAME	TITLE	DATE
Chris Schultz	Superintendent Environment	August 2023

Document Revisions

REVISION	DESCRIPTION OF CHANGES	DATE
3.0	Three yearly review as required by Development Consent	March 2008
4.0	Review as required by the revised Development Consent (issued 8 December 2008)	April 2009
5.0	Three yearly review as required by Development Consent and to reflect changes in Licenses monitoring point within the Environmental Protection Licence (removal of point 15)	March 2012
6.0	Removed Dust Deposition monitoring sites Point 10 and Point 12 following EPL 324 variation.	June 2014
7.0	The following changes have been made: <ul style="list-style-type: none"> Updated roles and responsibilities References to parent company changed Update in accordance with Development Consent 	January 2018
7.1	<ul style="list-style-type: none"> Updated roles and responsibilities References to parent company changed Update in accordance with Development Consent 	June 2018
8.0	Update to new format. Removal of Dust Deposition Gauges and replacement of High Volume Air Samplers with optical photometers. Combined DENMP0037 (Air Quality Management Plan) and DENMP0068 (Greenhouse Gas and Energy Efficiency Management Plan) into one document.	April 2021
9.0	General update. Removal of references to previous monitoring system. Inclusion of MOD 9 and Cordeaux Colliery. Includes outcomes of consultation with EPA and DPE.	August 2023

Persons involved in the review of this Plan

NAME	TITLE	COMPANY	EXP (YRS)	DATE
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<i>This document UNCONTROLLED once printed</i>				Page 4 of 48
Document ID	DENMP0037	Version	9.0	
Last Date Updated	August 2023	Next Review Date	August 2026	



1. INTRODUCTION

Dendrobium Mine is an underground mine which commenced construction in January 2002 following approval from the Minister of the then Department of Urban Affairs and Planning on 20 November 2001. Longwall mining commenced at Dendrobium in April 2005. The mine is owned and operated by Dendrobium Coal Pty Ltd, a subsidiary of Illawarra Coal Holdings Pty Ltd (ICHPL), which is a wholly owned subsidiary of South32 Limited. The mine operates on a continuous basis, 24 hours a day and 7 days a week.

The mining operations are located immediately adjacent to Mount Kembla, approximately 8 km west of Wollongong, NSW, on the Illawarra escarpment (refer to Plan 1). Mount Kembla village, located within 500 m of the Pit Top site, has close historical links with coal mining.

Dendrobium produces predominately metallurgical coal from the Wongawilli Seam (Areas 1, 2 and 3) and is approved to produce up to 5.2 million tonnes of run of mine (ROM) coal per annum. The BlueScope Steel Port Kembla Steel Works (PKSW) and Liberty Primary Steel (Whyalla) are major customers. In addition to these Australian based customers, coal is exported via the Port Kembla Coal Terminal to international customers.

Approval for mining in Areas 1,2 and 3 was granted under DA 60-03-2001, as modified (the Consent).

The Consent allows mining operations to take place in the mining area until 31 December 2030. Resources are available for mining to extend beyond this period and would be subject to further approvals.

Cordeaux Colliery is owned and operated by Endeavour Coal Pty Ltd, a subsidiary of ICHPL. Coal production ceased at the site in March 2001 and recovery of longwall mining equipment was completed on 12 April 2001. Following cessation of mining, the Colliery was placed on care and maintenance, on which it remains. The Cordeaux Colliery Pit Top functions as office space and a storage facility for various South32 departments. The Pit Top is also used as a base for exploration activity across the Dendrobium and Appin mining leases and exploration tenements, and for access into the WaterNSW Catchment Special Area (Special Area).

Dendrobium Mine, Cordeaux Colliery and Appin Mine (and associated facilities) collectively operate as South32 Illawarra Metallurgical Coal (IMC).

This Air Quality and Greenhouse Gas Management Plan (AQMP) has been prepared to detail the relevant air quality impact assessment criteria and greenhouse gas management measures, compliance procedures, and controls relating to the mining operations and associated activities. This AQMP has been prepared to satisfy Condition 10 of Schedule 4 and Condition 1 of Schedule 6 of the Consent for the Air Quality Monitoring Program and Greenhouse and Energy Efficiency Plan respectively.

1.1 Objectives

The objectives of the AQMP are to:

- comply with all regulatory requirements set out in the Consent and Environment Protection Licence (EPL) 3241;

<i>This document UNCONTROLLED once printed</i>				
Document ID	DENMP0037	Version	9.0	Page 5 of 48
Last Date Updated	August 2023	Next Review Date	August 2026	



- provide the framework for the responsible management of odour, particulate and greenhouse gas (GHG) emissions associated with Dendrobium Mine and Cordeaux Colliery;
- describe the control measures for the management of emissions;
- prevent adverse air quality impacts on the amenity of local communities and the environment;
- describe the air quality management system in place;
- define measures to minimise particulate emissions to comply with air quality criteria; and
- outline the process for identifying and notifying air quality incidents, investigating air quality complaints and implementing solutions to address complaints.

1.2 Scope

The scope of the AQMP applies to all existing and future activities related to Dendrobium Mine¹ including operational and construction air quality and greenhouse impacts at:

- Dendrobium Pit Top – consists of administration buildings, workshop, machinery and equipment storage areas, personnel and materials access to the underground workings via the Dendrobium Tunnel, sediment pond and water treatment facility.
- Kemira Valley Coal Loading Facility (KVCLF) – receives coal from underground via the Kemira Valley Tunnel. ROM coal is transported from underground to KVCLF via an extensive coal clearance system. The coal is then fed into a rill tower and deposited onto a 140,000 tonne stockpile from which it is loaded into trains via an enclosed rail-loading chute. Sediment ponds are in place.
- Dendrobium Coal Preparation Plant (DCPP) – located within the PKSW, the DCPP receives and washes ROM coal from the underground operations.
- Kemira Valley Rail Line (KVRL) – used to transport the coal from KVCLF to the DCPP.
- Ventilation Shaft (VS) 1 – located within the Special Area administered by WaterNSW, operates as a downcast shaft (i.e. drawing fresh air into the underground workings). VS1 is located on land owned by IMC.
- VS2 and VS3 – located within the Special Area and within Mining Lease (ML) 1566. VS2 operates as an additional downcast shaft whilst VS3 operates as an upcast shaft (i.e. drawing air out of the underground workings). The site includes gas drainage infrastructure for Area 3C.
- Cordeaux Pit Top - consists of administration buildings, workshop, machinery and equipment storage areas, personnel and materials access to the underground workings via a shaft (no longer utilised), ventilation fans, coal storage bins, exploration core shed, sediment pond and stabilisation lagoons. Corrimal #3 shaft

¹ For the purposes of this management plan, Dendrobium Mine refers to all sites included in the scope except where specifically listed in the document.

<i>This document UNCONTROLLED once printed</i>				Page 6 of 48
Document ID	DENMP0037	Version	9.0	
Last Date Updated	August 2023	Next Review Date	August 2026	



is located approximately 3.5 km from the pit top. Cordeaux Pit Top and Corrimal #3 shaft are on care and maintenance.

- Dendrobium Underground Operations – coal is extracted from the Wongawilli Seam. The underground operations consist of a longwall shearer, development units, coal clearance conveyor network and associated infrastructure.

Refer to Plan 1 for locations of the above.

1.3 Environmental Management System

IMC has a comprehensive Environmental Management System (EMS) in place to minimise the impact of its operations on the local environment and community. The AQMP is a component of the EMS which is certified to ISO 14001.

1.4 Consultation

Consultation has been undertaken as part of this review of the AQMP with the Environment Protection Authority (EPA). The comments from the consultation process have been incorporated into Version 9.0 of the AQMP.

Appendix 3: Agency Consultation outlines comments from the relevant government agencies following consultation and the IMC response.

Consultation with agencies as stated in Condition 10 of Schedule 4 and Condition 1 of Schedule 6 of the Consent will only be undertaken where there is a material change to the AQMP or if specifically requested by DPE. Administrative or descriptive changes do not constitute a material change.

2. ROLES AND RESPONSIBILITIES

Roles and responsibilities associated with environmental management at Dendrobium Mine and Cordeaux Colliery are defined in the Environmental Management Strategy. Table 1 outlines the roles and responsibilities associated with the implementation and periodic review of the AQMP.

Table 1: Roles and Responsibilities

Role	Responsibilities
Superintendent Environment	<p>Implement and periodically review the AQMP.</p> <p>Liaise with government regulators and IMC senior leadership team in relation to air quality and greenhouse gas issues, including reporting.</p> <p>Ongoing review of environmental performance and associated management/preventative actions.</p>

<i>This document UNCONTROLLED once printed</i>				Page 7 of 48
Document ID	DENMP0037	Version	9.0	
Last Date Updated	August 2023	Next Review Date	August 2026	



Specialist Environment	Advise, coach and mentor IMC operations with respect to meeting the standards and requirements of the AQMP.
Coordinator Environment	<p>Monitor and review compliance against these requirements.</p> <p>Undertake monitoring as required.</p> <p>Internal and external reporting of GHG emissions.</p> <p>Maintain and calibrate equipment.</p> <p>Review data to determine trends and review effectiveness of existing controls.</p> <p>Identify corrective actions to address deficiencies in controls.</p>
External Affairs Team	Meeting the commitments contained within the AQMP for stakeholder engagement and landowner notifications.
Engineering and Maintenance Managers	Maintain plant and equipment to minimise GHG emissions.
Manager Approvals Manager Technical Services General Manager Dendrobium Mine Manager Exploration and Technical Support Superintendent Environment	Provide the necessary resources and systems to ensure that requirements of the AQMP are met.

3. LEGISLATION AND PLANNING

3.1 Consent Conditions

Potential air quality and greenhouse gas impacts associated with Dendrobium Mine were modelled during the preparation of the Dendrobium Project Environmental Impact Study (EIS) 2001 and the Gas Management Infrastructure Modification Report (MOD 9). The EIS and MOD 9 application were assessed and approved under the *Environmental Planning and Assessment Act 1979 (EP&A Act)* and associated Regulations.

IMC will carry out the development generally in accordance with all of the necessary approvals, licences and other information described in Condition 2 of Schedule 2.

All activities carried out at Dendrobium Mine will be undertaken in accordance with the conditions of Consent (Condition 2A of Schedule 2).

<i>This document UNCONTROLLED once printed</i>				Page 8 of 48
Document ID	DENMP0037	Version	9.0	
Last Date Updated	August 2023	Next Review Date	August 2026	



In accordance with Condition 4 of Schedule 2, IMC will comply with any reasonable and feasible requirements of the Secretary arising from the Department's assessment of:

- (a) any reports, strategies, plans, programs, reviews, audits or correspondence that are submitted in accordance with the conditions of the Consent;
- (b) any reviews, reports or audits undertaken or commissioned by the Department regarding compliance with the conditions of the Consent; and
- (c) the implementation of any actions or measures contained in these documents.

Appendix 2 outlines the air quality and greenhouse gas management requirements of the Consent and cross references where the requirements have been addressed within the AQMP.

3.2 Wollongong City Council Consent

Cordeaux Colliery currently operates under Development Consent D74/134, issued by Wollongong City Council.²

3.3 Environment Protection Licence Requirements

EPL 3241 applies to Dendrobium Mine and associated activities and EPL 611 applies to Cordeaux Colliery and associated activities. A copy of these licences can be accessed at the EPA website: <http://www.epa.nsw.gov.au/prpoeoapp/>.

3.4 Mining Leases

Dendrobium Mine operates in accordance with the following mining leases:

- Consolidated Coal Lease (CCL) 768.
- ML 1510 (covers the KVCLF).
- ML 1566 (covers VS2 and 3).

3.5 Relevant Legislation

Key regulatory and AQMP obligations applicable to Dendrobium Mine are managed via an obligations management database. The obligations are allocated to responsible personnel. This process is detailed in the Environmental Compliance/Conformance Assessment and Reporting Procedure.

