Department of Planning, Housing & Infrastructure

Our ref: SSD-10418-PA-12

Christian Lauritzen
General Manager Resource Development
MACH ENERGY AUSTRALIA PTY LTD
PO Box 407
Newcastle NSW 2300

29/11/2024

Subject: Mount Pleasant Optimisation Project – Air Quality and Greenhouse Gas Management Plan

Dear Mr. Lauritzen

I refer to the Air Quality and Greenhouse Gas Management Plan (version 5.0), submitted on 21 November 2024, accordance with Schedule B, Condition B32 of SSD 10418 and Schedule 3 of Condition 23 of DA 92/97 for the Mount Pleasant Coal Mine. I also acknowledge your response to the Department's review comments and request for additional information.

Following review of the Air Quality and Greenhouse Gas Management Plan (the plan), the Department:

- considers that the plan has been prepared in consultation with the NSW EPA in accordance with Part B, Condition B32(c) of SSD 10418;
- is generally satisfied with the management and mitigation measures included in the plan;
- is satisfied that the plan meets the requirements of the conditions of consent, however some further matters are requested to be addressed as listed in Attachment A; and
- acknowledges that MACH Energy has committed to submitting an amended Air Quality and Greenhouse Gas Management Plan that responds to the matters, listed in Attachment A.

Accordingly, under the provisions of Schedule B, Condition B32 of the consent, I, as nominee of the Planning Secretary, conditionally approve the Air Quality and Greenhouse Gas Management Plan (version 5.0, submitted 21 November 2024), subject to an amended Air Quality and Greenhouse Gas Management Plan being submitted to the Department to respond to the comments listed in Attachment A by the dates stipulated in Attachment A, or as otherwise agreed by the Planning Secretary.

You are reminded that if there are any inconsistencies between the Air Quality and Greenhouse Gas Management Plan and the conditions of approval, the conditions prevail.

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

If you wish to discuss this matter further, please contact Tegan Cole on 02 9895 6457 or via email at tegan.cole@planning.nsw.gov.au.

Yours sincerely

Stephen O'Donoghue
Director
Resource Assessments

As nominee of the Planning Secretary

MACH Energy

MOUNT PLEASANT OPERATION

AIR QUALITY AND GREENHOUSE GAS MANAGEMENT PLAN

Document ID:	MP001-0000-ENV-PLN-0001		
Company:	MACH Energy Australia Pty Ltd		
Effective Date:	29 November 2024	**Status:**	Issued for Use
Endorsed By:	Andrew Reid	**Revision Number:**	05

MOUNT PLEASANT OPERATION AIR QUALITY AND GREENHOUSE GAS MANAGEMENT PLAN	
Name of Mine:	Mount Pleasant Operation
Air Quality and Greenhouse Gas Management Plan Commencement Date:	29 November 2024
Air Quality and Greenhouse Gas Management Plan Revision Dates and Version Numbers	Version 05 – This version has been updated following consultation with EPA.
Name of Mine Operator:	MACH Energy Australia Pty Ltd
Name of Lease Holder:	MACH Energy Australia Pty Ltd and J.C.D Australia Pty Ltd

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1 INTRODUCTION

The Mount Pleasant Operation (MPO) is located in the Upper Hunter Valley of New South Wales (NSW), approximately 3 kilometres (km) north-west of Muswellbrook and approximately 50 km north-west of Singleton (Figure 1). The village of Aberdeen and locality of Kayuga are also located approximately 5 km north-northeast and 1 km north of the MPO boundary, respectively (Figure 1). The proponent of the MPO is MACH Energy Australia Pty Ltd (MACH Energy), which purchased the MPO from Coal & Allied Operations Pty Ltd (Coal & Allied) in 2016.

MACH Mount Pleasant Operations Pty Ltd is the manager of the MPO as an agent for, and on behalf of, the unincorporated Mount Pleasant Joint Venture between MACH Energy (95 per cent [%] owner) and J.C.D. Australia Pty Ltd (5% owner). This Air Quality and Greenhouse Gas Management Plan (AQGGMP) is implemented at the MPO by MACH Energy.

The initial development application for the MPO was made in 1997. This was supported by an Environmental Impact Statement (EIS) prepared by Environmental Resources Management (ERM) Mitchell McCotter (ERM Mitchell McCotter, 1997). On 22 December 1999, the then Minister for Urban Affairs and Planning granted Development Consent DA 92/97 to Coal & Allied. This allowed for the "Construction and operation of an open cut coal mine, coal preparation plant, transport and rail load-out facility and associated facilities" at the MPO. The consent allowed for operations 24 hours per day seven days per week and the extraction of 197 million tonnes (Mt) of run-of-mine (ROM) coal over a 21 year period, at a rate of up to 10.5 Mt of ROM coal per year.

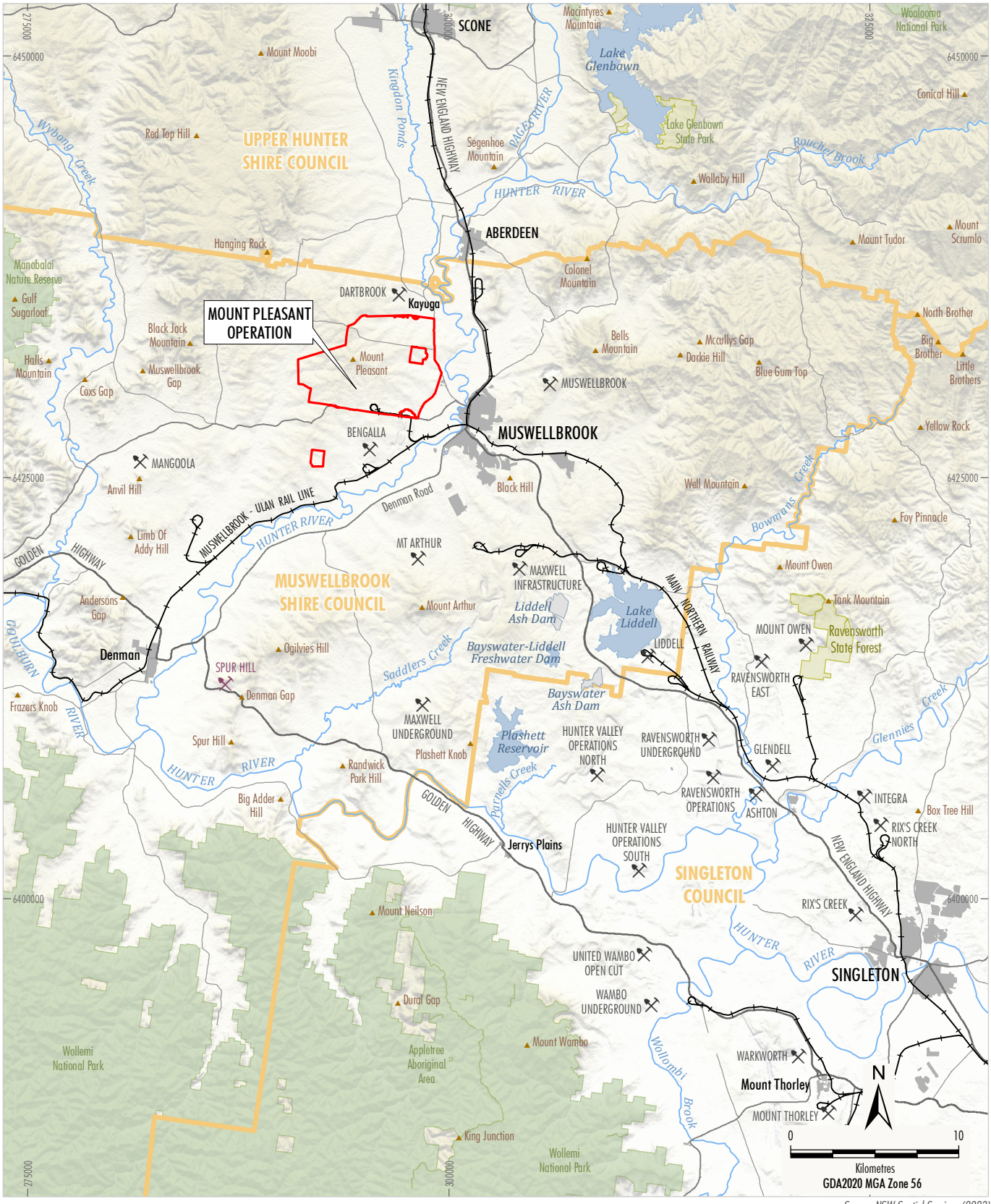
The Mount Pleasant Operation Modification (MOD 1) was submitted on 19 May 2010 with a supporting Environmental Assessment (EA) prepared by EMGA Mitchell McLennan (EMGA Mitchell McLennan, 2010). MOD 1 included the provision of an infrastructure envelope for siting the mine infrastructure, the provision of an optional conveyor/service corridor linking the MPO facilities with the Muswellbrook-Ulan Rail Line and modification of the existing Development Consent DA 92/97 boundaries to accommodate the optional conveyor/service corridor and minor administrative changes. MOD 1 was approved on 19 September 2011.

The MPO South Pit Haul Road Modification (MOD 2) was submitted on 30 January 2017 with a supporting EA prepared by MACH Energy (MACH Energy, 2017a). MOD 2 proposed to realign an internal haul road to enable more efficient access to the South Pit open cut, with no other material changes to the approved MPO. MOD 2 was approved on 29 March 2017.

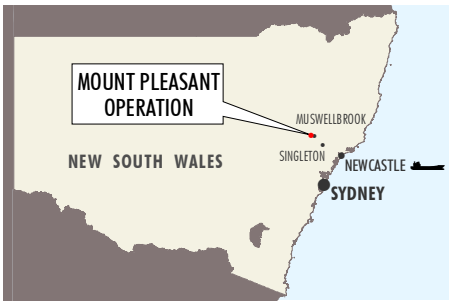
The MPO Mine Optimisation Modification (MOD 3) was submitted on 31 May 2017 with a supporting EA prepared by MACH Energy (MACH Energy, 2017b). MOD 3 comprised an extension to the time limit on mining operations (to 22 December 2026) and extensions to the South Pit Eastern Out of Pit Emplacement to facilitate development of an improved final landform. MOD 3 was approved on 24 August 2018.

The MPO Rail Modification (MOD 4) was submitted on 18 December 2017 with a supporting EA prepared by MACH Energy (MACH Energy, 2017c). MOD 4 proposed the following changes:

- duplication of the approved rail spur, rail loop, conveyor and rail load-out facility and associated services;
- duplication of the Hunter River water supply pump station, water pipeline and associated electricity supply that followed the original rail spur alignment; and
- demolition and removal of the redundant approved infrastructure within the extent of the Bengalla Mine, once the new rail, product loading and water supply infrastructure has been commissioned and is fully operational.



Source: NSW Spatial Services (2023)



LEGEND

- Mining Operation
- Proposed Mining Operation (Application Lodged)
- Railway
- Local Government Boundary
- State Forest/Reserve
- National Parks and Wildlife Estate
- Mining Lease Boundary (Mount Pleasant Operation)

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MOUNT PLEASANT OPERATION

Regional Location

Figure 1

MAC-18-03A MP2023_Figure 1_Rev B

MOD 4 was approved on 16 November 2018 by the Planning Secretary of the Department of Planning and Environment (DPE) (now the NSW Department of Planning, Housing and Infrastructure [DPHI]) (under Delegation). Appendix 2 of the modified Development Consent DA 92/97 illustrates the Conceptual Project Layout Plan of the approved MPO at 2021 and 2025, Approved Surface Disturbance Plan and Conceptual Final Landform (Attachment 1) incorporating the MOD 4 infrastructure relocations.

Modification 5 (MOD 5) was submitted to rectify an administrative error in Development Consent DA 92/97 and was approved by DPE (now DPHI) on 29 June 2022.

Modification 6 (MOD 6) was submitted to modify Development Consent DA 92/97 and was approved on 6 November 2023. MOD 6 will allow for the construction and operation of a re-transmission facility including a tower or mast, shed and associated transmission infrastructure to re-transmit local digital television signals from the Broadcast Australia site at Rossgole Lookout. Appendix 2 of the modified Development Consent DA 92/97 illustrates the Revised Approved Surface Disturbance Plan incorporating the MOD 6 infrastructure (Attachment 1).

On 22 January 2021, MACH Energy submitted the Mount Pleasant Optimisation Project (the Project) EIS in support of State Significant Development (SSD) 10418 under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). Key aspects of the Project generally involve (among other things):

- increased open cut extraction within the MPO's existing Mining Leases (MLs);
- a staged increase in extraction, handling and processing of ROM coal up to 21 million tonnes per annum (Mtpa);
- upgrades to existing infrastructure and new infrastructure to support mining of the proposed Project; and
- an extension to the time limit on mining operations to 22 December 2048.

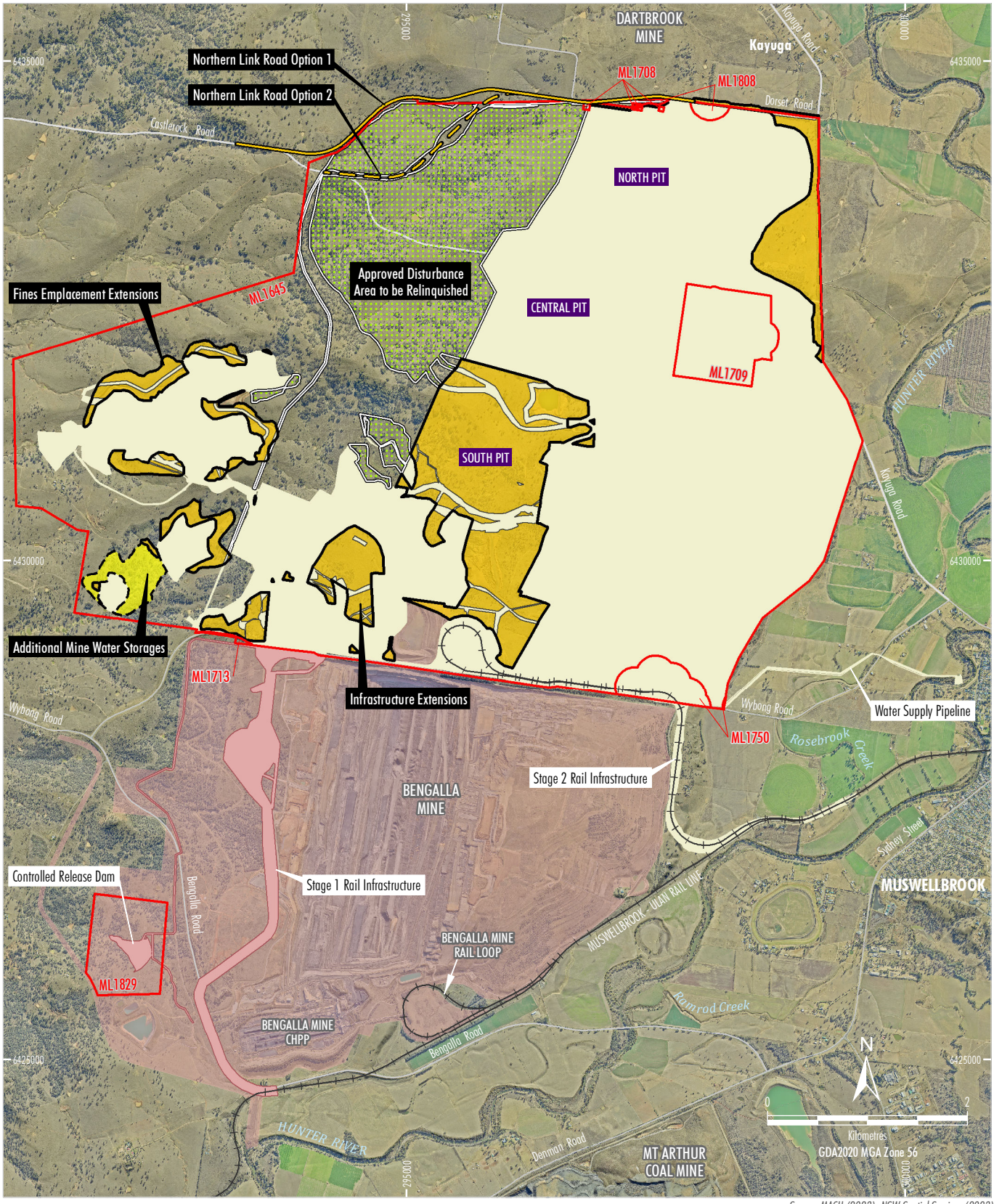
The Project was approved by the NSW Independent Planning Commission on 6 September 2022. Part A, Condition A14 of Development Consent SSD 10418 requires the surrender of Development Consent DA 92/97 within 12 months of the date of commencement of development under Development Consent SSD 10418, or an alternative timeframe agreed with the Planning Secretary of the DPE (now DPHI). Attachment 2 describes the development layout of the Project in accordance with Development Consent SSD 10418.

The Project EIS (MACH Energy, 2021) was supported by an Air Quality Impact Assessment and Greenhouse Gas Calculations Report (Todoroski Air Sciences [TAS], 2020). The Air Quality Impact Assessment and Greenhouse Gas Calculations Report findings and mitigation measures relevant to the preparation of this AQGGMP have been incorporated into this document.

Following the commencement of development under Development Consent SSD 10418 and prior to the surrender of Development Consent DA 92/97, MACH Energy will comply with the requirements of both consents (Section 1.1).

This AQGGMP has been prepared to satisfy the relevant conditions of both Development Consent SSD 10418 and Development Consent DA 92/97 (prior to its surrender). Where relevant, this AQGGMP builds on the components of the existing/approved AQGGMP, including previous feedback from government stakeholders and recommendations.

Figure 2 shows the indicative Project general arrangement and existing/approved surface development areas that would continue to comprise part of the Project and the areas that would be relinquished.



MAC-18-03A MP2023_Figure 2_Rev D

LEGEND

- Railway
- Mining Lease Boundary (Mount Pleasant Operation)
- Project Continuation of Existing/Approved Surface Development (DA92/97) [1]
- Bengalla Mine Approved Disturbance Boundary (SSD-5170)
- Existing/Approved Mount Pleasant Operation Infrastructure within Bengalla Mine Approved Disturbance Boundary (SSD-5170) [1]
- Development Footprint 1 (Stage 1) - General Extension Areas [1]
- Development Footprint 1 (Stage 2) - Mine Water Dam 3 [1]
- Relinquishment Area [2]
- Northern Link Road Option 1 Centreline
- Northern Link Road Option 2 Centreline

NOTES

1. Excludes some incidental Project components such as water management infrastructure, access tracks, topsoil stockpiles, power supply, temporary offices, other ancillary works and construction disturbance.
2. Subject to detailed design of Northern Link Road.

Source: MACH (2023); NSW Spatial Services (2023); Department of Planning and Environment (2016)
Orthophoto: MACH (Jun 2023)

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MOUNT PLEASANT OPERATION

General Arrangement of the Project

Figure 2

1.1 PURPOSE AND SCOPE

This AQGGMP has been prepared by MACH Energy to satisfy the requirements under Development Consent SSD 10418, specifically Part B, Condition B32. It also satisfies the requirements of Schedule 3, Condition 23 under Development Consent DA 92/97 (prior to its surrender).

The AQGGMP applies to all employees and contractors at the MPO and covers all areas within the MPO boundary. The AQGGMP applies to the life of the MPO, including (but not limited to) the period of mining operations specified in Development Consent SSD 10418, which permits mining until 22 December 2048. As required by Part A, Condition A5 of Development Consent SSD 10418, the AQGGMP will continue to apply (excluding mining operations) beyond 22 December 2048, as required, until the rehabilitation and any additional undertakings (required by the Planning Secretary of the DPE (now DPHI), or the NSW Resources Regulator) have been carried out satisfactorily.

All conditions and statutory requirements under Development Consent DA 92/97 will become null and void after its surrender where the MPO will operate under Development Consent SSD 10418 and other relevant legislation.

In accordance with Part B, Condition B32(b) of Development Consent SSD 10418, this AQGGMP has been prepared and reviewed by Aleks Todoroski, Director of TAS, who has been endorsed by the Planning Secretary as a suitably qualified and experienced person. A copy of the endorsement by the Planning Secretary is included in Attachment 3.

As required by Part B, Condition B33 of Development Consent SSD 10418, MACH Energy will not commence construction of the Northern Link Road or extract more than 10.5 Mt of ROM coal in a calendar year until the AQGGMP is approved by the Planning Secretary.

Upon the commencement of development under Development Consent SSD 10418, and before the surrender of Development Consent DA 92/97, in accordance with Part A, Condition A15 of Development Consent SSD 10418, the conditions of Development Consent SSD 10418 prevail to the extent of any inconsistency with the conditions of those consents.

Upon the surrender of Development Consent DA 92/97, MACH Energy will review the AQGGMP within three months and revise the AQGGMP within six weeks of this review (as required under Part D, Condition D7 and D8 of Development Consent SSD 10418). The AQGGMP will be revised to remove all references and information pertaining to Development Consent DA 92/97.

In accordance with Part B, Condition B35 of Development Consent SSD 10418, MACH Energy will implement this AQGGMP once approved by the Planning Secretary.

In addition to meeting the specific performance measures and criteria established under Development Consent SSD 10418, in relation to air quality and greenhouse gas, in accordance with Part A, Condition A1 of Development Consent SSD 10418, MACH Energy will implement all reasonable and feasible measures to prevent, and if prevention is not reasonable and feasible, minimise, any material harm to the environment that may result from the construction and operation of the development, and any rehabilitation required under Development Consent SSD 10418. The air quality and greenhouse gas mitigation measures to be implemented at the MPO are discussed in Section 7.

1.1.1 Previous Version

The previously approved version of the AQGGMP (Version 4) was updated by MACH Energy in May 2019 to replace Version 3. The new version was prepared to reflect the approval of MOD 3 and MOD 4 (24 August 2018 and 16 November 2018, respectively). The new version updated site monitoring locations and real-time response triggers to be consistent with variations to Environment Protection Licence (EPL) 20850 (approved 1 May 2019).

1.1.2 Current Version

The current version of the AQGGMP has been prepared to include additional details regarding air quality and greenhouse gas management measures relevant to the full life of the mine following approval of the Project and conditions under Development Consent SSD 10418, in addition to variations to EPL 20850 (approved 28 February 2023).

1.2 STRUCTURE OF AQGGMP

The remainder of the AQGGMP is structured as follows:

Section 2: Outlines the statutory obligations relevant to this AQGGMP.

Section 3: Existing Environment – outlines the existing environment including baseline data and sensitive receptors in the vicinity of the MPO.

Section 4: Air Quality Criteria – outlines the relevant criteria applicable to the MPO.

Section 5: Performance Indicators – outlines the specific performance indicators that MACH Energy proposes to use to guide the implementation of the air quality management measures and judge their performance.

Section 6: Dust Generating Sources – describes potential dust generating activities at the MPO including mining activities.

Section 7: Air Quality and Greenhouse Gas Management and Control Measures – describes the management and control measures to be implemented, where relevant, at the MPO.

Section 8: Air Quality Monitoring Program – outlines the air quality monitoring program components including locations, frequency and parameters.

Section 9: Contingency Plan – provides a contingency plan to manage unprecedented impacts and their consequences.

Section 10: Review and Improvement of Environmental Performance – provides details of the review process (through the MPO Annual Review and revisions of this AQGGMP) and improvement of the environmental performance of the MPO (through the Independent Environmental Audit [IEA] and revisions of this AQGGMP).

Section 11: Reporting Procedures – describes the management and reporting of incidents, complaints and non-compliances.

Section 12: List of references cited in this AQGGMP.

2 STATUTORY OBLIGATIONS

MACH Energy's statutory obligations are contained in:

- the conditions of Development Consent SSD 10418;
- the conditions of Development Consent DA 92/97 (prior to its surrender);
- the conditions of Commonwealth Approval EPBC 2011/5795;
- the conditions of Commonwealth Approval EPBC 2020/8735;
- relevant licences (including EPL 20850), permits and MLs (ML 1645, ML 1708, ML 1709, ML 1713, ML 1750, ML 1808 and ML 1829); and
- other relevant legislation.

In addition, MACH Energy operates in accordance with the approved MPO Rehabilitation Management Plan and Annual Rehabilitation Report and Forward Program, as amended from time to time, which has replaced the Mining Operation Plan (as of 1 August 2022).

In addition to the above, activities associated with the MPO will be undertaken with the licences, permits and leases described in the MPO Environmental Management Strategy (EMS).

Obligations relevant to this AQGGMP are described in the sections below.

2.1 DEVELOPMENT CONSENT SSD 10418

The conditions of Development Consent SSD 10418 relevant to the content and structure of this AQGGMP are described in Sections 2.1.1 and 2.1.2 below.

A comprehensive list of all air quality and greenhouse gas related conditions from Development Consent SSD 10418 are described in Appendix A.

2.1.1 AQGGMP Requirements

This AQGGMP has been prepared by MACH Energy to satisfy the requirements of Part B, Condition B32 of Development Consent SSD 10418 (Table 1) and Schedule 3, Condition 23 of Development Consent DA 92/97 (prior to its surrender) (Section 2.2). Additional conditions relevant to air quality and greenhouse gas are detailed in Appendix A and Appendix B.

Part B, Condition B32(c) of Development Consent SSD 10418 requires that the AQGGMP be prepared in consultation with the Climate and Science Branch within DPE (CAS) and NSW Environment Protection Authority (EPA). Details of the consultation undertaken, and the outcome of that consultation are detailed in Appendix C.

Table 1
Specific Development Consent SSD 10418 Conditions

MPO Development Consent SSD 10418 Part B	Section where addressed in this AQGGMP document
B32. The Applicant must prepare an Air Quality and Greenhouse Gas Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:	This document.
(a) be submitted for approval within six months of the commencement of development under this consent;	Noted.
(b) be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;	Section 1.1 and Attachment 3
(c) be prepared in consultation with the CAS and EPA;	Appendix C
(d) describe the measures to be implemented to ensure:	
(i) compliance with the air quality criteria and operating conditions of this consent;	Sections 4, 5, 6, 7 and 8
(ii) best practice management is being employed to: • *minimise the development's air quality impacts;* • *minimise the development's Scope 1 and 2 GHGEs; and* • *improve the development's energy efficiency; and*	Section 7
(iii) the air quality impacts of the development are minimised during adverse meteorological conditions and extraordinary events;	Section 7.1
(e) describe the air quality management system in detail; and	Section 7
(f) include an air quality monitoring program, undertaken in accordance with the Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales (DEC, 2007), that:	Section 8
(i) includes an estimate of the emissions of $PM_{2.5}$ per kilometre travelled from all 'non-road' mobile diesel equipment used for the development;	Section 8.1.5
(ii) uses monitors to evaluate the performance of the development against the air quality criteria in this consent and to guide day-to-day planning of mining operations;	Section 7.4
(iii) adequately supports the air quality management system;	
(iv) includes a protocol for distinguishing the dust emissions of the development from any neighbouring developments; and	Section 7.8
(v) includes a protocol for identifying any air quality-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of these events.	Sections 8.3, 9 and 11
B33. The Applicant must not commence construction of the Northern Link Road or extract more than 10.5 Mt of ROM coal in a calendar year until the Air Quality and Greenhouse Gas Management Plan is approved by the Planning Secretary.	Section 1.1
B34. Within 12 months of approval of the Air Quality and Greenhouse Gas Management Plan and then every 3 years during the life of mining operations (and any period of suspension of ROM coal extraction and/or processing), the Air Quality and Greenhouse Gas Management Plan must be updated to include the following information in relation to Scope 1 and Scope 2 GHGEs:	Section 10.2
(a) a review of all available GHGE abatement measures relevant to the development;	Section 7.6

Table 1 (Continued)
Specific Development Consent SSD 10418 Conditions

MPO Development Consent SSD 10418 Part B	Section where addressed in this AQGGMP document
(b) a review, to the satisfaction of the Planning Secretary, of the reasonable and feasible GHGE abatement measures, and economic considerations for the development;	Section 7.6
(c) a 3-year action plan to investigate and implement all reasonable and feasible abatement measures to minimise GHGEs;	Section 7.6
(d) a description of measures to minimise long-term Scope 1 GHGEs. These measures are to: *(i) have regard to the abatement measures and abatement options required by condition B34(a) and (b); and* *(ii) be aimed at achieving, as soon as reasonably feasible but by 2034 at the latest, a 5-year rolling average by calendar year of the annual Scope 1 GHGE intensities of not more than 0.028 tonnes of CO2-e emitted from the development per tonne of ROM coal; and*	Section 7.6
(e) a reporting of compliance with the performance measures in Table 4, and revise where reasonable and feasible to minimise GHGEs.	Section 7.6
B35. The Applicant must implement the Air Quality and Greenhouse Gas Management Plan (and any update thereof), including any measures it describes, as approved by the Planning Secretary.	Section 1.1

2.1.2 Management Plan (General) Requirements

Part D, Condition D5 of Development Consent SSD 10418 outlines general management plan requirements. Table 2 presents these requirements and indicates where each is addressed within this AQGGMP.

Table 2
General Development Consent SSD 10418 Conditions

MPO Development Consent SSD 10418 Part D	Where addressed in this AQGGMP document
D5. Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:	-
(a) summary of relevant background or baseline data;	Section 3
(b) details of:	
(i) the relevant statutory requirements (including any relevant approval, licence or lease conditions);	Section 2
(ii) any relevant limits or performance measures and criteria; and	Section 4
(iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;	Section 5
(c) any relevant commitments or recommendations identified in the document/s listed in condition A2(c);	Sections 7.4, 7.6 and 8
(d) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	Sections 7, 9, 10 and 11
(e) a program to monitor and report on the:	Sections 8, 10 and 11
(i) impacts and environmental performance of the development; and	
(ii) effectiveness of the management measures set out pursuant to condition D4(c);	
(f) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;	Section 9
(g) a program to investigate and implement ways to improve the environmental performance of the development over time;	Section 10
(h) a protocol for managing and reporting any:	Section 11
(i) incident, non-compliance or exceedance of any impact assessment criterion or performance criterion;	
(ii) complaint; or	
(iii) failure to comply with other statutory requirements;	
(i) public sources of information and data to assist stakeholders in understanding environmental impacts of the development; and	Section 11.4
(j) a protocol for periodic review of the plan.	Section 10.2
***Note**: The Planning Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.*	

2.2 DEVELOPMENT CONSENT DA 92/97

The conditions of Development Consent DA 92/97 relevant to the content and structure of this AQGGMP are described in Sections 2.2.1 and 2.2.2 below.

A comprehensive list of all air quality and greenhouse gas related conditions from Development Consent DA 92/97 are described in Appendix B.

2.2.1 AQGGMP Requirements

Table 3 presents the requirements of Schedule 3, Condition 23 of Development Consent DA 92/97 (prior to its surrender) and where they are addressed in this AQGGMP.

Table 3
Specific Development Consent DA 92/97 Conditions

MPO Development Consent DA 92/97 Schedule 3	Section where addressed in this AQGGMP document
23. *The Applicant must prepare an Air Quality and Greenhouse Gas Management Plan for the development to the satisfaction of the Secretary. This plan must:*	This document.
(a) be submitted to the Secretary for approval prior to carrying out any development on site;	Noted.
(b) describe the measures that would be implemented to ensure compliance with the relevant conditions of this consent, including a real-time air quality management system that employs reactive and proactive mitigation measures;	Sections 7, 9, 10 and 11
(c) include an air quality monitoring program that:	Section 8
• *uses a combination of real-time monitors and supplementary monitors to evaluate the performance of the development;*	Section 8.1
• *includes $PM_{2.5}$ monitoring (although this obligation could be satisfied by the regional air quality monitoring network if sufficient justification is provided);*	Section 8.1.3
• *includes a protocol for determining exceedances of the relevant conditions of this consent; and*	Section 8.3
(d) include a protocol that has been prepared in consultation with the owners of nearby mines to minimise the cumulative air quality impacts of the mines.	Section 7.8
The Applicant must implement the management plan as approved by the Secretary.	

2.2.2 Management Plan (General) Requirements DA 92/97

Schedule 5, Condition 2 of Development Consent DA 92/97 outlines the general management plan requirements that are applicable to the preparation of this AQGGMP. Table 4 presents these requirements and indicates where each is addressed within this AQGGMP.

Table 4
General Development Consent DA 92/97 Conditions

MPO Development Consent DA 92/97 Schedule 5	Where addressed in this AQGGMP document
2. The Applicant must ensure that the management plans required under this consent are prepared in accordance with any relevant guidelines, and include:	-
(a) detailed baseline data;	Section 3
(b) a description of:	
• *the relevant statutory requirements (including any relevant consent, licence or lease conditions);*	Section 2
• *any relevant limits or performance measures/criteria;*	Section 4
• *the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;*	Section 5
(c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;	Sections 7, 9, 10 and 11
(d) a program to monitor and report on the:	Sections 8, 10 and 11
• *impacts and environmental performance of the development;*	
• *effectiveness of any management measures (see c above);*	
(e) a contingency plan to manage any unpredicted impacts and their consequences;	Section 9
(f) a program to investigate and implement ways to improve the environmental performance of the development over time;	Section 10
(g) a protocol for managing and reporting any:	Section 11
• *incidents;*	
• *complaints;*	
• *non-compliances with statutory requirements; and*	
• *exceedances of the impact assessment criteria and/or performance criteria; and*	
(h) a protocol for periodic review of the plan.	Section 10.2
***Note**: The Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.*	

2.3 OTHER LEGISLATION, POLICIES AND GUIDELINES

Obligations from relevant guidelines, protocols, Australian Standards, codes or policies will be addressed in this AQGGMP, in accordance with Part A, Condition A34 of Development Consent SSD 10418 and Schedule 2, Condition 13 of Development Consent DA 92/97 (prior to its surrender).

Other NSW Acts and Regulations that may be applicable to air quality at the MPO include, but are not limited to, the:

- *Climate Change (Net Zero Future) Act 2023* (Net Zero Future Act)*;*
- *Protection of the Environment Operations Act 1997* (POEO Act);
- *Protection of the Environment Operations (General) Regulation 2022*;
- *Protection of the Environment Operations (Clean Air) Regulation 2022*;
- *Work Health and Safety Act 2011*;
- *Work Health and Safety Regulation 2017*;
- *Work Health and Safety (Mines and Petroleum Sites) Act 2013*; and
- *Work Health and Safety (Mines and Petroleum Sites) Regulation 2022*.