Legislation which may be applicable to air quality and greenhouse gas management includes but is not limited to:

- *Protection of the Environment Operations Act 1997 (POEO Act)*;
- *EP&A Act*;
- *Protection of the Environment Operations (General) Regulation 2009*;
- *Protection of the Environment Operations (Clean Air) Regulation 2010*;

² Options to incorporate Cordeaux Colliery in the Dendrobium Consent are currently being investigated.

This document UNCONTROLLED once printed				
Document ID	DENMP0037	Version	9.0	Page 9 of 48
Last Date Updated	August 2023	Next Review Date	August 2026	



- *National Greenhouse and Energy Reporting Act 2007 (NGER Act);*
- *National Greenhouse and Energy Reporting (Measurement) Determination 2008;*
- *National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015;*
- *Clean Energy Legislation (Carbon Tax Repeal) Act 2014;*
- *National Environment Protection (Ambient Air Quality) Measure 1998; and*
- *National Environment Protection (National Pollutant Inventory) Measure 1998.*

3.6 Guidelines and Standards

This AQMP has been developed to be consistent with the principles of the following:

- ISO 14001:2015 Environmental Management Systems;
- South32 Sustainability Policy;
- South32 Environment and Climate Change Standard; and
- South32 Climate Change Strategy.

Other relevant guidelines for air quality and greenhouse gas management include:

- AS 3580.14-2014 – Methods for sampling and analysis of ambient air. Part 14: Meteorological monitoring for ambient air quality monitoring applications;
- AS/NZS 3580.10.1:2016 - Methods for sampling and analysis of ambient air Determination of particulate matter - Deposited matter - Gravimetric method;
- Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales (EPA, 2022);
- Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (EPA, 2022);
- NSW Coal Benchmarking Study: International Best Practice Measures to Prevent and/or Minimise Emissions of Particulate Matter from Coal Mining (OEH, 2011);
- Coal Mine Particulate Matter Control Best Practice – Site-specific determination guideline (OEH, 2011); and
- Technical Guidelines as detailed on the Clean Energy Regulator [website](#).

4. BASELINE ASSESSMENT

4.1 General

An Air Quality Impact Assessment for the Dendrobium operations was completed in 2000 by Holmes Air Sciences as part of the original Dendrobium Project EIS (refer to Volume 4). The assessment used a computer-based dispersion model, with local meteorological data and estimates of dust emissions, to predict the concentration and deposition rate of

<i>This document UNCONTROLLED once printed</i>				Page 10 of 48
Document ID	DENMP0037	Version	9.0	
Last Date Updated	August 2023	Next Review Date	August 2026	



particulate matter from activities associated with the Dendrobium operations. A summary of the baseline data is provided below.³

4.1.1 **Odour**

The maximum odour level predicted at any residence is 2 odour units. The EPA odour goal allows 88 exceedances of this level per year. Odour levels are predicted to be within the EPA's criteria for the VS1 emissions. Since all other fan locations will be in more remote areas, and are likely to have similar emissions characteristics, it was concluded that odour impacts will not occur.

4.1.2 **GHGs**

LGC Geoscience Pty Ltd were commissioned to prepare a Greenhouse Impact Analysis of the Dendrobium Coal Project. The Analysis indicated that the project would have low greenhouse gas emission levels and greenhouse intensity, compared with other underground coal operations in Australia.

Gas content is nominally 5 m³/tonne of raw coal. Gas composition is 90% methane and 10% carbon dioxide by volume. There will be some changes in gas composition in later years, probably after 2015.

Due to the low gas content in the seam, there is probably no need for mitigation of fugitive methane in the mine ventilation systems e.g. by oxidation of methane into carbon dioxide. Gas pre-drainage is not required at Dendrobium Mine until at least 2015. Seam gas will escape through the mine ventilation system.

Forecast GHG emissions will increase from very low in 2002, to 280,000 tCO_{2-e} in 2006, and reach a maximum of 400,000 tCO_{2-e} in 2013.

4.1.3 **Particulate Matter**

No measurements of TSP or PM₁₀ were available at the time of the assessment. The area near the mine entry is well removed from significant sources of particulate matter emissions and background levels are likely to be low except on rare occasions when bushfire smoke might affect the area. The area near the stockpile and rail loading facilities would be expected to currently experience similar air quality to the mine entry area. For the purposes of the assessment, it has been assumed that the following background concentrations apply:

- Mine entry site – annual average TSP of 18 µg/m³ and annual average PM₁₀ concentration of 7 µg/m³ and annual average dust deposition 1 g/m²/month; and
- Stockpile and rail load out area - annual average TSP of 18 µg/m³ and annual average PM₁₀ concentration of 7 µg/m³ and annual average dust deposition 1 g/m²/month.

³ It is noted that this information is from the Air Quality Impact Assessment undertaken in 2000 prior to the approval of operations and therefore needs to be considered in the context of the assessment at that date. It is considered to be baseline data to meet the requirements of Condition 2(a) of Schedule 8 of the Consent.

<i>This document UNCONTROLLED once printed</i>				Page 11 of 48
Document ID	DENMP0037	Version	9.0	
Last Date Updated	August 2023	Next Review Date	August 2026	



4.1.4 Summary

The assessment was used as a basis for the identification and implementation of suitable management strategies to control fugitive dust emissions, GHG and/or odour issues associated with the Dendrobium operations. The strategies are outlined in Section 5.3 of this management plan.

4.2 MOD 3

Air quality and GHG emissions were assessed as part of MOD 3 (Cardno 2007), required for the modification of the approved Area 3 mining footprint according to more contemporary geological information and assessment of environmental constraints.

4.2.1 GHGs

The proposed modified Dendrobium Area 3 (including Area 3A, 3B and 3C) is estimated to produce up to a total of approximately 80 Mt of ROM coal and have a project life of approximately 20 years (based on an annual extraction of ROM coal of 4 Mtpa). The major sources of GHG emissions associated with the project are fugitive mining emissions, combustion of fuels during mining and transportation of materials, indirect emissions associated with the consumption of purchased electricity used onsite for mining and coal processing, and emissions from end use of product coal for steel manufacturing and energy generation (coking and combustion of coal).

The majority of data used in the estimation of GHG emissions was sourced from production/logistical data for the 2007 financial year.

The total of all emissions associated with the project (including Scope 1, 2 and 3 GHG emissions) is estimated to be appropriately 147.66 Mt CO_{2-e} (approximately 1.846 t CO_{2-e}/tonne ROM coal mined). The Scope 1 and 2 emissions (approximately 1.7% of all emissions) associated with the project is small compared with the Scope 3 emissions (approximately 98.3% of total emissions).

The total of all Scope 1 emissions associated with the project is approximately 1.02 Mt CO_{2-e} (approximately 0.013 t CO_{2-e}/tonne ROM coal mined). The major sources of Scope 1 emissions are fugitive mining emissions (total approximately 65.68%), and emissions associated with the transportation of materials between IMC facilities (total approximately 24.82%).

The total of all Scope 2 emissions associated with the project is approximately 1.49 Mt CO_{2-e} (approximately 0.019 t CO_{2-e}/tonne ROM coal mined). Electricity consumption at Dendrobium Colliery and the DCPD makes up the majority of the estimated Scope 2 emissions associated with the project (approximately 50.86% and 46.16% respectively).

Illawarra Coal has undertaken a number of GHG reduction programs and continues to investigate potential GHG abatement opportunities.

4.2.2 Particulate Matter

Dust monitoring of the No. 1 Ventilation Shaft shows low levels of dust (mean of <2.5 g/m²/month for 2006) well under the relevant EPA criteria (4 g/m²/month). As no other surface infrastructure (except exploration bores) is currently proposed for Area 3, it is not

<i>This document UNCONTROLLED once printed</i>				Page 12 of 48
Document ID	DENMP0037	Version	9.0	
Last Date Updated	August 2023	Next Review Date	August 2026	



expected that the proposed modification for the Area 3 footprint will result in any significant dust emissions, or any other air quality impacts in the area.

4.3 MOD 9

The flaring of pre- and post-drainage gas from Area 3C to the greatest extent practicable would result in methane being converted to CO₂ which in turn would result in fewer Scope 1 emissions (i.e. as methane has a Global Warming Potential 28 times that of CO₂). MOD 9 would therefore reduce Scope 1 greenhouse gas emissions relative to the approved Dendrobium Mine.

Flaring of pre-drainage gas, which contains methane, has the potential to produce oxides of nitrogen (NO_x) emissions and give rise to odour concerns. The impacts of NO_x emissions on the local air quality environment are expected to be minimal because the infrastructure would be located away from any sensitive receptors (the closest receiver is approximately 3 km away from the site).

5. AIR QUALITY MANAGEMENT AND MITIGATION

The Consent requires the implementation of best practice air quality management, including all reasonable and feasible measures to minimise the off-site odour, fume, dust and greenhouse gas emissions generated by the project, including from any spontaneous combustion on site.

5.1 Odour

Odours from mining operations may be caused by hydrocarbon emissions from ventilation shafts. Historical odour monitoring indicates that hydrocarbon levels in the ventilation shafts are generally low. Ventilation shafts are located in remote locations away from residential areas and other receivers.

Odour has not historically been or is expected to be an issue at Dendrobium Pit Top or the KVCLF.

Coal from the Wongawilli Seam is not susceptible to spontaneous combustion.

5.2 Greenhouse Gas Emissions

GHG emissions are categorised as either Scope 1 (direct) or Scope 2 (indirect) emissions.

- Scope 1: the release of greenhouse gas into the atmosphere as a direct result of an activity, or series of activities (including ancillary activities) that constitute the facility. Scope 1 emissions for the mine include fugitive mine air emissions (containing methane and carbon dioxide gas) and emissions associated with diesel fuel combustion on site.
- Scope 2: The release of greenhouse gas as a result of one or more activities that generate electricity, heating, cooling or steam that is consumed by the facility but that do not form part of the facility. The Scope 2 emissions associated with the mine are related to consumption of imported electricity.

Dendrobium Mine does not account for Scope 3 emissions and it is not a legal or prescribed obligation to report it. The Scope 3 emissions cannot be accurately accounted for by the

<i>This document UNCONTROLLED once printed</i>				Page 13 of 48
Document ID	DENMP0037	Version	9.0	
Last Date Updated	August 2023	Next Review Date	August 2026	



operation as these are essentially third party down-stream emissions for which the operation has very limited to no control.

Gas released from mining coal is the main source of fugitive GHG emissions and accounts for up to 80% of total GHG emissions for Dendrobium Mine. Total GHG emissions are in the order of 260 to 350 kt CO_{2-e} per annum (depending on production performance and regional mining area gassiness). Dendrobium Mine accounts for a relatively small percentage of the total overall IMC level fugitive emissions.

Electricity is the main energy source for mining operations, followed by diesel fuel consumption and petroleum-based oils and greases (PBOGs) consumption. No other energy source is consumed at the mine. Total energy consumption is in the order of 0.38 PJ/annum.

As Cordeaux Pit Top is primarily used as office space, it is not a significant contributor to GHG emissions. Cordeaux Mine was closed in 2001 and fugitive emission from the mine is based on calculation as per *NGER (Measurement) Determination 2008* Section 3.3 Method 1. Total GHG emissions from Cordeaux Mine are in the order of 5 to 7 kt CO_{2-e} per annum.

5.2.1 Electricity, Diesel and PBOGs

The main electricity demands in relative order are the mine ventilation fans, coal conveyance equipment, coal cutting equipment, compressors, bathhouse heating and other underground services. Electricity consumption shows a close relationship to production but does not reduce relatively due to the base-load of the mine still being supported. The key base-loads are the mine ventilation fans, pumping and conveyor systems.

Dendrobium Mine consumes a total of ~80,000 MWh of electricity annually with 100% of the electricity demand supplied from the Endeavour Energy High Voltage Distribution Network (state grid).