Commonwealth Acts which may be applicable to the conduct of the MPO include:

- *Environment Protection and Biodiversity Conservation Act 1999*;
- *Native Title Act 1993*; and
- *National Greenhouse and Energy Reporting Act 2007* (NGER Act).

Other guidelines and standards that were considered during the preparation of this AQGGMP include:

- *Approved Methods for the Sampling and Analysis of Air Pollutants in NSW* (EPA, 2022a);
- *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (EPA, 2022b);
- Australian and New Zealand Standard AS/NZS 3580.10.1:2003: *Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method*;
- Australian and New Zealand Standard AS/NZS 3580.9.8-2008: *Methods for sampling and analysis of ambient air – PM_{10} continuous direct mass method using a tapered element oscillating microbalance analyser*;
- Australian and New Zealand Standard AS/NZS 3580.9.3:2015: *Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – Total suspended particulate matter (TSP) - High volume sampler gravimetric method*;
- Australian and New Zealand Standard AS/NZS 3580.14:2014: *Methods for sampling and analysis of ambient air – Meteorological monitoring for ambient air quality monitoring applications;*
- Australian Standard AS 3580.9.8:2022: *Methods for sampling and analysis of ambient air, Method 9.8: Determination of suspended particulate matter — PM10 continuous direct mass method using a tapered element oscillating microbalance*; and
- Draft *Greenhouse Gas Assessment Guide for Large Emitters* (EPA, 2024).

3 EXISTING ENVIRONMENT

The MPO is located in the Upper Hunter Valley of NSW, north-west of Muswellbrook and approximately 50 km north-west of Singleton (Figure 1). The villages of Aberdeen and Kayuga are located approximately 5 km north-northeast and 1 km north of the MPO boundary, respectively.

The substances considered in this AQGGMP are those identified in Development Consent SSD 10418 and Development Consent DA 92/97 that have potential to affect the general health and amenity of the community and the surrounding environment. This includes particulate matter, which refers to particles of varying size and composition that are defined as follows:

- Total Suspended Particulate matter (TSP) – refers to the total dust particles that are suspended in the air and nominally defined with an upper size range of 30 micrometres (µm).
- PM_{10} – refers to particulate matter with an aerodynamic diameter less than or equal to 10 µm.
- $PM_{2.5}$ – refers to particulate matter with an aerodynamic diameter less than or equal to 2.5 µm.
- Deposited dust – refers to the largest dust particles in the air. These particles rarely travel far from the source as they rapidly settle under gravity.

Other relevant substances considered in this plan are odorous compounds (generally associated with spontaneous combustion events) and oxides of nitrogen (generally associated with blast fumes).

3.1 BASELINE DATA

Dust in the vicinity of the MPO has been monitored by a series of dust gauges that measure deposited dust on a monthly basis, and for some time now, Palas Fidas monitoring systems and High Volume Air Sampler systems (HVAS) have also been employed.

The Hunter Valley runs along a north-west/south-east axis through the Great Dividing Range and gives rise to the distinct channelling of winds along this axis that is prevalent in much of the area. Almost no winds originate from the north-east and south-west quadrants. The local topography plays an important role in steering and channelling the wind, generating turbulence and large-scale eddies, which all influence the dispersion of pollutants. Other influences in the Hunter Valley include the night-time drainage flows (katabatic winds) that transport air from the mountains down across the valley as well as the daytime flows that transport the air back upslope.

There is also a strong seasonal variation in the prevailing wind direction in the Hunter Valley, with winds during summer originating predominantly from the south-eastern quadrant with fewer winds originating from the north-western quadrant. During winter, this pattern is reversed and winds from the north-west are dominant. Spring and autumn are a combination of these two trends. This is a common seasonal pattern found throughout the Hunter Valley and is shown in the wind roses presented in the Project EIS (MACH Energy, 2021) and the 1997 EIS (ERM Mitchell McCotter, 1997).

The following section incorporates existing information from the Project EIS (MACH Energy, 2021), the 1997 EIS (ERM Mitchell McCotter, 1997) and subsequent MPO Annual Reviews since the submission of the Project EIS.

3.1.1 Mount Pleasant Optimisation Project Environmental Impact Statement 2021

The following describes the baseline data reported in the Project EIS (MACH Energy, 2021).

Dust Deposition

The monitoring captures particulate matter from sources including existing active mining operations (e.g. the MPO and other mines), commercial and industrial sources (including power generation), agriculture, other localised particulate matter sources (e.g. wood heaters, vehicles using unsealed roads and wind erosion of exposed areas) and regional particulate matter sources (e.g. bushfires and dust storms).

Dust deposition monitoring data have been collected at 13 locations in the vicinity of the MPO since 2012. The mean annual deposition rates at each of the 13 sampling sites are summarised in Table 5 and the monitoring locations are shown on Figure 3.

Table 5
Annual Average Dust Deposition (Insoluble Solids) Levels (g/m^2/month)

Location	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
D1	1.4	1.2	1.3	1.0	1.3	1.3	1.6	2.4	2.6	2.4	2.3	1.9
D3a	2.2	1.8	1.8	1.5	1.5	1.9	2.9	3.6	2.6	1.6	1.7	-
D4	1.6	1.3	1.1	2.4	1.2	1.4	1.8	2.5	2.8	1.6	1.0	1.3
D5	2.9	3.0	2.9	2.4	2.2	2.4	2.5	3.3	3.1	2.9	2.2	2.8
D6	2.1	2.1	3.0	2.5	2.3	2.6	3.2	**6.4**	3.3	2.7	1.6	2.5
D7b	**13.0**	**11.5**	**11.0**	**5.8**	**6.8**	**5.8**	**8.5**	**7.6**	**6.0**	**7.9**	**6.2**	**8.0**
D8	3.4	**4.1**	3.6	3.0	2.8	**5.9**	3.9	**5.0**	**4.7**	3.4	3.2	3.8
D9a	1.3	1.4	1.5	1.3	1.6	1.7	1.9	**4.3**	3.7	1.7	2.4	**4.2**
D10	1.2	**4.2**	1.0	0.8	1.1	1.3	1.5	1.8	1.7	1.0	0.9	1.1
D11	1.9	1.0	1.6	1.4	1.3	1.7	2.0	3.0	3.2	1.7	1.9	3.1
D12	1.1	0.7	1.0	0.8	0.7	0.9	1.5	1.5	2.2	0.7	0.6	1.0
D13	1.9	2.2	2.0	2.1	2.0	3.3	2.7	-	3.6	1.5	1.1	1.4
D14	2.4	3.0	3.2	2.2	3.2	2.5	3.7	**4.3**	3.2	2.9	2.8	3.7

Source: MACH Energy, 2021; MACH Energy, 2023; MACH Energy, 2024.

Note: g/m^2/month = grams per square metre per month.
Bold text indicates an exceedance of relevant dust deposition criteria of 4 g/m^2/month (Development Consent DA 92/97).

Mean annual rates of dust deposition were generally less than the exceedance criteria in Development Consent DA 92/97 of 4 g/m^2/month. The exceptions were site D6 with 6.4 g/m^2/month in 2019, site D8 with 4.1, 5.9, 5.0 and 4.7 g/m^2/month in 2013, 2017, 2019 and 2020, respectively, site D9a with 4.3 g/m^2/month in 2019, site D10 with 4.2 g/m^2/month in 2015, site D14 with 4.3 g/m^2/month in 2019. Site D7b consistently recorded results above the criteria, however it is not used to assess compliance or to represent residential receivers in the area as it is in a location that may be affected by various sources of dust and is not representative of any off-site effects.

Total Suspended Particulates, PM_{10} and $PM_{2.5}$

Monitoring of TSP, PM_{10} and $PM_{2.5}$ was undertaken reliably from 2017 to 2023 using the Palas Fidas monitoring systems installed in 2016 (A-PF2, A-PF4 and A-PF5) and HVAS (A-HV2, A-HV4 and A-HV5). The HVAS and Palas Fidas monitoring systems were installed at the same locations. Table 6 summarised the background data for TSP, PM_{10} and $PM_{2.5}$. Monitoring locations are shown on Figure 3.

Table 6
Annual Average TSP, PM_{10} and $PM_{2.5}$ Concentrations

Location	TSP Concentration (µg/m³)						
	2017	2018	2019	2020	2021	2022	2023
A-HV2 / A-PF2	52.9	89.6*	80.6*	51.8*	49.3	39.3	61.9
A-HV4 / A-PF4	30.5	45.5*	46.7*	32.2*	27.6	30.1	39.9
A-HV5 / A-PF5	25.4	43.7*	48.3*	31.6*	27.2	26.8	56.3

Location	$PM_{2.5}$ Concentration (µg/m³)						
	2017	2018	2019	2020	2021	2022	2023
A-HV2 / A-PF2	5.1	6.1*	6.4*	5.8*	5.2	4.9	6.0
A-HV4 / A-PF4	4.8	5.5*	5.4*	5.3*	4.8	4.3	5.1
A-HV5 / A-PF5	-	5.2*	5.5*	4.6*	4.9	4.6	5.0^

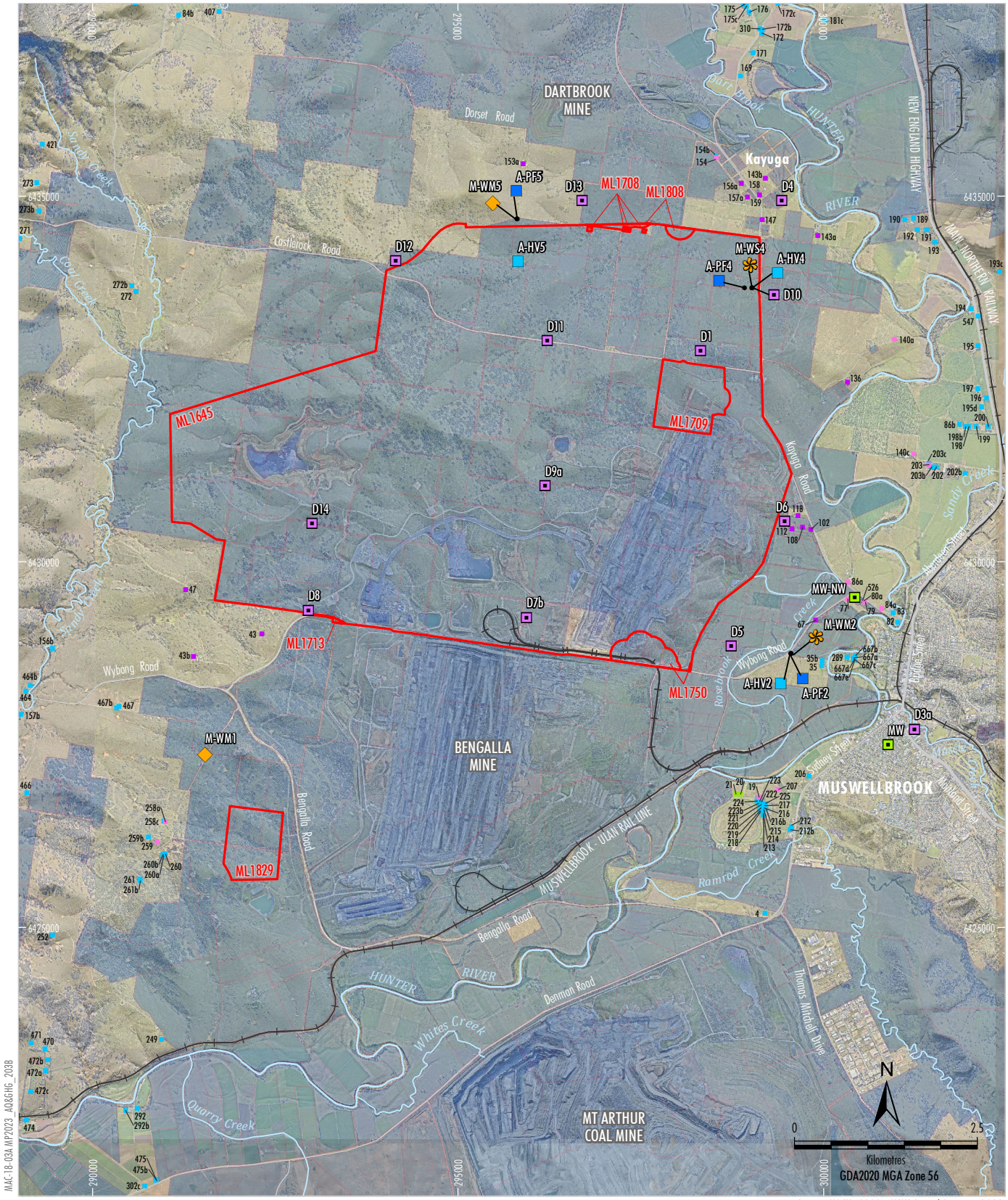
Location	PM_{10} Concentration (µg/m³)						
	2017	2018	2019	2020	2021	2022	2023
A-HV2 / A-PF2	17.4	23.4*	23.4*	16.8*	16.1	14.0	20.4
A-HV4 / A-PF4	8.9	16.0*	16.3*	13.4*	13.4	10.9	13.4
A-HV5 / A-PF5	-	15.4*	17.5*	10.7*	10.7	12.3	15.3^

Source: MACH Energy, 2021; MACH Energy, 2024.

* Results exclude 'extraordinary events' (e.g. dust storms and bushfire activity).

^ Insufficient data (38% data availability) for an annual average calculation.

Note: µg/m³ = micrograms per cubic metre.



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Source: MACH (2023); NSW Spatial Services (2023)
Orthophoto: MACH (Dec 2022)

LEGEND

- Mining Lease Boundary (Mount Pleasant Operation)
- Mine-owned Land
- Railway

Monitoring Sites

- Air Quality - High Volume Sampler
- Air Quality - Palas Fidas
- Dust Deposition Gauge
- Upper Hunter Air Quality Monitoring Network
- Weather Mast
- Weather Station

Category of Rural Residence under DA92/97

- Privately-owned - Acquisition on Request
- Privately-owned - Mitigation on Request
- Privately-owned - Mitigation/Acquisition on Request*
- Other Privately-owned

* Mitigation on Request - rail noise/Aquisition on Request - air quality. MACH is only required to acquire and/or install air quality mitigation measures at this property if not reasonably achievable under a separate approval for the Bengalla Mine.

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Air Quality and Meteorological Monitoring Sites

Figure 3

As part of the Project EIS (MACH Energy, 2021), TAS (2020) estimated the contribution of local mining operations to dust levels representative of the 2015 calendar period. The estimated background dust levels excluding local mining operations such as Bengalla Mine, Mt Arthur Coal Mine, Mangoola Coal, Muswellbrook Coal Mine and the former Drayton Mine are provided in Table 7.

Table 7
Estimated Background Dust Levels Excluding Local Mining Operations

Dust Metric	Averaging Period	Estimated Contribution	Unit
TSP	Annual	34.8	µg/m^3
PM_{10}	Annual	Variable grid (approximately 4 to 14)	µg/m^3
$PM_{2.5}$	Annual	2.9	µg/m^3
$PM_{2.5}$ (edge of Muswellbrook)	Annual	5.4	µg/m^3
Dust Deposition	Annual	1.9	g/m^2/month

Source: MACH Energy, 2021.

Greenhouse Gas Emissions

Key greenhouse gas emission sources for the MPO are listed in Table 8. These sources are considered in the estimate of greenhouse gas emissions emitted from the MPO. The estimates are developed in accordance with the *National Greenhouse Accounts Factors* (NGA Factors) (Department of Industry, Science, Energy and Resources, 2020) emissions factors where possible. Where NGA Factors were not available emission factors from similar projects for the same activities were used. Fugitive emissions from the MPO have been calculated using site-specific emission data.

Table 8
Summary of Potential Greenhouse Gas Emission Sources for the MPO

Type of Emission	Description
Scope 1	• Direct emissions from the combustion of diesel, including during decommissioning. • Direct emissions from the consumption of oil and grease, including during decommissioning. • Direct emissions from the use of explosives. • Release of stored carbon in vegetation resulting from land clearing. • Fugitive emissions that result from the extraction of coal.
Scope 2	• Emissions from the consumption of purchased electricity.
Scope 3	• Upstream emissions from the extraction, production and transport of fuel burned for the generation of electricity consumed, and the electricity lost in delivery in the transmission and distribution network. • Upstream emissions attributable to the extraction, production and transport of diesel consumed at the MPO. • Upstream emissions attributable to the extraction, production and transport of oil and grease consumed at the MPO. • Downstream emissions from the combustion of fuels used during domestic rail transport and shipping. • Downstream third-party emissions from the combustion of product coal from the MPO.

Source: MACH Energy, 2021.

The total emissions from Scope 1, 2 and 3 over the life of the MPO (MACH Energy, 2022a) are estimated to be approximately:

- Scope 1: 13.9 million tonnes of carbon dioxide equivalent (Mt CO_2-e) with an average of 0.53 Mt CO_2-e per year during operations.
- Scope 2: 2.17 Mt CO_2-e with an average of 0.08 Mt CO_2-e per year during operations.
- Scope 3: 860 Mt CO_2-e with an average of 33.1 Mt CO_2-e per year during operations.

The fugitive emissions factor for the MPO was projected to be approximately 0.020 tonnes (t) CO_2-e per tonnes of ROM coal (t CO_2-e/ t ROM coal) (MACH Energy, 2022a). This intensity compares favourably to other coal mining operations which range from 0.0003 t CO_2-e / t ROM coal for Victoria and South Australia, to 0.061 t CO_2-e / t ROM coal for open cut mines in NSW (MACH Energy, 2022a).

A summary of the greenhouse gas emission estimates for the MPO is detailed below in Table 9.

Table 9
Summary of Greenhouse Gas Emission Estimates

Period	Estimated Greenhouse Emissions (Mt CO_2-e)		
	Scope 1	Scope 2	Scope 3
Annual average*	0.53	0.08	33.1
Maximum annual value	0.89	0.11	45.1
Total over life of Project*	13.9	2.17	860

Source: MACH Energy, 2022a.
Note:
* The annual average values exclude the decommissioning phase, but the total values include the decommissioning phase.

3.1.2 Mount Pleasant Mine Environmental Impact Statement 1997

The following describes the baseline data reported in the 1997 EIS (ERM Mitchell McCotter, 1997).

Dust Deposition

Existing atmospheric dust levels at Muswellbrook are generated by a variety of sources including plant pollen, farming activities such as ploughing, wind erosion from bare surfaces, traffic on sealed and unsealed roads, coal mining and power generation. Domestic wood or coal fires also add to the particulate matter in the air. A monitoring program was established in 1992 to determine the existing, or background, dust levels for the 1997 EIS (ERM Mitchell McCotter, 1997).

A network of 14 dust deposition gauges was used to determine monthly rates of dustfall at various locations in the area. The mean deposition rates at each of the 14 sampling sites are summarised in Table 10 below and the monitoring locations from the Mount Pleasant Mine in 1997 are shown on Figure 4.

Table 10
Mean Annual Dust Deposition

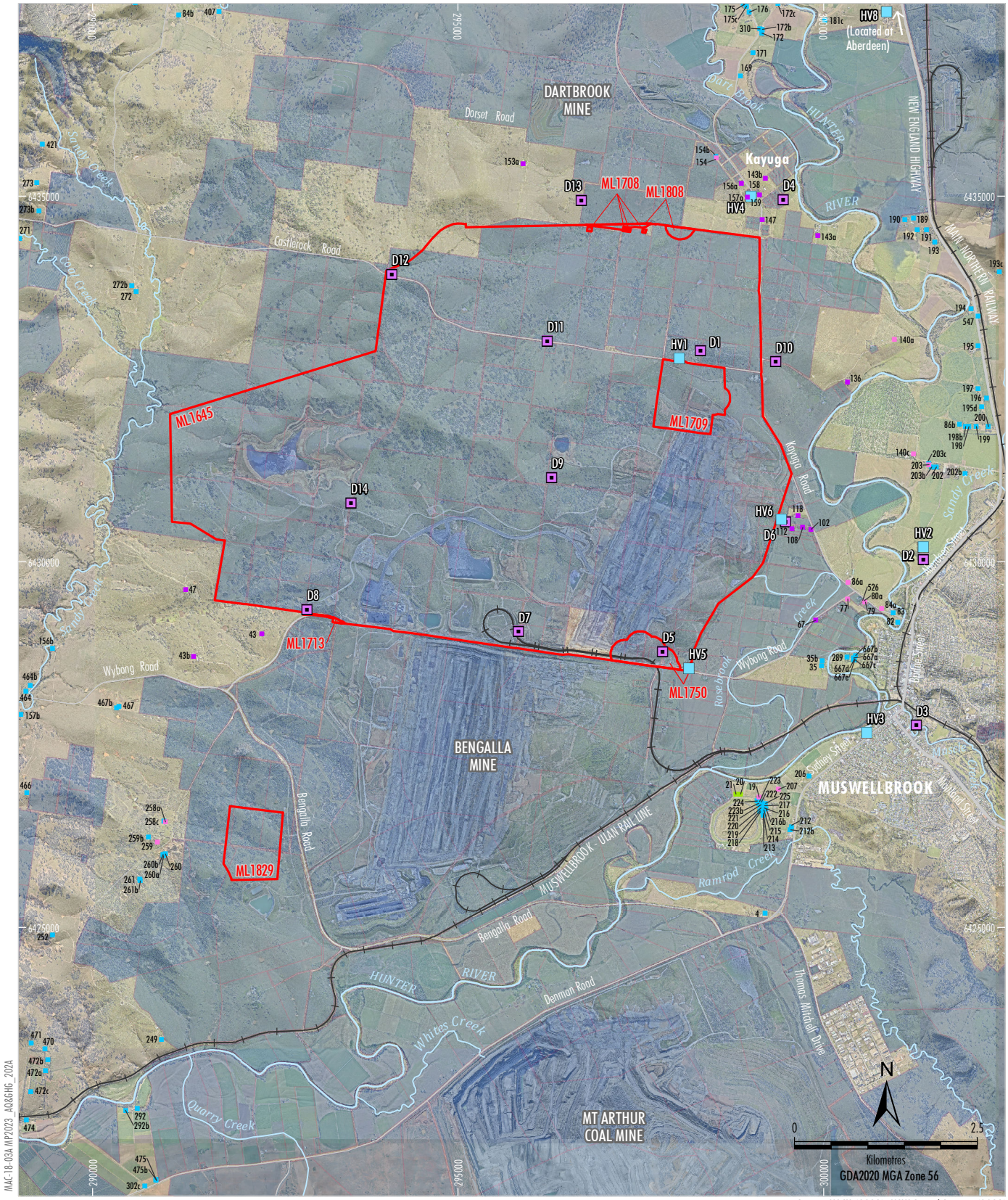
Site	Deposition Rate (g/m^2/month)				Total Number of Measurements
	1993	1994	1995	1996	
D1	0.6	0.6	0.7	0.5	45
D2	1.4	1.5	1.5	1.3	45
D3a	2.0	2.1	2.0	1.2	45
D4	1.5	2.7	1.6	1.0	40
D5	1.4	1.3	1.1	1.6	42
D6	1.1	1.3	1.2	0.9	44
D7b	1.4	1.0	1.1	1.1	43
D8	1.5	0.8	1.1	1.0	40
D9a	0.8	0.8	0.7	0.4	43
D10	1.1	1.5	0.7	1.2	41
D11	1.5	1.0	1.0	1.2	41
D12	0.5	0.5	0.5	0.6	45
D13	0.8	1.4	1.2	0.9	43
D14	1.3	1.7	1.4	1.2	44
Average	1.2	1.3	1.1	1.0	-

Source: ERM Mitchell McCotter, 1997.

Mean annual rates of dust deposition were consistently less than 2.0 g/m^2/month. The exceptions were site D4, near Kayuga, with 2.7 g/m^2/month in 1994 and site D3a, near Muswellbrook, which recorded an annual mean of 2.1 g/m^2/month in 1994. The average of all sites over each year was 1.2 g/m^2/month in 1993, 1.3 g/m^2/month in 1994, 1.1 g/m^2/month in 1995 and 1.0 g/m^2/month in 1996.

Total Suspended Particulates and PM_{10}

Monitoring of TSP and PM_{10} was undertaken on a one-day-in-six cycle at seven monitoring sites in 1993 and 1994 (HV1 to HV6 and HV8, Figure 4). Mean values for TSP were calculated and are summarised in Table 11.



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LEGEND

- Mining Lease Boundary (Mount Pleasant Operation)
- Mine-owned Land
- Railway

Monitoring Sites

- Dust Deposition Gauge
- High Volume Air Sampler

Category of Rural Residence under DA92/97

- Privately-owned - Acquisition on Request
- Privately-owned - Mitigation on Request
- Privately-owned - Mitigation/Acquisition on Request*
- Other Privately-owned

* Mitigation on Request - rail noise/Aquisition on Request - air quality. MACH is only required to acquire and/or install air quality mitigation measures at this property if not reasonably achievable under a separate approval for the Bengalla Mine.

Source: MACH (2023); NSW Spatial Services (2023)
Orthophoto: MACH (Dec 2022)

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1997 EIS Air Quality Monitoring Sites

Figure 4

Table 11
Mean Annual TSP Concentrations

Site	Concentration (µg/m^3)		Total Number of Measurements	
	1993	1994	1993	1994
HV1	20.4	28.0	10	16
HV2	37.4	48.7	7	13
HV3	33.7	40.8	11	22
HV4	21.7	38.5	15	19
HV5	30.0	43.5	15	12
HV6	38.2	40.2	13	14
HV8	42.4	51.7	30	11

Source: ERM Mitchell McCotter, 1997.

Dust concentration values, determined as geometric means measured over periods of 24 hours, ranged from 20.4 to 42.4 µg/m^3 in 1993 and 28.0 to 51.7 µg/m^3 in 1994 (Table 11). The consistently higher mean concentrations in 1994 were most likely due to dry weather conditions throughout much of the year.

A total of 21 samples of PM_{10} were collected during monitoring intervals in 1993 and 1994. Nineteen of the 21 samples collected had 24-hour concentrations of PM_{10} ranging from 8 to 33 µg/m^3. Two samples collected in early October 1994, at the peak of the drought, recorded 24-hour concentrations of 70 µg/m^3 at HV1 (within the site) and 76 µg/m^3 at HV6 (near the eastern boundary of the site).

3.1.3 MPO Annual Reviews

Following the 1997 EIS (ERM Mitchell McCotter 1997), the objective of air quality management at the MPO was to monitor the background or baseline dust levels prior to the commencement of the MPO mining activities.

Monitoring of the background or baseline dust deposition levels, TSP, PM_{10} and $PM_{2.5}$ at the MPO has been reported in the relevant MPO Annual Reviews (formerly known as Annual Environmental Management Reports). Figure 3 displays the current dust deposition monitoring network that has been used at the MPO for background or baseline dust levels.

Dust Deposition

Monitoring reported in the MPO Annual Reviews from 2010 to 2023 has identified exceedances of the EPA annual impact assessment criteria (4 g/m^2/month) at the following locations (Appendix D) (Coal & Allied, 2011; 2012; 2013; 2014; 2015 and 2016) (MACH Energy, 2017d; 2018; 2019; 2020; 2021; 2022b; 2023 and 2024):

- Site D6 (6.4 g/m^2/month in 2019).
- Site D7b (15.0 g/m^2/month in 2010, 12.1 g/m^2/month in 2011, 13.0 g/m^2/month in 2012, 11.5 g/m^2/month in 2013, 11.0 g/m^2/month in 2014, 5.8 g/m^2/month in 2015, 6.8 g/m^2/month in 2016, 5.8 g/m^2/month in 2017, 8.5 g/m^2/month in 2018, 7.6 g/m^2/month in 2019, 6.0 g/m^2/month in 2020, 7.9 g/m^2/month in 2021, 6.2 g/m^2/month in 2022 and 8.0 g/m^2/month in 2023).
- Site D8 (4.1 g/m^2/month in 2013, 5.9 g/m^2/month in 2017, 5.0 g/m^2/month in 2019 and 4.7 g/m^2/month in 2020).
- Site D9a (4.3 g/m^2/month in 2019 and 4.2 g/m^2/month in 2023).
- Site D10 (4.2 g/m^2/month in 2013).
- Site D14 (4.3 g/m^2/month in 2019).

Site D7b is located in close proximity to the northern boundary of the Bengalla Mine main pit. Review of the dust deposition results recorded for the Bengalla Mine shows that depositional dust levels are generally greater in the proximity of the mining operation extending out to the north-west and south-southeast corresponding with the predominant wind directions.

Excluding site D7b, the mean annual average dust deposition at all gauges for the period 2010 to 2023 was approximately 2.7 g/m²/month.

Total Suspended Particulates, PM_{10} and $PM_{2.5}$

Monitoring reported in the MPO Annual Reviews from 2019 to 2023 has identified no exceedances for the annual average criteria under Development Consent DA 92/97 for TSP, PM_{10} and $PM_{2.5}$ (90 µg/m^3, 25 µg/m^3 and 8 µg/m^3, respectively) (MACH Energy, 2020; 2021; 2022b; 2023 and 2024).

The mean annual average TSP, PM_{10} and $PM_{2.5}$ (excluding extraordinary events) at all monitors for the period 2019 to 2023 was approximately 38.9 µg/m^3, 13.8 µg/m^3 and 5 µg/m^3, respectively.

3.1.4 Muswellbrook NW Data

Ambient PM_{10} levels measured by the Muswellbrook NW Upper Hunter Air Quality Monitoring Network Monitor for the period 2012 to 2023 are provided in Table 12.

Table 12
PM_{10} Levels Measured at the Muswellbrook NW Monitor

Year	Annual Average Concentration (µg/m^3)	24 hour Average	
		Maximum Concentration (µg/m^3)	Number of Days Exceeding 50 µg/m^3 (days)
2012	19.1	55.8	1
2013	18.9	52.4	3
2014	19.2	50.8	1
2015	16.7	72.9	2
2016	16.6	44.8	0
2017	18.5	51.0	1
2018	25.0	195.4	10
2019	33.7	244.6	57
2020	21.0	238.6	14
2021	15.6	38.2	0
2022	14.3	55.5	1
2023	19.8	57.5	4

Source: Upper Hunter Air Quality Monitoring Network.

3.1.5 MPO Safeguard Baseline

The Safeguard Mechanism Reforms (Commonwealth Department of Climate Change, Energy, the Environment Water [Commonwealth DCCEEW], 2024) introduced an amendment to the NGER Act and other legislation (i.e. the Climate Act) to establish the framework to give effect to key elements of the reforms, such as introducing a requirement for facilities to achieve greenhouse abatement via annual downward adjustment of baseline levels.

The reforms apply a decline rate to a facility's baseline so that baselines are reduced predictably and progressively over time (initially 4.9% per annum until the end of Financial Year 2029/30) on a proportionate trajectory consistent with achieving Australia's emission reduction targets of 43% below 2005 levels by 2030, and net zero by 2050 (Commonwealth DCCEEW, 2024) in combination with other greenhouse gas reduction measures in the economy.

At the end of each reporting year, the MPO facility baseline will therefore be calculated via its:

- production quantities;
- the emissions-intensity values for each product it produces; and
- the decline rate.

It is noted that the target of 43% reduction by 2030 is tied to 2005 emission levels. Table 13 below summarises the Safeguard Mechanism baseline decline rate which has been calculated with sufficient headroom allowance for higher than expected growth at new and existing Safeguard facilities (Commonwealth DCCEEW, 2024).

Table 13
Safeguard Mechanism Baseline Decline Rate – 2023-2030

Financial year	Baseline Decline rate	Emission reduction contribution
2023–24	4.9%	95.1%
2024–25	4.9%	90.2%
2025–26	4.9%	85.3%
2026–27	4.9%	80.4%
2027–28	4.9%	75.5%
2028–29	4.9%	70.6%
2029–30	4.9%	65.7%
2030–ongoing	3.285%*	-

Source: Clean Energy Regulator (2024).
Note:
* The decline rate for 2030 onwards is indicative only.

Schedule 1 of the Safeguard Rules defines a range of products produced at Safeguard facilities. For each product, Schedule 1 sets out one or more metrics (each of which is a production variable), the units relevant to those production variables and the circumstances in which they are applicable to the particular Safeguard facility. This includes the assignment of a default emission intensity for each production variable. A facility's baseline is therefore adjusted annually based on actual site production metrics.

The predominant production variable for the MPO is production of Run of mine coal (ROM Coal).

Because of the high diversity of existing emission intensities in the coal sector, a hybrid approach was adopted for existing coal mines. In this case, the ROM Coal Safeguard emissions intensity is calculated by progressively decreasing the proportion of a site-specific emissions intensity, and progressively increasing the proportion of the Safeguard Mechanism default production variable. Pursuant to transitional arrangements under the Safeguard Rule, the default ROM coal production variable has been set at 0.0653 t CO_2-e / t ROM coal.

In accordance with Subdivision C of the Safeguard Rule, a responsible emitter can apply to the Regulator for an emissions intensity determination. A number of such intensity determinations were published by the Clean Energy Regulator in October 2024. The MPO emissions intensity determination has been set at 0.07174 t CO_2-e / t ROM coal (Clean Energy Regulator, 2024).

As the Clean Energy Regulator's emissions intensity determination for the site is relatively similar to (albeit slightly higher than) the default ROM coal production variable, the progressive transition to a facility specific default (0.06852 t CO_2-e / t ROM coal) by 2030 will have limited influence on the MPO's Safeguard baseline decline rate.

3.2 METEOROLOGICAL CONDITIONS

In accordance with Part B, Condition B38 of Development Consent SSD 10418, MACH Energy will operate a suitable meteorological station in the vicinity of the MPO. The monitoring station will need to comply with the requirements in the *Approved Methods for Sampling and Analysis of Air Pollutants in NSW* (EPA, 2022a) and be capable of measuring meteorological conditions in accordance with the NSW *Noise Policy for Industry* (EPA, 2017).

A meteorological station was originally established on-site as part of the monitoring program. The station was located north of Castlerock Road and approximately 1 km west of Kayuga Road. A second meteorological station was established near the south-east corner of the site. The aim of the second station was to account for any differences in meteorological conditions between the flatter areas of the Hunter River floodplain and the more elevated terrain of the site represented by the permanent station.

Data from the stations confirm the north-west to south-east axis of the prevailing winds. Variations between the stations indicated that the land nearer the Hunter River experienced generally lower wind strengths. The site adjacent to the floodplain also tended to experience north to north-easterly air flow at night while the more elevated station recorded winds from the north-west and north-northwest.

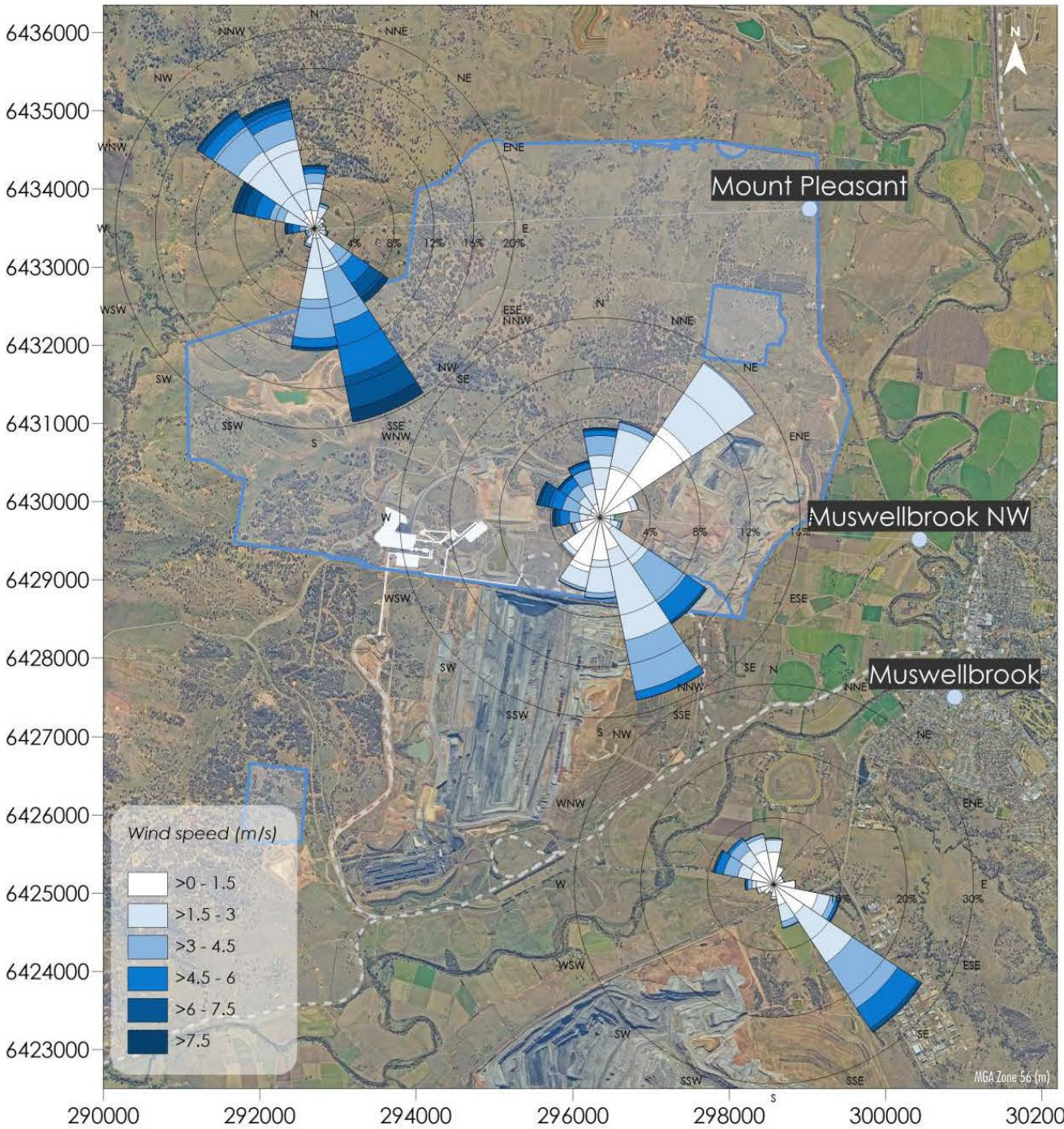
These differences indicate that the area between the site and Muswellbrook experiences less frequent strong north-westerlies than the site.

As part of the Project EIS (MACH Energy, 2021), wind roses were developed using wind direction and wind speed data from several weather stations in the region. On an annual basis, prevailing winds at the Muswellbrook NW weather station are typically from the south-east, with fewer winds from the north-west quadrant, and little wind from the north-east or south-west (Figure 5). Such winds are typical of Hunter Valley conditions. The weather stations at the MPO are shown in Figure 3 and discussed further in Section 8.

3.3 SENSITIVE RECEPTORS

Relevant receptors that may experience air quality impacts from activities associated with the MPO are shown on Figure 6. It should be noted that, subsequent to the approval of Development Consent SSD 10418, a number of formerly privately owned residences have been acquired by the MPO or other mining operations.

An expanded list of the relevant sensitive receptor list and locations is provided in Appendix E.



MAC-18-03A MP2023_AQ&GHG_002A

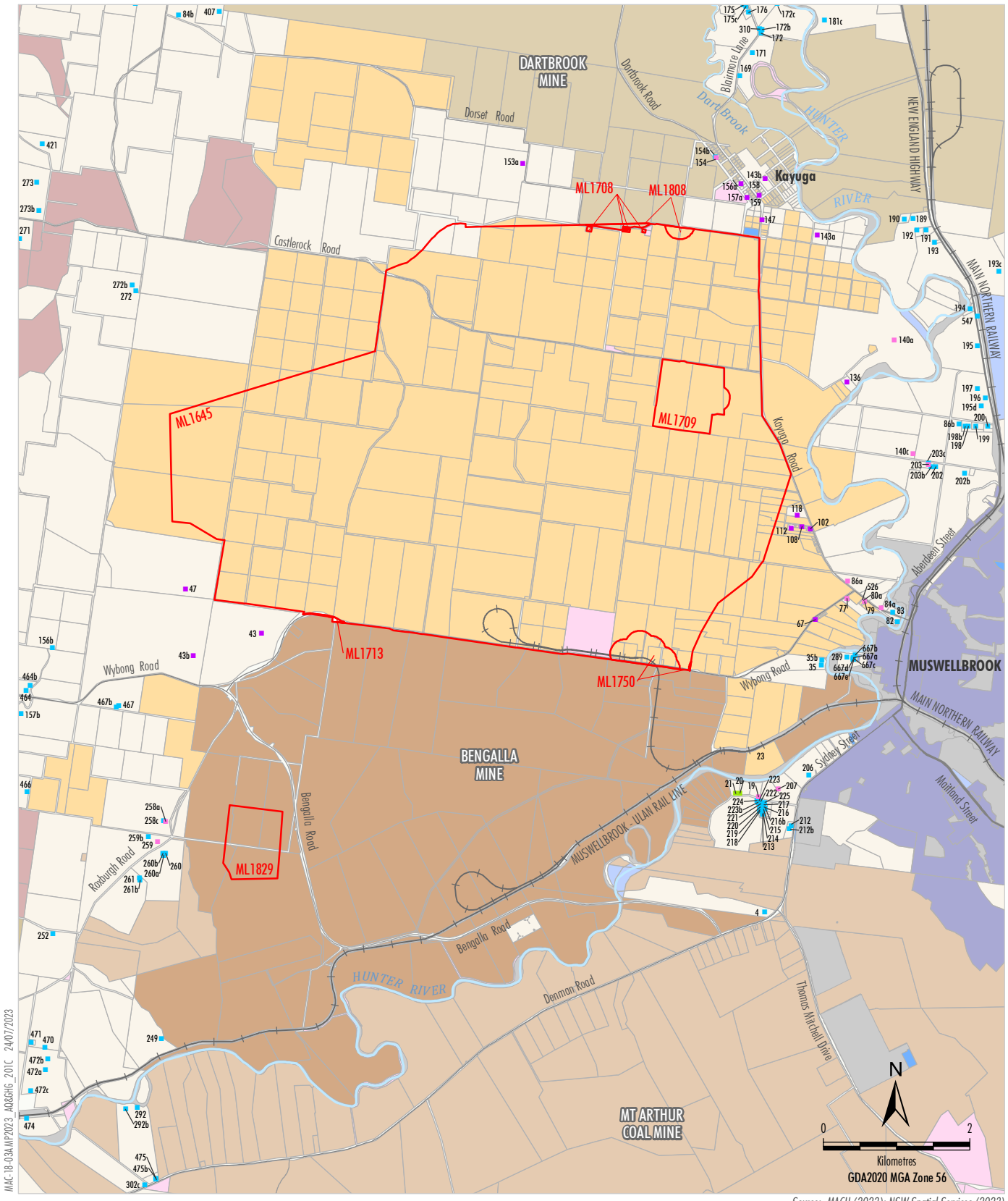
(TAS, 2020)

MACHEnergy

MOUNT PLEASANT OPERATION

Annual Wind Roses for 2015

Figure 5



Source: MACH (2023); NSW Spatial Services (2023)

LEGEND

- Mining Lease Boundary (Mount Pleasant Operation)
- Mount Pleasant-controlled
- Bengalla-controlled
- Dartbrook-controlled
- Mangoola-controlled
- Muswellbrook Coal-controlled
- Mt Arthur-controlled
- Crown
- The State of NSW
- Muswellbrook Shire Council
- Privately-owned Land
- Muswellbrook and Upper Hunter LEP Zones B2, B5, R1, R5
- Muswellbrook and Upper Hunter LEP Zones IN1, SP2, RE1, RE2, W1
- Railway

Category of Rural Residence under DA92/97

- Privately-owned - Acquisition on Request
- Privately-owned - Mitigation on Request
- Privately-owned - Mitigation/Acquisition on Request*
- Other Privately-owned

* Mitigation on Request - rail noise/Aquisition on Request - air quality. MACH is only required to acquire and/or install air quality mitigation measures at this property if not reasonably achievable under a separate approval for the Bengalla Mine.

MACHEnergy

MOUNT PLEASANT OPERATION

Relative Sensitive Receivers

Figure 6

4 AIR QUALITY CRITERIA

4.1 DEVELOPMENT CONSENT SSD 10418

Part B, Condition B28 of Development Consent SSD 10418 requires that, except for the air quality affected land listed in Part C, Condition C1 of Development Consent SSD 10418, MACH Energy must ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the development do not cause exceedances of the criteria listed in Table 14 at any residences on privately-owned land.

Table 14
Long Term and Rolling Average Criteria for Particulate Matter

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

Source: Development Consent SSD 10418.
Notes:
[a] Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources).
[b] Incremental impact (i.e. incremental increase in concentrations due to the development on its own).
[c] Excludes extraordinary events such as bushfires, prescribed burning, dust storms, fire incidents or any other activity agreed by the Planning Secretary.

The reasonable and feasible avoidance and mitigation measures employed at the MPO such that the particulate matter emissions generated by the development do not cause exceedances of the criteria listed in Table 14 are described in Section 7. Additionally, the air quality monitoring program implemented at the MPO is described in Section 8.

Note that in accordance with Part B, Condition B29 of Development Consent SSD 10418 (Appendix A), the air quality criteria in Table 14 do not apply if MACH Energy and the owner/s of the relevant residence or land have an agreement to exceed the air quality criteria. If agreed, MACH Energy must advise DPE (now DPHI) in writing of the terms of this agreement. MACH Energy currently does not have any existing private agreements with the owner/s of the relevant residence/land to exceed the air quality criteria listed in Table 14 (as at November 2024).

In accordance with Part B, Condition B30 of Development Consent SSD 10418 (Appendix A), particulate matter emissions generated by the MPO must not exceed the criteria listed in Table 14 at any occupied residence or mine-owned land (including land owned by another mining company), unless:

- the tenant and landowner (if the residence is owned by another mining company) have been notified of any health risks associated with such exceedances in accordance with the notification requirements under Part C of Development Consent SSD 10418 (Section 4.3.5 and Appendix A);
- the tenant of any land owned by the applicant can terminate their tenancy agreement without penalty at any time, subject to giving 14 days' notice;
- air quality monitoring is regularly undertaken to inform the tenant and landowner (if the residence is owned by another mining company) of the likely particulate matter emissions at the residence (Section 4.3.5); and
- data from monitoring is presented to the tenant and landowner in an appropriate format for a medical practitioner to assist the tenant and landowner in making informed decisions on the health risks associated with occupying the property.

Additional air quality related conditions from Development Consent SSD 10418 are described in Appendix A.

In accordance with Part A, Condition A32 of Development Consent SSD 10418, MACH Energy will maintain all plant and equipment used at the MPO, or to monitor the performance of the development will be maintained in a proper and efficient condition and will be operated in a proper and efficient manner. This is discussed in Section 7.2 and 7.6.1.

4.2 DEVELOPMENT CONSENT DA 92/97

Schedule 3, Condition 20 of Development Consent DA 92/97 (prior to its surrender) requires that, except for the air quality-affected land subject to acquisition upon request, MACH Energy shall ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the development do not exceed the criteria listed in Tables 15, 16 or 17 at any residence on privately-owned land.

Table 15
Long Term Criteria for Particulate Matter

Pollutant	Averaging Period	[d]Criterion
Total suspended particulate (TSP) matter	Annual	[a]90 µg/m^3
Particulate matter <10 µm (PM_{10})	Annual	[a]25 µg/m^3
Particulate matter <2.5 µm ($PM_{2.5}$)	Annual	[a]8 µg/m^3

Source: Development Consent DA 92/97.

Table 16
Short Term Criterion for Particulate Matter

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

Source: Development Consent DA 92/97.

Table 17
Long Term Criteria for Deposited Dust

Pollutant	Averaging Period	Maximum increase in deposited dust level	Maximum total deposited dust level
[c]Deposited dust	Annual	[b]2 g/m^2/month	[a]4 g/m^2/month

Source: Development Consent DA 92/97.

Notes to Tables 15 to 17 (inclusive)

[a] Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources);

[b] Incremental impact (i.e. incremental increase in concentrations due to the development on its own);

[c] Deposited dust is to be assessed as insoluble solids as defined by Australia and New Zealand Standards, AS/NZS 3580.10.1:2003: *Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method*; and

[d] Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents or any other activity agreed by the Secretary.

Additional air quality and greenhouse gas related conditions from Development Consent DA 92/97 are described in Appendix B.

4.3 DEVELOPMENT CONSENT SSD 10418 AND DEVELOPMENT CONSENT DA 92/97 ADDITIONAL CRITERIA AND REQUIREMENTS

4.3.1 Greenhouse Gas Performance Measures

Part B, Condition B36 of Development Consent SSD 10418 implements greenhouse gas performance measures, which MACH Energy must comply with. Table 18 details the greenhouse gas performance measures that will be implemented upon commencement of Development Consent SSD 10418.

Table 18
Greenhouse Gas Performance Measures for Development Consent SSD 10418

Feature	Performance Measure
Scope 1	• Less than 0.87 million tonnes CO_2-e emitted per calendar year, or lower emissions as determined under Condition B34. • Less than 0.80 million tonnes CO_2-e emitted per calendar year (5-year rolling average), or lower emissions as determined under Condition B34. • Less than 13.9 million tonnes CO_2-e emitted over the life of the development, or lower emissions as determined under Condition B34.
Scope 2	• Minimise CO_2-e emissions by using electricity generated by renewable or carbon neutral energy sources where reasonable and feasible.

Source: Development Consent SSD 10418.

In accordance with Part B, Condition B37 of Development Consent SSD 10418, in determining compliance with the performance measures in Table 18, the Planning Secretary will take into account any atypical or abnormal operating conditions, any exceedances already offset (or required to be offset or otherwise accounted for) under other applicable Commonwealth or State requirements (for example the National Greenhouse Gas and Energy Reporting Scheme [NGERS]), changes in Global Warming Potential and/or any voluntary offsetting of CO_2-e by MACH Energy.

MACH Energy Greenhouse Gas Policy Statement

Until recently, MACH Energy held only one major greenhouse gas-generating mining asset (i.e. the MPO) in Australia.

However, MACH Energy has recently acquired some interests in an ASX-listed metalliferous mining company that has multiple development projects (in Australia and overseas). MACH Energy may also pursue other resource development project acquisitions over the life of the MPO.

As MACH Energy is a relatively young company that anticipates increasing the number and scope of its resource development assets over time, it is currently in the process of reviewing its likely greenhouse gas reporting and greenhouse gas mitigation obligations in Australia, and in other key jurisdictions.

At the time of writing, MACH Energy has commenced development of an internal Greenhouse Gas Policy Statement. However, this internal Greenhouse Gas Policy Statement is not currently available to provide overarching guidance with respect to managing the potential greenhouse gas emissions of the MPO.

Notwithstanding, it is anticipated that this internal Greenhouse Gas Policy Statement would be available for consideration where relevant in the development of further iterations of this AQGGMP and to guide the development of the 3-year action plan.

The internal Greenhouse Gas Policy Statement (in preparation) will be informed by the principles that actions to address climate change should:

- be undertaken in a way that is fiscally responsible, promotes sustainable economic growth and considers the economic risks of delaying action to address climate change;
- be consistent with the principles of ecologically sustainable development; and
- involve appropriate consultation with affected persons, communities and stakeholders.

Section 7.6 discusses the greenhouse gas emissions and mitigation measures in place at the MPO to address meet the performance measures in accordance with Part B, Condition B36 of Development Consent SSD 10418.

4.3.2 Acquisition Criteria

Part C, Condition C1 of Development Consent SSD 10418 requires that, upon receiving a written request for acquisition from the owner of the privately-owned land listed in Table 19, MACH Energy must acquire the land in accordance with the procedures listed in Part C, Condition C12 to C19 (inclusive) of Development Consent SSD 10418 (Appendix A).

Schedule 3, Condition 1 of Development Consent DA 92/97 (prior to its surrender), requires that, upon receiving a written request for acquisition from the owner of the land listed in Table 19, MACH Energy shall acquire the land in accordance with the procedures in Schedule 4, Conditions 6 and 7 of Development Consent DA 92/97 (Appendix B). The voluntary land acquisition process is detailed in Appendix A, the MPO EMS and based on the *Voluntary Land Acquisition and Mitigation Policy for State Significant Mining, Petroleum and Extractive Industry Development* (VLAMP) (DPE, 2018).

Table 19
Land Subject to Acquisition Upon Request

Acquisition Basis	Receiver
Development Consent SSD 10418	
Air Quality and Noise	118, 120, 120c, 121, 143b, 143e, 147, 153a, 154, 154b, 156a, 157a, 159
Air Quality	112
Noise	136, 143a
Development Consent DA 92/97 (prior to its surrender)	
Noise	23, 45, 47, 67, 96[1], 102, 108, 112, 118, 120, 120c, 121, 136, 143a, 143b, 143c^, 143d^, 143e^, 147, 153a, 153b^, 156a, 157a, 158, 159, 447^, 448, 449^
Noise & Air	43, 43b
Air	20*, 21*

Source: Development Consent SSD 10418 and Development Consent DA 92/97.

Notes:

- To identify the locations referred to in Table 19, see Figure 6.

* MACH Energy is only required to acquire and/or install mitigation measures at receivers 20 and 21 if acquisition and/or mitigation is not reasonably achievable under a separate approval for the Bengalla Mine.

^ Vacant lots of land with no dwellings.

[1] Acquired by MACH Energy.

MACH Energy will minimise air quality impacts of the development on air quality-affected land (Table 19) in accordance with Part C, Condition C1 of Development Consent SSD 10418 and Schedule 3, Condition 1 of Development Consent DA 92/97 (prior to surrender) for as long as the land remains privately-owned (i.e. until it is acquired).

To minimise air quality impacts on air quality-affected land (Table 19), MACH Energy will also operate in accordance with the conditions stipulated in EPL 20850 (Section 4.4). This includes the implementation of a predictive modelling system (Section 7.3) which aims to provide a framework for dealing with cumulative impacts in the local air-shed in cooperation with adjacent mines.

Additionally, to minimise the air quality impacts of the development on air quality-affected land (Table 19), additional mitigation measures will be employed upon receiving a written request from the owner of the residence, which is discussed in Section 4.3.3 below.

4.3.3 Additional Mitigation Criteria

Part C, Condition C2 to C4 (inclusive) of Development Consent SSD 10418 (Appendix A) requires MACH Energy to obtain written request from the owner of any residence on the land listed in Table 19 or Table 20, to implement additional mitigation measures outlined in the VLAMP (DPE, 2018). The additional mitigation measures process is detailed in Appendix A, the MPO EMS and based on the VLAMP (DPE, 2018).

As outlined in the VLAMP (DPE, 2018), the mitigation measures directed towards reducing the potential human health and amenity impacts of the development may include, but are not limited to:

- air conditioning, including heating;
- insulation;
- first flush water systems;
- installation and regular replacement of water filters;
- cleaning of rainwater tanks;
- clothes and dryers; and
- regular cleaning of any residence and its related amenities, such as barbeque areas and swimming pools.

The measures must also be reasonable and feasible, proportionate to the level of predicted impact and directed towards reducing the noise and/or air quality impacts of the development. MACH Energy is also required to be responsible for the reasonable costs of ongoing maintenance of these additional mitigation measures until the cessation of mining operations.

Schedule 3, Condition 2 of Development Consent DA 92/97 (prior to its surrender) requires MACH Energy, upon receiving a written request from the owner of any residence on the land listed in Table 19 or Table 20, to implement additional noise mitigation measures (such as double-glazing, insulation, and/or air conditioning) and/or air quality mitigation measures (such as air filters, first flush roof water drainage system and/or air conditioning), as relevant, at the residence(s) in consultation with the landowner.

Where a landowner considers the MPO to be exceeding the air quality criteria, the landowner may request an independent review of the impacts in accordance with Part C, Condition C9 to C11 (inclusive) of Development Consent SSD 10418 (Appendix A) and Schedule 4, Condition 3 of Development Consent DA 92/97 (prior to its surrender) (Appendix B).

In accordance with Part C, Condition C11 of Development Consent SSD 10418, if the Planning Secretary is satisfied that an independent review is warranted, within three months of the Planning Secretary's decision, MACH Energy will:

- commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Planning Secretary, to:
  - consult with the landowner to determine their concerns;
  - conduct monitoring to determine whether the development is complying with the relevant criterion in Part B of Development Consent SSD 10418; and
  - if the development is not complying with the relevant criterion, identify measures that could be implemented to ensure compliance with the relevant criterion;
- give the Planning Secretary and landowner a copy of the independent review;
- comply with any written requests made by the Planning Secretary to implement any findings of the review.

These measures must be reasonable and feasible and related to the noise and/or dust impacts on the residence. MACH Energy is responsible for the reasonable costs of ongoing maintenance of these additional measures until the cessation of mining operations.

Table 20
Land Where Additional Mitigation Measures are Available on Request

Basis	Development Consent	Receiver
Noise	SSD 10418	20, 21, 35, 35b, 43, 43b, 47, 67, 74[1], 86a, 96[1], 102, 108, 140a
	DA 92/97 (prior to its surrender)	19, 20, 21, 68, 74[1], 77, 79, 80a, 84a, 86a, 139, 140a, 140c, 154, 203, 207, 257, 258, 259, 526

Source: Development Consent SSD 10418 and Development Consent DA 92/97.

Notes:

- To identify the locations referred to in Table 20, see Figure 6.

[1] Acquired by MACH Energy.

In accordance with Part C, Condition C3 of Development Consent SSD 10418 (Appendix A), if within three months of receiving this request from the owner, MACH Energy and the owner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, MACH Energy must arrange an independent review of the measures to be implemented and either party may then refer the matter to the Planning Secretary for resolution.

4.3.4 Operating Conditions

In accordance with Part B, Condition B31 of Development Consent SSD 10418, MACH Energy will:

B31. The Applicant must:

- *(a) take all reasonable and feasible steps to:*
  - *(i) minimise odour, fume and particulate matter (including PM_{10} and $PM_{2.5}$) emissions of the development, paying particular attention to minimising wheel-generated haul road emissions;*
  - *(ii) eliminate or minimise the risk of spontaneous combustion;*
  - *(iii) improve energy efficiency and minimise Scope 1 and Scope 2 GHGEs generated by the development;*
  - *(iv) minimise any visible off-site air pollution generated by the development; and*
  - *(v) minimise the extent of potential dust generating surfaces exposed on the site at any given point in time;*
- *(b) ensure that all new 'non-road' mobile diesel equipment used in undertaking the development includes reasonable and feasible diesel emissions reduction technology;*
- *(c) operate a comprehensive air quality management system that uses a combination of predictive meteorological forecasting and real-time air quality monitoring data to guide the day-to-day planning of mining operations and the implementation of both proactive and reactive air quality mitigation measures to ensure compliance with the relevant conditions of this consent;*
- *(d) minimise the air quality impacts of the development during adverse meteorological conditions and extraordinary events (see Note c to Table 3 above);*
- *(e) minimise air quality impacts of the development on air quality-affected land referred to in condition C1 for as long as the land remains privately-owned (i.e. until it is acquired).*
- *(f) make all reasonable effects to co-ordinate air quality management on the site with the air quality management at nearby mines to minimise cumulative air quality impacts;*
- *(g) carry out regular air quality monitoring to determine whether the development is complying with the relevant conditions of this consent; and*
- *(h) regularly assess meteorological and air quality monitoring data, and modify operations on the site to ensure compliance with the relevant conditions of this consent.*

Schedule 3, Condition 22 of Development Consent DA 92/97 requires that MACH Energy:

22. The Applicant must:

- *(a) implement best practice air quality management, including all reasonable and feasible measures to minimise the odour, fume and dust emissions of the development;*
- *(b) minimise visible air pollution generated by the development;*
- *(c) minimise, where reasonable and feasible, the extent of potential dust generating surfaces exposed on the site at any given point in time;*
- *(d) minimise the air quality impacts of the development during adverse meteorological conditions and extraordinary events (see Note d above under Tables 8-10);*
- *(e) regularly assess the real-time air quality monitoring and meteorological forecasting data and relocate, modify and/or stop operations on site to ensure compliance with the relevant conditions of this consent; and*
- *(f) co-ordinate the air quality management on site with the air quality management at nearby mines (including the Bengalla Mine) to minimise cumulative air quality impacts from the mines,*

to the satisfaction of the Secretary.

4.3.5 Notifications

MACH Energy has notified in writing the relevant owners listed in Table 19 of their acquisition and mitigation rights under Development Consent SSD 10418, in accordance with Part C, Condition C5 and C6 of Development Consent SSD 10418 (Appendix A). In accordance with Part C, Condition C5 of Development Consent, MACH Energy notified the relevant owners within one month of commencing development under Development Consent SSD 10418.

In addition, when there is an exceedance of Development Consent SSD 10418 and DA 92/97 (prior to its surrender) air quality criterion (Section 4), MACH Energy will also provide a copy of *Mine Dust and You* (NSW Health, 2017) (or the latest version) to any affected landowner and/or tenant in accordance with Condition C8, Part C of Development Consent SSD 10418 and Schedule 4, Condition 1(b) of Development Consent DA 92/97 (prior to its surrender).

In accordance with Part C, Conditions C7 and C8 of Development Consent SSD 10418 and Schedule 4, Condition 2 of Development Consent DA 92/97 (prior to its surrender), as soon as practicable and no longer than seven days after obtaining monitoring results showing an exceedance of any noise, blasting or air quality criterion listed in Part B of Development Consent SSD 10418, MACH Energy must provide the details of the exceedance to any affected landowners, tenants and the Community Consultative Committee. Additional air quality-related conditions are detailed in Appendix A and B.

In accordance with Part B, Condition B30(c) of Development Consent SSD 10418, annual air quality monitoring will be undertaken to inform tenants and landowners (if the residence is owned by another mining company) of the likely particulate matter emissions at the residence. The air quality monitoring results will be provided to the tenants and landowners annually, with the MACH Energy Land and Property team to be responsible for this notification process.

4.4 OTHER LICENCE CONDITIONS

Air quality criteria and other air quality related conditions stipulated in EPL 20850 are generally consistent with those prescribed in Development Consent SSD 10418 and Development Consent DA 92/97, with the exception of Conditions O3.4 to O3.9, which state:

O3 Dust

...

O3.4 The licensee must cease all dust generating activities during adverse conditions being the occurrence of both:

(i) the adverse wind conditions set out in Condition O3.5 (b), and

(ii) the adverse PM_{10} concentrations set out in Condition O3.5 (c).

O3.5 For the purpose of Condition O3.4 the following definitions apply:

(a) 'dust generating activities' means drilling, blasting, earthworks, construction activities, all hauling activities on unsealed haul roads, all overburden and coal extraction operations including loading and dumping activities and grader, loader, dozer and dragline operations.

(b) 'adverse wind conditions' means a rolling 1-hour average wind direction between 250 degrees and 340 degrees (inclusive) measured at the Muswellbrook NW Upper Hunter Air Quality Monitoring Network monitor.

Australian Standard AS3580.14:2014 is to be used to calculate the rolling 1 hour average wind direction.

(c) 'adverse PM_{10} concentrations' means a rolling 24-hour average PM_{10} concentration of equal to or greater than 44 micrograms per cubic metre measured at the Muswellbrook NW Upper Hunter Air Quality Monitoring Network monitoring station.

(d) Operation of watercarts is permitted at all times.

(e) Activities within the Coal Handling and Preparation Plant and Materials Handling Area, including run-of-mine (ROM) coal, product coal handling (including dozer/loader operations) and train loading operations … are not included as dust generating activities provided all automated dust suppression spray systems at the ROM hopper, conveyor transfer points and product stockpiles are in use, at least one water cart is in use on the ROM stockpile and an adjustable hood is lowered onto rail wagons loadings.

O3.6 Shutdown of dust generating activities required by Condition O3.4 must be completed within 1 hour of receiving data that triggers action required by Condition O3.4.

O3.7 The licensee may resume dust generating activities at the premises when:

(a) adverse wind conditions as defined in Condition O3.5 (b); or

(b) adverse PM_{10} concentrations as defined in Condition O3.5 (c)

are not measured for a minimum time period of 1 hour from the time that cessation of dust generation activities is completed.

O3.8 At any time when there is no access to the meteorological data or PM_{10} data from the Muswellbrook NW Upper Hunter Air Quality Monitoring Network monitoring station, definitions of 'adverse wind conditions' and 'adverse PM_{10} concentrations' in condition O3.5 are replaced with:

- *'adverse wind conditions' means a 1-hour average wind direction between 245 and 345 degrees (inclusive) measured at EPA Monitoring Point 11, identified in condition P1.3*

- *'adverse PM_{10} concentrations' means a rolling 24-hour average PM_{10} concentration of equal to or greater than 44 micrograms per cubic metre measured at the EPA Monitoring Point 1, identified in condition P1.3*

Note: If at any time, there is no access to the Muswellbrook NW Upper Hunter Air Quality Monitoring Network monitoring station and to either 1-hour average wind direction data from monitoring point 11 or PM_{10} data from monitoring point 1 the licensee must cease dust generating activities at the premises.

O3.9 For the purpose of condition O3.5 (e), dust suppression systems must be operated in a manner to ensure that there is no visible dust emissions emitted from the premises.

5 PERFORMANCE INDICATORS

The following air quality related performance indicators will be used to judge the performance of the MPO, or guide the implementation of, the development or any management measures:

- effective implementation of the Real-time Response Protocol for air quality (Section 7.4);
- results of monitoring are compliant with the air quality criteria in Section 4; and
- complaints are minimised and appropriate management actions are implemented following receipt of a complaint (Section 11.2).

Performance indicators for greenhouse gas emissions will be developed as part of the review 12 months after initial approval (i.e. nominally in 2025) (Section 10.2). Indicators of MACH Energy's greenhouse gas abatement performance will include:

- Compliance with the greenhouse gas performance measures (Section 4.3.1).
- Compliance with NGERS and the Safeguard Mechanism.
- The trend in diesel usage per tonne of ROM coal and total material mined.
- The trend in Scope 2 emissions per tonne of ROM coal mined.

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

6 DUST GENERATING SOURCES

The sources of dust emissions at the MPO are associated with the activities described in Sections 6.1 and 6.2.

6.1 CONSTRUCTION

Typically, dust generating activities during construction may arise from:

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

Relative to mining operations, the scale of emissions generated during construction will be small and there is low risk for any actual impact to occur at receptors.

6.2 OPERATION

Significant dust generating activities identified for the site comprise:

- hauling of materials along unsealed roads;
- loading and unloading of materials;
- dozers operating on material;
- wind erosion from exposed areas;
- topsoil and subsoil stripping;
- wind erosion from stockpiles;
- drilling and blasting of materials;
- grading roads; and
- processing and handling of coal.

Note: that sources of dust may be small on an annual average basis but still have high emission rates for short periods, for example dust from a blast event or topsoil stripping. Thus, all sources of dust need to be carefully considered.

Particular attention to wheel-generated haul road emissions will be observed in accordance with Part B, Condition B31 of Development Consent SSD 10418 (Section 8.1.5).

7 AIR QUALITY AND GREENHOUSE GAS MANAGEMENT AND CONTROL MEASURES

MACH Energy will take all reasonable and feasible steps to implement best management practice to minimise the MPO's generation of dust, odour, fume and greenhouse gas emissions, paying particular attention to minimising wheel-generated haul road emissions, in accordance with Part B, Condition B31 of Development Consent SSD 10418 and Schedule 3, Condition 22 of Development Consent DA 92/97 (prior to its surrender).

Management and control measures are outlined in Sections 7.2, 7.5 and 7.6, for dust, odour and fumes, and greenhouse gases, respectively. The proposed management measures are considered by MACH Energy to be consistent with best practice management. The effectiveness of air quality and greenhouse gas management and control measures at the MPO will be assessed and continually improved through real-time and attended monitoring (Section 8).