Diesel fuel consumption and PBOGs consumption account for a small percentage of the total overall GHG emission at Dendrobium Mine. Diesel fuel demand is associated with the use of mobile equipment (personnel and materials transporters and vehicles servicing the underground workings). PBOGs including gear oil, hydraulic oil, engine oil, soluble oil and grease are used for both underground and surface equipment.

Opportunities to upgrade equipment to improve performance and efficiency are dealt with as part of an item's overall design lifecycle and maintenance/overhaul cycle. Potential initiatives may present themselves as opportunities to be re-evaluated in the future as circumstances and operational requirements change and the equipment ages.

Where there is an opportunity to consider new and improved energy efficient apparatus and processes for new projects, equipment or upgrades, energy efficiency and cost effectiveness are evaluated as an integral part of the Project review and Project justification process.

5.2.2 Fugitive Methane Emissions

Fugitive methane emissions are released from the coal seam and overlying strata during development and longwall mining activities. The methane is extracted from the operational mining areas through the mine ventilation system and emitted to atmosphere from upcast ventilation shafts.

<i>This document UNCONTROLLED once printed</i>				Page 14 of 48
Document ID	DENMP0037	Version	9.0	
Last Date Updated	August 2023	Next Review Date	August 2026	



Variability in fugitive emissions is associated with mine production volumes and rates in addition to regional gassiness of the immediate mining area. As a consequence of the number of variables associated with the production process, fugitive mine gas emissions may not necessarily have a direct relationship to annual ROM production volumes.

Previous mining domains at Dendrobium Mine (Areas 1, 2, 3A and 3B) did not have sufficient in-situ gas concentrations, gas volumes and gassiness to justify the use of a gas drainage facility. The mine's ventilation fan system was sufficient to maintain low and safe operational gas levels underground and will be upgraded through the construction of additional ventilation fans as required.

The forecast gas quantities in Area 3C exceed the dilution capacity of the ventilation circuit, necessitating the capture and reticulation of post-drainage gas through new gas management infrastructure, instead of through the ventilation infrastructure as currently occurs. The infrastructure would also be used for pre-drainage of other longwall blocks within the Area 3C domain.

5.2.3 Methane Gas Capture, Flaring and Beneficial Use

Means of capturing mine methane may include:

- underground drilling programs which pre-drain methane from the coal seam and adjacent geological units prior to longwall mining; and
- goaf drainage drilling programs which capture methane from the coal seam and adjacent geological units which have been fractured by the longwall as coal is extracted.

A post-drainage programme was proposed in MOD 9 as it provides the lowest risk practically achievable. The infrastructure is required to be installed and commissioned prior to the commencement of longwall mining in LW22, which is anticipated in mid-2023 and would be used until the completion of mining in Area 3C.

Power generation was not proposed as part of MOD 9 as it would:

- result in a much larger footprint and associated complexity in managing the impacts of a larger construction area;
- result in a heavy industrial activity within the catchment with a requirement for a range of associated infrastructure such as electricity transmissions lines and substations;
- require continuous operators/supervision/access, which is not required for flaring; and
- not be viable due to short duration of gas (i.e. Area 3C is a relatively small mining area and the gas contains areas of CO₂, which cannot be used for power generation).

MOD 9 includes:

- Construction of new gas management infrastructure and ancillary infrastructure to facilitate management of post-drainage and pre-drainage gas from Area 3C at the site of the existing VS 2 and 3 Shafts.

<i>This document UNCONTROLLED once printed</i>				Page 15 of 48
Document ID	DENMP0037	Version	9.0	
Last Date Updated	August 2023	Next Review Date	August 2026	



- Gas extraction from the underground mine via a borehole and vacuum pump, with associated infrastructure including a cooling water system incorporating cooling towers.
- Gas treatment using an enclosed flare on the surface. Under conditions not suitable for flaring, gasses would alternatively be vented via a stack approximately 25 m high.

The flaring of pre- and post-drainage gas from Area 3C to the greatest extent practicable would result in methane being converted to CO₂ which in turn would result in fewer Scope 1 emissions.

5.2.4 GHG Reductions and Climate Change

All measures to minimise the release of GHG and to support the South32 Climate Change Strategy are directed towards reducing methane emissions. The South32 mitigation hierarchy for decarbonisation is shown in Figure 1.

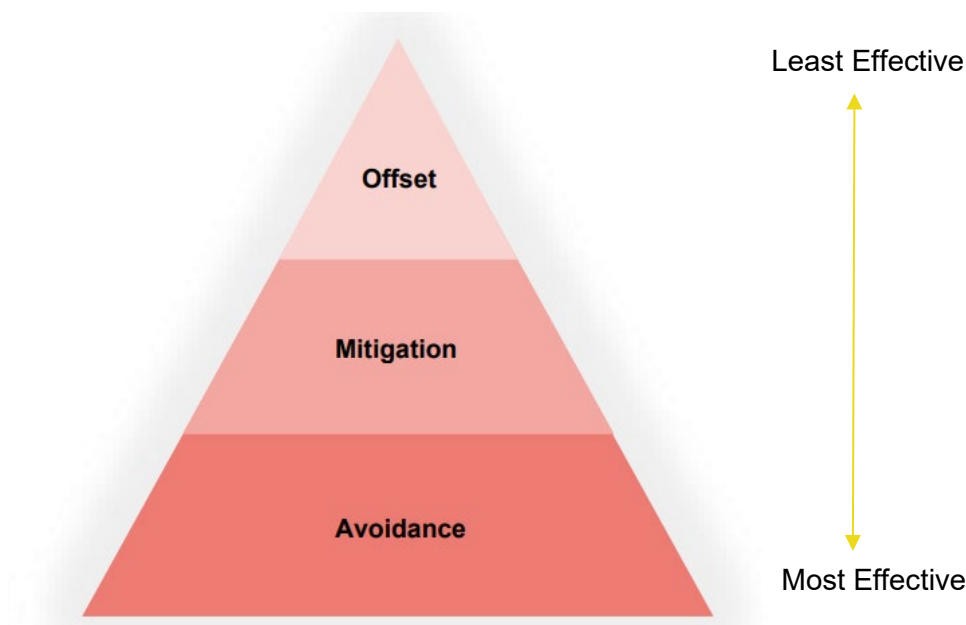


Figure 1: South32 Decarbonisation Mitigation Hierarchy

South32 has established greenhouse gas emission targets. Since setting these, IMC has met its short-term goal of maintaining Scope 1 emissions at FY15 levels through to the end of FY21. IMC is now working towards its medium-term emissions reduction target of 50% by 2035 on a FY21 baseline (operational emissions only). The plan is then to progressively reduce emissions, such that the business is carbon neutral by 2050. The goal of carbon neutrality by 2050 aligns South32 with the Paris Agreement, as well as the NSW aspirational target for 2050.

South32 will focus on three key areas to address the challenge of climate change including Emission Reduction, Climate Resilience and Climate Change Opportunity. Details of the Climate Change Strategy are available at <https://www.south32.net/sustainability/climate-change>.

South32 publicly reports progress on commitments made in the Climate Change Strategy. These reports are available at:

<https://www.south32.net/investors-media/investor-centre/annual-reporting-suite>.

<i>This document UNCONTROLLED once printed</i>				Page 16 of 48
Document ID	DENMP0037	Version	9.0	
Last Date Updated	August 2023	Next Review Date	August 2026	



Future actions taken by IMC to minimise GHG emissions will be reported in the Annual Review that is available at: <https://www.south32.net/what-we-do/our-locations/australia/illawarra-metallurgical-coal>.

5.3 Particulate Matter

Particulate matter emission management measures that have been implemented across Dendrobium Mine are outlined in Table 2, Table 3, Table 4, Table 5, Table 6 and .

Table 2: Particulate Matter Controls – Dendrobium Pit Top

Area and/or Source	Management Measure/Control
Portal road (movement of vehicles)	Majority of internal roads are sealed Road sweeper Automatic fixed water sprays
Warehouse and workshop (movement of vehicles)	Area is sealed Road sweeper Hose down of surfaces Pit Top Yard Dust Trigger Action Response Plan (TARP)

The Pit Top Yard Dust TARP outlines the frequency of management actions that are required to be undertaken according to Normal, Level 1 and Level 2 response levels that relate to seasons, wind speed and temperature.

Table 3: Particulate Matter Controls – Kemira Valley and KVRL

Area and/or Source	Management Measure/Control
Stockpile and conveyors	Reduced drop height (rill tower) Moisture content maintained at >8% Automated dust suppression system (sprays) Conveyors and conveyor transfer points are covered and/or partially enclosed Scrapers on return conveyor
Internal roads	Road sweeper Area is sealed
Train loading	Area is enclosed Moisture content maintained at >8%
Coal Sizer	Enclosed and mechanically ventilated through a fabric filter



Coal transport (rail)	Moisture content of product Profile of coal in wagons maintained Train speed
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The Dendrobium Water Balance, which includes moisture content, can be accessed [here](#).⁴

Table 4: Particulate Matter Controls – Ventilation Shaft sites

Area and/or Source	Management Measure/Control
Ventilated underground air	Dust suppression sprays on underground mining equipment Maintenance of travel roads Application of salt of roads Wet diesel exhaust scrubbers on all underground type mine vehicles Diesel particulate filters or low emission Tier 3 engines on underground type mine vehicles Low emission diesel fuel used by mining vehicles

Table 5: Particulate Matter Controls - DCP

Area and/or Source	Management Measure/Control
Stockpiles	Water cart Dust suppression system (sprays)
Internal haulage roads	Water cart Road sweeper Truck/Wheel wash facility Road sprays Covered loads

⁴ This document is only available internally at IMC.



Table 6: Particulate Matter Controls – Construction

Area and/or Source	Management Measure/Control
General Construction Activities	Appropriate and effective dust control measures are implemented, which may include: <ul style="list-style-type: none"> • wetting of potential dust generation areas; • amending, halting or revising times of activities to minimise dust generation; • maintaining vehicle cleanliness for vehicles leaving site on public or private roads; • wetting or covering of material stockpiles where appropriate; • speed limits on unsealed roads; and/or • use of water sprays, water carts and mobile vacuum sweepers where appropriate.

Table 7: Particulate Matter Controls – Cordeaux Pit Top

Area and/or Source	Management Measure/Control
Workshop area (movement of vehicles)	<ul style="list-style-type: none"> • Area is sealed
Internal Roads/Car Park	<ul style="list-style-type: none"> • Roads and car park are sealed



6. AIR QUALITY MONITORING PROGRAM

6.1 Odour Monitoring

No odour monitoring is routinely undertaken due to the remote location of upcast ventilation shafts. If unusual odour is detected during site inspections, further investigation may be undertaken, considering aspects such as the conditions underground, surface activities and data obtained from the relevant site weather station.

6.2 GHG Monitoring

GHG data is reported to the Clean Energy Regulator annually in the form of a Section 19 Energy and Emissions Report. GHG emissions data is assured by a third party annually and the opinion is published on the South32 website.

Measurement of the concentration and volume of point source GHG emissions (namely fugitive releases of methane and carbon dioxide associated with mine gases) are undertaken on a Continuous Emissions Monitoring (CEM) basis.⁵ The CEM systems are designed to measure the flow, temperature, pressure, and the CH₄ and CO₂ concentrations of an emission point to enable calculation of accurate outputs for GHG emissions reporting. From the flow, pressure and temperature readings, normalised flow rate is calculated in normal cubic meters per hour (Nm³/hr). This data, along with raw CH₄ and CO₂ readings are sent from the PLC to the SCADA system where it is extracted for further computation, data review and reporting within an NGER Workbook. This is broken down into five distinct functional levels as shown in Figure 2.

Point source monitoring that feeds into the calculation of GHG emissions at Dendrobium currently include the ventilation evases at VS3. Future point sources will include the enclosed flare and ventilation stack for the gas management infrastructure being constructed at the VS2/3 site.⁶

GHG emissions are reported in the Annual Review, copies of which are available on the IMC website: <https://www.south32.net/what-we-do/our-locations/australia/illawarra-metallurgical-coal> > Dendrobium > Annual Reviews.