7.1 ADVERSE WEATHER CONDITIONS AND EXTRAORDINARY EVENTS

In accordance with Part B, Condition B31(d) of Development Consent SSD 10418, MACH Energy will take all reasonable and feasible steps to minimise the air quality impacts of the development during adverse meteorological conditions and extraordinary events[1].

Adverse Weather Conditions

Condition O3.5(b) in EPL 20850 defines "adverse wind conditions" for the MPO as a rolling 1-hour average wind direction between 250 degrees and 340 degrees (inclusive) measured at the Muswellbrook NW Upper Hunter Air Quality Monitoring Network monitor (MW-NW on Figure 3). When data is not available from this monitor, Condition O3.8 in EPL 20850 defines "adverse wind conditions" as a rolling 1-hour average wind direction between 245 degrees and 345 degrees (inclusive) measured at M-WM2 (Figure 3). The rolling 1 hour average will be calculated using Australian Standard AS3580.14:2014: *Methods for sampling and analysis of ambient air – Meteorological monitoring for ambient air quality monitoring applications*.

Extraordinary Events

In accordance with Part B, Condition B31(d) of Development Consent SSD 10418, MACH Energy will take all reasonable and feasible steps to minimise the air quality impacts of the development during adverse meteorological conditions and extraordinary events. Compliance with the criteria in Table 15 is demonstrated where the measured level is below the criteria. However, dust from extraordinary events (e.g. bushfires, prescribed burning, dust storms, fire incidents or local [non-mining] dust sources) may lead to dust levels above these criteria being recorded.

When an extraordinary event is suspected to be the cause of the exceedance of air quality criteria the DPE (now DPHI) will be contacted to confirm an extraordinary event has taken place and subsequent exceedance reporting required under Development Consent SSD 10418 is not required. The MACH Energy Environmental Superintendent will be responsible for contacting DPHI immediately, and no later than 48 hours (via the Major Projects Website) to confirm that an extraordinary event has taken place and if subsequent exceedance reporting is required (Section 11.1).

During periods of extraordinary events operations will be monitored, assessed and modified accordingly. Project personnel would also undertake visual monitoring of stockpiles and exposed areas. In the event that any substantial dust plumes are observed, additional dust management measures would be implemented.

[1] Events such as bushfires, prescribed burning, dust storms, fire incidents or any other activity agreed by the Planning Secretary.

7.2 DUST MANAGEMENT AND CONTROL MEASURES

Air quality management measures at the MPO include proactive and reactive management measures and are generally consistent with best practice dust controls identified in the Office of Environment and Heritage document, *NSW Coal Mining Benchmarking Study: International Best Practice Measures to Prevent and/or Minimise Emissions of Particulate Matter from Coal Mining* (Katestone Environmental Pty Ltd, Final, Revision R1.3, 2011). The primary measures that will be implemented to control/minimise dust emissions from the MPO are summarised in Table 21.

Table 21
Dust Management and Control Measures

Target	Management and Control Measure
General	• Mining operations will be reviewed following a real-time response trigger and dust generating activities will be modified, relocated and/or paused where required (Section 7.4). • Forecast meteorological conditions and air quality concentrations will be reviewed at least once per day (Section 7.3). • Site inductions will include air quality requirements to ensure employee and contractor awareness of potential dust impacts, especially with respect to the nearest receptors. • All machinery and plant used on-site will be maintained and operated in a proper and efficient manner, in accordance with manufacturers specifications and contemporary maintenance practices in order to minimise dust generation.
Disturbed Areas	• Only the minimum area necessary for mining and associated infrastructure will be disturbed. • Overburden emplacement areas will be designed to minimise the disturbance area, and completed areas will be progressively reshaped and revegetated. Temporary cover crops will be used to stabilise rehabilitation areas if sowing of long term species is unlikely to occur within four weeks (waiting for more favourable sowing conditions in Autumn/Spring). • Temporary stabilisation of unused areas or dump slopes will be undertaken annually (e.g. cover crops would be established, preferentially in Autumn or Spring). Cover crops will be established on areas that are planned to be inactive for six months or more. • Cleared vegetation will be mulched and then used for stabilising rehabilitated landforms. This may include spreading of mulch and branches on completed overburden landforms. • Cleared areas will be watered during construction activities, as required. • Application of water and/or dust suppressant to stabilise the surface of inactive exposed areas.
Material Stockpiling and Handling	• Long-term stockpiles will be revegetated as soon as practicable following completion. • Water carts and/or sprays will be used on all coal handling and stockpile areas, including topsoil stockpiles (as required) to minimise dust generation. In accordance with EPL 20850, operation of watercarts is permitted at all times. • Material handling and stripping/ripping will be avoided or postponed if excessive dust lift off occurs. Material with low moisture content will be sprayed with water prior to and/or during handling if necessary and practicable to control visible dust. • The drop height will be minimised when loading or unloading material as far as practicable, including adjusting the height of the luffing (variable height) stacker when necessary. • Spillage from loading/unloading will be minimised and cleaned up as soon as practicable.
Roads	• Consideration will be given to using the largest practical and cost-effective truck size for transporting coal and overburden. • Roads will be constructed in a proper manner and consideration will be given to constructing all major haul roads using material with low silt/fines content. • Speed limits will be imposed on all roads. • A system to track water application rates on major haul roads will be implemented using a staged approach. This will be undertaken in consultation with a technical specialist and MACH Energy will look to develop this research and design project for development in 2025. The implementation of the program to track the water application will be undertaken by a technical specialist and will be the responsibility of the General Manager – Operations. The status of this proposed research and design project will be reported in the 2026 MPO Annual Review.

Table 21 (Continued)
Dust Management and Control Measures

Target	Management and Control Measure
Roads (cont.)	• Roads which are used infrequently will be watered or access suspended as appropriate and obsolete roads will be rehabilitated. • Watercarts will be utilised as necessary to minimise excessive visible dust. • Roads will be regularly maintained and/or cleaned to ensure a smooth surface and to prevent a build-up of loose material. This is managed through the internal MPO Maintenance and Watering of Mine Roads Procedure and is the responsibility of the General Manager – Operations. • All trafficable areas, coal storage areas and vehicle manoeuvring areas in or on the premises will be maintained, at all times, in a condition that will minimise the generation, or emission from the premises, of wind-blown or traffic generated dust. • Road edges will be defined with marker posts or equivalent (where practicable). • Road vehicles will remain on formed roads and tracks, except as required for environmental management (e.g. survey/inspection work). • Roads will be constructed to achieve a compact, stable, and durable surface, using an optimally low silt/fines content. Surface will be maintained and controlled with watering. • The Environmental Superintendent will maintain inventory of dust suppressant (currently RST) onsite for use in watercarts on less trafficked areas and on haul roads during low rainfall periods.
Drilling and Blasting	• Blasting will be conducted in accordance with the Blast Management Plan. • Blasting will be conducted during daylight hours when dispersion conditions are favourable, unless otherwise required for safety reasons. • Production drill rigs will utilise water injection (or be fitted with dust mitigation, such as sprays) and dust aprons will be lowered during drilling. Production drill rigs will not be operated without adequate dust control. • Adequate stemming will be used in drill holes at all times. • Drill rigs are fitted with dust aprons and utilise either water injection or dust collectors. • Wet drilling techniques will be employed to control dust emissions during drilling operations. For example, the application of water or foam at the point of drilling to reduce respirable dust emissions.
Coal Handling and Preparation Plant	• Appropriate dust suppression methods (including enclosed ROM hoods, water sprays, fitting of conveyors with appropriate cleaning and collection devices and using ‘hood and spoon’ chutes) will be employed at the coal handling facilities, as required. • Where possible, conveyors, transfers and chutes will be enclosed or partially enclosed. • Areas where spilt material can build up will be regularly cleaned (e.g. under transfer chutes and conveyors, and paved areas). Regular inspections and maintenance of these systems, including under-conveyor transfers, are managed through work orders generated by the CHPP Management Team. • The train load-out facility allows for wagons to be loaded with a streamlined and consistent profile. • Enclose ROM coal hoppers on three sides and activation of fogging sprays during unloading of ROM coal. • Water sprays operated at transfer points, if required. • Application of water at conveyor transfer points. • Luffing the stacker to reduce fall height of material at stockpiles.

Table 21 (Continued)
Dust Management and Control Measures

Target	Management and Control Measure
Adverse Conditions and Contingency Actions	• Mitigation will be implemented by the relevant contractors as required. Inspections of dust levels and weather conditions will continue regularly to assess the effectiveness of controls (Section 7.4). • Potential mitigating measures that will be implemented during adverse conditions include: – scheduling of additional watercart(s) in advance; – scheduling of amended working hours or working locations during unfavourable dispersion conditions; – review of the elevation and wind exposure of activities and, where possible, relocating the activity to a sheltered area or undertaking an alternative, non-dusty activity until more suitable conditions return; and/or – temporary cessation of work within an area or a particular activity when it is identified to be a likely contributor to elevated dust measurements, until more favourable conditions return. • At the commencement of shift, the Open Cut Examiner reviews the latest forecast meteorological conditions to assess the potential for adverse weather conditions. Where there is a high risk of adverse conditions causing unmanageable impacts, operations would be shut down as required in accordance with Conditions O3.4 to O3.9 of EPL 20850 (Section 4.4). • During operations, real-time air quality monitoring and meteorological data is viewed regularly and used to inform operations on site to ensure compliance with the relevant conditions of SSD 10418. Data from the real-time air monitoring system (Section 8.1) are viewed regularly throughout every 24-hour period. • If visual triggers such as visible dust, or other triggers relating to meteorological conditions, offensive odour, and ambient air quality conditions occur during mining operations, MACH Energy will take corrective actions to mitigate impacts. Actions can ultimately include temporarily reducing or suspending operations in accordance with the shutdown requirements listed in Condition O3.4 to O3.9 of EPL 20850 (Section 4.4). • Operations will only resume at the premises when the adverse wind conditions and adverse PM_{10} concentrations are not measured for a minimum time period of 1 hour from the time that cessation of dust generation activities is completed (Section 4.4). • In accordance with Condition R4.3 of EPL 20850, MACH Energy will report any exceedance of the 1 hour dust shutdown timeframe prescribed in Condition O3.6 of EPL 20850 to the EPA at info@epa.nsw.gov.au as soon as practicable after the exceedance becomes known to MACH Energy or one of its employees or agents.

Over the life of the Project, MACH Energy will continue to evaluate reasonable and feasible dust reduction technologies and apply these where relevant to minimise particulate matter emissions. Additional dust management controls, including new technologies, will be investigated and implemented where practicable (Section 10.4).

7.3 PREDICTIVE MODELLING

MACH Energy will operate two predictive models which will be used in conjunction with the real-time response protocols (Section 7.4) as part of the comprehensive air quality management system at the MPO:

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

The system will assist operators to manage emissions and mitigate potential impacts from the MPO and aims to provide a framework for dealing with cumulative impacts in the local air-shed in cooperation with adjacent mines (in accordance with Part B, Condition B31(f) of Development Consent SSD 10418 and Schedule 3, Condition 22 of Development Consent DA 92/97 [prior to its surrender]).

The predictive air quality forecasting system will use predicted meteorological data and exposed operational areas to predict the risk of dust dispersion as a result of operations at the MPO.
The predictive air quality forecasting system will be primarily used to plan activities for the day and as an alert of possible elevated dust levels due to the operations, allowing MACH Energy to temporarily modify proposed operations, where relevant, to minimise the risk of elevated dust dispersion.

The predictive meteorological and air quality forecasting systems will be available at any time to environmental employees and shift supervisors. The latest available forecasts will be reviewed at the start of each shift and reported to the shift supervisor. The data will also be reviewed each morning (weekdays only) by the Environmental Superintendent (or delegate).

7.4 REAL-TIME RESPONSE PROTOCOLS

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

EPL 20850 defines ‘dust generating activities’ as drilling, blasting, earthworks, construction activities, all hauling activities on unsealed haul roads, all overburden and coal extraction operations including loading and dumping activities and grader, loader, dozer and dragline operations. Operation of watercarts is permitted at all times. Activities within the Coal Handling and Preparation Plant (CHPP) and Materials Handling Area are not included as dust generating activities, provided all automated dust suppression spray systems at the ROM hopper, conveyor transfer points and product stockpiles are in use, at least one water cart is in use on the ROM stockpile and an adjustable hood is lowered onto rail wagons loadings.

In accordance with Part B, Condition B31 of Development Consent SSD 10418, MACH Energy will take all reasonable and feasible steps to pay particular attention to wheel-generated haul road emissions. MACH Energy will ensure that further monitoring of road emissions will be implemented with associated mitigations (Section 8.1.5).

The preliminary real-time response trigger levels are shown in Table 22. In the event that the real-time response trigger level is exceeded, email and/or SMS alarms will be directed to key staff/operational personnel. The adequacy of these alarms will be reviewed on an annual basis with any changes reported in the MPO Annual Review and subsequent revisions of this AQGGMP. It is anticipated that changes will be required over time to reflect the relative positions of the mining, monitoring and receptor location as the mine progresses.

In the event that a real-time response trigger is exceeded, MACH Energy will implement the real-time response management actions listed in Table 23 (dependent upon the trigger level determined). The real-time response protocol is detailed in Figure 7.

The procedures outlined in Table 23 are then initiated by the key staff/operational personnel to investigate the cause of the trigger. The adequacy of these alarms will be reviewed as needed with any changes reported in the MPO Annual Review and subsequent revisions of this AQGGMP.

Data from the real-time air quality monitors are viewed regularly throughout every 24-hour period. Reports from the system are received on a daily basis; enabling site personnel to review air quality levels recorded in the previous 24-hour period. Recorded data is also reviewed and provided on the MACH Energy website on a regular (monthly) basis, providing MACH Energy with important information on air quality trends.

During operations, real-time air quality monitoring and meteorological data is viewed regularly and used to inform operations on site to ensure compliance with the relevant conditions of SSD 10418. Data from the real-time air monitoring system (Section 8.1) are viewed regularly throughout every 24-hour period.

If visual triggers such as visible dust, or other triggers relating to meteorological conditions, offensive odour, and ambient air quality conditions occur during mining operations, MACH Energy will take corrective actions to mitigate impacts. Actions can ultimately include temporarily reducing or suspending operations in accordance with the shutdown requirements listed in Condition O3.4 to O3.9 of EPL 20850 (Section 4.4). Operations will only resume at the premises when the adverse wind conditions and adverse PM_{10} concentrations are not measured for a minimum time period of 1 hour from the time that cessation of dust generation activities is completed (Section 4.4).

In accordance with Condition R4.3 of EPL 20850, MACH Energy will report any exceedance of the 1 hour dust shutdown timeframe prescribed in Condition O3.6 of EPL 20850 to the EPA at info@epa.nsw.gov.au as soon as practicable after the exceedance becomes known to MACH Energy or one of its employees or agents.

In accordance with EPL 20850, at any time when there is no access to the meteorological or PM_{10} monitoring data from the Muswellbrook NW Upper Hunter Air Quality Monitoring Network monitor and MACH Energy's A-PF2 monitor, all dust generating activities at the MPO will be temporarily ceased.

Table 22
Preliminary Real-time Response Trigger Levels

Monitor	Rolling 1 hour Average Wind Direction	Rolling 24 hour Average PM_{10} concentration		
		Green	Amber	Red
MW-NW[a*]	Between 250 degrees (°) and 340° (inclusive) measured at MW-NW	≥38 µg/m^3	≥41 µg/m^3	≥44 µg/m^3
A-PF2[b]	Between 245° and 345° (inclusive) measured at A-PF2	≥38 µg/m^3	≥41 µg/m^3	≥44 µg/m^3
A-PF2	Between 245° and 345° (inclusive) measured at A-PF2	≥40 µg/m^3	≥44 µg/m^3	≥50 µg/m^3 [c]
A-PF4	Between 180° and 270° (inclusive) measured at A-PF4	≥40 µg/m^3	≥45 µg/m^3	≥50 µg/m^3 [c]
A-PF5	Between 135° and 225° (inclusive) measured at A-PF5	≥40 µg/m^3	≥45 µg/m^3	≥50 µg/m^3 [c]

Notes:

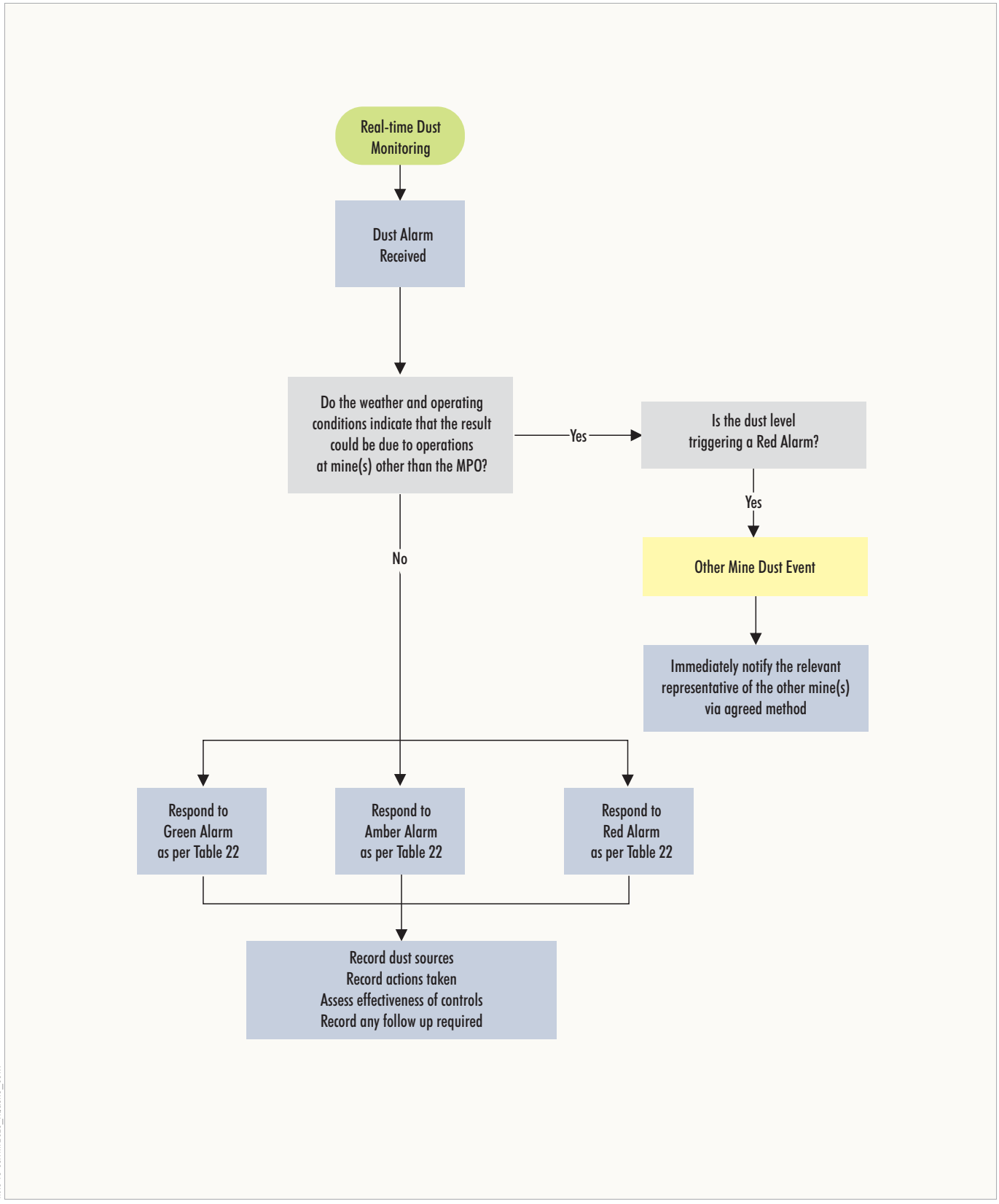
- The rolling 1 hour average wind direction will be calculated in accordance with Australian Standard AS3580.14:2014: *Methods for sampling and analysis of ambient air – Meteorological monitoring for ambient air quality monitoring applications*.

[a] The Muswellbrook NW (MW-NW) monitor is a component of the Upper Hunter Air Quality Monitoring Network.

[b] A-PF2 is to be used if there is no access to the meteorological or PM_{10} data from MW-NW.

[c] To be assessed for project-specific contribution.

* Note alarms are not available from MW-NW.



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MOUNT PLEASANT OPERATION

Dust - Real-time Response Flow Chart

Figure 7

Table 23
Real-time Response Management Measures

Colour	Management/Control Action	Responsible
Green	• Review both actual and predicted weather conditions[1] to identify if adverse conditions are forecast or likely to occur for the rest of the shift. • Review predicted air quality impacts[1] for the shift against measured levels. • Confirm relevant dust control measures (refer Table 21) are in place and performing effectively. • Prepare to make temporary operational changes to dust generating activities (e.g. relocate overburden dumping to wind protected locations; increase haul road watering rate; ensure operators using best endeavours to minimise dust lift off during loading; or selectively shutting down mobile fleet or diggers). • Monitor any changes in weather conditions and PM_{10} concentrations until PM_{10} concentrations have dropped below the alarm trigger. • Record management strategies each shift. This includes details of investigation, type of response (if any required), monitoring results and actions taken.	Control Room Operator (or delegate)
Amber	• Review both actual and predicted weather conditions[1] to identify if adverse conditions are forecast or likely to occur for the rest of the shift. • Review predicted air quality impacts[1] for the shift against measured levels. • Confirm relevant dust control measures (refer Table 21) are in place and performing effectively. • Make temporary operational changes to 'high priority' dust generating activities. – If amber alarm is triggered at MW-NW (or A-PF2 if MW-NW is not operational), make additional operational changes to dust generating activities as required, to prevent triggering a red alarm. • Monitor any changes in weather conditions and PM_{10} concentrations and progressively reinstate equipment once PM_{10} concentrations have dropped below the alarm trigger. • Record management strategies each shift. This includes details of investigation, type of response (if any required), monitoring results and actions taken.	Control Room Operator (or delegate)
Red	**If red alarm is triggered at MW-NW, or A-PF2 (when MW-NW is not operational only):** • Cease all dust generating activities within one hour of red alarm being triggered. • Review both actual and predicted weather conditions[1] to identify if adverse conditions are forecast or likely to occur for the rest of the shift. • Review predicted air quality impacts[1] for the shift against measured levels (including any trends in the measured levels). • Confirm relevant dust control measures (refer Table 21) are in place and performing effectively. • Monitor changes in weather conditions and PM_{10} concentrations. When the red alarm has not been triggered for a minimum time period of one hour from the time that cessation of all dust generating activities was completed, progressively resume dust generating activities. • When progressively resuming dust generating activities, track the recorded levels to maintain dust levels below the trigger. • Record management strategies each shift. This includes details of investigation, type of response (if any required), monitoring results and actions taken.	Control Room Operator (or delegate)

Table 23 (Continued)
Real-time Response Management Measures

Colour	Management/Control Action	Responsible
Red (cont.)	**If red alarm is triggered at A-PF4, A-PF5 or A-PF2 (when MW-NW is operational):** • Review both actual and predicted weather conditions[1] to identify if adverse conditions are forecast or likely to occur for the rest of the shift. • Review predicted air quality impacts[1] for the shift against measured levels (including any trends in the measured levels). • Make further temporary operational changes to 'high priority' and then 'lower priority' dust generating activities. • Confirm relevant dust control measures (refer Table 21) are in place and performing effectively. • Monitor changes in weather conditions and PM_{10} concentrations and progressively reinstate equipment once the alarm is no longer triggered. • When progressively reinstating equipment, track the recorded levels to maintain dust levels below the trigger. • Record management strategies each shift. This includes details of investigation, type of response (if any required), monitoring results and actions taken.	Control Room Operator (or delegate)

Notes:

[1] Predictive meteorological/air quality level forecasting as described in Section 7.3.

7.5 ODOUR AND FUME MANAGEMENT AND CONTROL MEASURES

In accordance with Part B, Condition B27 of Development Consent SSD 10418 and Schedule 3, Condition 18 of Development Consent DA 92/97 (prior to its surrender), MACH Energy will ensure no offensive odours will be emitted from the site, as defined under section 129 of the POEO Act (unless otherwise authorised by an EPL, DA 92/97 and SSD 10418 only). No offensive odours are authorised by EPL 20850, as per Condition L6.1.

The primary potential odour and fume sources at the MPO are from spontaneous combustion and from blasting. Secondary sources include potential odour emissions from hydrocarbons and effluent discharge areas. Preventative measures to manage the risk of spontaneous combustion in coal stockpiles and in the pit at the MPO, are focused on effective stockpile management. Regular surveys (using visual and other techniques such as infra-red screening) will be conducted to minimise the risk of spontaneous combustion events (Section 7.5.1).
During CHPP operation, select ROM coal (e.g. ROM coal that has been identified as having a higher propensity for spontaneous combustion, or has been stockpiled for a designated period of time) would be preferentially processed to reduce the risk of spontaneous combustion.

Part B, Condition B22 of Development Consent SSD 10418 and Schedule 3, Condition 15(a) of Development Consent DA 92/97 (prior to its surrender), requires MACH Energy to minimise the dust and fume emissions from blasting on-site. Details on blast management at the MPO will be described in the Blast Management Plan, including measures applied to minimise odour and blast fume.

MACH Energy will also manage its hydrocarbon stores and effluent discharge to ensure no emission of offensive odour occur (as defined under the POEO Act). The primary controls for these secondary odour sources include efficient operation and maintenance of potential odour generating facilities and that these sources (hydrocarbon stores and effluent discharge) are physically separated from any sensitive receptors.

7.5.1 Spontaneous Combustion

The Mining Services Contractor is responsible for mitigating the risks associated with spontaneous combustion and removal or excavation of hot material from the pit, ROM pad or stockpiles.

An assessment of odour and gas emissions is undertaken every two hours and recorded on the internal Mining and Handling of Hot Material Inspection Temperature Record Sheet under the direction of the Open Cut Examiner. The Open Cut Examiner, Production Supervisor and Site Geologist must be notified if heat haze, steam plumes, smoke, smell of burning coal or flames are observed coming from coal stockpiles.

Inspections, observations and thermographic surveys are used to identify and monitor heating of carbonaceous material as a result of mining activity at the MPO. Stockpiles that comprise coal that is susceptible to self-heating or have been stockpiled for a period greater than 3 months are monitored on a regular basis to identify signs of self-heating. If a coal is approaching the residency time, this will be scheduled to be washed as soon as practical.

Where heated material is identified, excavation and separation of heated material will be undertaken while wetting down the material, however if this process is deemed too dangerous, consideration will be given to rolling over heated material to prevent wind/oxygen ingress. The responsibility rests with the Mining Services Contractor - Project Manager.

Other spontaneous combustion controls include:

- maintenance workers will conduct plant and equipment inspections to identify fuel, oil, or grease leaks and complete the Mount Pleasant Mining in Hot Material Plant Inspection Checklist;
- operational supervisor will communicate excavation processes to relevant operators and limit the amount of people in the vicinity of the excavation;
- watercarts will be available during excavation;
- all plant and equipment will following topside loading by excavator procedures including loading direction, two-way communication, audible signals, queuing, lighting, and weather; and
- risk assessments will be conducted prior to extinguishing stockpiles of heated material.

7.6 GREENHOUSE GAS EMISSIONS AND MEASURES

In accordance with Part B, Condition B34 of Development Consent SSD 10418 outlined in Table 1, a review of all available greenhouse gas management abatement measures relevant to the MPO will be conducted 12 months after approval of the AQGGMP (i.e. anticipated to commence in 2025) and every 3 years thereafter during the life of the mining operation (Table 24). This review and its economic considerations will be submitted to the Planning Secretary and incorporated into this AQGGMP. The requirements of Part B, Condition B34 of Development Consent SSD 10418 is discussed in detail in Section 10.2.

Table 24
Emission Abatement Opportunities – Indicative Evaluation Timing and Responsibilities

Scope	Element/Review	AQGGMP Update	Responsibility
Scope 1	**Energy Efficiency** Diesel Consumption Stocktake and Education Programme	• 2025 • 2028	• General Manager Operations • Department Managers • Mining Contractor
	Major Plant Diesel Efficiency, Hybrid Technologies and Renewable Fuel Blends	• 2025 • 2028	• General Manager Operations • Mining Contractor
	Fugitive Emissions Abatement Evaluation	• 2028 • 2031	• General Manager – Operations
	Major Plant Electrification Evaluation	• 2028 • 2031	• General Manager Operations • Mining Contractor
	Major Plant Replacement Renewable Fuel Evaluation	• 2031 • 2034	• General Manager Operations • Mining Contractor
Scope 2	**Energy Efficiency** Electricity Consumption Stocktake and Education Programme	• 2025 • 2028	• General Manager – Operations • CHPP Contractor • Mining Contractor
	Renewable Electricity On-site Generation Evaluation	• 2025	• General Manager – Operations
	Renewable Electricity Third-Party Electricity Supply Evaluation	• 2028	

A 3-year action plan will be developed in coordination with the greenhouse gas emission abatement measures review and incorporated into this AQGGMP. The plan will detail the actions to be taken to investigate and implement all reasonable and feasible abatement measures to minimise greenhouse gas emissions.

In these reviews, MACH Energy will provide updated estimates of the greenhouse gas emissions over the life of the MPO from adoption of greenhouse gas abatement measures proposed. The review of abatement measures will include the following:

- Identify potential design and operational best practice measures and technologies from international and Australian sources.
- Selection criteria used to identify design and operational best practice measures potentially applicable to the MPO.
- Technologies and practices will be ranked by effectiveness and potential for reasonable and feasible application at the MPO.
- Justification of the technologies and practices not proposed will be included, considering local conditions, national circumstances and operational circumstances (i.e. scale and remaining life of the MPO).

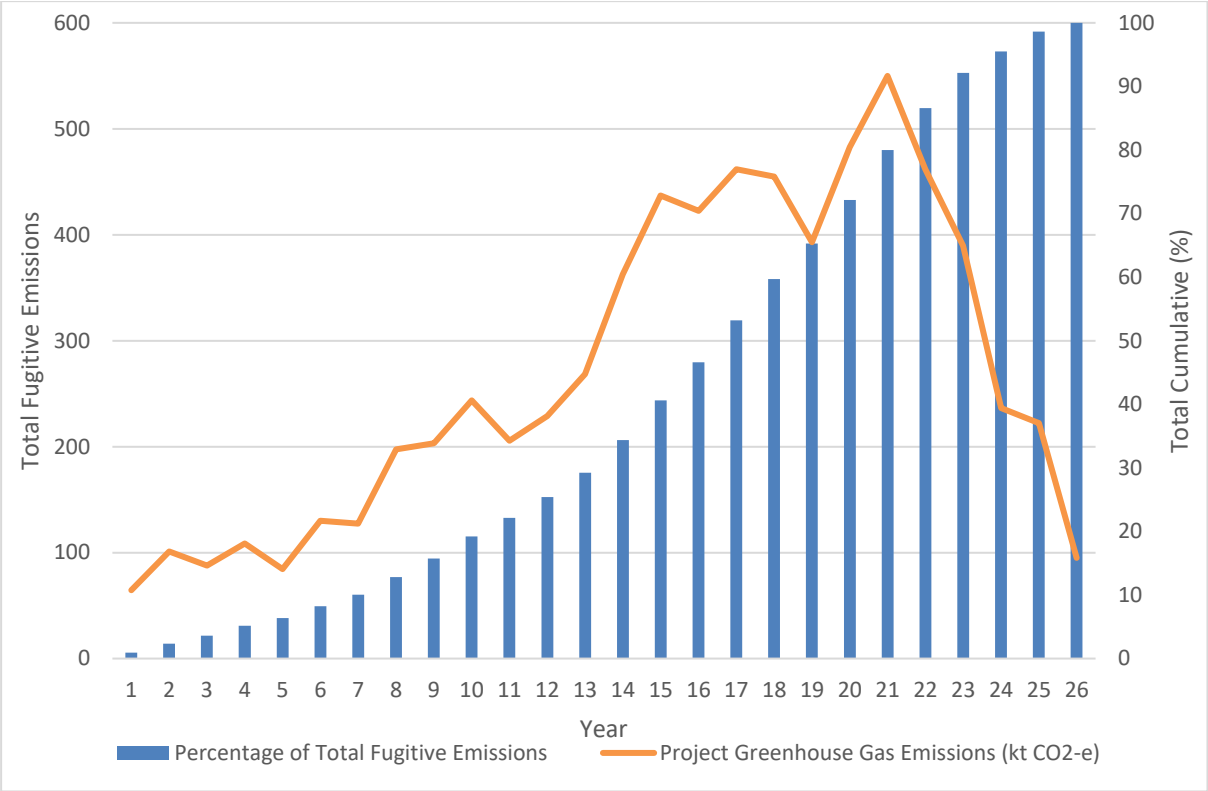
Following commencement of Development Consent SSD 10418 on 12 February 2024, MACH Energy will aim to achieve a 5-year rolling average of 0.028 tonnes of CO_2-e emitted from the MPO per tonne of ROM coal as soon as reasonably feasible, but before 2034 at the latest. In accordance with Part D, Condition D11(e) of Development Consent SSD 10418, MACH Energy will include an addendum report in the MPO Annual Review (Section 10.2) which reports:

- annual methane (CH_4) and annual total carbon dioxide (CO_2) emissions (both categorised by source);
- overall emissions benchmarked against representative industry sectors and the predictions in the Project EIS (MACH Energy, 2021), and performance measures set in Conditions 36 and/or under Condition B34 of Development Consent SSD 10418; and
- measures undertaken to minimise Scope 1 and Scope 2 greenhouse gas emissions, including actions taken under Condition B34 of Development Consent SSD 10418 and estimated reductions in CO_2-e as a result of measures implemented.

Part B, Condition B37 of Development Consent SSD 10418 requires that, in determining compliance with the performance measures described in Table 15, the Planning Secretary will take into account any atypical or abnormal operating conditions, any exceedances already offset (or required to be offset or otherwise accounted for) under other applicable Commonwealth or State requirements (e.g. NGERS and associated revised Safeguard Mechanism), changes in Global Warming Potential and/or any voluntary offsetting of CO_2-e by MACH Energy.