⁵ Other approved methodologies may be utilised if required.

⁶ Including the temporary gas drainage plant.

<i>This document UNCONTROLLED once printed</i>				Page 20 of 48
Document ID	DENMP0037	Version	9.0	
Last Date Updated	August 2023	Next Review Date	August 2026	

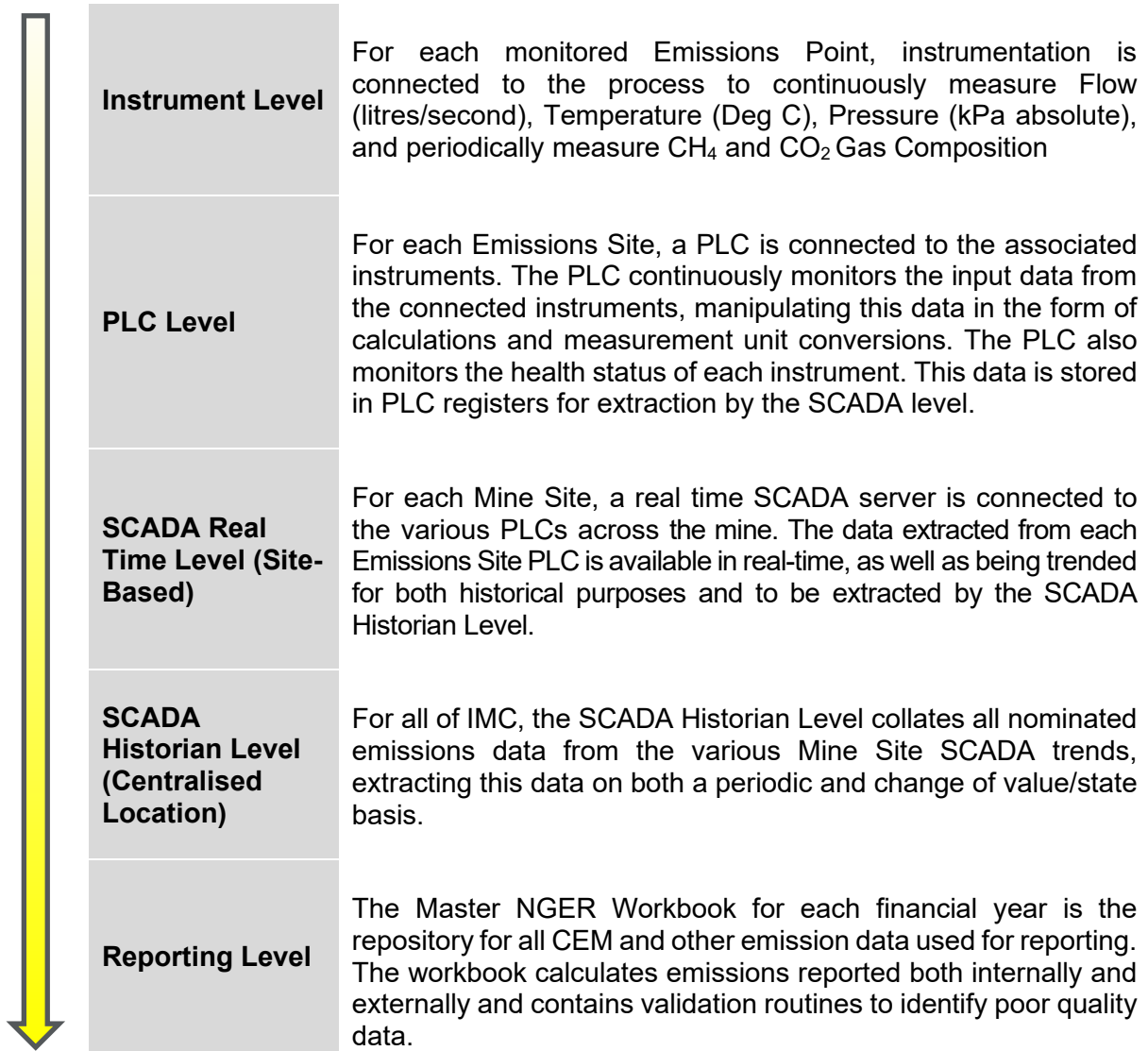


Figure 2: Continuous Emissions Monitoring System Framework

6.3 Particulate Matter Monitoring

Sites selected for the air quality monitoring program are considered to be the most appropriate locations to provide reliable and representative indication of air quality impacts associated with Dendrobium Mine.

The particulate matter monitoring program incorporates:

- use of real-time air quality monitors (optical photometers); and
- visual inspections and audits.

Dust Deposition Gauges (DDGs) and High Volume Air Samplers (HVAS) may be used if required to investigate complaints or operational dust related issues, however they are not included in the regular dust monitoring program.

When samples are collected, the following information is to be recorded:

- the date(s) on which the sample was taken;

<i>This document UNCONTROLLED once printed</i>				Page 21 of 48
Document ID	DENMP0037	Version	9.0	
Last Date Updated	August 2023	Next Review Date	August 2026	



- the time(s) at which the sample was collected;
- the point at which the sample was taken; and
- the name of the person who collected the sample.

Air quality monitoring equipment is operated for diagnostic purposes, providing data for internal assessment of air quality and potential impacts from operations. The data can also be used for investigation of any community complaints. An IMC Specialist Environment reviews key data trends on a monthly frequency during monitoring, with this information used to supplement the information being obtained from inspections. Monitoring equipment is checked and calibrated as required.

Analysis and provision of results from dust monitoring apparatus will be undertaken by appropriately qualified laboratories, personnel, or subject matter experts.

Data from the particulate matter monitoring program will be uploaded into EQulS. All monitoring data will be routinely reviewed, analysed and validated for compliance with the relevant criteria and in consideration of prevailing factors. The Specialist Environment will be involved in the review, analysis and validation of monitoring data for recording and reporting purposes, and to review the effectiveness of existing controls.

No particulate monitoring is undertaken at Cordeaux Pit Top.

6.3.1 Air Quality Criteria

Dendrobium Mine will ensure that all reasonable and feasible avoidance and mitigation measures will be utilised to ensure particulate emissions do not exceed the criteria in Table 4, Table 5 and Table 6 in Condition 9 of Schedule 4 of the Consent, which are replicated in Table 7 and Table 8.

Table 8: Air quality criteria

Pollutant	Averaging Period	Criterion ⁷
Total suspended particulate (TSP) matter	Annual	⁸ 90 µg/m ³
Particulate matter <10 µm (PM ₁₀)	Annual	⁷ 30 µg/m ³
	24 hour	⁷ 50 µg/m ³

⁷ Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities or any other activity agreed to by the Planning Secretary.

⁸ Total impact (i.e. incremental increase in concentrations due to the project plus background concentrations due to other sources).

<i>This document UNCONTROLLED once printed</i>				Page 22 of 48
Document ID	DENMP0037	Version	9.0	
Last Date Updated	August 2023	Next Review Date	August 2026	



Table 9: Long term criteria for deposited dust

Pollutant	Averaging Period	Maximum increase in deposited dust level	Maximum total deposited dust level
Deposited dust ⁹	Annual	¹⁰ 2 g/m ² /month	⁷ 4 g/m ² /month

The assessment of results will consider the influence of external sources of dust and the contribution to measured dust levels by the relevant operation (see Section 7.2.1).

6.3.2 Optical Photometers

Fixed optical photometers are installed at the Dendrobium Pit Top and Kemira Valley to provide an indication of compliance against both the long term criteria and short term criteria for particulate matter (as listed in Table 7).

The locations of the optical photometers are shown on Plan 2.

A portable optical photometer may be used to conduct spot checks, surveys and audits in addition to the specified program on an as required basis (i.e. in response to complaints and/or specific dust issues, or to gather background data for projects).

Targeted temporary residential air quality monitoring may be undertaken where residential receivers will possibly experience adverse air quality impacts directly associated with operational or construction activities, or in response to community complaints. Where required, consultation with relevant residents will be undertaken to establish additional air quality monitoring sites at private residences and privately-owned land.

Reasonable and feasible measures will be undertaken on site to address adverse air quality impacts (see Section 7.2.2).

6.3.3 HVAS

HVAS were replaced with optical photometers at the Dendrobium Pit Top and KVCLF in 2021. HVAS may be used if required to investigate complaints or operational dust related issues.

6.3.4 DDGs

A network of DDGs was utilised at Dendrobium Mine and was decommissioned in 2021.

Targeted temporary residential air quality monitoring using DDGs may be undertaken in response to community complaints, or during construction activities (for background data and air quality during construction). The limitations associated with DDGs as described above need to be considered before implementation.

⁹ Deposited dust is to be assessed as insoluble solids as defined by Standards Australia AS/NZS 3580.9.15:2014.

¹⁰ Incremental impact (ie incremental increase in concentrations due to the project on its own).

<i>This document UNCONTROLLED once printed</i>				Page 23 of 48
Document ID	DENMP0037	Version	9.0	
Last Date Updated	August 2023	Next Review Date	August 2026	



Where required, consultation with relevant residents will be undertaken to establish additional air quality monitoring sites at private residences and privately-owned land. The DDGs would be installed for a minimum three-month period. A DDG would also be installed between the dust source and the sensitive receiver to provide a reference point (where possible).

6.3.5 Dust analysis

A visual analysis of DDG samples may be undertaken to determine the fractions of different solids.

Sampling of material from surfaces in potentially affected households may also be utilised to determine the composition of material deposited. These samples have been analysed by CSIRO. Further detail on the process is available in the Air Quality Monitoring Procedure.

6.3.6 Weather Stations

Meteorological stations are located at the Vent Shaft 2/3 site, KVCLF and Dendrobium Mine. The main parameters measured are outlined in Table 9.

Table 10: Meteorological parameters and locations

Parameter	Locations
Wind speed	VS2/3, Pit Top, KVCLF
Wind Direction	VS2/3, Pit Top, KVCLF
Temperature	VS2/3, Pit Top, KVCLF
Rainfall	VS2/3, Pit Top, KVCLF
Humidity	VS2/3, Pit Top, KVCLF
Barometric Pressure	VS2/3, Pit Top
Solar Radiation	KVCLF

Data from these stations may be used to inform evaluation of compliance with air quality criteria. Details on the weather stations is provided in the Meteorological Station Operation and Data Management Procedure.

The locations of the weather stations are shown on Plan 2.

6.3.7 Weather Alerts

IMC subscribes to an early warning weather alert service. With the assistance of the early warning weather alerts service for impending adverse weather conditions, pre-emptive dust control measures will be implemented where required at the KVCLF and DCP. These measures may include adjustments to existing dust control measures, manually activating suppression sprays, deployment of mobile sweepers or modification and/or suspension of activities.

<i>This document UNCONTROLLED once printed</i>				Page 24 of 48
Document ID	DENMP0037	Version	9.0	
Last Date Updated	August 2023	Next Review Date	August 2026	



7. COMPLAINTS AND NON-COMPLIANCE MANAGEMENT

7.1 Complaints and Dispute Resolution

IMC has a 24-hour, free community call line (1800 102 210) and email address (illawarracommunity@south32.net) which is displayed at IMC Projects and Mine Sites, and included in newsletters, letters and other correspondence. The call line is for all complaints and general enquiries regarding environmental or community issues associated with IMC's operations.

Community complaints and enquiries may also be received in person by any employee of IMC, with details to be immediately shared with the Community Team for investigation. All air quality complaints received in relation to Dendrobium Mine will be managed in accordance with the Handling Community Complaints, Enquiries and Disputes Procedure.

Upon receipt of a community complaint, preliminary investigations will commence as soon as practicable to determine the likely cause of the complaint. An initial response will be provided to the complainant within 24 hours of the complaint being made, with a follow up response being provided as soon as practicable once a more detailed investigation is complete.

Supplementary air quality monitoring surveys will also be undertaken as necessary and until satisfactory resolution of the issue.

A summary of all complaints received during the reporting year will be provided as part of the Annual Review. A log of complaints is also maintained on the IMC website at <https://www.south32.net/what-we-do/our-locations/australia/illawarra-metallurgical-coal>.

7.2 Events, Non-Compliance, Corrective Action, and Preventative Action

Events, non-compliances, corrective actions and preventative actions are managed in accordance with the Reporting and Investigation Standard and Environmental Compliance/Conformance Assessment and Reporting Procedure. These procedures, which relate to all IMC operations, detail the processes to be utilised with respect to event and hazard reporting, investigation and corrective action identification. The key elements of the process include:

- identification of events, non-conformances and/or non-compliances;
- recording of the event, non-conformance and/or non-compliance in the event management system (G360);
- investigation/evaluation of the event, non-conformance and/or non-compliance to determine specific corrective and preventative actions;
- assigning corrective and preventative actions to responsible persons in G360; and
- review of corrective actions to ensure the status and effectiveness of the actions.

Incidents, exceedances and non-compliances with air quality criteria will be reported to all relevant stakeholders as detailed in Section 8.2.

<i>This document UNCONTROLLED once printed</i>				Page 25 of 48
Document ID	DENMP0037	Version	9.0	
Last Date Updated	August 2023	Next Review Date	August 2026	



7.2.1 Protocol for Assessing Compliance

The process for assessing compliance considers whether external extraordinary factors unrelated to Dendrobium Mine have adversely influenced a monitoring result. This is necessary to ensure that air quality accounting is reliable and accurate and ensures stakeholders are properly informed.

The protocol for confirmation of monitoring results, including exceedances of criteria in the Consent, includes the consideration of extraordinary factors unrelated to Dendrobium Mine operations and not within Dendrobium Mine's operational control. Such external factors include the adverse consequences of dust storm events, severe weather events, regional dry and dusty conditions elevating regional dust levels, local or regional bushfires, laboratory or analysis errors by external service providers, invalid or contaminated samples and other external unrelated operations or activities adversely influencing project air quality results (e.g.: construction, roadworks, regional traffic, land clearing, rural activities, unauthorised monitoring station interference).

Where results are likely to have been influenced by extraordinary events, the NSW Department of Planning, Industry and Environment Air Quality Categories (AQC) ([Daily air quality data | NSW Dept of Planning, Industry and Environment](#)) will be reviewed as a reference for a regional air quality comparison.

7.2.1.1 Exceedances due to operational activities

Where an exceedance has been recorded and it has been validated that it is due to operational activities or the failure of controls, notifications to Government Agencies and landowners will occur as detailed in Section 8.2. The exceedance will be classified as a non-compliance.

7.2.1.2 Exceedances due to extraordinary events

Where an exceedance of air quality criteria has been recorded due to extraordinary events, the following process will be followed:

- the result will be recorded in the 14 day report with a qualifying comment;
- the result will be recorded in the Annual Review with a qualifying comment; and
- the data will be used in the calculation of average, minimum and maximum values for the project, with the inclusion of a qualifying comment.

Where deposited dust deposition rates or particulate matter data indicates levels that exceed the relevant criteria, further analysis of the particulate matter may be undertaken where necessary to qualify the constituents of the particulate matter sampled.

Exceedances due to extraordinary events will be notified to Government Agencies as detailed in Section 8.2.2, for information only. Landholders will not be notified.

7.2.1.3 Exceedances due to invalid samples

Where an exceedance of air quality criteria has been recorded due to an invalid sample (e.g. laboratory error, tampering with monitoring equipment or errors in the monitoring equipment logs), and this has been validated, these results will not be recorded. A file note will be maintained in the document management system providing justification for

<i>This document UNCONTROLLED once printed</i>				
Document ID	DENMP0037	Version	9.0	Page 26 of 48
Last Date Updated	August 2023	Next Review Date	August 2026	



disregarding the sample. Notification to the relevant Government Agency will occur if the sample is required for compliance monitoring, providing justification for disregarding the sample.

7.2.2 **Adaptive Management**

Where any exceedance of the criteria in Condition 9 of Schedule 4 of the Consent has occurred, IMC will take all reasonable and feasible steps to ensure the exceedance ceases and does not recur and consider all reasonable and feasible options for remediation (where relevant).

If adverse weather conditions are predicted, dust emission controls will be reviewed and additional measures undertaken as required. This may include hose down of areas or use of additional water trucks.

7.3 **Independent Review**

If the owner of privately-owned lands considers that Dendrobium Mine is exceeding the air quality criteria in Condition 9 of Schedule 4 of the Consent (refer to Section 6.3.1), they are entitled to request, in writing, an Independent Review.

In accordance with Conditions 2 to 5 of Schedule 7 the Consent, IMC will comply with the requirements of the Secretary and commission an Independent Review where the Secretary is satisfied that an Independent Review is warranted and comply with any written requests made by the Planning Secretary to implement any findings of the review.

If the Secretary determines that a landowner has acquisition rights due to a sustained exceedance of air quality criteria on an affected property, the process as detailed in Conditions 6, 7 and 8 of Schedule 7 for land acquisition will be followed.

8. **REPORTING AND REVIEW**

Any condition of this consent that requires the carrying out of monitoring or an environmental audit, whether directly or by way of a plan, strategy or program, is taken to be a condition requiring monitoring or an environmental audit under Division 9.4 of Part 9 of the *EP&A Act*.

This includes conditions in respect of incident notification, reporting and response, noncompliance notification, compliance report and independent audit.

8.1 **Reporting**

8.1.1 **Annual Review**

IMC will report on the performance of the AQMP in the Annual Review.

The Annual Review is prepared in accordance with the requirement of Condition 5 of Schedule 8 of the Consent and is to be submitted to relevant agencies in September each year. Annual Reviews are made available to the general public via the South32 website.

The Annual Review will include:

- air quality monitoring results including comparison to criteria for particulate matter and identification of trends;

<i>This document UNCONTROLLED once printed</i>				Page 27 of 48
Document ID	DENMP0037	Version	9.0	
Last Date Updated	August 2023	Next Review Date	August 2026	



- a summary of GHG emission data and any GHG related improvement opportunities implemented;
- air quality related complaints and management/mitigation measures undertaken;
- management/mitigation measures undertaken in the event of any confirmed exceedance of criteria for particulate matter; and
- review of the performance of management/mitigation measures and the monitoring program.

8.1.2 **Public Reporting of Results (via website)**

A summary of the particulate matter monitoring results, including details of exceedances and non-compliances (as determined in accordance with the protocol for assessing compliance as described in Section 7.2.1 of the AQMP), will be provided on the IMC website in the 14 day report at <https://www.south32.net/what-we-do/our-locations/australia/illawarra-metallurgical-coal>. Results provided in the 14-day Report will be summarised and submitted to the EPA in the Annual Return for EPL 3241.

8.1.3 **National Greenhouse and Energy Reporting Scheme (NGERS)**

Dendrobium accounts for all emissions and energy use as required by NGERS and as per reporting boundaries verified by legal advice.

8.1.4 **Internal Sustainability Reporting**

GHG emission data is collated monthly and reported to Head Office for aggregation.

8.1.5 **National Pollutant Inventory**

The National Pollutant Inventory (NPI) is an internet database that provides the community, industry and government with free information about the emissions of 93 substances in Australia. The NPI is implemented cooperatively by the Federal Government, the EPA and other state and territory governments.

The NPI report is compiled on an annual basis by the Specialist Environment (Reporting and Technology) and must be submitted by 30 September for the reporting year (1 July to 30 June). The report includes particulate emissions from site.

8.2 **Incident, Non-compliance and Exceedance Notifications**

8.2.1 **Notification of Incidents**

In accordance with Conditions 3 and 4 of Schedule 8 of the Consent, the Department and any other relevant agencies will be notified immediately by IMC after becoming aware of an incident¹¹. The notification will be in writing and submitted to

¹¹ An incident is defined as an occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be or cause a non-compliance.

<i>This document UNCONTROLLED once printed</i>				Page 28 of 48
Document ID	DENMP0037	Version	9.0	
Last Date Updated	August 2023	Next Review Date	August 2026	



compliance@planning.nsw.gov.au and identify the development and set out the location and nature of the incident.

8.2.2 Notification of Criteria Exceedances – Government Agencies

In the event that an exceedance of the relevant criteria for particulate matter is confirmed as per Section 7.2.1, a notification is to be made in accordance with Condition 1 of Schedule 7 of the Consent via the DPE Major Projects Planning Portal: <https://www.planningportal.nsw.gov.au/major-projects>. This notification is to be made as soon as practicable and no longer than seven (7) days after obtaining monitoring results showing any exceedance of air quality criterion (see Section 6.3.1). The EPA is also to be notified of the exceedance (via email).

8.2.3 Notification of Criteria Exceedances – Landowners

In the event that an exceedance of the relevant criteria for particulate matter is confirmed as per Section 7.2.1, a notification is to be made in accordance with Condition 1 of Schedule 7 of the Consent to any affected landowners and/or tenants (including tenants of mine-owned properties). This notification is to be made as soon as practicable and no longer than seven (7) days after obtaining monitoring results showing any exceedance of air quality criterion (see Section 6.3.1). Notifications of exceedances is to be undertaken prior to inclusion in the 14-day report.

Monitoring results will be provided to each affected landowner and/or existing or future tenants until compliance with criteria is achieved (nominally quarterly). In addition, a copy of the NSW Health fact sheet entitled “Mine Dust and You” is to be provided to the affected landowners and/or tenants.

Additional targeted particulate matter monitoring and analysis at the affected landowners’ premises may be required to verify exceedances of criteria attributable to Dendrobium Mine.

The Dendrobium Community Consultative Committee (CCC) will also be advised of exceedances of criteria at the next available meeting.

8.3 Review of AQMP

In accordance with Condition 2A of Schedule 8 of the Consent, the AQMP will be reviewed, and if necessary revised, within three months of:

- a) the submission of an annual review;
- b) the submission of an incident report;
- c) the submission of an Independent Environmental Audit report; or
- d) any modification to the conditions of the Consent (unless the conditions require otherwise).

Outcomes from each review will be documented in the Management Plan Review Log. The AQMP will only be revised where a material change to site operations or environmental management has occurred, or in accordance with the review period on the AQMP. Administrative or descriptive changes do not constitute a material change.

Where a review triggers a revision of the AQMP, the AQMP will be revised and submitted to the Secretary for approval. The approved AQMP will be implemented.

<i>This document UNCONTROLLED once printed</i>			
Document ID	DENMP0037	Version	9.0
Last Date Updated	August 2023	Next Review Date	August 2026

Page 29 of 48



8.4 Audits

8.4.1 Independent Environmental Audit

In accordance with Condition 6 of Schedule 8 of the Consent, an Independent Environmental Audit (IEA) shall be commissioned every three years, that will include a review of the AQMP. The report is required to be submitted to the Planning Secretary and any other NSW agency that requests it, together with the response to any recommendations contained in the audit report, and a timetable for the implementation of the recommendations, within three (3) months of commencing the IEA, in accordance with Condition 7 of Schedule 8 of the Consent.

IEAs have been conducted every three years since 2008, with the last IEA being conducted in 2020 and the next IEA to be conducted in 2023. Recommendations from the IEA will be incorporated into the AQMP where appropriate.

8.4.2 ISO 14001

As part of the ISO 14001 certification, IMC maintains an environmental auditing and governance program across all of its operational sites. The program, which includes the use of competent internal and accredited external auditors, is an integral part of maintaining certification under the ISO 14001 standard.

External surveillance audits are undertaken on an annual basis, with recertification audits undertaken every three years.

Internal Governance Reviews of the AQMP are nominally undertaken on an annual basis.