If, following this consideration, the Planning Secretary determines that MACH Energy has exceeded any of these performance measures, including revised performance measures determined under Part B, Condition B34 of Development Consent SSD 10418, then MACH Energy must offset the excess CO_2-e within six months of the Planning Secretary determination, using a mechanism to the satisfaction of the Planning Secretary.

Chart 1 depicts the estimated fugitive emissions over the life of the Project under the Development Consent SSD 10418. The majority of the estimated Project fugitive emissions would occur in the last 10 to 12 years of the Project life. As the majority of the Project fugitive emissions are expected to occur in the latter part of the Project life, MACH Energy would continue to periodically evaluate technological advancements in fugitive emission abatement technology and would implement additional reasonable and feasible fugitive greenhouse gas mitigation measures that may become available over the life of the Project (Section 7.6.1).



Source: MACH Energy, 2022a.

Chart 1: Timing of Estimated Fugitive Emissions – Mount Pleasant Optimisation Project

Further, in accordance with Part B, Condition B34 of Development Consent SSD 10418 and Schedule 2, Condition 19 of Development Consent DA 92/97 (prior to its surrender), all reasonable and feasible measures being used to minimise Scope 1 greenhouse gas emissions at the MPO will be described and implemented. The measures will pay particular attention the abatement options detailed in the review and action plan required by Part B, Condition B34(a) and (b) of Development Consent SSD 10418. The measures described are discussed below.

In order to avoid duplication, MACH Energy would primarily use records kept for NGERS, to record/document and report emissions data for use in comparisons to the previous Project emission projections and Development Consent SSD 10418 performance measures (Condition B36).

It is noted that this will require calendar year reporting, as opposed to the NGERS financial year reporting. However, monthly NGERS energy consumption records and fugitive emission estimates will be used to prepare any calendar year reports for Development Consent Condition reporting.

7.6.1 Mitigation Measures

The primary source of greenhouse gas emissions at the MPO is from the combustion of diesel fuel. Fugitive emissions of CO_2 and CH_4 from the coal seam and CO_2 released during the use of explosives will be lesser contributors in comparison to diesel combustion emissions.

Greenhouse gas emissions at the MPO will be minimised through the efficient use of diesel fuel by the mobile fleet. A number of new mobile plant ultra-class fleet items have been recently commissioned, which include 'hybrid' diesel electric trucks manufactured by Komatsu. Abatement measures that are implemented will be reported on in the MPO Annual Reviews. A summary of existing key Scope 1 mitigation measures is outlined in Tables 25 and 26 below.

Table 25
Summary of Existing Key Greenhouse Gas Mitigation Measures – By Abatement Hierarchy

Mitigation Measure Hierarchy[1]	Katestone Element Terminology[2]	Description of MACH Energy Current Practice	Responsibility
Reduce	Haul road optimisation	• Optimising the design of haul roads for energy efficient operation by minimising the distance travelled between the pit and the CHPP.	• General Manager Operations • Mining Contractor
	Material handling	• Minimising the re-handling of materials (i.e. coal, overburden and topsoil).	
Avoid	Maintenance of Plant/Fleet	• Maintaining the fleet in good operating order, including: – servicing all machinery in accordance with maintenance contracts and adopting original equipment manufacturer recommendations for maintenance; – targeted maintenance, as far as reasonably practical, equipment remains fit for purpose over its whole life cycle; and – define failure modes, effects and criticality which helps to minimise potential equipment failure.	• General Manager Operations • Mining Contractor
	Fleet vehicle operation	• Maximising truck payloads to maximise productivity and efficiency. • Reducing idling times. • Scheduling activities so that equipment and vehicle operation and maintenance is optimised.	• General Manager Operations • Mining Contractor
Substitute	Drive train	• Consideration of replacing diesel with hybrid diesel electric vehicles, when new fleet are required.	• General Manager Operations • Mining Contractor
	Fuel efficient vehicles	• Selecting new equipment and vehicles that have high energy efficiency.	
	Energy efficiency	• Consideration of energy efficiency of all new major electrical equipment.	• CHPP Contractor

Note:
[1] NSW Guide for Large Emitters – Mitigation Hierarchy.
[2] Katestone Environmental Pty Ltd – Best Practice Checklist for Greenhouse Gas Abatement by NSW Coal Mines.

Table 26
Summary of Existing Key Greenhouse Gas Mitigation Measures – by Emissions Source

Scope	Emissions Source	Management Control	Responsibility
Scope 1	Stationary Energy (excluding electricity generation) – **mining**	• Optimising the design of haul roads for energy efficient operation by minimising the distance travelled between the pit and the CHPP.	• General Manager Operations • Mining Contractor
		• Minimising the re-handling of materials (i.e. coal, overburden and topsoil).	
		• Maintaining the fleet in good operating order, including: – servicing all machinery in accordance with maintenance contracts and adopting original equipment manufacturer recommendations for maintenance; – targeted maintenance, as far as reasonably practical, equipment remains fit for purpose over its whole life cycle; and – define failure modes, effects and criticality which helps to minimise potential equipment failure.	• General Manager Operations • Mining Contractor
		• Maximising truck payloads to maximise productivity and efficiency. • Reducing idling times. • Scheduling activities so that equipment and vehicle operation and maintenance is optimised.	• General Manager Operations • Mining Contractor
		• Consideration of replacing diesel with hybrid diesel electric-drive vehicles, when new fleet are required.	• General Manager Operations • Mining Contractor
		• Selecting new equipment and vehicles that have high energy efficiency.	
Scope 2	Purchased Electricity	• Consideration of energy efficiency of all new major electrical equipment.	• General Manager Operations

In accordance with Part B, Condition B31(a)(iii) of Development Consent SSD 10418, MACH Energy will take all reasonable and feasible steps to improve energy efficiency and minimise Scope 1 and Scope 2 greenhouse gas emissions generated by the development.

For example, in 2023 MACH Energy installed a 99.75 kilowatt rooftop solar system at the MPO, comprising 266 solar panels (Plate 1). The solar system supplies the mine infrastructure area including powering two Electric Vehicle charging stations, with surplus production going into the MPO grid (which also powers the CHPP and other powered items on-site including pumps and water fill points).

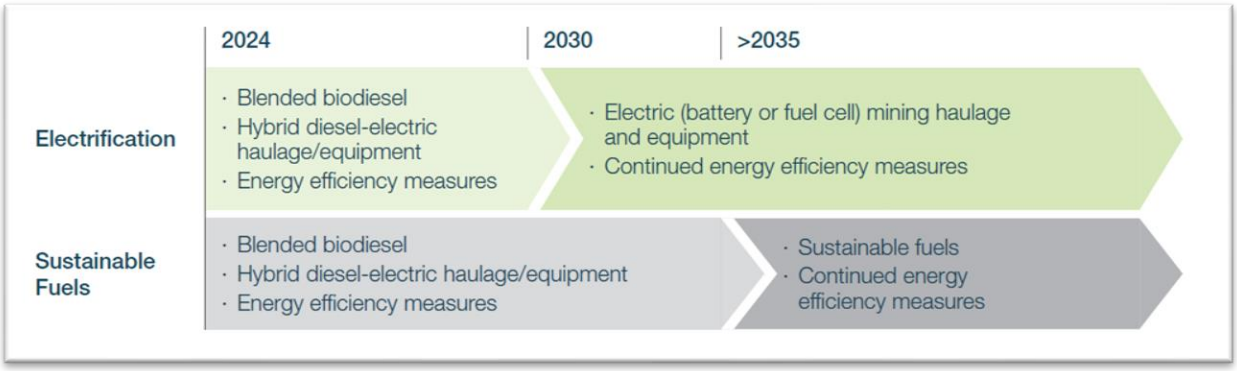
Plate 1
Solar Panels Installed at the MPO Mine Infrastructure Area

In the *Sector Pathways Review*, the Commonwealth Climate Change Authority examined potential technology transition and emissions pathways in six key emission sectors to support Australia's transition to net zero emissions by 2050, including the Resources sector (Climate Change Authority, 2024).

Key findings of Part 1 of the *Sectoral Pathways Review* (Resources) of potential relevance to the MPO include (Climate Change Authority, 2024):

> *Decarbonisation of the* (Resources) *sector requires widespread electrification, and deployment of fugitive abatement technologies in oil, gas and coal mining operations.*
> *…*
> *Electrification can play a significant role in reducing emissions from fuel combustion in the sector. Electric mining haulage and equipment is at pilot scale, with widespread adoption expected after 2030.*
> *…*
> *Based on available technologies, several sources of emissions across the sector are expected to remain largely unabated while the activities continue. There are few opportunities to significantly reduce fugitive emissions from surface coal mines.*
> *…*
> *Barriers to electrification and deployment of fugitive abatement measures across the sector include high upfront capital costs, integration challenges within existing facilities and the lack of access to a sufficient firmed supply of renewable electricity.*
>
> *…*

Figure R.4 of the *Sectoral Pathways Review* also provides a schematic diagram illustrating two key prospective alternative decarbonisation pathways for major mining and haulage equipment, being *electrification* and *sustainable fuels* (reproduced below as Figure 8).



Source: Climate Change Authority, 2024.

Figure 8
Prospective Decarbonisation Pathways for Mining and Haulage Equipment

MACH Energy notes that the Climate Change Authority schematic (Figure 8) indicates that irrespective of which prospective decarbonisation pathway is followed, the initial stage of each pathway is likely to involve some combination of blended diesel, hybrid diesel-electric equipment and energy efficiency measures.

MACH Energy also notes that the Climate Change Authority has identified that electric battery or fuel cell powered heavy mining haulage and equipment is likely to accelerate after 2030. Whereas the Climate Change Authority has identified that the role of sustainable fuels is likely to accelerate after 2035 (Figure 8).

Based on the Climate Change Authority's projections, Table 24 outlines MACH Energy's current planned timing and management responsibilities for further detailed reviews of potential Scope 1 and Scope 2 abatement opportunities, and to conduct a reasonable and feasible evaluation of the identified opportunities, consistent with both Conditions B31(a)(iii) and B34 of Development Consent SSD 10418.

In accordance with Part B, Condition B34 of Development Consent SSD 10418, a review of all available greenhouse gas management abatement measures relevant to the MPO will be conducted 12 months after approval of the AQGGMP (i.e. anticipated to commence in 2025) and every 3 years thereafter during the life of the mining operation (Table 24). These reviews (commencing in 2025) will also incorporate detailed MPO projections against the 5-year rolling average greenhouse gas intensity target set under Condition B34(d)(ii) and the associated performance measures in Table 4 of Condition B36 of the Development Consent, and as may be necessary, consideration of a potential offset strategy for any projected excess emissions (consistent with Condition B37 of the Development Consent).

As greenhouse gas abatement technologies develop, the provisional timing of key evaluations provided in Table 24 would be reviewed and adjusted as necessary, over the life of the MPO. Greenhouse gas emissions from the MPO will be tracked and reported each year in the MPO Annual Review (Section 10.1) in addition to any further measures to be implemented to improve the sites environmental performance. The greenhouse gas emissions from the MPO will also be reported through the NGERS.

7.6.2 Diesel Combustion Emission Mitigation

In accordance with Part B, Condition B31 of Development Consent SSD 10418, all new 'non-road' diesel equipment used in undertaking the development will include reasonable and feasible diesel emission reduction technology. MACH Energy's procurement process includes a tender evaluation process for the supply of new equipment on-site. The tender evaluation process will include criteria for diesel efficiency and inclusion of diesel emission reduction technology as a key aspect of the equipment procurement process (Table 25).

MACH Energy will maintain emissions reductions components in accordance with manufacturer specifications, so they remain fit for purpose over their whole life cycle. MACH Energy's management measures for diesel combustion emissions are outlined in Table 25.

Additional non-road vehicle emission management measures are discussed further in Section 8.1.5.

7.6.3 Initial Comparison to Safeguard Mechanism and NSW Emission Reduction Targets

Safeguard Mechanism Requirements

Based on MACH Energy's internal greenhouse gas projections, it is not anticipated that the MPO would exceed its Safeguard baseline emissions intensity targets in the first ten years of Mount Pleasant Optimisation Project operations.

However, ROM coal production rates, greenhouse gas intensity projections and MPO emission intensity baseline decline rates under the Safeguard Mechanism will continue to be reviewed annually, in conjunction with annual NGERs reporting and Development Consent reporting against Condition B34(d)(ii) under the MPO Annual Review (Section 10.1).

In the latter part of the Project life, the Safeguard Mechanism is expected to impose more stringent emission intensity requirements than the 5-year rolling average greenhouse gas intensity target set under Condition B34(d)(ii) of the Development Consent.

NSW Emission Reduction Targets

The NSW Government has recently enshrined in legislation whole-of-government climate action in the Net Zero Future Act.

The Net Zero Future Act legislates:

- guiding principles for action to address climate change that consider the impacts, opportunities and need for action in NSW;
- emissions reduction targets for NSW, comprising:
  - 50% reduction on 2005 levels by 2030;
  - 70% reduction on 2005 levels by 2035; and
  - net zero by 2050.
- an objective for NSW to be more resilient to a changing climate; and
- establishment of an independent, expert Net Zero Commission to monitor, review, report on and advise on progress towards these targets.

It is noted that the Net Zero Future Act emission reduction targets established by NSW for 2030 and 2035 are more aggressive than the current Commonwealth targets as set out in Australia's second Nationally Determined Contribution, and the associated current design of the Safeguard Mechanism decline rate (Table 13).

NSW greenhouse gas emissions projections 2023 - Methods Paper

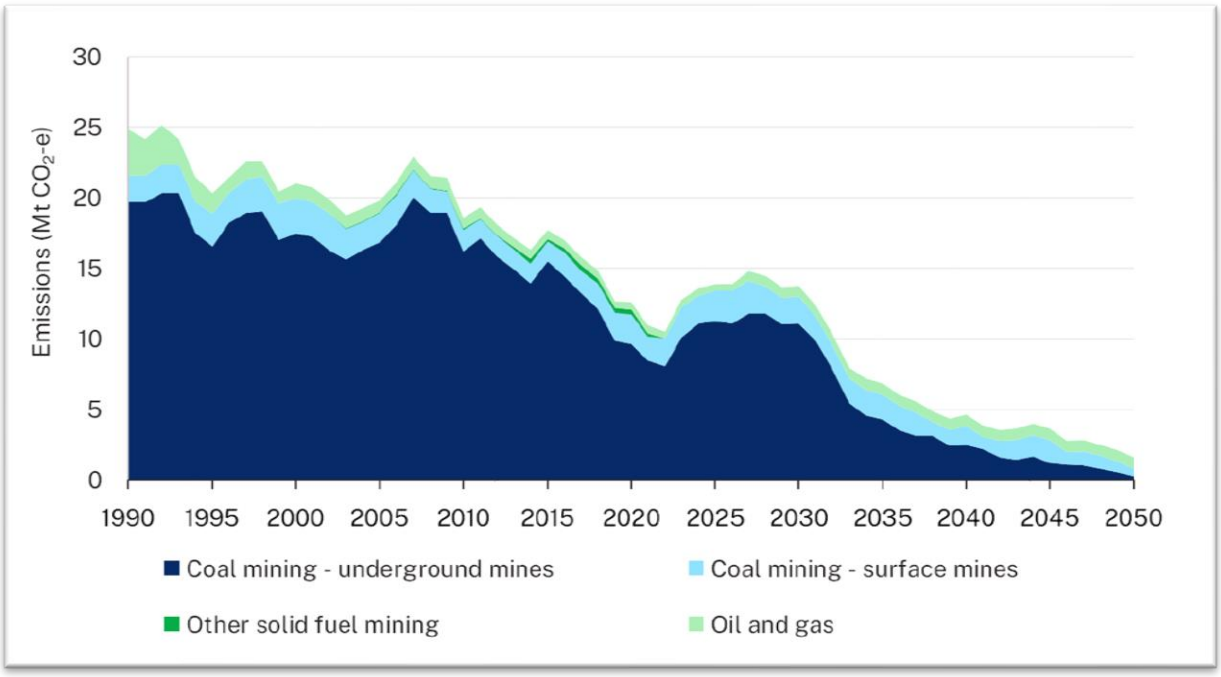
The NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW) has projected future trends in greenhouse gas emissions and the *NSW greenhouse gas emissions projections 2023 - Methods Paper* (NSW DCCEEW, 2024) summarises NSW emissions trends and describes the assumptions and methodologies applied in preparing NSW's projections.

In completing its greenhouse gas sectoral projections, NSW DCCEEW has made assumptions regarding the potential availability and adoption of alternative technologies to diesel powered mining equipment, as follows (NSW DCCEEW, 2024):

> *Open-cut mines operating post-2042 are assumed to replace non-road diesel equipment with clean technology starting in 2032. The abatement to be achieved post-2030 by replacing diesel-powered mobile plant and equipment was modelled on a mine-by-mine basis accounting for the extent of emissions projected for the mine and the forecast remaining mine life.*
> *…*
> *Given the slow pace of trialling options for diesel replacement on mine sites, the turnover progress for mine site vehicle fleets was modelled to happen at a slower pace in the 2023 projections (i.e. starting at 5% in 2033 and reaching 100% turnover of the fleet by 2043) compared to the 2022 projections where turnover was modelled to be 40% by 2033 and 100% by 2036.*

Consideration of the technology and commercial readiness of alternative heavy equipment diesel replacement technologies will occur at the MPO, with current anticipated timing of the AQGGMP updates in which these various technologies will be the focus of additional analysis as provided in Table 26 (which is generally consistent NSW DCCEEW advice reproduced above).

With respect to fugitive emissions from NSW coal mines, gassier underground coal mines have historically contributed the vast majority of emissions. The NSW DCCEEW (2024) projects increasing fugitive emissions under current policy settings in the period to approximately 2028, before fugitive emissions (particularly from NSW underground coal mines) begin to materially fall off from approximately 2033 (Figure 9).



Source: NSW DCCEEW, 2024.

Figure 9
Inventoried (to 2021) and NSW DCCEEW Projected (2022 – 2050) Fugitive Emissions by Sector

MACH Energy understands that the projected ROM coal extraction and annual projected greenhouse gas emissions of the Project (including fugitive emissions) have already been included in the Net Zero Emissions Modelling team's[2] NSW greenhouse gas projections.

Notwithstanding, MACH Energy does intend to undertake further exploration drilling and gas content testwork in the latter part of the approved pit shell over the next 2-3 years. These investigations will assist to identify whether a fugitive abatement trial may potentially be feasible in the medium-term. This exploration drilling and gas content testwork will be available for a detailed evaluation by MACH Energy of fugitive abatement opportunities in the planned 2028 and 2031 AQGGMP updates (Table 24).

In accordance with Part B, Condition B34 of Development Consent SSD 10418, a review of all available greenhouse gas management abatement measures relevant to the MPO will be conducted 12 months after approval of the AQGGMP (i.e. nominally commencing in 2025) and every 3 years thereafter during the life of the mining operation (Table 24). When completed, this review and its economic considerations will be submitted to the Planning Secretary and incorporated into this AQGGMP.

MACH Energy will also incorporate in this review further consideration of the NSW Government emissions reduction targets, and associated EPA mitigation guidance that may be available at that time.

The EPA's guideline on greenhouse gas mitigation at NSW coal mines that MACH Energy understands is currently in preparation will describe the EPA's expectations for avoiding and reducing GHG emissions at NSW coal mines (including minimum performance standards, current best practice, and technologies and measures likely to be available in the future) (EPA, 2024).

7.7 AT-RECEIVER CONTROL

In accordance with Part C, Condition C2 of Development Consent SSD 10418 and Schedule 3, Condition 2, of Development Consent DA 92/97 (prior to its surrender), upon receiving a written request from the owner of any residence on the land listed in Table 19 and Table 20, MACH Energy will implement additional reasonable and feasible mitigation measures (such as insulation, air filters, first flush roof water drainage system and/or air conditioning) at the residence in consultation with the landowner.

The measures will be consistent with those outlined in the VLAMP (DPE, 2018). The measures will also be proportionate to the level of predicted impact and directed towards reducing the noise and/or air quality impacts of the development.

[2] Within the NSW Department of Climate Change, Energy, the Environment and Water.

7.8 CUMULATIVE AIR QUALITY MANAGEMENT

Part B, Condition B31(f) of Development Consent SSD 10418 states:

B31. The Applicant must:

...

(f) make all reasonable efforts to co-ordinate air quality management on the site with the air quality management at nearby mines to minimise cumulative air quality impacts.

Schedule 3, Condition 22(f) of Development Consent DA 92/97 (prior to its surrender) states:

22. The Applicant must:

...

(f) co-ordinate the air quality management on site with the air quality management at nearby mines (including the Bengalla mine) to minimise cumulative air quality impacts from the mines,

to the satisfaction of the Secretary.

In regard to this AQGGMP, Part B, Condition B32(f)(iv) of Development Consent SSD 10418 states:

B32. The Applicant must prepare an Air Quality and Greenhouse Gas Management Plan for the development to the satisfaction of the Secretary. This plan must:

...

(f) include an air quality monitoring program, undertaken in accordance with the Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales (DEC, 2007), that:

…

(iv) includes a protocol for distinguishing the dust emissions of the development from any neighbouring developments; and

Further, Schedule 3, Condition 23(d) of Development Consent DA 92/97 (prior to its surrender) also states:

23. The Applicant must prepare an Air Quality and Greenhouse Gas Management Plan for the development to the satisfaction of the Secretary. This plan must:

...

(d) include a protocol that has been prepared in consultation with the owners of the nearby mines to minimise the cumulative air quality impacts of the mines.

The following mines have been identified nearby the MPO (Figure 1) and have been consulted with respect to cumulative air quality management:

- Bengalla Mine (immediately south);
- Mt Arthur Coal Mine (further south);
- Dartbrook Mine (immediately north);
- Mangoola Coal (south-west); and
- Muswellbrook Coal Mine (east).

An overall Master Cooperation Agreement has been developed between MACH Energy and the Bengalla Mine.

Data will be shared between the mining operations with real-time air-quality and noise monitoring. Additionally, quarterly meetings with Bengalla Mine and Mt Arthur Coal Mine are scheduled with the Environmental Superintendent to discuss cumulative impacts and how they are managed. The meeting is held in order to discuss improvements, recommendations, arising issues and potential cumulative impacts on the community.

Additionally, MACH Energy has access to the temperature inversion tower maintained by the Bengalla Mine. This information is reviewed on a regular basis (or as required) to coordinate and minimise cumulative impacts within the vicinity of the MPO and neighbouring mines.

The cumulative air quality management protocol prepared in consultation with the above mines is described in Section 7.8.1.

7.8.1 Cumulative Air Quality Management Protocol

In accordance with Part B, Condition B32 of Development Consent SSD 10418, a protocol to distinguish dust emissions of the MPO from any neighbouring develops will be implemented.

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

In the event that real-time monitoring identifies an ‘Other Mine Dust Event’, the Environmental Superintendent (or delegate) will (subject to agreement by the other mine) immediately notify the nominated representative of the relevant other mine(s). A representative of another mine will only be contacted once per shift (i.e. day shift, night shift).
An ‘Other Mine Dust Event’ is defined for real-time monitoring as presented on Figure 7, whereby:

- a real-time monitoring “Red Alarm” is triggered; and
- review of the observed weather conditions and operating conditions indicates that the source of excessive dust is likely to be another mine.

If informed by neighbouring mines of excessive dust, MACH Energy will liaise with each other as appropriate following investigation into meteorological conditions or visual observations associated with a real time meteorological or PM_{10} alarms at the monitoring locations and investigate circumstances.

MACH Energy will continue to monitor and assess air quality data, including data from the Upper Hunter Air Quality Monitoring Network, in conjunction with meteorological data to determine the Project’s contribution to recorded dust events.

7.9 ROLES AND RESPONSIBILITIES

The Environmental Superintendent is primarily responsible for implementing the suite of environmental management plans across the MPO, with assistance provided by the Managing Director, General Manager - Operations and Department Managers/Supervisors. The Environmental Superintendent is responsible for the coordination of the development, communication, implementation and maintenance of management plans and environmental monitoring programs and regular review environmental monitoring data for compliance with relevant criteria.

A combination of MACH Energy employees and mining contractor staff are responsible for environmental management at the MPO. The roles and responsibilities of members of the site, including the environmental management team, are provided in MACH Energy's EMS.

It is the responsibility of MACH Energy to employ people that are appropriately trained, competent and have an appropriate level of experience and understanding to undertake their work in a manner that minimises impacts on the environment and community. In addition, a component of the site-specific induction is to promote and provide all employees and contractors with general environmental awareness training. In accordance with Part A, Condition A33 of Development Consent SSD 10418, MACH Energy will ensure that any of its employees or contractors are made aware of, and are instructed to comply with, the conditions of Development Consent SSD 10418 relevant to activities they carry out in respect of the development. A description of training requirements is provided in MACH Energy's EMS.

8 AIR QUALITY MONITORING PROGRAM

To assess compliance with the relevant criteria, and to meet the monitoring requirements of EPL 20850, real-time and supplementary air quality monitoring will be conducted at various locations that are considered representative of residential receivers in the areas that may potentially be influenced by mining operations.

The MPO air quality monitoring system is summarised in Table 27 and Figure 3 and is described further in Section 8.1. Note that in the event a monitoring site ceases to provide reliable data (e.g. due to excessive uncontrollable contamination from other local activity such as vegetation or wildlife), a new location may be established in consultation with a technical specialist.

Given that monitors will be required to be removed or relocated as mining operations progress north-west, the following matters will be considered as part of this process:

- If a monitor or monitoring location is no longer representative for monitoring the specific impact of the development, or if it is deemed to be “not functioning” or “not representative" anymore, the preferred process will be to move the monitor to a suitable, more representative location rather than completely removing it from the monitoring network. In some cases, the need for that monitor may become obsolete, e.g. due to the changed position or proximity of the mine.
- MACH Energy will confirm if approval needs to be sought from DPHI and/ or the EPA prior to it being removed from a monitoring program. If approval is required, MACH Energy will submit a letter to DPHI which will include the draft AQGGMP that incorporates the draft changes for either the removal or revised location of the monitor.
- The letter to DPHI will:
  - Provide evidence demonstrating that there is no material issues with removing or relocating the monitor.
  - Confirm if the monitor is required under EPL 20850. If it is, MACH Energy will provide consultation evidence with the EPA confirming their position on the request and clarify if the EPL 20850 would be varied as a result of the removal or relocation.
  - Confirm the purpose of the monitor - what impact is being monitored and why.
  - Confirm what consent condition requirements are associated with the monitor or monitoring location (e.g., HVAS), monitoring air quality criteria (e.g., TSP, dust deposition), or monitoring locations.
  - Confirm if certain data from this monitor is required for tracking long-term trends.
- If a supporting report is provided by an independent expert, provide evidence to demonstrate the consultant is a suitably qualified expert. For example, provide evidence of qualifications and experience.

The air quality monitoring system will be reviewed each year as part of the MPO Annual Review (Section 10.1) and will be revised as necessary to reflect the progression of the mine. For example, when the mine progresses to the west, a real-time monitor will be relocated (or added) to the north-west of the MPO. A potential location would be in the general vicinity of site D12 with the commissioning coinciding with the peak coal extraction rate of 21 Mtpa.

Meteorological monitoring will also be conducted as described in Section 8.2.

Table 27
Mount Pleasant Operation Air Quality Monitoring System

Location				Frequency	Parameter
Site ID	General Description	Easting	Northing		
D1	Dust deposition gauge (DDG) located to the north-east.	0298316	6432891	Monthly	Dust
D3a	DDG located to the south-east, in Muswellbrook.	0301250	6427717	Monthly	Dust
D4	DDG located to the north-east, in Kayuga.	0299429	6434929	Monthly	Dust
D5	DDG located to the south-east.	0298743	6428850	Monthly	Dust
D6	DDG located to the east on Collins Lane.	0299471	6430552	Monthly	Dust
D7b[1]	DDG located to the south, near Bengalla Mine.	0295938	6429242	Monthly	Dust
D8	DDG located to the south-west.	0292955	6429337	Monthly	Dust
D9a	DDG located approximately in the centre of the MPO.	0296191	6431042	Monthly	Dust
D10	DDG located to the north-east.	0299023	6433751	Monthly	Dust
D11	DDG located to the north.	0296226	6433026	Monthly	Dust
D12	DDG located to the north-west.	0294147	6434114	Monthly	Dust
D13	DDG located to the north.	0296703	6434935	Monthly	Dust
D14	DDG located to the south-west.	0293006	6430521	Monthly	Dust
A-HV2[2]	HVAS located to the south-east.	0299559	6428742	24 hours every 6 days	TSP
A-HV4	HVAS located to the north-east.	0299023	6433751	24 hours every 6 days	TSP
A-HV5	HVAS located to the north.	0295825	6434104	24 hours every 6 days	TSP
A-PF2[2]	Palas Fidas real-time monitor located to the south-east.	0299559	6428742	Continuous	TSP, PM_{10} and $PM_{2.5}$
A- PF4	Palas Fidas real-time monitor located to the north-east.	0298923	6433747	Continuous	TSP, PM_{10} and $PM_{2.5}$
A-PF5	Palas Fidas real-time monitor located to the north.	0295812	6434688	Continuous	TSP, PM_{10} and $PM_{2.5}$

Notes:

[1] Site D7b is located in close proximity to the northern boundary of the Bengalla Mine main pit and is heavily influenced by Bengalla Mine operations. Additionally, there are no privately-owned receivers in the vicinity of the site. As such, this site will continue to be monitored but will not be used to assess compliance or to represent residential receivers in the area.

[2] The locations of sites A-HV2 and A-PF2 were revised in Q1 2018 to transition from construction to operation.

8.1 AIR QUALITY MONITORING METHODS

8.1.1 Dust Deposition Monitoring

Dust deposition will be monitored monthly at thirteen DDGs around the MPO (Figure 3 and Table 27). These are utilised to assess nuisance dust impacts and determine the amount of dust that settles in a fixed area. Deposited dust will be assessed as insoluble solids as defined by Australian and New Zealand Standard AS/NZS 3580.10.1:2003: *Methods for sampling and analysis of ambient air – Determination of particulate matter – Deposited matter – Gravimetric Method*.

No long-term criteria for deposited dust are encompassed in Development Consent SSD 10418, however MACH Energy will adhere to the impact assessment criteria from the *Approved Methods for the Sampling and Analysis of Air Pollutants in NSW* Guideline (EPA, 2022a) for the maximum total deposited dust level of 4 g/m^2/month. However, a number of dust deposition monitoring gauges are frequent to contamination (e.g. from bird droppings, insects or proximal construction works) and hence regularly generate invalid results that must be excluded from annual average dust deposition levels. Site D7b and D8 are not used to assess compliance against the deposited dust criteria as the monitors are located in close proximity to the northern boundary of a neighbouring mining operation open cut pit, and there are no privately-owned receivers in the vicinity of these monitoring locations.

In line with the shift in government policy, MACH Energy will look to decommission sites D6, D7b, D8, D9, D11, D13 and D14 and any other dust deposition gauge that is providing unreliable or unrepresentative data, due to the high number of contaminated readings which must be removed to determine the valid annual dust deposition levels. The remaining gauges are located in key locations, allowing for readings near Muswellbrook and areas between the MPO and areas which provide good background data and will continue to be recorded.

Decommissioning of problematic dust deposition gauges will be undertaken once Development Consent DA 92/97 is surrendered and will be reported in the subsequent MPO Annual Review (Section 10.1).

8.1.2 PM_{10} – Real-time Monitoring

PM_{10} will be measured using a Palas Fidas or similar fine dust monitoring and ambient air measuring system at three locations around the MPO (Figure 3 and Table 27).

Real-time PM_{10} levels are also available from the Muswellbrook NW monitor (part of the Upper Hunter Air Quality Monitoring Network).

PM_{10} will be assessed for the purpose of real-time environmental management, as far as practicable, as defined by Australian and New Zealand Standard AS/NZS 3580.9.8-2008: *Methods for sampling and analysis of ambient air – PM_{10} continuous direct mass method using a tapered element oscillating microbalance analyser*.

8.1.3 $PM_{2.5}$ – Real-time Monitoring

$PM_{2.5}$ will be measured using Palas Fidas or similar monitoring systems at two locations around the MPO (Figure 3 and Table 27).

An estimate of $PM_{2.5}$ emissions per kilometre travelled from all 'non-road' mobile diesel equipment used at the MPO will be included in the monitoring reports uploaded to the MACH Energy website. Real-time $PM_{2.5}$ levels are also available from the Muswellbrook monitor (part of the Upper Hunter Air Quality Monitoring Network) located at Bowman Park, Lorne Street, Muswellbrook, NSW.

8.1.4 Total Suspended Particulate

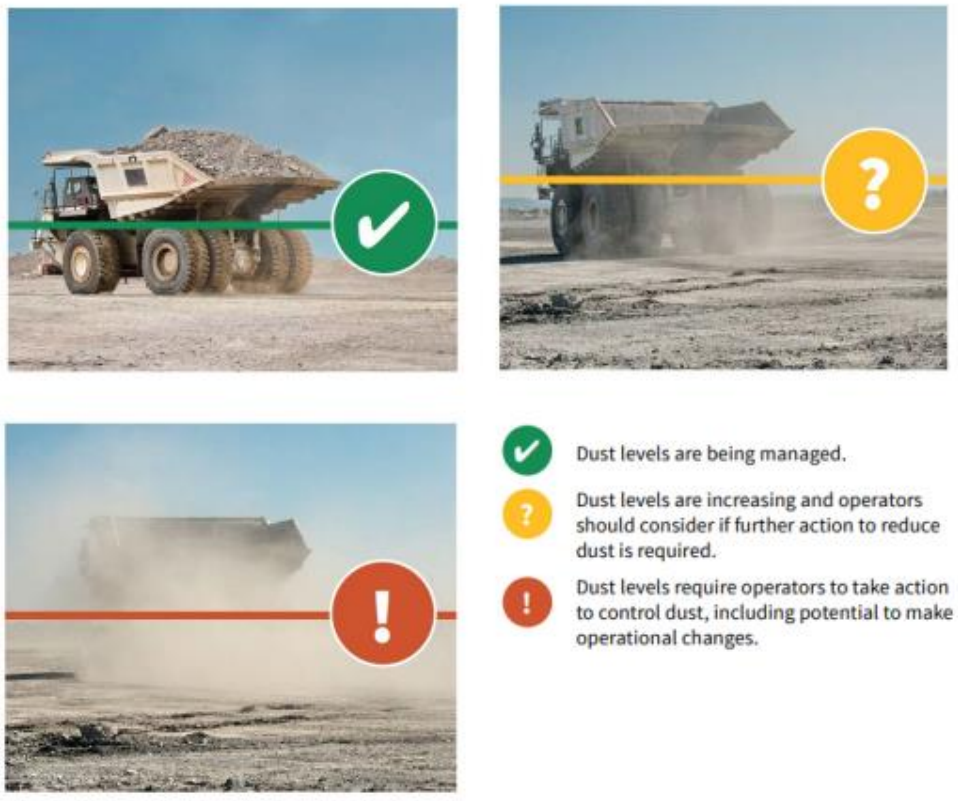
TSP will principally be measured with three HVAS monitors (Figure 3 and Table 27). TSP will be assessed as defined by Australian and New Zealand Standard AS/NZS 3580.9.3:2015: *Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – Total suspended particulate matter (TSP) - High volume sampler gravimetric method*.

TSP will also be measured using Palas Fidas monitoring systems at three locations around the MPO (Figure 3 and Table 27).

8.1.5 Non-road Vehicle Dust Emissions

In accordance with Part B, Conditions B31 and B32 of Development Consent SSD 10418, MACH Energy will prepare and deliver annual refresher training programs to applicable employees and contractors to identify a range of triggers when operations require additional dust management measures to minimise the occurrence of wheel generated dust on haul roads, dust from drill rigs and dust from excavator loading.

In accordance with the *Dust Assessment Handbook* (EPA, 2019), operators of mobile equipment and light vehicles in haul roads are required to notify their Supervisor when dust levels are either increasing or unacceptable (Figure 10).



Source: EPA, 2019.

Figure 10
Acceptable and Unacceptable Dust Levels on Haul Roads

The primary reasonable and feasible measures that will be implemented to control/minimise particulate matter (including PM_{10} and $PM_{2.5}$) emissions from the MPO are summarised in Table 21 (Section 7.2). These mitigation measures are applicable to the minimisation of wheel generated dust on haul roads. Further measures to minimise wheel generated dust at the MPO include:

- Slowing down, particularly in dry conditions;
- Operators monitoring their own dust generation;
- Use of the two-radio as necessary to notify of unacceptable dust levels;
- Scheduling tasks with high dust generation to suitable times so potential impacts are kept to a minimum e.g. topsoil should not be handled when it is excessively dry and windy;
- Scheduling clearing activities in stages to reduce the area exposed;
- Relocation of excavation/dumping operations to lower parts of the mine during extreme wind conditions;
- Operators taking instruction and direction from Supervisors and Dispatch relating to dust management/ operational changes due to excessive dust generation; and
- Increasing the frequency of watering haul roads displaying signs of unacceptable dust levels.

Additionally, the Mining Service Contractor maintains a Principal Hazard Management Plan for Airbourne Contaminants. The MPO undertakes regular watering of roadways, excavation and dumping areas to suppress dust caused by vehicle traffic, mining operations and wind, as per *Mount Pleasant Dust Management Procedure and Mount Pleasant Maintenance and Watering of Mine Roads Procedure*. The responsibility of the implementation of the management measures listed above is the responsibility of the Mining Services Contractor - Project Manager.

As part of the air quality modelling for the Project EIS (MACH Energy, 2021), TAS (2020) adopted a control efficiency of 90% for the main coal haul road leading to the CHPP. This haul road is a generally permanent haul road maintained for the life of the mine, constructed of high-quality materials to ensure its longevity. Lower levels of control were applied in the modelling for haul roads that are not the main haul road (a level of 80% was used, corresponding to the minimum level required by the EPA).

The control efficiency was adopted based on measurements conducted for the EPA wheel generated dust Pollution Reduction Programs (PRPs) carried out by four separate Hunter Valley mines, including mines nearby to the MPO.

The uncontrolled haul road emission level applied in the modelling was approximately 700 grams of PM_{10} per vehicle kilometre travelled (g/VKT), as calculated with a 2% silt value. Therefore, the modelling applied a value of approximately 70 g/VKT for the main haul road and approximately 140 g/VKT for non-main haul roads.

In accordance with Part B, Condition B32(f)(i) of Development Consent SSD 10418, MACH Energy will undertake site-specific monitoring of the emissions of $PM_{2.5}$ per km travelled from all 'non-road' mobile diesel equipment used for the development.

MACH Energy will adopt the methodology applied for the PRPs which will include the direct measurement of dust emissions from a controlled and uncontrolled road at the MPO to estimate the control efficiency. This monitoring will be conducted within 12 months of approval of the AQGGMP under Development Consent SSD 10418 and will be reported in the subsequent MPO Annual Review.

8.2 METEOROLOGICAL MONITORING

Meteorological data will be collected by the Automatic Weather Station (AWS) and Weather Masts at the MPO (locations described in Table 28 and shown on Figure 3). Meteorological forecasting (Section 7.3) will be undertaken as part of the air quality management system.

In accordance with Part B, Condition B38 of Development Consent SSD 10418 and Schedule 3, Condition 24 of Development Consent DA 92/97 (prior to its surrender), the monitoring systems comply with the requirements from *Approved Methods for Sampling and Analysis of Air pollutants in New South Wales* (EPA, 2022a) and is capable of measuring meteorological conditions in accordance NSW *Noise Policy for Industry* (EPA, 2017).

Table 28
Location of Meteorological Monitoring

Location				Frequency
Site ID	General Description	Easting	Northing	
M-WM1	Weather mast, located to the south-west	0291543	6427358	Continuous
M-WM2	Weather mast, located to the south-east	0299559	6428742	Continuous
M-WS4	AWS, located to the north-east	0299023	6433751	Continuous
M-WM5	Weather mast, located to the north	0295812	6434688	Continuous

8.3 DATA VALIDATION AND COMPLIANCE ASSESSMENT

In accordance with Part B, Condition B31(g) of Development Consent SSD 10418, MACH Energy will take all reasonable and feasible steps to carry out regular air quality monitoring to determine whether the development is complying with the relevant conditions of Development Consent SSD 10418 (Section 4). This is achieved through the air quality monitoring program as discussed in Section 8.1.

Where monitoring indicates elevated readings above the prescribed criteria (Tables 14 to 18), MACH Energy will initiate an assessment of the data to determine the validity of the elevated reading and whether an exceedance or equipment malfunction has occurred.

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

- Level 1: First pass data review and evaluation. For example, using a plot of the last month's data on a trend line spanning at least 12 months (where the data is available) or similar other simple and effective means to identify potentially erroneous or outlier data (e.g. wind roses for meteorological data), or tables showing variability and deviation from the average. At this stage, it is also necessary to establish if an elevated reading has been influenced by one of the following factors:
  - Extreme events, such as:
    - bushfires;
    - prescribed burning;
    - dust storms;
    - fire incidents;
    - illegal activities; or

    - other activities agreed by the Planning Secretary of the DPE (now DPHI).
  - Reasonableness of data (e.g. is the equipment operating properly, providing reliable data and calibrated correctly?).

- Level 2: Where data is assessed to be potentially invalid, an analysis of the available data (e.g. field records, laboratory notes, calibrations etc.) shall be made by the Environmental Superintendent. This may require a site inspection of the monitoring equipment to determine it is not damaged, dirty, corroded or compromised by insects, spider webs etc. and thus that the data is valid.
- Level 3: Where anomalous or potentially invalid data is found and the issue is significant (e.g. may indicate an exceedance or equipment fault) and a Level 1 or 2 evaluation cannot determine the cause, engage a professional air quality expert to examine the issue.

In addition to this event driven validation process, a review of monitoring data (TSP, $PM_{2.5}$, PM_{10}) will be undertaken quarterly for dust deposition, HVAS and Palas Fidas monitoring locations to ensure compliance with the air quality criteria in accordance with Development Consent SSD 10418 (Section 4.1). The air quality monitoring locations will be reviewed annually to determine if the locations are still representative, where necessary, modified over the life of operations according to progressive monitoring results, physical changes in mining operations, or following the acquisition of private property by MACH Energy. This will also include the review and progressive adjustment of the wind angles of the air quality monitors as mining operations move further west (over the life of the development). Any change to the air quality monitoring location will be captured in an update to the AQGGMP (Section 10.2) and the MPO Annual Review (Section 10.1).

In accordance with Part B, Condition B31(h) of Development Consent SSD 10418, MACH Energy will take all reasonable and feasible steps to regularly assess meteorological and air quality monitoring data and modify operations on site to ensure compliance with the relevant conditions of SSD 10418. Data from the real-time air monitoring system (Section 8.1) are viewed regularly throughout every 24-hour period.

Reports from the system are received on a daily basis; enabling site personnel to review air quality levels recorded in the previous 24-hour period. Recorded data is also reviewed on a regular (monthly) basis, providing MACH Energy with important information on air quality trends to ensure compliance and also to modify operations on site. This information is also reported in the MPO Annual Review (Section 10.1).

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

As outlined in the MPO EMS and Section 7.9, the Environmental Superintendent is responsible for the coordination of the development, communication, implementation and maintenance of management plans and environmental monitoring programs and regular review environmental monitoring data for compliance with relevant criteria.

9 CONTINGENCY PLAN

In accordance with Part D, Condition D5(f) of Development Consent SSD 10418, this AQGGMP includes a protocol for identifying any air quality-related exceedance, incident or non-compliances and protocol for notifying the DPE (now DPHI) and relevant stakeholders of these events.

In the event that an exceedance of an air quality criterion due to MACH Energy is considered to have occurred or an offensive odour due to MACH Energy has been detected off-site, MACH Energy will implement the procedures described in Section 7.4. Additionally, MACH Energy will undertake the compliance assessment protocol in Section 8.3 to ensure that the exceedance ceases and does not recur. Additionally, MACH Energy will implement the following Contingency Plan:

- The Environmental Superintendent will report the incident in accordance with Section 11.
- MACH Energy will identify the appropriate course of action with respect to the identified impact(s), in consultation with technical specialists, DPE (now DPHI) and any other relevant agencies, as necessary. For example, contingency measures, such as, but not limited to, those described in Section 9.1.
- MACH Energy will, in the event there is a dispute over the proposed remedial course of action or if the actions conflict with current approvals, submit the appropriate course of action to the DPE (now DPHI) for approval.
- MACH Energy will implement the appropriate course of action to the satisfaction of the DPE (now DPHI).

In accordance with Part D, Condition D5(f) of Development Consent SSD 10418, this Contingency Plan will 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. This will be achieved through the contingency measures outlined below and through the incident reporting procedures outlined in Section 11.

9.1 POTENTIAL CONTINGENCY MEASURES

Potential contingency measures will be reviewed during revisions of this AQGGMP, as outlined in Section 10.2. Key potential contingency measures to be implemented (following completion of the compliance assessment protocol as described in Section 8.3) may include the following:

- MACH Energy will notify (in writing) the affected landowners and tenants of the exceedance as soon as practicable and provide them with regular air quality monitoring results, until the results show that the MPO is complying with the air quality criteria.
- MACH Energy will, on request, implement reasonable and feasible at-receiver air quality controls in accordance with Part C, Condition C2 of Development Consent SSD 10418 and Schedule 3, Condition 2 of Development Consent DA 92/97 (prior to its surrender), where a breach of the relevant criteria has occurred.
- MACH Energy will investigate further air quality controls if monitoring results indicate this is required.
- MACH Energy will, on request, acquire air quality-affected properties in accordance with Part C, Condition C1 of Development Consent SSD 10418 and Schedule 3, Condition 1 of Development Consent DA 92/97 (prior to its surrender), where a breach of the relevant criteria has occurred and, for relevant properties, acquisition is not reasonably achievable under a separate approval for the Bengalla Mine.

9.2 ADAPTIVE MANAGEMENT

In accordance with Part D, Condition D4 of Development Consent SSD 10418 and Schedule 5, Condition 1A of Development Consent DA 92/97 (prior to its surrender), MACH Energy will assess and manage risks to comply with the criteria and/or performance measures outlined in Section 5.

Adaptive management means that changes may need to be made in how air quality, odour and greenhouse gas emissions are managed as circumstances change (e.g. due to mine progress). Where any non-compliance with the criteria and/or performance measures occurs, at the earliest opportunity, MACH Energy will:

- take all reasonable and feasible steps to identify the cause and take action to ensure that the exceedance ceases and does not recur;
- consider all reasonable and feasible options for remediation (where relevant) and submit a report to the DPE (now DPHI) describing these options and preferred remediation measures or other course of action; and
- implement remediation measures as directed by the Planning Secretary.

10 REVIEW AND IMPROVEMENT OF ENVIRONMENTAL PERFORMANCE

10.1 ANNUAL REVIEW

In accordance with Part D, Condition D11 of Development Consent SSD 10418 and Schedule 5, Condition 3 of Development Consent DA 92/97 (prior to its surrender), MACH Energy will review and evaluate the environmental performance of the MPO by the end of March each year (for the preceding calendar year) or other such timing as agreed by the Planning Secretary of the DPE (now DPHI).

In relation to air quality, the MPO Annual Review will:

- describe the development (including any rehabilitation) that was carried out in the previous calendar year, and the development that is proposed to be carried out over the current calendar year;
- include a comprehensive review of the monitoring results and complaints records relating to the MPO over the past year for both air quality and greenhouse gas emissions, which includes a comparison of these results to evaluate compliance against the:
  - relevant statutory requirements, limits or performance measures/criteria (refer Sections 2 and 4);
  - monitoring results of the previous years;
  - requirements of any plans or programs required under Development Consent SSD 10418;
  - relevant predictions in accordance with MPO EIS and MOD 1, MOD 2, MOD 3 and MOD 4 EAs (prior to the surrender of Development Consent DA 92/97);
  - relevant predictions in accordance with Part A, Condition A2 of Development Consent SSD 10418;
- identify any air quality related incident over the past year, and describe what actions were (or are being) taken to ensure compliance;
- identify any trends in the air quality and greenhouse gas emissions monitoring data over the life of the MPO;
- identify any discrepancies between the predicted and actual air quality impacts of the MPO, and analyse the potential cause of any significant discrepancies;
- describe what air quality related measures and greenhouse gas measures, including those identified by the abatement measures review, estimated reductions in CO_2-e as a result of measures implemented and 3-year action plan will be implemented over the next year to improve the environmental performance of the MPO;
- identify any non-compliance or incident which occurred in the previous calendar year, and describe what actions were (or are being) taken to rectify the non-compliance and avoid reoccurrence;
- include an addendum report on Scope 1 and Scope 2 greenhouse gas emissions, which reports:
  - annual CH_4 and annual total CO_2-e emissions (both categorised by source);
  - overall emissions benchmarked against representative industry sectors; and
  - measures undertaken to minimise Scope 1 and Scope 2 greenhouse gas emissions, including actions taken under Condition B34 and estimated reductions in CO_2-e as a result of measures implemented.

In accordance with Part D, Condition D11(d) of Development Consent SSD 10418, the MPO Annual Review will also evaluate and report on:

- the effectiveness of the air quality management systems, including a review of the reactive management measures implemented at the site during the previous year of operations;
- quantification of the number of hours that reactive management measures were implemented, specifying the trigger for the implementation of these measures; and
- compliance with the performance measures, criteria and operating conditions of this AQGGMP.

Copies of the approved MPO Annual Review will be submitted to Muswellbrook Shire Council and made available to the Community Consultative Committee and any interested person upon request, in accordance with Part D, Condition D12 of Development Consent SSD 10418 and Condition 11, Schedule 5 of Development Consent DA 92/97 (prior to its surrender). The MPO Annual Review will also be made publicly available on the MACH Energy website (https://machenergyaustralia.com.au/).

As mentioned in Part D, Condition D11 of Development Consent SSD 10418 (above) relating to MPO Annual Reviews, MACH Energy will include a comprehensive review of environmental performance at the MPO in accordance with Part A, Condition A2 of Development Consent SSD 10418 requires that:

A2. The development may only be carried out:

(a) in compliance with the conditions of this consent;

(b) in accordance with all written directions of the Planning Secretary;

(c) generally in accordance with the EIS and EAs;

(d) generally in accordance with the Development Layout in Appendix 2.

As discussed in Section 7.6, MACH Energy will report the greenhouse gas intensity per tonne of ROM coal produced at the MPO in the 2024 Annual Review, and all subsequent Annual Reviews, consistent with the requirements of this AQGGMP and Part B, Condition B34(d) of Development Consent SSD 10418.

In addition to the Scope 1 and Scope 2 greenhouse gas emission reporting requirements for the MPO Annual Review, MACH Energy will implement an internal audit process of the management controls relating to greenhouse gas emissions to determine whether controls are being actioned appropriately and whether the emissions reduction targets are being met ahead of time. This internal audit will occur bi-annually to proactively reduce the risk of requiring offsetting of excess CO_2-e in accordance with the Commonwealth or State requirements (i.e. NGERs Scheme and Safeguard Mechanism). The MACH Energy Chief Financial Officer will be responsible for any offsetting required.

10.2 AIR QUALITY AND GREENHOUSE GAS MANAGEMENT PLAN REVISION

Development Consent SSD 10418

In accordance with Part D, Condition D7 of Development Consent SSD 10418 this AQGGMP will be reviewed, and if necessary revised (to the satisfaction of the Planning Secretary), within three months of the submission of:

- the submission of an incident report under Part D, Condition D9 or D10 of Development Consent SSD 10418;
- the submission of an MPO Annual Review under Part D, Condition D11 of Development Consent SSD 10418;
- the submission of an IEA under Part D, Condition D13 of Development Consent SSD 10418;

- the approval of any modification of the conditions of Development Consent SSD 10418 (unless the conditions require otherwise); or
- notification of a change in development phase under Part A, Condition A12 of Development Consent SSD 10418.

The suitability of existing strategies, plans and programs under Development Consent SSD 10418 will be reviewed by MACH Energy.

In accordance with Part B, Condition D8 of Development Consent SSD 10418, if necessary, to either improve the environmental performance of the development, cater for a modification or comply with a direction, the strategies, plans and programs required under Development Consent SSD 10418 will be revised, to the satisfaction of the Planning Secretary. Where revisions are required, the revised document will be submitted to the Planning Secretary for approval within six weeks of the review[3].

Further, in accordance with Part B, Condition B34 of Development Consent SSD 10418, within 12 months of the approval of this AQGGMP (i.e. anticipated to commence in 2025), and then every 3 years during the life of mining operations (and any period of suspension of ROM coal extraction and/or processing), the AQGGMP will be updated to include the following information in relation to Scope 1 and Scope 2 greenhouse gas emissions:

- a review to the greenhouse gas abatement measures relevant to the development;
- a review, to the satisfaction of the Planning Secretary, of the reasonable and feasible greenhouse gas emissions abatement measures, and economic considerations for the development;
- a 3-year action plan to investigate and implement all reasonable and feasible abatement measures to minimise greenhouse gas emissions;
- a description of measures to minimise long-term Scope 1 greenhouse gas emissions. These measures are to:
  - have regard to the abatement measures and abatement options required by Condition B34(a) and (b) of Development Consent SSD 10418; and
  - be aimed at achieving, as soon as reasonably feasible but by 2034 at the latest, a 5-year rolling average by calendar year of the annual Scope 1 intensities of not more than 0.028 tonnes of CO_2 emitted from the development per tonne of ROM coal;
- a reporting of compliance with the performance measures in Table 18 (Section 4.3.1), and revise where reasonable and feasible to minimise greenhouse gas emissions.

As mentioned above, the process of evaluating greenhouse gas abatement measures will include, but not be limited to:

- Review of the fugitive gas assignment model and mining sequence to provide contemporary estimates of fugitive emissions.
- A plan for ongoing investigation and review of fugitive emission abatement potential and technology.
- An assessment of the current technology readiness and commercial readiness of alternative power sources to diesel and potential applications to the operation.

[3] This is to ensure strategies, plans and programs are updated on a regular basis and to incorporate any recommended measures to improve the environmental performance of the development.

Review of the proposed abatement measures against industry practice and sectoral pathway advice issued by the EPA and/or the Commonwealth Climate Change Authority. In accordance with Part B, Condition B34(d) of Development Consent SSD 10418, a description of measures to minimise long-term Scope 1 greenhouse gas emissions and reporting of compliance with the performance measures outlined in Section 7.6 will also be included in the 3-year action plan.

Development Consent DA 92/97

In accordance with Schedule 5, Condition 4 of Development Consent DA 92/97 (prior to its surrender), this AQGGMP will be reviewed, and if necessary revised (to the satisfaction of the Planning Secretary of the DPE [now DPHI]), within three months of the submission of:

- an MPO Annual Review (Schedule 5, Condition 3 of Development Consent DA 92/97);
- an incident report (Schedule 5, Condition 7 of Development Consent DA 92/97);
- an IEA (Schedule 5, Condition 9 of Development Consent DA 92/97); and/or
- any modification to the conditions of Development Consent DA 92/97.

Within 4 weeks of conducting any such review, the Planning Secretary of the DPE (now DPHI) will be advised of the outcomes of the review and any revised documents submitted to the Planning Secretary for approval.

In accordance with Schedule 5, Condition 4A of Development Consent DA 92/97 (prior to its surrender), MACH Energy may submit a revised AQGGMP for the approval of the Planning Secretary at any time and may also submit any revision to this AQGGMP required under Development Consent DA 92/97 on a staged basis.

If agreed with the Planning Secretary of the DPE (now DPHI), a revision to this AQGGMP required under Development Consent DA 92/97 (prior to its surrender) may be prepared without undertaking consultation with all parties nominated under the relevant Condition of Development Consent DA 92/97.

This AQGGMP will be made publicly available on the MACH Energy website, in accordance with Part D, Condition D17 of Development Consent SSD 10418 and Schedule 5, Condition 11 of Development Consent DA 92/97 (prior to its surrender).

10.3 INDEPENDENT ENVIRONMENTAL AUDIT

Within one year of commencement of development under Development Consent SSD 10418, and every three years after, an IEA will be undertaken and submitted as required, in accordance with Part D, Condition D13 of Development Consent SSD 10418.

In accordance with Part D, Condition D14 of Development Consent SSD 10418, within three months of commencing the IEA, MACH Energy will submit a copy of the audit report to the Planning Secretary, and 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. MACH Energy will ensure that the recommendations will be implemented and the findings and compliance with the IEA will be reported in the MPO Annual Reviews.

Once Development Consent DA 92/97 is surrendered, all subsequent IEAs commissioned by MACH Energy will be in accordance with Part D, Condition D13 and D14 of Development Consent SSD 10418. Subsequent versions of the IEA will be provided to the Planning Secretary of the DPE (now DPHI) and made available on the MACH Energy website. The IEA will be conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Planning Secretary of the DPE (now DPHI).

10.4 CONTINUOUS IMPROVEMENT

Environmental performance of the MPO in relation to air quality and greenhouse gas impacts is continuously evaluated through:

- review and investigation of any exceedances (Section 8.3);
- the undertaking of IEAs (Section 10.3);
- feedback from stakeholder consultation and complaints (Section 11.2); and
- the MPO Annual Review process (Section 10.1).

Air quality monitoring results are reviewed continuously as part of the ongoing reporting requirements including:

- monthly as part of the Development Consent DA 92/97 (prior to its surrender) and Development Consent SSD 10418 Monthly Monitoring Data Summary and the EPL 20850 Monthly Monitoring Data Summary available publicly on the MACH Energy website; and
- in the MPO Annual Review which compares air quality monitoring results for that year against the relevant air quality criteria. The MPO Annual Review also includes a review of the air quality monitoring results for that year undertaken by a technical specialist.

Those air quality monitoring results (annual average deposited dust, TSP, $PM_{2.5}$ and PM_{10}) are assessed relative to the air quality impact assessment modelling predictions and the air quality criteria contained in Development Consent SSD 10418 and Development Consent DA 92/97 (prior to its surrender).

Non-compliances regarding air quality are reported in the MPO Annual Review (Section 10.1). Following submission of the MPO Annual Review to DPHI and DPHI responding to the MPO Annual Review, MACH Energy will determine if any change to dust management practices at the MPO is required.

The basis for continuous improvement of air quality mitigation measures will be through the ongoing monitoring of dust impacts (Section 8) and corrective/preventative actions (Section 9). The effectiveness of greenhouse gas management measures will be reviewed through NGERS reporting and monitoring (Section 7.6). Any new mitigation measures that are implemented as a result of these investigations will be reported in the MPO Annual Review (Section 10.1). MACH Energy will also maintain awareness of new technologies for air quality mitigation through participation in relevant industry groups such as through the Upper Hunter Mining Dialogue.

11 REPORTING PROCEDURES

In accordance with Part D, Condition D5(h) of Development Consent SSD 10418 and Schedule 5, Condition 2 of Development Consent DA 92/97 (prior to its surrender), MACH Energy has developed protocols for managing and reporting the following:

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

These protocols are described in detail in the MPO EMS.

In accordance with Part D, Condition D17(vi) of Development Consent SSD 10418 and Schedule 5, Condition 8 of Development Consent DA 92/97 (prior to its surrender), MACH Energy will provide regular (monthly) reporting on the environmental performance of the MPO on the MACH Energy website (https://machenergyaustralia.com.au/).

In accordance with Part D, Conditions D15 and D16 of Development Consent SSD 10418, any conditions of Development Consent SSD 10418 that require 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 NSW EP&A Act. These conditions include incident notification (Part D, Condition D9 of Development Consent SSD 10418); non-compliance notification (Part D, Condition D10 of Development Consent SSD 10418); reporting and response; compliance reporting; and IEA (Part D, Condition D13 of Development Consent SSD 10418).

11.1 INCIDENT REPORTING

An incident is defined as an occurrence or a set of circumstances that causes or threatens to cause material harm and which may or may not be or caused by a non-compliance, as defined in Development Consent SSD 10418.

A non-compliance is defined as an occurrence, set of circumstances or development that is a breach of Development Consent SSD 10418.

In the event that review of monitoring data, or a complaint indicates an incident has occurred, the incident will be reported in accordance with Part D, Condition D9 of Development Consent SSD 10418 and Schedule 5, Condition 7 of Development Consent DA 92/97 (prior to its surrender). The Planning Secretary and other relevant agencies will be notified in writing via the Major Projects Website immediately, after MACH Energy becomes aware of an incident. The notification will identify the Project name and development application number and set out the location and nature of the incident.

In accordance with Part D, Condition D10 of Development Consent SSD 10418, within seven days of becoming aware of a non-compliance, MACH Energy will notify DPE (now DPHI) of the non-compliance. Additionally, in accordance with Part B, Condition B32(f)(v) of Development Consent SSD 10418, MACH Energy will notify the EPA of any air quality-related exceedance, incident or non-compliance (Section 7.4).

The notification must be made in writing via the Major Projects Website and will:

- identify the MPO (including the Development Application number and name);
- set out the condition of Development Consent SSD 10418 that the incident is non-compliant with;
- describe the location and nature of the incident;
- the reason for the non-compliance (if known); and
- what actions have been, or will be, undertaken to address the non-compliance.

In accordance with Condition R4.3 of EPL 20850, MACH Energy will report any exceedance of the 1 hour dust shutdown timeframe prescribed in Condition O3.6 of EPL 20850 to the EPA at info@epa.nsw.gov.au as soon as practicable after the exceedance becomes known to MACH Energy or one of its employees or agents (Section 7.4).

11.2 COMPLAINTS

MACH Energy maintains a Community Hotline (1800 886 889), which is dedicated to the receipt of community complaints. The Community Hotline is publicly advertised in a variety of MACH Energy's public communication tools and is available during operating hours (i.e. 24/7), to receive any complaints. Communication received from the hotline is recorded in a Community and Stakeholder Engagement Database.

MACH Energy has developed a procedure that outlines its commitment to receiving, responding to and maintaining a record of phone calls from the community. This procedure is supported by a Community and Stakeholder Engagement Register. This is described in the MPO EMS.

The following details are recorded in the Community and Stakeholder Engagement Register:

- the date and time of the contact;
- the method by which engagement was made;
- any personal details provided or, if no such details were provided, a note to that effect;
- the nature of the contact;
- relevant monitoring results and meteorological data at the time of the contact;
- the actions taken by MACH Energy in relation to the contact, including any follow-up that is required with the person contacting the MPO; and
- if no action was taken by MACH Energy, the reasons why no action was taken.

In the event of a complaint, investigations commence within 24 hours of contact (including contact with the complainant) to ensure the likely cause of the complaint is determined (e.g. considering meteorological conditions and nature of mining activities) and, where possible and/or required, mitigating actions are executed. This investigation is used to develop appropriate mitigation measures which are presented to the party who contacted the MPO. Consideration is also given to how adjustments to existing management/operational approaches could be applied across the MPO. MACH Energy provides a response to the complainant within seven calendar days.

In accordance with Part D, Condition D17 of Development Consent SSD 10418, the Community and Stakeholder Engagement Register is updated monthly and made available on the MACH Energy website. Complaints are also reported in the MPO Annual Review. In accordance with Part D, Condition D17 of Development Consent SSD 10418 and Condition 11, Schedule 5 of Development Consent DA 92/97 (prior to its surrender), a complaints register will be made available on the MACH Energy website (https://machenergyaustralia.com.au/) and updated monthly.

11.3 NON-COMPLIANCE WITH STATUTORY REQUIREMENTS

In accordance with Part D, Condition D5(h)(iii) of Development Consent SSD 10418 and Schedule 5, Condition 7A of Development Consent DA 92/97 (prior to its surrender), a protocol for managing and reporting non-compliances with statutory requirements has been developed as a component of the MPO EMS and is described below.

Compliance with all approval plans and procedures is the responsibility of all personnel (staff and contractors) employed on or in association with MACH Energy and the Project. MACH Energy will undertake regular inspections, internal audits and initiate directions identifying any remediation/rectification work required, and areas of actual or potential non-compliance. The Environmental Superintendent undertakes regular inspections, internal audits and initiates directions identifying any remediation/rectification work required, and areas of actual or potential non-compliance.

As described in Section 11.1, MACH Energy will report incidents in accordance with Part D, Condition D9 of Development Consent SSD 10418 and Schedule 5, Condition 7 of Development Consent DA 92/97 (prior to its surrender).

A review of compliance with all conditions in Development Consent SSD 10418, Development Consent DA 92/97 (prior to its surrender) and relevant MLs will be undertaken prior to (and included within) each MPO Annual Review (Section 10.1).

In accordance with Part D, Condition D13 of Development Consent SSD 10418, within one year of commencement of development under Development Consent SSD 10418, and every three years after, unless the Planning Secretary directs otherwise, MACH Energy will commission and pay the full cost of an IEA of the development. The audit will:

- be led by a suitably qualified, experienced and independent auditor whose appointment has been endorsed by the Planning Secretary;
- be conducted by a suitably qualified, experienced and independent team of experts (including any expert in field/s specified by the Planning Secretary) whose appointment has been endorsed by the Planning Secretary;
- be carried out in consultation with the relevant agencies and the CCC;
- assess the environmental performance of the development and whether it is complying with the relevant requirements in this consent, water licences and mining leases for the development (including any assessment, strategy, plan or program required under these approvals);
- review the adequacy of any approved strategy, plan or program required under the abovementioned approvals and Development Consent SSD 10418;
- recommend appropriate measures or actions to improve the environmental performance of the development and any assessment, strategy, plan or program required under the abovementioned approvals and this consent; and
- be conducted and reported to the satisfaction of the Planning Secretary.

In accordance with Part A, Condition A2 of Development Consent SSD 10418 and Schedule 2, Condition 2 of Development Consent DA 92/97 (prior to its surrender), MACH Energy will carry out the development in accordance with:

- the conditions of Development Consent SSD 10418 and Development Consent DA 92/97 (prior to its surrender)[4];

[4] In accordance with Part A, Condition A4 of Development Consent SSD 10418, the conditions in Development Consent SSD 10418 and directions of the Planning Secretary prevail to the extent of inconsistency, ambiguity or conflict between them and

- all written directions of the Planning Secretary;
- Statement of Commitments (Appendix 3 of Development Consent DA 92/97);
- the 1997 EIS, EA (MOD 1), EA (MOD 2), EA (MOD 3), EA (MOD 4), the Project EIS; and
- with the Development Layout in Appendix 2 of Development Consent SSD 10418 (Attachment 2).

11.4 ACCESS TO INFORMATION

In accordance with Part D, Condition D17 of Development Consent SSD 10418 and Schedule 5, Condition 11 of Development Consent DA 92/97 (prior to its surrender), the MACH Energy website will be maintained as a tool for the provision of information to stakeholders and interested parties about the operation and environmental performance of the MPO. Information required by MACH Energy to be available on the website is outlined in the MPO EMS. In accordance with Part D, Condition D17 of Development Consent SSD 10418, within one month of commencement of development under Development Consent SSD 10418 until completion of all rehabilitation required under this consent, MACH Energy will:

- 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:
  - the documents listed in condition A2(c) of Development Consent SSD 10418 (Section 10.1);
  - all current statutory approvals for the development;
  - all approved strategies, plans and programs required under the conditions of Development Consent SSD 10418;
  - the proposed staging plans for the development if the construction, operation or decommissioning of the development is to be staged;
  - minutes of CCC meetings;
  - regular reporting on the environmental performance of the development in accordance with the reporting requirements in any plans or programs approved under the conditions of Development Consent SSD 10418;
  - a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of Development Consent SSD 10418, or any approved plans and programs;
  - a summary of the current phase and progress of the development;
  - contact details to enquire about the development or to make a complaint;
  - a complaints register, updated monthly;
  - the Annual Reviews of the development;
  - audit reports prepared as part of any IEA of the development and MACH Energy's response to the recommendations in any audit report;
  - any other matter required by the Planning Secretary; and
- keep such information up to date, to the satisfaction of the Planning Secretary.

Additionally, in accordance with Part D, Condition D5(i) of Development Consent SSD 10418, the MACH Energy website will be maintained as a public source of information and data to assist stakeholders in understanding environmental impacts of the development.

any document/s listed in condition A2(c). In the event of an inconsistency, ambiguity or conflict between any of the document/s listed in condition A2(c), the most recent document prevails to the extent of the inconsistency, ambiguity or conflict.