<i>This document UNCONTROLLED once printed</i>				Page 30 of 48
Document ID	DENMP0037	Version	9.0	
Last Date Updated	August 2023	Next Review Date	August 2026	



9. SUMMARY OF COMMITMENTS

Commitment	Section in AQMP
IMC will provide personnel and resources to implement the AQMP.	Section 2
IMC will comply with the conditions of the approval and relevant legislation.	Section 3
IMC will implement and maintain reasonable and feasible air quality mitigation measures across all sites to comply with air quality criteria and minimise the impact on the environment and community.	Section 5
IMC will undertake air quality and greenhouse gas monitoring as required by the Consent and EPL.	Section 6
IMC will review monitoring data and review controls where data analysis indicates controls are not effective.	Section 5 and Section 7.2
IMC will conduct additional monitoring and spot checks to investigate complaints and ineffective controls.	Section 6
IMC will maintain and calibrate monitoring equipment as required.	Section 6.3
IMC will subscribe to early warning weather alerts.	Section 6.3.7
IMC will evaluate options to extract and utilise or flare methane from the coal seam and adjacent strata to determine feasibility.	Section 5.2.3
IMC will take all reasonable and feasible measures to ensure exceedances cease as soon as practicable and take appropriate remedial action as required.	Section 7.2.2
IMC will progress land acquisition where air quality land acquisition criteria are exceeded on a sustained basis.	Section 7.3
IMC will commission an Independent Review where requested by the Secretary.	Section 7.3
IMC will report and investigate complaints, incidents and exceedances of limits as required, and identify and implement corrective actions.	Section 7
IMC will undertake reporting as required.	Section 8
IMC will review the AQMP as required.	Section 8.3
IMC will undertake audits as required.	Section 8.4

<i>This document UNCONTROLLED once printed</i>				Page 31 of 48
Document ID	DENMP0037	Version	9.0	
Last Date Updated	August 2023	Next Review Date	August 2026	



10. ACRONYMS

Term	Definition
AQMP	Air Quality and GHG Management Plan
CEM	Continuous Emissions Monitoring
CCC	Community Consultative Committee
CH ₄	Methane
CO _{2-e}	Carbon dioxide equivalent
DCPP	Dendrobium Coal Preparation Plant
DDG	Dust deposition gauge
DPE	Department of Planning and Environment
EIS	Environmental Impact Study
EMS	Environmental Management System
EPA	Environment Protection Authority
<i>EP&A Act</i>	<i>Environmental Planning and Assessment Act</i>
EPL	Environment Protection Licence
EQiS	Environmental Quality Information System
FY	Financial year
G360	IMC event reporting system
GHG	Greenhouse Gas
GWP	Global Warming Potential
ICHPL	Illawarra Coal Holdings Pty Ltd
IEA	Independent Environmental Audit
IMC	Illawarra Metallurgical Coal
km	kilometre
kPa	kilopascal
KVCLF	Kemira Valley Coal Loading Facility

<i>This document UNCONTROLLED once printed</i>				Page 32 of 48
Document ID	DENMP0037	Version	9.0	
Last Date Updated	August 2023	Next Review Date	August 2026	



ML	Mining Lease
NGER	National Greenhouse Emissions Reporting Scheme
N ₂ O	Nitrous oxide
Mtpa	Million tonnes per annum
PBOGs	Petroleum-based Oils and Greases
PLC	Programmable Logic Control
PM ₁	Particulate matter (1 micron)
PM _{2.5}	Particulate matter (2.5 microns)
PM ₄	Particulate matter (4 microns)
PM ₁₀	Particulate matter (10 microns)
POEO	Protection of the Environment Operations
PKSW	Port Kembla Steel Works
ROM	Run of Mine
TSP	Total Suspended Particulate
VS	Ventilation Shaft



11. REFERENCES

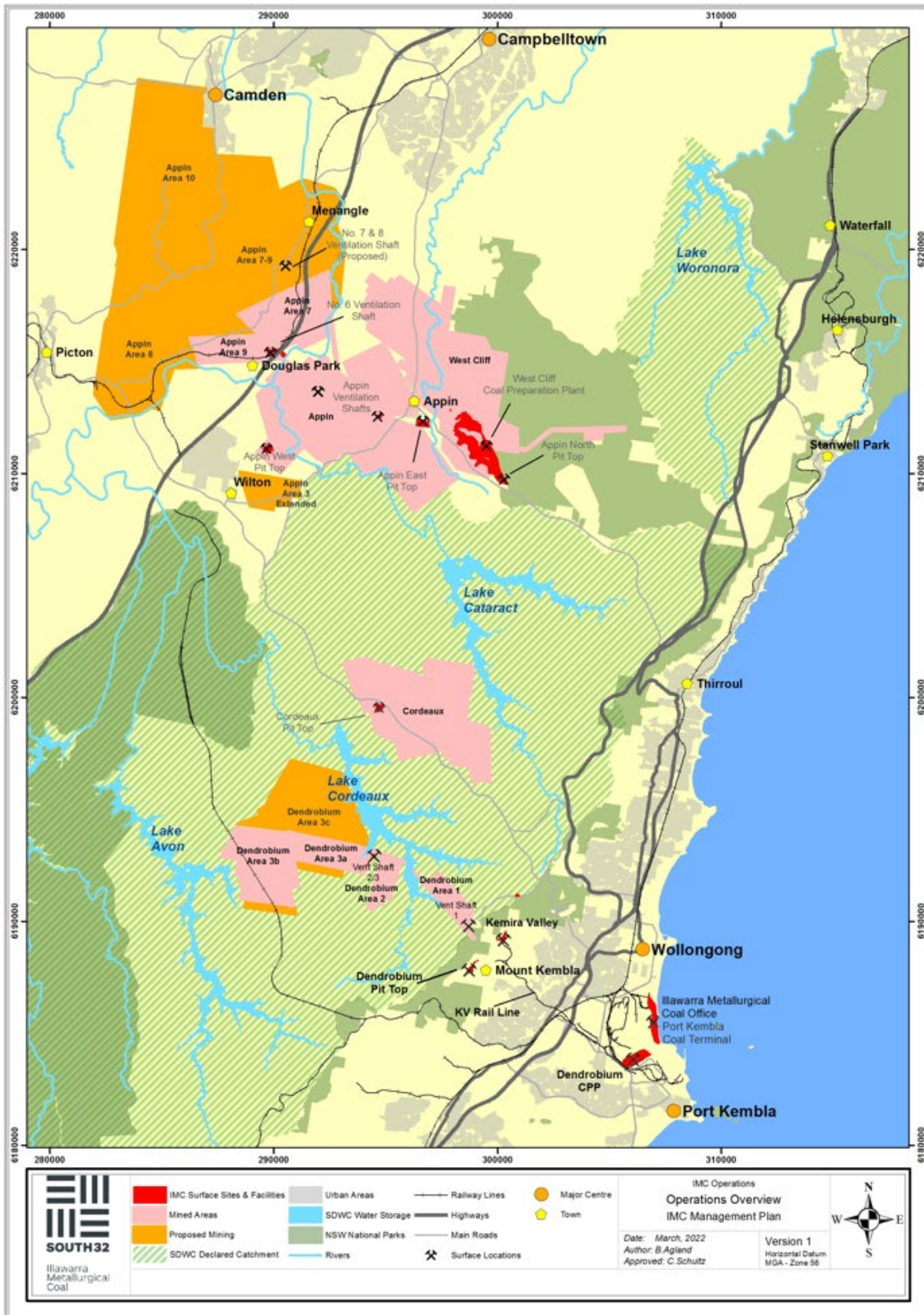
- Development Consent 60-03-2001, as modified
- EPL 3241
- Holmes Air Sciences (2000), Air Quality Impact Assessment: Dendrobium Underground Mine Extension – Southern Coalfields NSW. Prepared for BHP Billiton by Holmes Air Sciences, Suite 2B, 14 Glen Street, Eastwood, NSW 2122
- Environmental Assessment for Modification to Dendrobium Area 3 - Final Report (November 2007). Cardno Forbes Rigby. Reference 107055-01 Report 002 Rev 0
- Department of Planning (2008). Notice of Modification - Development Consent for the Dendrobium Underground Mine
- Holmes Air Sciences (2005). "Air Quality Assessment: Dendrobium Underground Mine, NSW South Coast" Prepared for BHP Billiton by Holmes Air Sciences, Suite 2B, 14 Glen Street, Eastwood, NSW 2122.
- Handling Community Complaints, Enquiries and Disputes Procedure (IMCP0112)
- Reporting and Investigation Standard (IMCSTD0069)
- Environmental Compliance/Conformance Assessment and Reporting Procedure (IMCP0186)
- ISO 14001:2015 Environmental Management Systems Standard
- Carbon Emissions Measurement and Reporting Management Plan (IMCMP0255)
- Meteorological Station Operation and Data Management (IMCP0206)
- <https://www.health.nsw.gov.au/environment/factsheets/Pages/mine-dust.aspx>
- Pit Top Yard Dust Trigger Action Response Plan (DENTARP0041)
- Air Quality Monitoring Procedure (IMCP0209)

<i>This document UNCONTROLLED once printed</i>				Page 34 of 48
Document ID	DENMP0037	Version	9.0	
Last Date Updated	August 2023	Next Review Date	August 2026	



12. PLANS

Plan 1: Dendrobium Mine Locality Plan

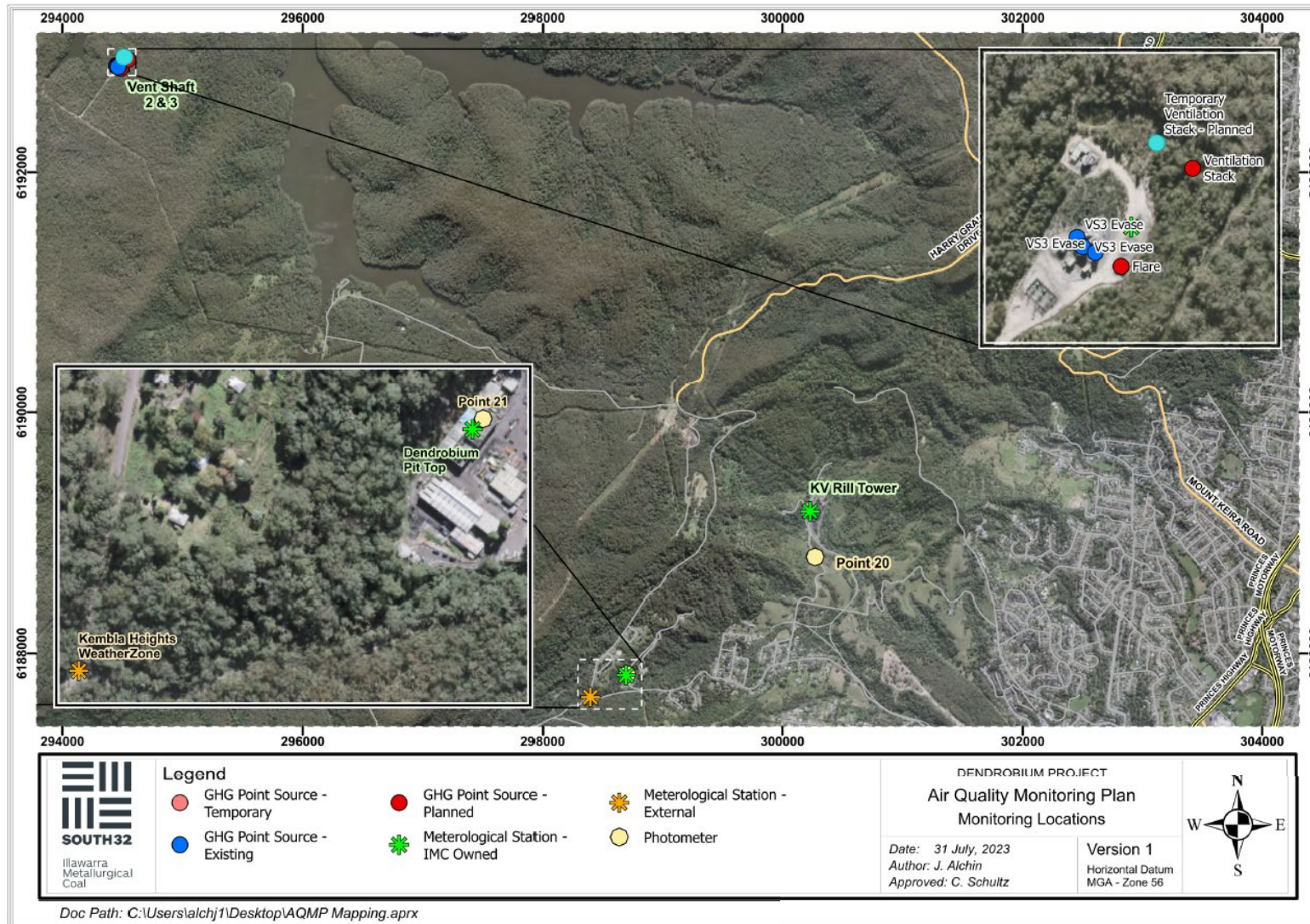


This document UNCONTROLLED once printed

Document ID	DENMP0037	Version	9.0	Page 35 of 48
Last Date Updated	August 2023	Next Review Date	August 2026	