12 REFERENCES

Clean Energy Regulator (2024) *Safeguard baselines.*

Climate Change Authority (2024) *Sector Pathway Reviews.*

Coal & Allied Operations Pty Ltd (2011) *Mount Pleasant Project – Annual Environmental Management Report 2010.*

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Coal & Allied Operations Pty Ltd (2016) *Mount Pleasant Project – Annual Environmental Review 2015.*

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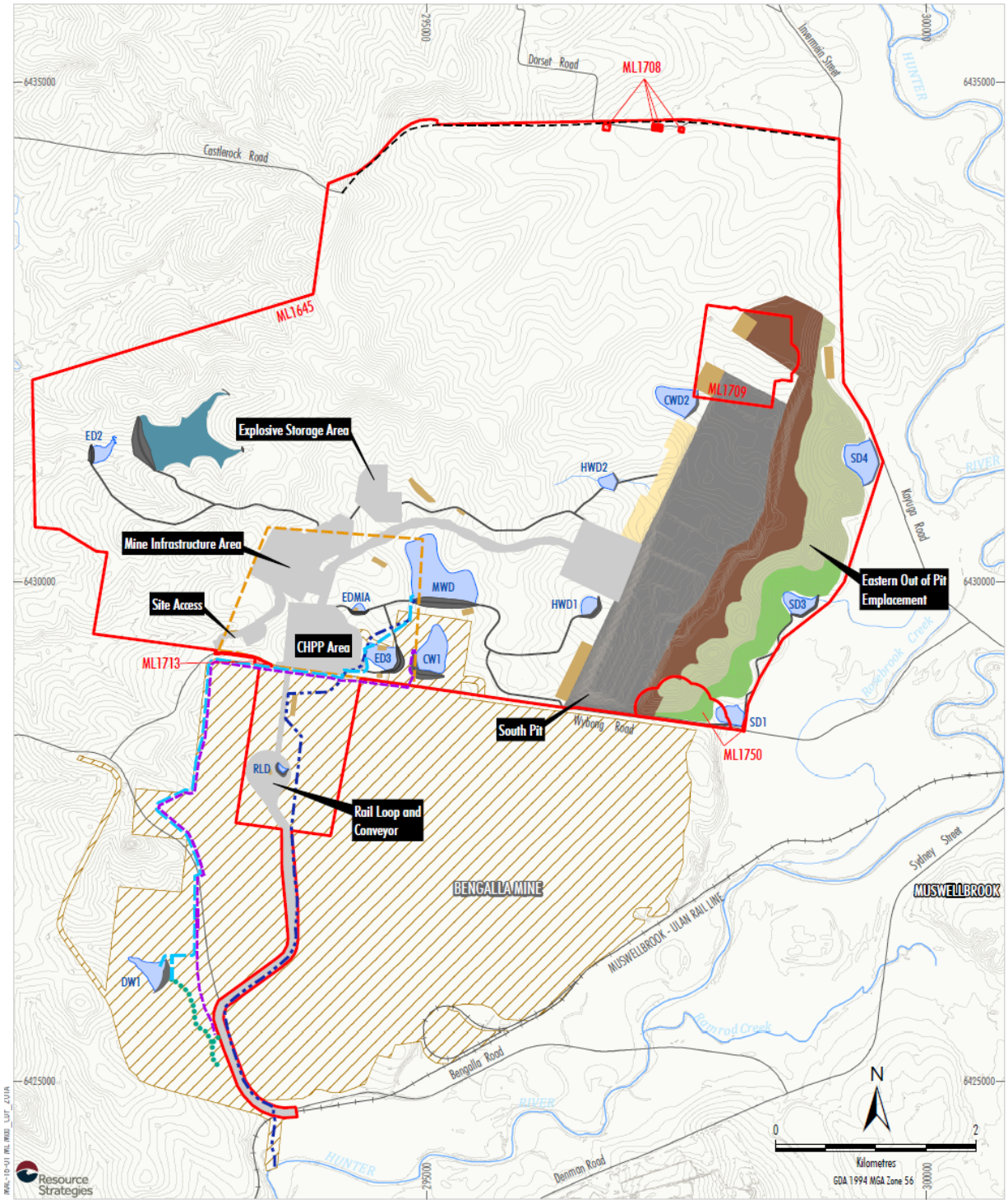
ATTACHMENT 1

APPENDIX 2 OF DEVELOPMENT CONSENT DA 92/97

APPENDIX 2
FIGURE 1 - CONCEPTUAL PROJECT LAYOUT PLAN AT 2021



LEGEND

- Mining Lease Boundary
- Bengalla Mine Approved Disturbance Boundary (SSD-5170)
- Infrastructure Area Envelope
- Active Stripping Area
- Active Mining Area
- Active Overburden Emplacement Area
- Topsoil Stockpile
- Initial Rehabilitation
- Established Rehabilitation
- Infrastructure and Borrow/Stockpile Area
- Access Road
- Northern Link Road

Indicative Water Pipeline Alignment

- MPO Hunter River Supply Pipeline
- MPO DW1 Pipeline (Bi-directional)
- Bengalla Mine CW1 Pipeline
- Approximate Extent of Scour Protection
- Water Dam
- Fines Emplacement Area

Source: NSW Land & Property Information (2017); NSW Division of Resources & Energy (2017); MACH Energy (2017)

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MOUNT PLEASANT OPERATION

FIGURE 2 - CONCEPTUAL PROJECT LAYOUT PLAN AT 2025

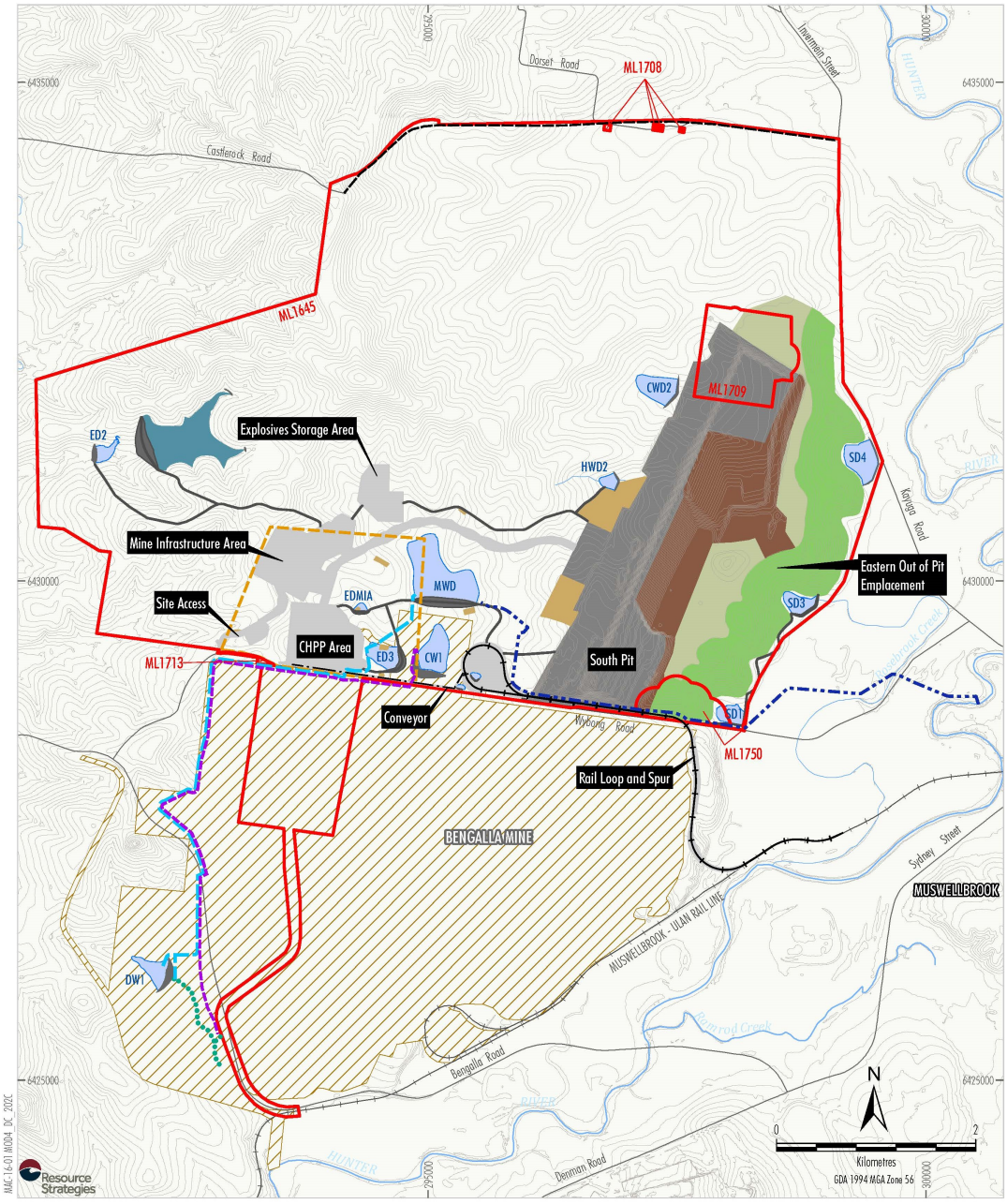
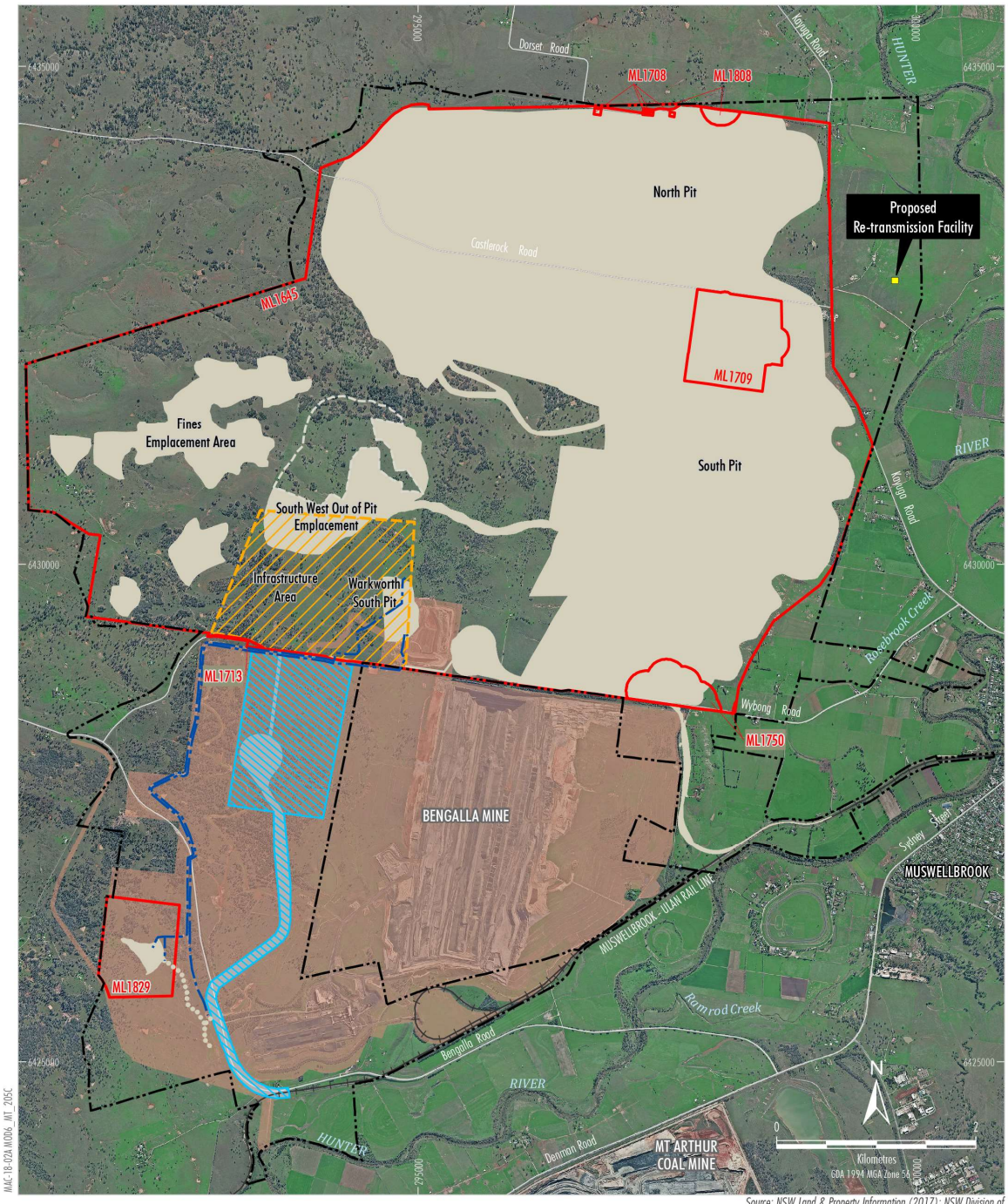


FIGURE 3 - APPROVED SURFACE DISTURBANCE PLAN



LEGEND

- Development Consent Boundary (DA 92/97)
- Mining Lease Boundary
- Approximate Extent of Approved Surface Development [1]
- Indicative Water Pipeline Alignment
- Area Relinquished for Overburden Emplacement and Major Infrastructure
- Infrastructure Area Envelope
- Infrastructure to be removed under the Terms of Condition 37, Schedule 3
- Indicative Existing Coal Transport Infrastructure
- Bengalla Mine Approved Disturbance Boundary (SSD-5170)

NOTE

1. Excludes some project components such as water management infrastructure, infrastructure within the Infrastructure Area Envelope, offsite coal transport infrastructure, road diversions, access tracks, topsoil stockpiles, power supply, temporary offices, signalling, other ancillary works and construction disturbance.

Source: NSW Land & Property Information (2017); NSW Division of Resources & Energy (2018); Department of Planning and Environment (2016); MACH Energy (2017)
Orthophoto: MACH Energy (Aug 2016)

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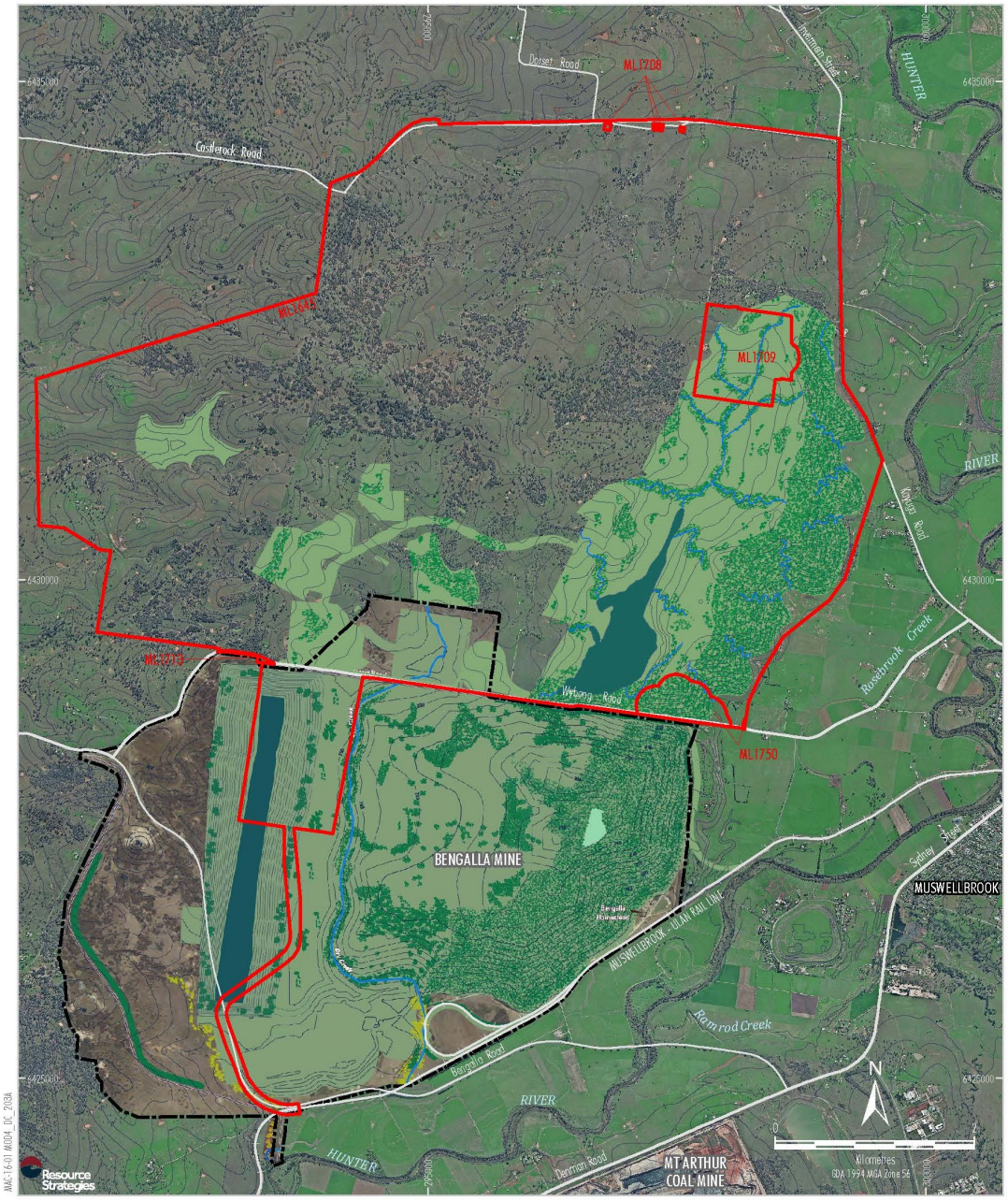
MOUNT PLEASANT OPERATION
Revised Approved Surface Disturbance Plan

FIGURE 4 - CONCEPTUAL FINAL LANDFORM



LEGEND

- Mt Pleasant Mining Lease Boundary
- Final Void
- Final Rehabilitation

Bengalla Mine Conceptual Final Landform *

- Project Boundary (Appendix 2 of Development Consent SSD-5170) (Dated 23 December 2016)
- Dry Creek
- Final Void Lake
- Rehabilitation
- Rehabilitation Class III
- Indicative Tree Screens (or equivalent)
- Treed Rehabilitation
- Indicative Restorative Area

* Digitised from Appendix 9 of Development Consent (SSD-5170) and amended in the Mount Pleasant Operation CHPP area.

Source: NSW Land & Property Information (2017); NSW Division of Resources & Energy (2017); Department of Planning and Environment (2016); MACH Energy (2017)
Orthophoto: MACH Energy (Aug 2016)

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MOUNT PLEASANT OPERATION
Conceptual Final Landform (2026)

ATTACHMENT 2

APPENDIX 2 OF DEVELOPMENT CONSENT SSD 10418

APPENDIX 2 DEVELOPMENT LAYOUT PLANS

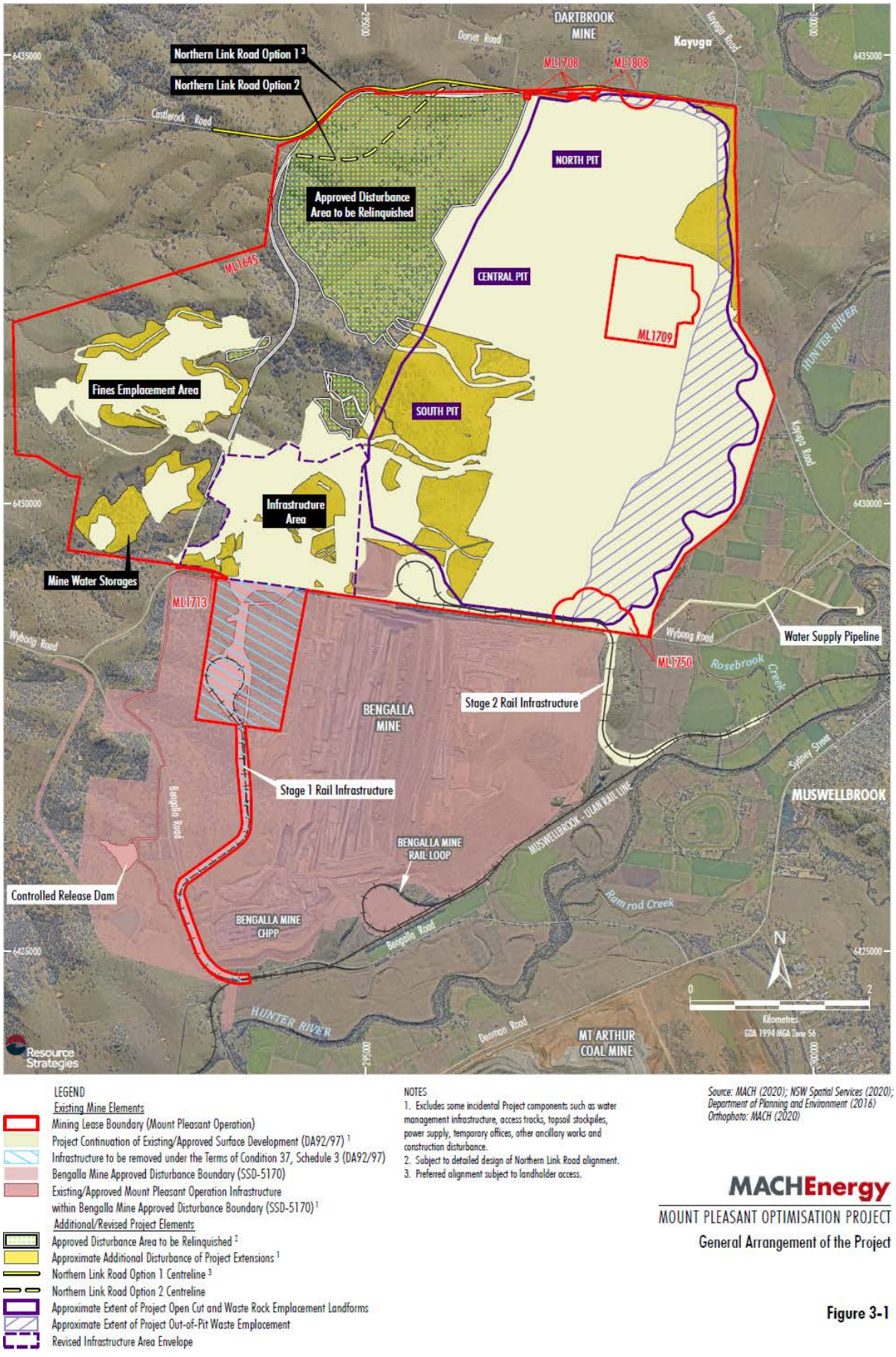


Figure 1: General Project Arrangement

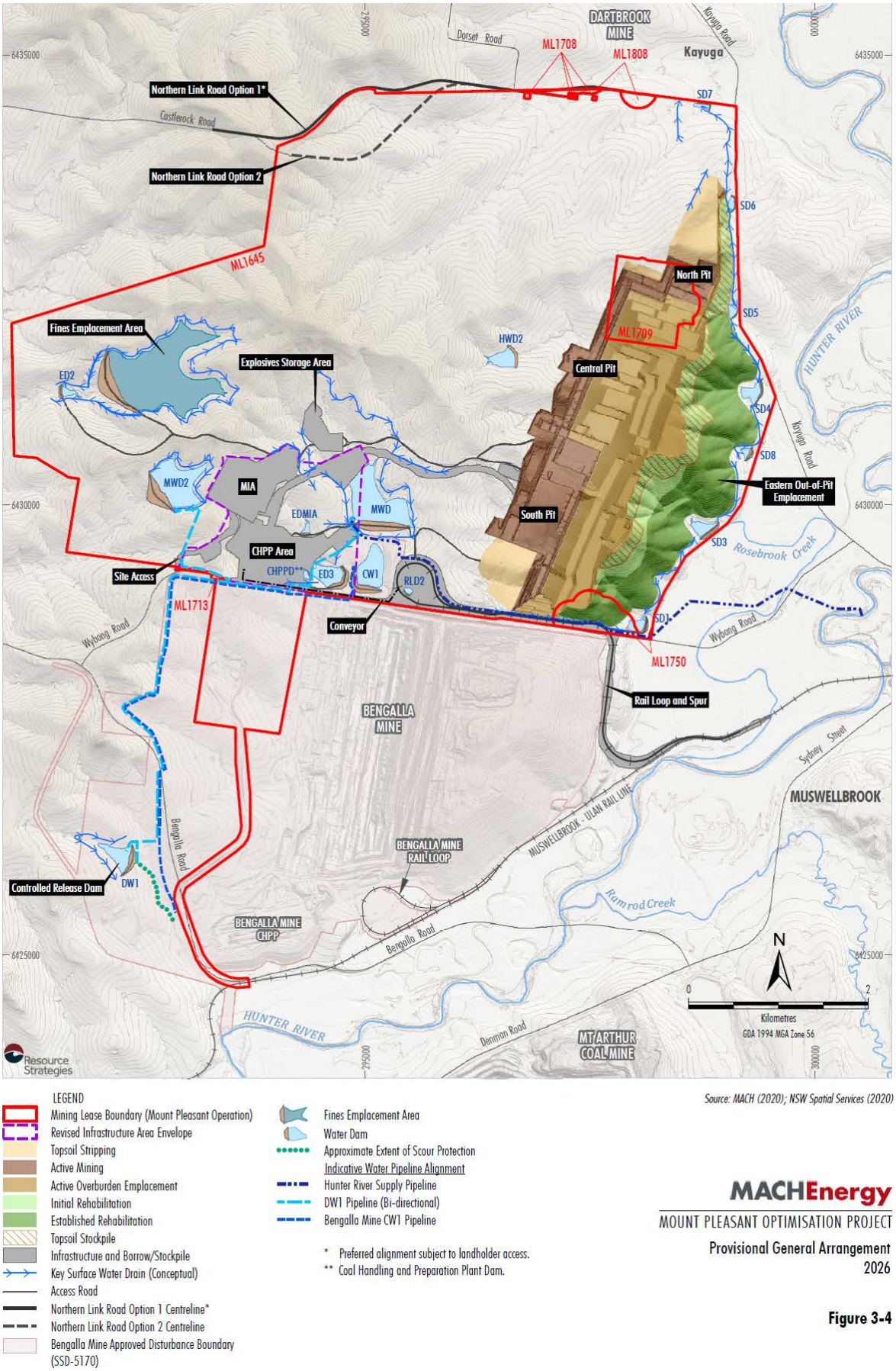
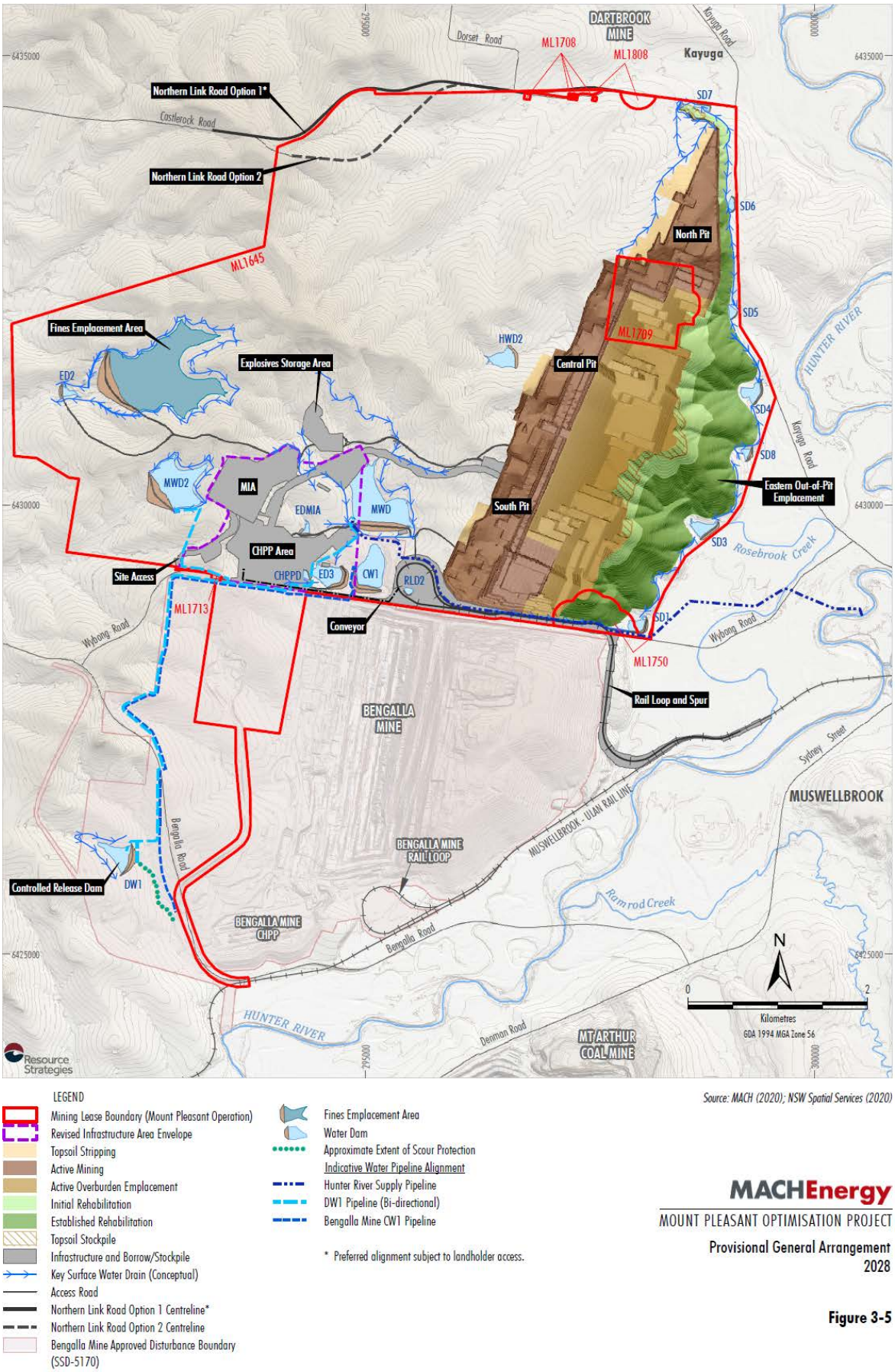


Figure 2: General Project Arrangement – 2026



LEGEND

- Mining Lease Boundary (Mount Pleasant Operation)
- Revised Infrastructure Area Envelope
- Topsoil Stripping
- Active Mining
- Active Overburden Emplacement
- Initial Rehabilitation
- Established Rehabilitation
- Topsoil Stockpile
- Infrastructure and Borrow/Stockpile
- Key Surface Water Drain (Conceptual)
- Access Road
- Northern Link Road Option 1 Centreline*
- Northern Link Road Option 2 Centreline
- Bengalla Mine Approved Disturbance Boundary (SSD-5170)
- Fines Emplacement Area
- Water Dam
- Approximate Extent of Scour Protection
- Indicative Water Pipeline Alignment
- Hunter River Supply Pipeline
- DW1 Pipeline (Bi-directional)
- Bengalla Mine CW1 Pipeline

* Preferred alignment subject to landholder access.

Source: MACH (2020); NSW Spatial Services (2020)

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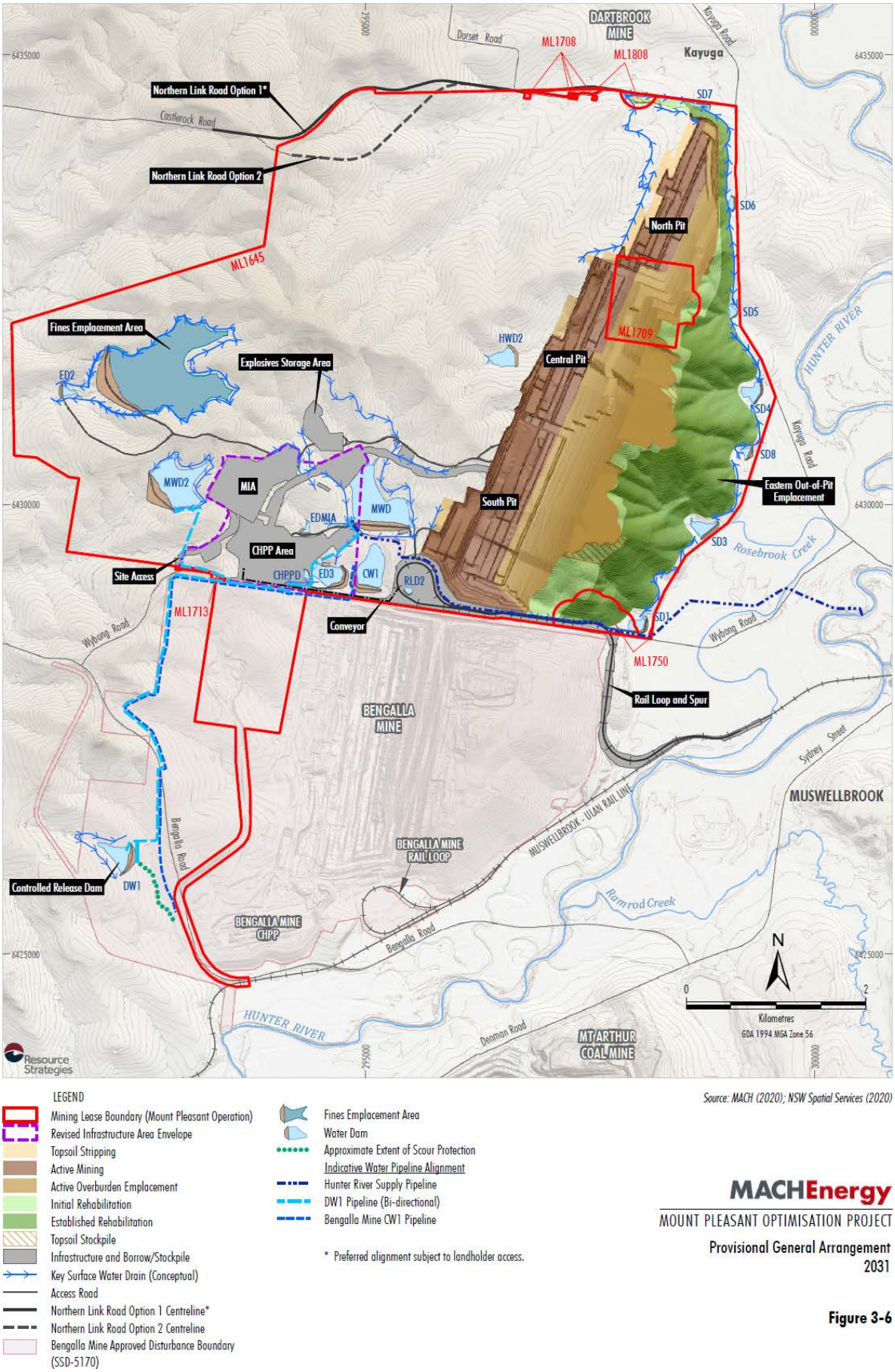
MOUNT PLEASANT OPTIMISATION PROJECT

Provisional General Arrangement 2028

Figure 3-5

Figure 3: General Project Arrangement – 2028



LEGEND

- Mining Lease Boundary (Mount Pleasant Operation)
- Revised Infrastructure Area Envelope
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- Active Mining
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- Bengalla Mine CW1 Pipeline

* Preferred alignment subject to landholder access.