Plan 2 : Air Quality Monitoring Locations



<i>This document UNCONTROLLED once printed</i>				Page 36 of 48
Document ID	DENMP0037	Version	9.0	
Last Date Updated	August 2023	Next Review Date	August 2026	



13. APPENDICES

Appendix 1: Particulate matter monitoring program

Site ID	Location	Parameter	Measurement Method	Frequency?	Function
Point 20	KVCLF	Particulate Matter: PM ₁ , PM _{2.5} , PM ₄ , PM ₁₀	Real-time Photometer (fixed)	Continuous	Real-time monitoring of dust emissions at the coal stockpile area and site access road. Real-time Operational Control – stockpile, internal roads and public road dust control measures performance reference monitor.
Point 21	Dendrobium Pit Top	Particulate Matter: PM ₁ , PM _{2.5} , PM ₄ , PM ₁₀	Real-time Photometer (fixed)	Continuous	Real-time monitoring of dust emissions in the warehouse and workshop area. Real-time Operational Control – internal roads and warehouse loading/unloading area.

<i>This document UNCONTROLLED once printed</i>				Page 37 of 48
Document ID	DENMP0037	Version	9.0	
Last Date Updated	August 2023	Next Review Date	August 2026	



Appendix 2: Consent Conditions: Air Quality and GHG Management

Condition	Requirement	Section
Condition 2 of Schedule 2	<p>Terms of Consent</p> <p>The Applicant must carry out the development generally in accordance with the:</p> <p>(a) Development Application (DA 60-03-2001), EIS and associated submissions to the Dendrobium Underground Coal Mine Project Commission of Inquiry, and in particular its:</p> <ul style="list-style-type: none"> • Primary Submission (the Dendrobium Project, dated 30 July 2001); • Submission in Reply (the Dendrobium Project, undated); and • Environmental Effects of Subsidence Associated with the Dendrobium Project, prepared by National Environmental Consulting Services and dated August 2001; <p>(b) Modification Application dated 12 February 2002 and supporting information dated 27 January 2002;</p> <p>(c) Modification Application and supporting information dated 24 May 2002 and additional supporting information dated 14 June 2002;</p> <p>(d) Modification Application and Statement of Environmental Effects for the Dendrobium Coal Sizer, prepared by Olsen Environmental Consulting and dated March 2005;</p> <p>(e) Application for Further Approval of West Cliff Emplacement Area Stage 3, Vol 2 (including Appendices), prepared by Cardno Forbes Rigby and dated July 2007, associated Response to Submissions dated 1 November 2007 and associated Statement of Commitments dated 28 November 2007 (see Appendix 3);</p> <p>(f) Modification Application – Modification of Area 3 Footprint and Review of Conditions of Consent dated 27 November 2007, EA and associated Statement of Commitments (see Appendix 4); and</p> <p>(g) Modification 7, Modification 8 and Modification 9.</p>	Section 3.1
Condition 2A of Schedule 2	The Applicant must carry out the development in accordance with the conditions of this consent.	Section 3.1
Condition 2A of Schedule 2	The Applicant must carry out the development generally in accordance with the development layout shown in Appendix 2.	Section 3.1

<i>This document UNCONTROLLED once printed</i>				Page 38 of 48
Document ID	DENMP0037	Version	9.0	
Last Date Updated	August 2023	Next Review Date	August 2026	



<p>Condition 9 of Schedule 4</p>	<p>Impact Assessment Criteria</p> <p>The Applicant must ensure that dust generated by the development does not cause additional exceedances of the criteria listed in Tables 4 to 6 at any residence on privately-owned land, or on more than 25 percent of any privately-owned land.</p> <p><i>Table 4: Long term impact assessment criteria for particulate matter</i></p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging period</th> <th>Criterion</th> </tr> </thead> <tbody> <tr> <td>Total suspended particulate (TSP) matter</td> <td>Annual</td> <td>90 µg/m³</td> </tr> <tr> <td>Particulate matter < 10 µm (PM₁₀)</td> <td>Annual</td> <td>30 µg/m³</td> </tr> </tbody> </table> <p><i>Table 5: Short term impact assessment criteria for particulate matter</i></p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging period</th> <th>Criterion</th> </tr> </thead> <tbody> <tr> <td>Particulate matter < 10 µm (PM₁₀)</td> <td>24 hour</td> <td>50 µg/m³</td> </tr> </tbody> </table> <p><i>Table 6: Long term impact assessment criteria for deposited dust</i></p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging period</th> <th>Maximum increase in deposited dust level</th> <th>Maximum total deposited dust level</th> </tr> </thead> <tbody> <tr> <td>Deposited dust</td> <td>Annual</td> <td>2 g/m²/month</td> <td>4 g/m²/month</td> </tr> </tbody> </table> <p><i>Note: Deposited dust is assessed as insoluble solids as defined by Standards Australia, 1991, AS/NZS 3580.10.1-2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulates - Deposited Matter - Gravimetric Method.</i></p>	Pollutant	Averaging period	Criterion	Total suspended particulate (TSP) matter	Annual	90 µg/m ³	Particulate matter < 10 µm (PM ₁₀)	Annual	30 µg/m ³	Pollutant	Averaging period	Criterion	Particulate matter < 10 µm (PM ₁₀)	24 hour	50 µg/m ³	Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level	Deposited dust	Annual	2 g/m ² /month	4 g/m ² /month	<p>Section 6.3.1</p>
Pollutant	Averaging period	Criterion																							
Total suspended particulate (TSP) matter	Annual	90 µg/m ³																							
Particulate matter < 10 µm (PM ₁₀)	Annual	30 µg/m ³																							
Pollutant	Averaging period	Criterion																							
Particulate matter < 10 µm (PM ₁₀)	24 hour	50 µg/m ³																							
Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level																						
Deposited dust	Annual	2 g/m ² /month	4 g/m ² /month																						
<p>Condition 10 of Schedule 4</p>	<p>Monitoring</p> <p>The Applicant must prepare an Air Quality Monitoring Program for the surface facilities (excepting those surface facilities within the mining area) to the satisfaction of the Secretary. This program must:</p> <ul style="list-style-type: none"> (a) be submitted to the Secretary for approval by 30 April 2009; (b) be prepared in consultation with EPA; (c) use a combination of high volume samplers and dust deposition gauges to monitor the performance of the development; and (d) include an air quality monitoring protocol for evaluating compliance with the air quality impact assessment criteria in this consent. <p>The Applicant must implement the Air Quality Monitoring Program as approved by the Secretary.</p>	<p>Date is in the past</p> <p>Appendix 3</p> <p>Section 6.3</p> <p>Section 7.2.1</p>																							
<p>Condition 11 of Schedule 4</p>	<p>Meteorological Monitoring</p> <p>During the development, the Applicant must ensure that it has a suitable meteorological station in the vicinity of the site that is generally in accordance with the requirements in the guideline Approved Methods for Sampling of Air Pollutants in New South Wales.</p>	<p>Section 6.3.6</p>																							



<p>Condition 1 of Schedule 6</p>	<p>Greenhouse Gases and Energy Efficiency</p> <p>The Applicant must prepare a Greenhouse and Energy Efficiency Plan for the development. This plan must:</p> <p>(a) be prepared in consultation with EPA and generally in accordance with the Guidelines for Energy Savings Action Plans (DEUS 2005, or its latest version);</p> <p>(b) be submitted to the Secretary by 30 April 2009 for approval;</p> <p>(c) include a program to monitor greenhouse gas emissions and energy use generated by the development;</p> <p>(d) include a framework for investigating and implementing measures to reduce greenhouse gas emissions and energy use at the development;</p> <p>(e) include a research program to inform the continuous improvement of the greenhouse gas minimisation measures at the development;</p> <p>(f) describe how the performance of these measures would be monitored over time; and</p> <p>(g) report on the development’s greenhouse gas emissions and minimisation measures in the Annual Review,</p> <p>to the satisfaction of the Secretary.</p> <p>The Applicant must implement the Greenhouse and Energy Efficiency Plan as approved by the Secretary.</p> <p>Note: The Applicant may consider the Dendrobium Mine’s greenhouse gas minimisation measures within its overall greenhouse gas minimisation measures across its Southern Coalfield mines and related operations.</p>	<p>Appendix 3</p> <p>Date is in the past</p> <p>Section 6.2</p> <p>Section 5.2</p> <p>Section 5.2</p> <p>Section 6.2</p> <p>Section 8.1</p>
<p>Condition 2 of Schedule 6</p>	<p>The Applicant must implement all reasonable and feasible measures to minimise the greenhouse gas emissions from the development to the satisfaction of the Secretary.</p>	<p>Section 5.2</p>
<p>Condition 1 of Schedule 7</p>	<p>Notification of Landowners</p> <p>If the results of monitoring required in Schedule 4 identify that the impacts generated by the development are greater than the relevant impact assessment criteria in Schedule 4, except where this is predicted in the documents listed in condition 2 of schedule 2 or where a negotiated agreement has been entered into in relation to that impact, then the Applicant must notify the Secretary and the affected landowners and/or existing or future tenants (including tenants of mine-owned properties) accordingly, and provide quarterly monitoring results</p>	<p>Section 8.2.3</p>



	to each of these parties until the results show that the development is complying with the criteria in Schedule 4.	
Condition 2 of Schedule 7	<p>Independent Review</p> <p>If a landowner considers the development to be exceeding the impact assessment criteria in schedule 4, except where this is predicted in the EA, then he/she may ask the Secretary in writing for an independent review of the impacts of the development on his/her land.</p>	Section 7.3
Condition 3 of Schedule 7	<p>If the independent review determines that the development is complying with the relevant impact assessment criteria in schedule 4, then the Applicant may discontinue the independent review with the approval of the Secretary. If the landowner disputes the results of the independent review then either the Applicant or the landowner may refer the matter to the Secretary for resolution.</p> <p>Where matters referred to the Secretary under this condition cannot be resolved by the Secretary within 28 days, the Secretary shall refer the matter to an Independent Dispute Resolution Process.</p>	Section 7.3
Condition 4 of Schedule 7	<p>If the independent review determines that the development is not complying with the relevant impact assessment criteria in Schedule 4, and that the development is primarily responsible for this noncompliance, then the Applicant must:</p> <p>(a) take all reasonable and feasible measures, in consultation with the landowner, to ensure that the development complies with the relevant criteria and conduct further monitoring to determine whether these measures ensure compliance; or</p> <p>(b) secure a written agreement with the landowner to allow exceedances of the relevant criteria; or</p> <p>(c) offer to acquire all or part of the landowner's land in accordance with the procedures in conditions 6-8 below to the satisfaction of the Secretary.</p>	Section 7.3
Condition 5 of Schedule 7	<p>If further monitoring under condition 4(a) determines that the development is complying with the relevant impact assessment criteria, then the Applicant may discontinue the independent review with the approval of the Secretary.</p> <p>If further monitoring under condition 4(a) determines that measures implemented under that condition have not achieved compliance with the impact assessment criteria in schedule 4, and the Applicant cannot secure a written agreement with the landowner under condition 4(b) to allow these exceedances, then the Applicant must, upon receiving a written request from the landowner, acquire all or part of the</p>	Section 7.3



	landowner's land in accordance with the procedures in conditions 6-8 below.	
Condition 2 of Schedule 8	<p>Management Plan Requirements</p> <p>Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:</p> <p>(a) a summary of relevant background or baseline data;</p> <p>(b) details of:</p> <p>(i) the relevant statutory requirements (including any relevant approval, licence or lease conditions);</p> <p>(ii) any relevant limits or performance measures and criteria; and</p> <p>(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;</p> <p>(c) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;</p> <p>(d) a program to monitor and report on the:</p> <p>(i) impacts and environmental performance of the development; and</p> <p>(ii) effectiveness of the management measures set out pursuant to condition 2(c);</p> <p>(e) 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;</p> <p>(f) a program to investigate and implement ways to improve the environmental performance of the development over time;</p> <p>(g) a protocol for managing and reporting any:</p> <p>(i) incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria);</p> <p>(ii) complaint;</p> <p>(iii) failure to comply with statutory requirements; and</p> <p>(h) a protocol for periodic review of the plan.</p>	<p>Section 4</p> <p>Section 3</p> <p>Section 6.3.1</p> <p>Section 5</p> <p>Section 5</p> <p>Section 8</p> <p>Section 7.2.2</p> <p>Section 8.4</p> <p>Section 8.2</p> <p>Section 7</p> <p>Section 8.3</p>
Condition 3 of Schedule 8	Within 24 hours of detecting the occurrence of an incident that causes (or may cause) material harm to the environment, the Applicant must notify the Department and other relevant agencies of the incident.	Section 8.2



<p>Condition 4 of Schedule 8</p>	<p>Within 7 days of notifying the Department and other relevant agencies of such an incident, the Applicant must provide the Department and these agencies with a written report that:</p> <ul style="list-style-type: none"> (a) describes the date, time, and nature of the incident; (b) identifies the cause (or likely cause) of the incident; (c) describes what action has been taken to date; and (d) describes the proposed measures to address the incident. 	<p>Section 8.2</p>
<p>Condition 5 of Schedule 8</p>	<p>Annual Review</p> <p>By the end of September each year (or other such timing as may be agreed by the Secretary), and for at least 3 years following the cessation of mining at the development, the Applicant must submit an Annual Review to the Secretary, CCC and all relevant agencies reviewing the environmental performance of the development to the satisfaction of the Secretary. This report must relate to the previous financial year and:</p> <ul style="list-style-type: none"> (a) identify the standards and performance measures that apply to the development; (b) describe the development (including any rehabilitation) that was carried out in the previous financial year; (c) describe the development (including any rehabilitation) that is proposed to be carried out over the current financial year; (d) include a summary of the complaints received during the past year, and compare this to the complaints received in previous years; (e) include a summary of the monitoring results for the development during the past year; (f) a comprehensive review of the monitoring results and complaints records of the development over the previous financial year, including a comparison of these results against the: (i) relevant statutory requirements, limits or performance measures/criteria; (ii) requirements of any plan or program required under this consent; (iii) monitoring results of previous years; and (iv) relevant predictions in the documents listed in condition 2 of Schedule 2. (g) identify any non-compliance or incident which occurred in the previous financial year, and describe what actions were (or are being) taken to rectify the non-compliance and avoid reoccurrence; (h) evaluate and report on: (i) the effectiveness of the noise and air quality management systems; and (ii) compliance with the performance measures, criteria and operating conditions in this consent; (i) identify any trends in the monitoring data over the life of the development; 	<p>Section 8.1.1</p>

<i>This document UNCONTROLLED once printed</i>				Page 43 of 48
Document ID	DENMP0037	Version	9.0	
Last Date Updated	August 2023	Next Review Date	August 2026	



	<p>(j) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and</p> <p>(k) describe what measures will be implemented over the next financial year to improve the environmental performance of the development. Copies of the Annual Review must be submitted to the affected Councils and made available to the CCC and any interested person upon request.</p>	
<p>Condition 6 of Schedule 8</p>	<p>Independent Environmental Audit</p> <p>By 31 December 2011, and every 3 years thereafter, unless the Secretary directs otherwise, the Applicant must commission and pay the full cost of an Independent Environmental Audit of the development. This audit must:</p> <p>(a) be conducted by suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary;</p> <p>(b) include consultation with the relevant agencies and the CCC;</p> <p>(c) assess the environmental performance of the development and assess whether it is complying with the relevant requirements in this consent and any relevant EPL or mining lease (including any strategy, plan or program required under these approvals);</p> <p>(d) review the adequacy of strategies, plans or programs required under these approvals;</p> <p>(e) recommend measures or actions to improve the environmental performance of the development, and/or any strategy, plan or program required under these approvals; and</p> <p>(f) be conducted and reported to the satisfaction of the Secretary. Note: This audit team must be led by a suitably qualified auditor and include experts in the fields of a) mine subsidence impacts and remediation and b) stream hydrology and water quality.</p>	<p>Section 8.4.1</p>
<p>Condition 7 of Schedule 8</p>	<p>Within three months of commencing an Independent Environmental Audit, or within another timeframe agreed by the Secretary, the Applicant must submit a copy of the audit report to the 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 must be implemented to the satisfaction of the Secretary. Note: The audit team must be led by a suitably qualified auditor and include experts in any fields specified by the Secretary.</p>	<p>Section 8.4.1</p>



<p>Condition 8 of Schedule 8</p>	<p>Any condition of this consent that requires the carrying out of monitoring or an environmental audit, whether directly or by way of a plan, strategy or program, is taken to be a condition requiring monitoring or an environmental audit under Division 9.4 of Part 9 of the EP&A Act. This includes conditions in respect of incident notification, reporting and response, non-compliance notification, compliance report and independent audit.</p>	<p>Section 8</p>
<p>Condition 11 of Schedule 8</p>	<p>Access to Information</p> <p>Before the commencement of Modification 8 until the completion of all rehabilitation required under this consent, the Applicant must:</p> <p>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:</p> <ul style="list-style-type: none"> i. the documents referred to in condition 2 of Schedule 2 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. minutes of CCC meetings; v. 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; vi. 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; vii. a summary of the current stage and progress of the development; viii. contact details to enquire about the development or to make a complaint; ix. a complaints register, updated monthly; x. the Annual Reviews of the development; xi. audit reports prepared as part of any Independent Environmental Audit of the development and the Applicant's response to the recommendations xii. any other matter required by the Secretary; and <p>keep such information up to date, to the satisfaction of the Secretary.</p>	<p>Section 3.1 Section 7.1 Section 8.1</p>



Appendix 3: Agency Consultation

Agency Comments	IMC Response
Environment Protection Authority (EPA)	
<p><u>Comment received 12 May 2021</u></p> <p>The EPA has reviewed the plan and makes the following comments for your consideration.</p> <ul style="list-style-type: none"> Table 7, page 17, “Particulate matter <10 µg (PM10)” should read “Particulate matter <10 µm (PM10)”. Section 7.2.1, page 20, “the NSW Office of Environment and Heritage’s Regional Air Quality Index (RAQI)” should be updated to “the NSW Department of Planning, Industry and Environment Air Quality Categories (AQC)”. 	<p>References updated</p>
<p><u>Comment received 14 April 2023</u></p> <p>The EPA refers to your request for comments on the above plan which is required to be prepared under Development Consent DA 60-03-2001 issued for Dendrobium Mine.</p> <p>The plan has been updated to include the proposed methane gas extraction operation at Vent shaft 2/3 (Mod 9), and activities the existing Cordeaux Colliery site.</p>	<p>Noted</p>
<p>The EPA has reviewed the plan and makes the following comments for your consideration.</p> <ul style="list-style-type: none"> Page 11, Section 4.1.2 appears to include historical content that is out of date and possibly now inaccurate. e.g. “There will be some changes in gas composition in later years, probably after 2015 Gas pre-drainage is not required at Dendrobium Mine until at least 2015 Forecast GHG emissions will increase from very low in 2002, to 280,000 tCO₂-e in 2006, and reach a maximum of 400,000 tCO₂-e in 2013.” Similarly for section 4.1.3 “No measurements of TSP or PM10 were available at the time of the assessment.” 	<p>It is noted that this information is from the Air Quality Impact Assessment undertaken in 2000 prior to the approval of operations and therefore needs to be considered in the context of the assessment at that date. It is considered to be baseline data to meet the requirements of Condition 2(a) of Schedule 8 of the Consent, rather than up to date information as at the time of the review of the AQMP. Footnote 3 has been added to provide clarification.</p> <p>Additional information has been included in Section 4.2 for MOD 3.</p>

<i>This document UNCONTROLLED once printed</i>				Page 46 of 48
Document ID	DENMP0037	Version	9.0	
Last Date Updated	August 2023	Next Review Date	August 2026	



<ul style="list-style-type: none"> Page 18, Section 6.2 discusses how greenhouse gas monitoring is undertaken in a very general sense. It would be informative for a map or description to be provided of where the monitoring is undertaken - such as vent shaft sites or flares. The section would also benefit from a link to the location of GHG data on South32's website. 	<p>Additional information has been included in this section regarding point sources.</p> <p>GHG emissions data is only available externally in the Annual Review. A link has been provided.</p>
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Department of Planning and Environment

<p><u>Letter received 8 June 2021</u></p> <p>The Department has carefully reviewed the document and is satisfied that it generally meets the relevant conditions.</p> <p>Accordingly, the Planning Secretary has approved the Air Quality Greenhouse Energy Efficiency Management Plan (Revision 8.0, dated April 2021). Please ensure that the approved plan is placed on the project website at the earliest convenience.</p>	<p>Noted</p>
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<p><u>Letter received 25 July 2023</u></p> <p>You are requested to add a figure to the Air Quality and Greenhouse Gas Management Plan indicating air quality and greenhouse monitoring locations. The figure must:</p> <ul style="list-style-type: none"> include clearly identified existing or planned air quality and greenhouse gas monitoring locations, and be consistent with comments on the plan provided by the NSW EPA on 14 April 2023. 	<p>A description had been provided in the text around GHG monitoring locations following a review of the EPA comments.</p> <p>Figure 1 has now also been amended to include GHG monitoring locations.</p>
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Appendix 4: Management Plan Approval

Department of Planning and Environment



Our ref: DA60-03-2001-PA-203

Chris Schultz
Superintendent Environment
Illawarra Coal Holdings Pty Ltd

Via: NSW Planning Portal
09/08/2023

Subject: Air Quality and Greenhouse Gas Management Plan

Dear Mr Schultz

I refer to the Air Quality and Greenhouse Gas Management Plan (rev 9, August 2023) submitted in accordance with Condition 10, Schedule 4 and Condition 1, Schedule 6 of the consent for the Dendrobium Mine (DA60-03-2001). I also acknowledge your response to the Department's review comments and request for additional information.

The Department has carefully reviewed the document and is satisfied that it meets the requirements of the relevant conditions in consent DA60-03-2001 as modified.

Accordingly, as nominee of the Planning Secretary, I approve the Air Quality and Greenhouse Gas Management Plan (rev 9, August 2023).

You are reminded that if there are any inconsistencies between the Plan and the conditions of consent, the conditions prevail.

Please ensure you make the document publicly available on the project website at the earliest convenience.

If you wish to discuss the matter further, please contact Emily Pemberton on 02 8275 1783.

Yours sincerely

Jessie Evans
Director, Resource Assessments
Resource Assessments

As nominee of the Planning Secretary

<i>This document UNCONTROLLED once printed</i>				Page 48 of 48
Document ID	DENMP0037	Version	9.0	
Last Date Updated	August 2023	Next Review Date	August 2026	