Source: MACH (2020); NSW Spatial Services (2020)

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MOUNT PLEASANT OPTIMISATION PROJECT

Provisional General Arrangement 2031

Figure 3-6

Figure 4: General Project Arrangement - 2031

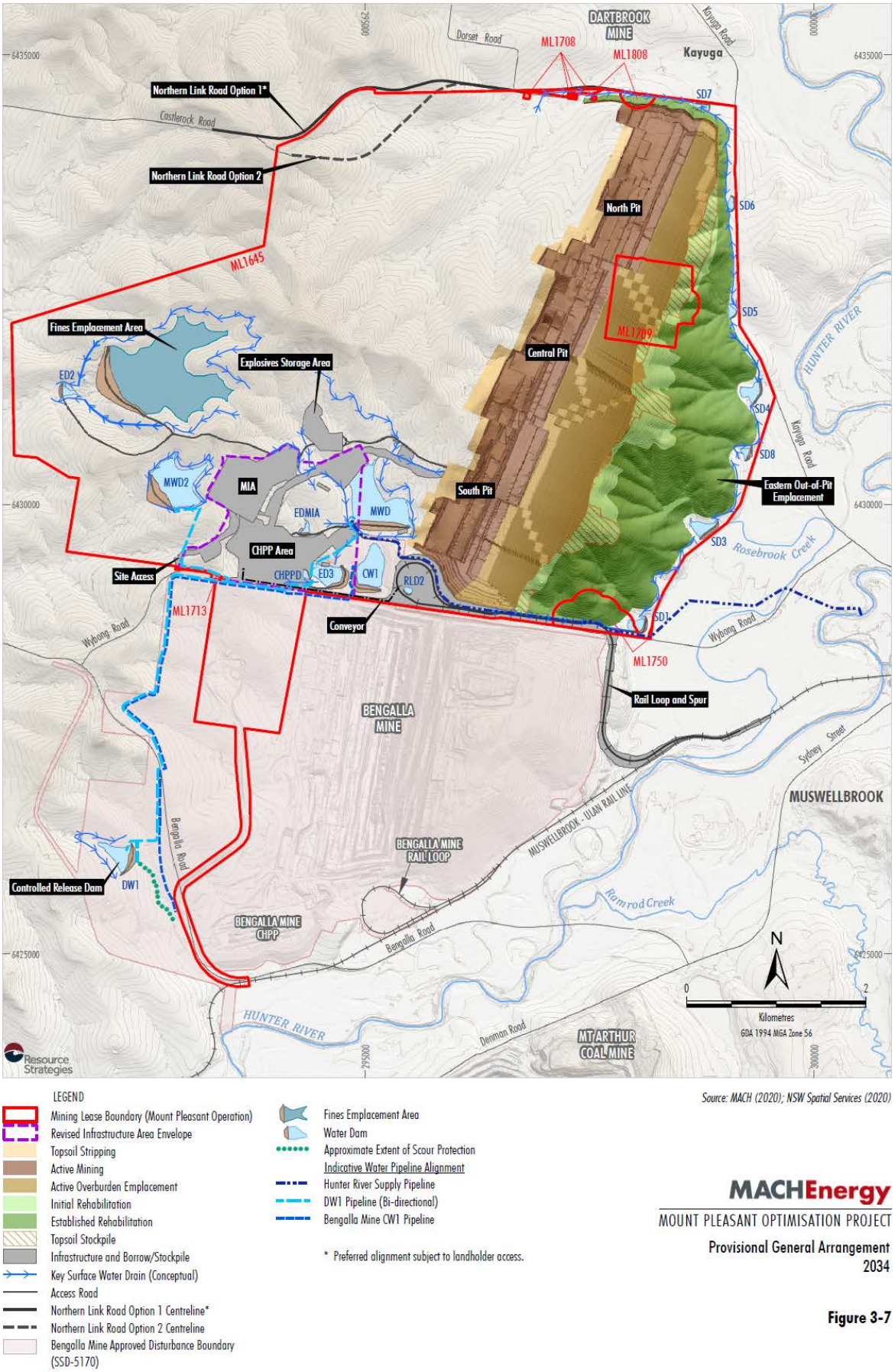


Figure 5: General Project Arrangement - 2034

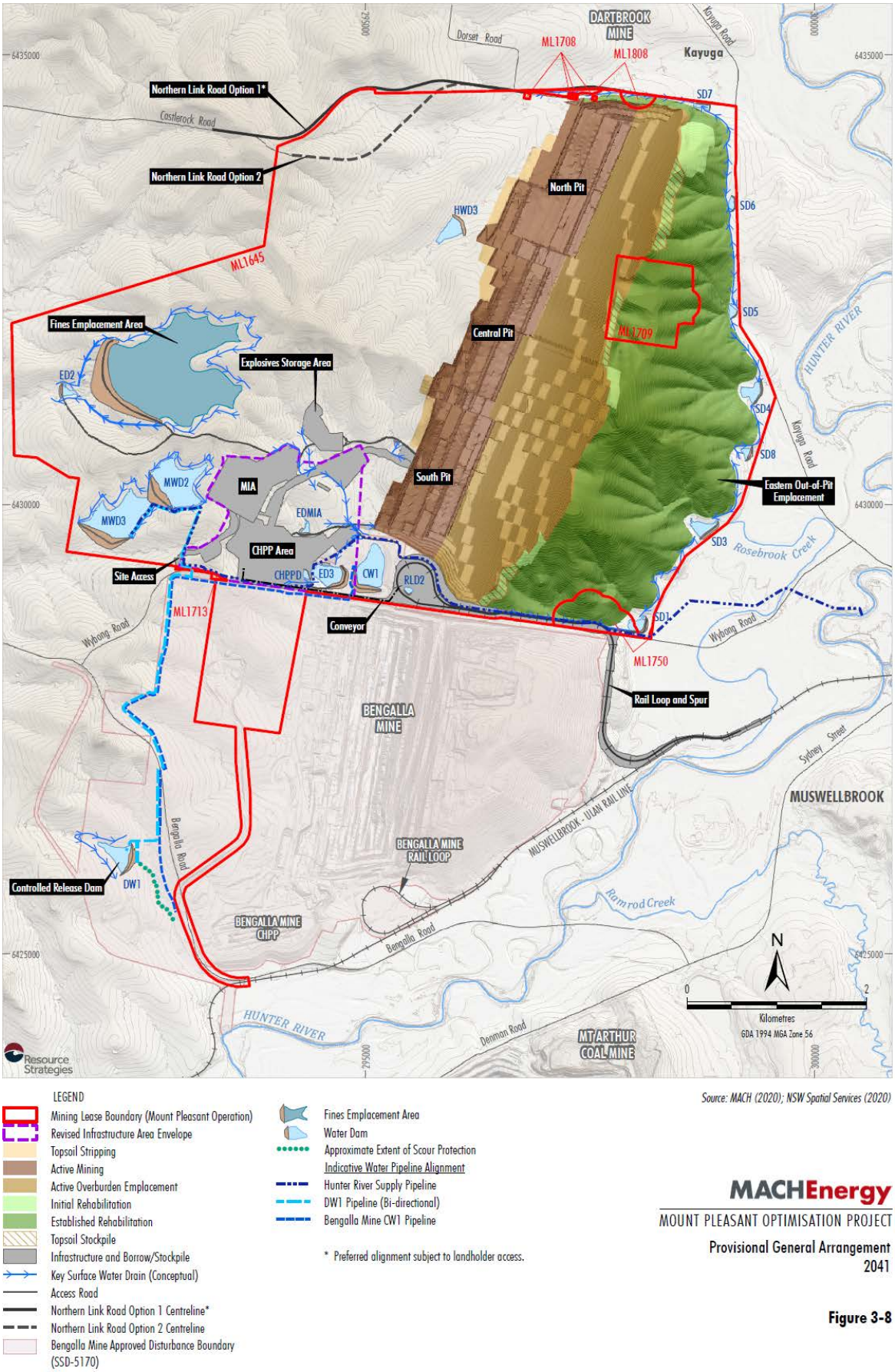
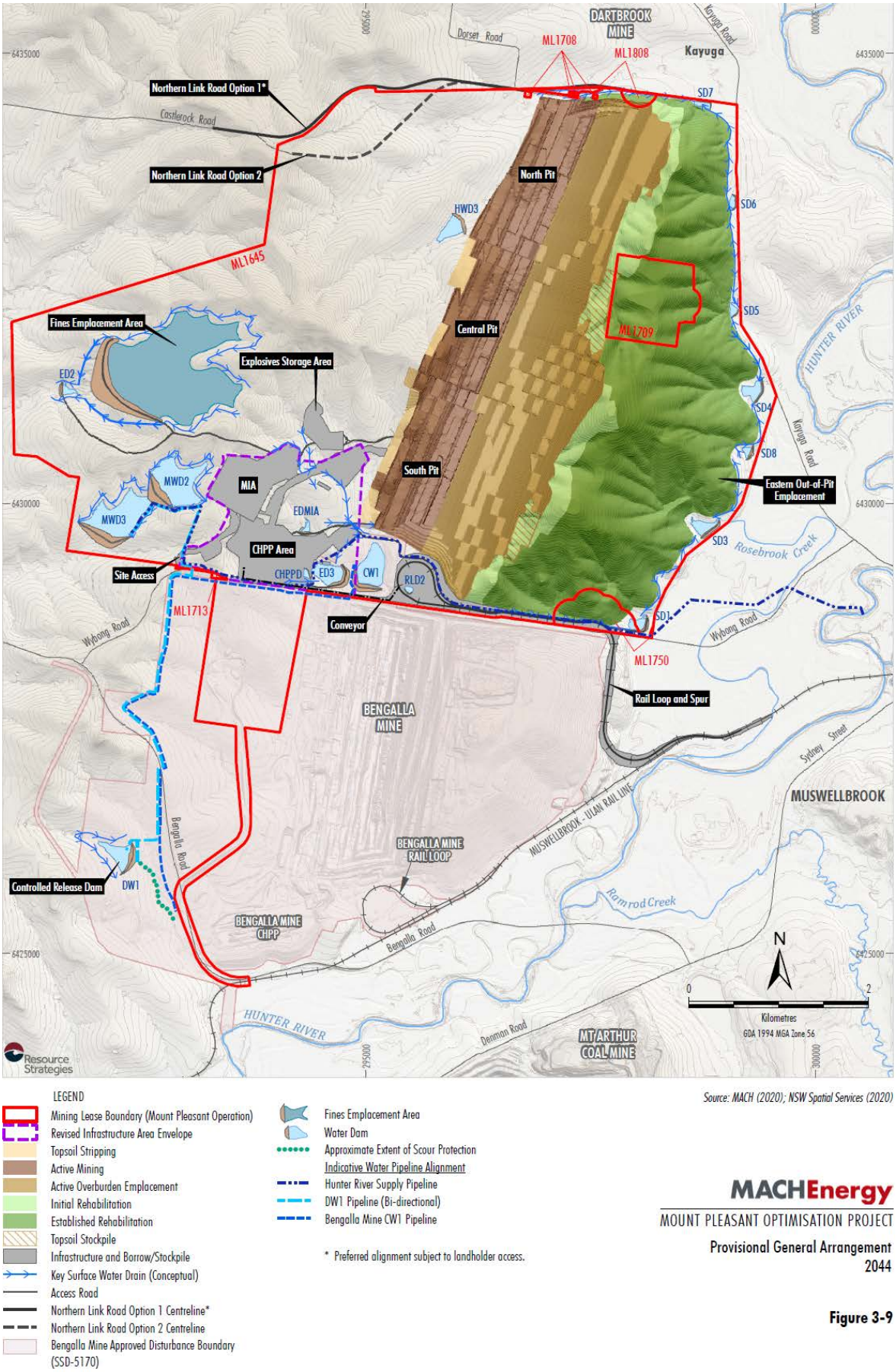


Figure 6: General Project Arrangement - 2041



LEGEND

- Mining Lease Boundary (Mount Pleasant Operation)
- Revised Infrastructure Area Envelope
- Topsoil Stripping
- Active Mining
- Active Overburden Emplacement
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- Established Rehabilitation
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- Hunter River Supply Pipeline
- DW1 Pipeline (Bi-directional)
- Bengalla Mine CW1 Pipeline

* Preferred alignment subject to landholder access.

Source: MACH (2020); NSW Spatial Services (2020)

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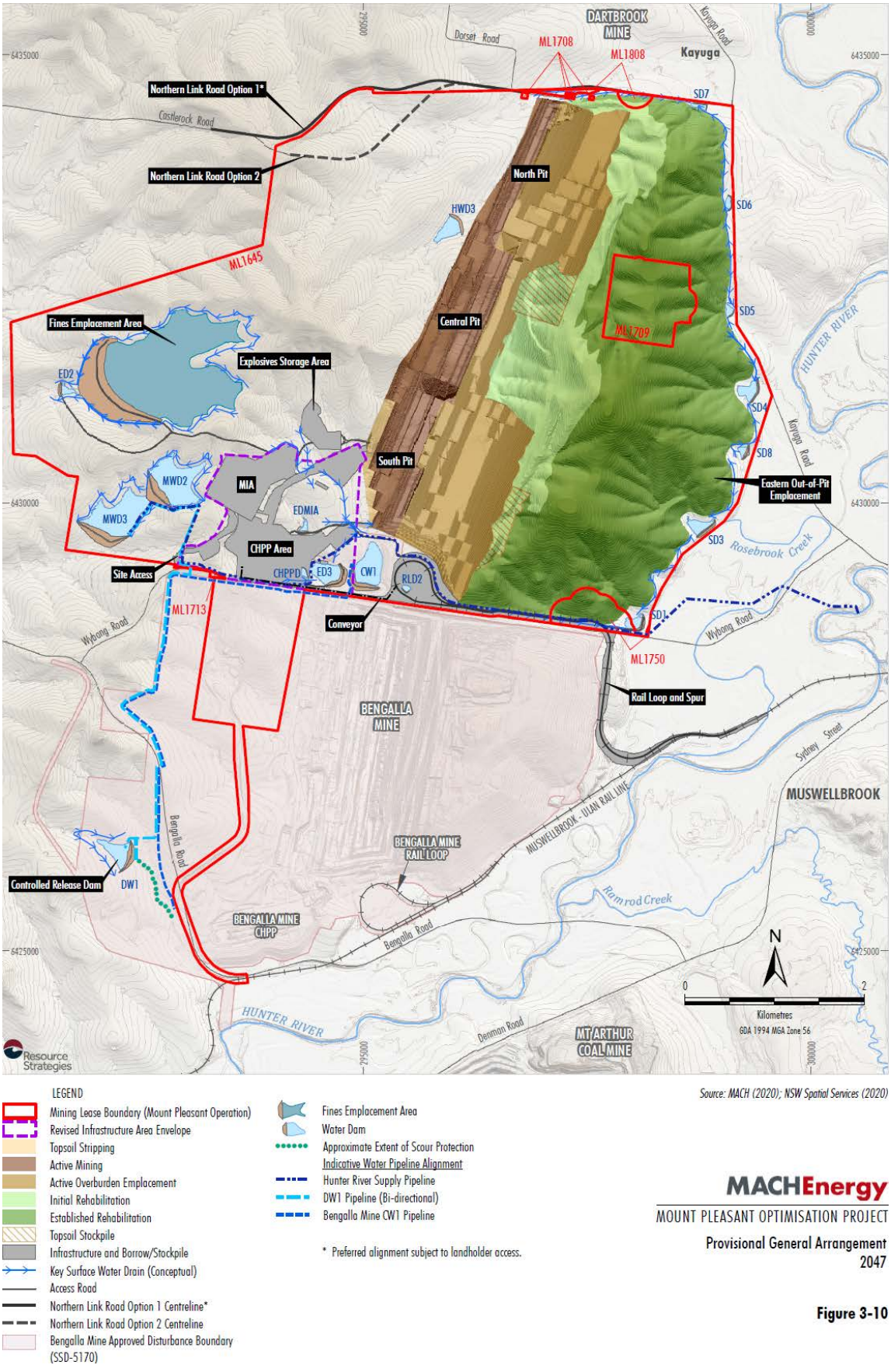
MOUNT PLEASANT OPTIMISATION PROJECT

Provisional General Arrangement 2044

Figure 3-9

Figure 7: General Project Arrangement - 2044



LEGEND

- Mining Lease Boundary (Mount Pleasant Operation)
- Revised Infrastructure Area Envelope
- Topsoil Stripping
- Active Mining
- Active Overburden Emplacement
- Initial Rehabilitation
- Established Rehabilitation
- Topsoil Stockpile
- Infrastructure and Borrow/Stockpile
- Key Surface Water Drain (Conceptual)
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- Northern Link Road Option 1 Centreline*
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- Bengalla Mine Approved Disturbance Boundary (SSD-5170)
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- Indicative Water Pipeline Alignment
- Hunter River Supply Pipeline
- DW1 Pipeline (Bi-directional)
- Bengalla Mine CW1 Pipeline

* Preferred alignment subject to landholder access.

Source: MACH (2020); NSW Spatial Services (2020)

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MOUNT PLEASANT OPTIMISATION PROJECT

Provisional General Arrangement 2047

Figure 3-10

Figure 8: General Project Arrangement – 2047

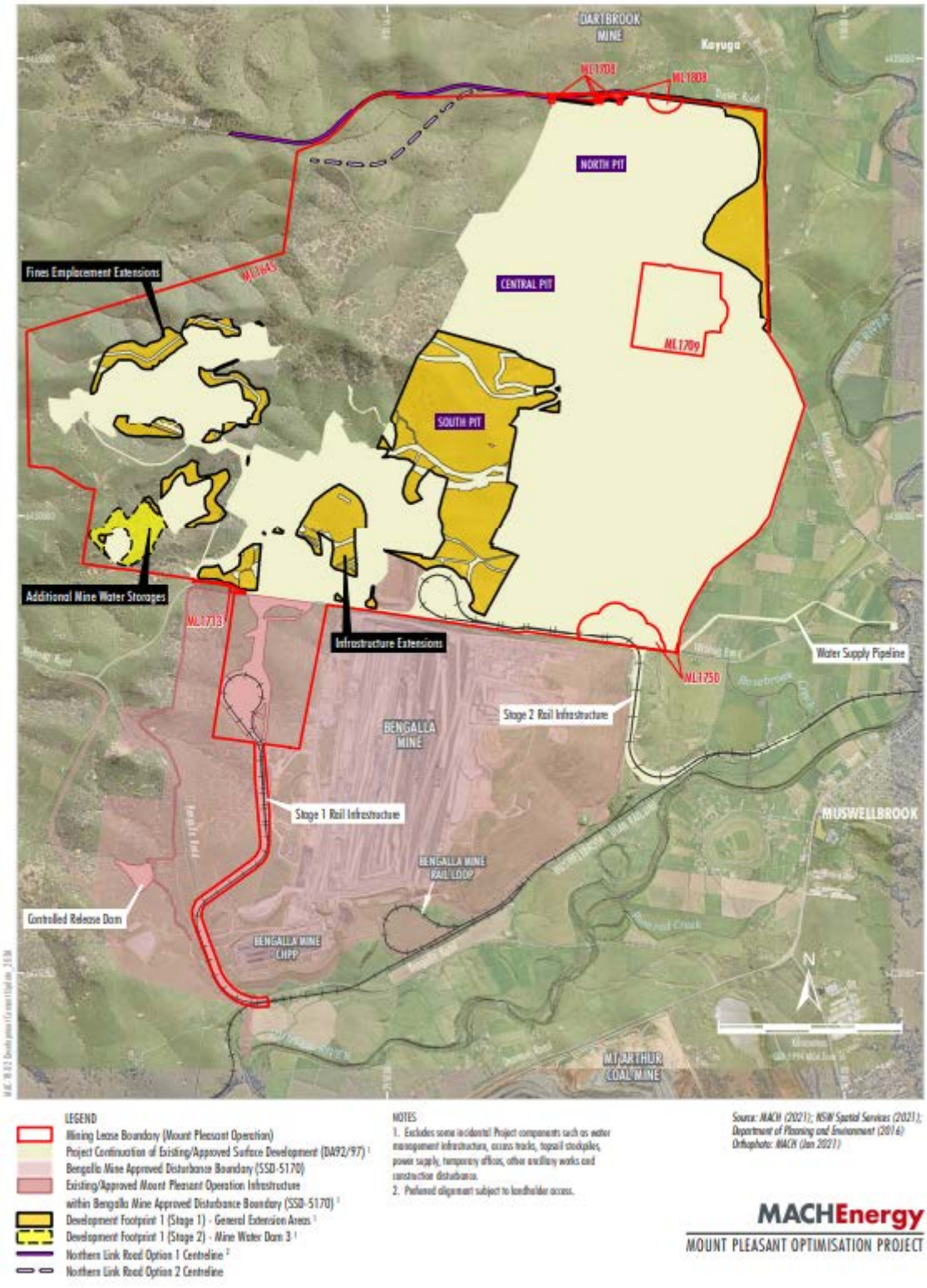


Figure 9: Staging of Project Disturbance Areas

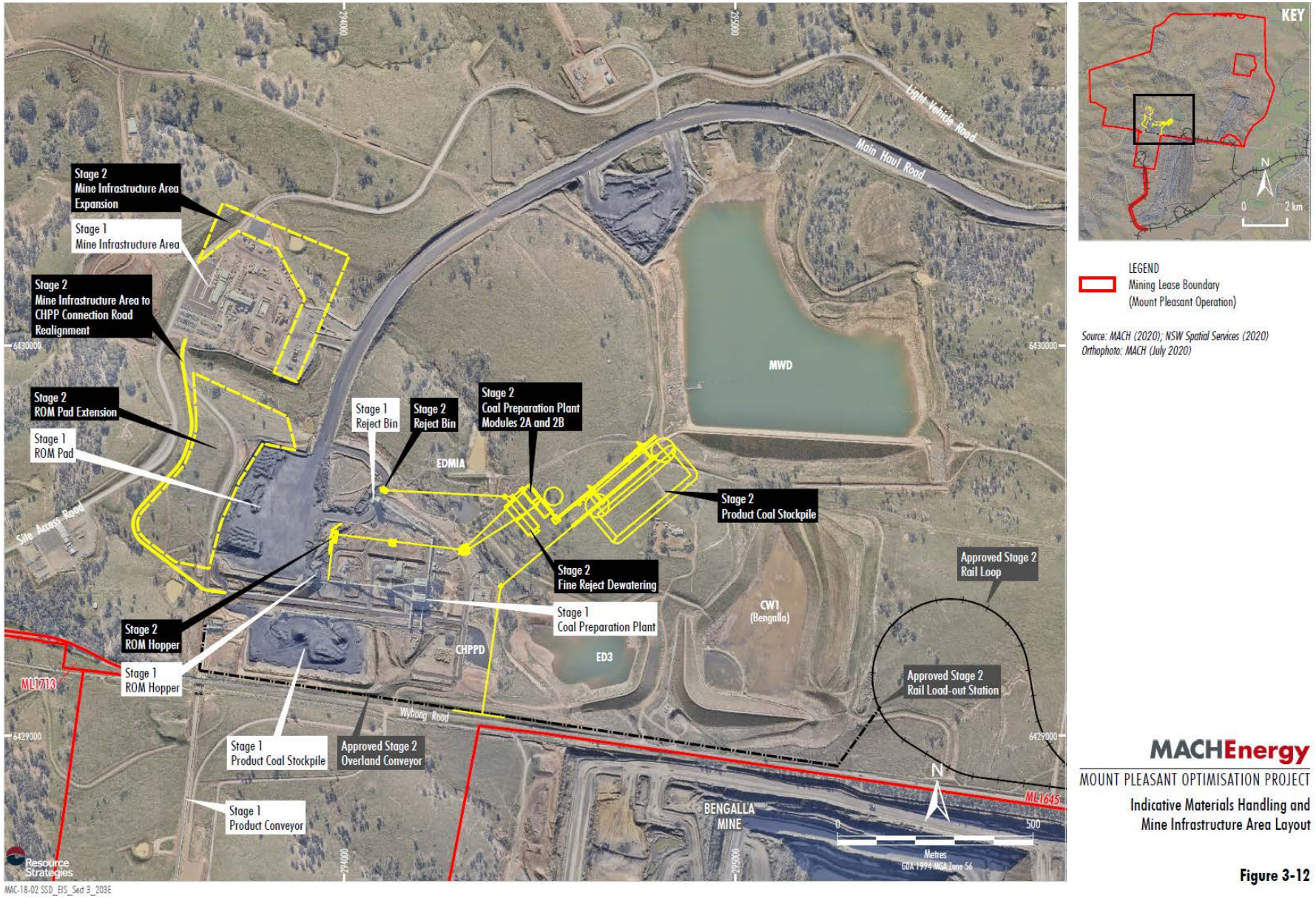


Figure 10: Indicative Mine Infrastructure Area Layout

ATTACHMENT 3

ENDORSEMENT OF ALEKS TODOROSKI

Department of Planning and Environment

Our ref: SSD-10418-PA-1

Mariah Lane
Environmental Advisor
Mach Energy Australia Pty Ltd
PO Box 407
Newcastle, NSW,2300

17/05/2023

Subject: Endorsement of Suitably Qualified and Experience Specialists for Mount Pleasant Optimisation Project

Dear Ms. Lane

I refer to your request for the Planning Secretary's endorsement of suitably qualified and experienced specialists to prepare management plans for the Mount Pleasant Optimisation Project (SSD-10418) and Mount Pleasant Coal Mine DA (92/97 until its surrender).

The Department has reviewed the nominations and information you have provided and is satisfied that the following specialists are suitably qualified and experienced. Accordingly, I can advise that the Planning Secretary approves/endorses the appointment of the following specialists:

- Dr Colin Driscoll of Hunter Eco for preparation of the Biodiversity Management Plan
- Chloe Annandale of Landroc for preparation of the Rehabilitation Strategy
- John Wassermann of RWDI for the preparation of the Blast Management Plan and Noise Management Plan
- Jamie Reeves of Niche Environment and Heritage for the preparation of the Aboriginal Cultural Heritage Management Plan
- Aleks Todoroski of Aleks Air Sciences for the preparation of the Air Quality and Greenhouse Gas Management Plan
- Dr Andrew Sneddon of Extent for the preparation of the Historic Heritage Management Plan
- Penny Dalton of TTPP for the preparation of the Traffic Management Plan
- Camilla West of ATC Williams and Bryce McKay of AGEC for the preparation of the Water Management Plan

If you wish to discuss the matter further, please contact Wayne Jones on (02) 6575 3406.

Yours sincerely

Stephen O'Donoghue
Director
Resource Assessments
As nominee of the Planning Secretary

APPENDIX A

AIR QUALITY AND GREENHOUSE GAS RELATED CONDITIONS – DEVELOPMENT CONSENT SSD 10418

Table A1
Air Quality and Greenhouse Gas Related Development Consent SSD 10418 Conditions

<table>
<tr><th>Development Consent SSD 10418</th><th>Section where addressed in this AQGGMP</th></tr>
<tr><td colspan="2">Part B</td></tr>
<tr><td>AIR QUALITY AND GREENHOUSE GAS EMISSIONS
Odour
B27. The Applicant must ensure that no offensive odours, as defined under the POEO Act, are emitted from the site.</td><td>Section 7.5</td></tr>
<tr><td>Air Quality Criteria
B28. Except for the air quality affected land in condition C1, the Applicant must ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the development do not cause exceedances of the criteria listed in Table 3 at any residence on privately-owned land.
Table 3: Air quality criteria
<table>
<tr><th>Pollutant</th><th>Averaging Period</th><th>Criterion</th></tr>
<tr><td rowspan="2">Particulate matter < 10 µm (PM_{10})</td><td>Annual</td><td>[a,c] 25 µg/m^3</td></tr>
<tr><td>24 hour</td><td>[b] 50 µg/m^3</td></tr>
<tr><td rowspan="2">Particulate matter < 2.5 µm ($PM_{2.5}$)</td><td>Annual</td><td>[a,c] 8 µg/m^3</td></tr>
<tr><td>24 hour</td><td>[b] 25 µg/m^3</td></tr>
<tr><td>Total suspended particulate (TSP) matter</td><td>Annual</td><td>[a,c] 90 µg/m^3</td></tr>
</table>
[a] Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources).
[b] Incremental impact (i.e. incremental increase in concentrations due to the development on its own).
[c] Excludes extraordinary events such as bushfires, prescribed burning, dust storms, fire incidents or any other activity agreed by the Planning Secretary.

B29. The air quality criteria in Table 3 do not apply if the Applicant has an agreement with the owner/s of the relevant residence or land to exceed the air quality criteria, and the Applicant has advised the Department in writing of the terms of this agreement.</td><td>Section 4.1

Section 4.1</td></tr>
<tr><td>Mine-owned Land
B30. Particulate matter emissions generated by the development must not exceed the criteria listed in Table 3 at any occupied residence on mine-owned land (including land owned by another mining company) unless:
(a) the tenant and landowner (if the residence is owned by another mining company) have been notified of any health risks associated with such exceedances in accordance with the notification requirements under PART C of this consent;
(b) the tenant of any land owned by the Applicant can terminate their tenancy agreement without penalty at any time, subject to giving 14 days' notice;
(c) air quality monitoring is regularly undertaken to inform the tenant and landowner (if the residence is owned by another mining company) of the likely particulate matter emissions at the residence; and
(d) data from this monitoring is presented to the tenant and landowner in an appropriate format for a medical practitioner to assist the tenant and landowner in making informed decisions on the health risks associated with occupying the property.</td><td>Section 4.1</td></tr>
</table>

<table>
<tr><th>Development Consent SSD 10418</th><th>Section where addressed in this AQGGMP</th></tr>
<tr><td>

Air Quality and Greenhouse Gas Operating Conditions

B31. The Applicant must:

(a) take all reasonable and feasible steps to:

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

(ii) eliminate or minimise the risk of spontaneous combustion;

(iii) improve energy efficiency and minimise Scope 1 and Scope 2 GHGEs generated by the development;

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

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

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

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

(d) minimise the air quality impacts of the development during adverse meteorological conditions and extraordinary events (See Note c to Table 3 above);

(e) minimise air quality impacts of the development on air quality-affected land referred to in condition C1 for as long as the land remains privately-owned (i.e. until it is acquired);

(f) make all reasonable efforts to co-ordinate air quality management on the site with the air quality management at nearby mines to minimise cumulative air quality impacts;

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

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

</td><td>

Section 7
Section 8.1.5
Section 7.5
Section 7.6.1
Section 7.2
Section 7.2
Section 7.6.1
Sections 7.3 and 7.4
Section 7.1
Section 4.3
Section 7.8
Section 8.3
Sections 7.4 and 8.3

</td></tr>
<tr><td>

Minimisation of Greenhouse Gas Emissions

B36. The Applicant must comply with the performance measures in Table 4.

Table 4: *Greenhouse gas performance measures*

Feature	***Performance Measure***
Scope 1	• Less than 0.87 million tonnes CO2-e emitted per calendar year, or lower emissions as determined under condition B34 • Less than 0.80 million tonnes CO2-e emitted per calendar year (5-year rolling average), or lower emissions as determined under condition B34 • Less than 13.9 million tonnes CO2-e emitted over the life of the development, or lower emissions as determined under condition B34
Scope 2	• Minimise CO2-e emissions by using electricity generated by renewable or carbon neutral energy sources where reasonable and feasible

B37. In determining compliance with the performance measures in Table 4, the Planning Secretary will take into account any atypical or abnormal operating conditions, any exceedances already offset (or required to be offset or otherwise accounted for) under other applicable Commonwealth or State requirements (for example the NGERs scheme), changes in Global Warming Potential and/or any voluntary offsetting of CO2-

</td><td>Section 4.3.1 and 7.6</td></tr>
</table>

<table>
<tr><th>Development Consent SSD 10418</th><th>Section where addressed in this AQGGMP</th></tr>
<tr><td>e emissions by the Applicant. If, following this consideration, the Planning Secretary determines that the Applicant has exceeded any of these performance measures, including revised performance measures determined under condition B34, then the Applicant must offset the excess CO2-e emissions within six months of the Planning Secretary's determination, using a mechanism to the satisfaction of the Planning Secretary.</td><td></td></tr>
<tr><td>METEOROLOGICAL MONITORING
B38. Within three months of the commencement of development under this consent, the Applicant must ensure that there is a suitable meteorological station operating in the vicinity of the site that:
(a) complies with the requirements in the Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales (DEC, 2007); and
(b) is capable of measuring meteorological conditions in accordance with the NSW Noise Policy for Industry (EPA, 2017),
unless a suitable alternative is approved by the Planning Secretary following consultation with the EPA.</td><td>Section 8.2</td></tr>
<tr><td>ACQUISITION UPON REQUEST
C1. Upon receiving a written request for acquisition from the owner of the privately-owned land[a] listed in Table 11, the Applicant must acquire the land in accordance with the procedures in conditions C12 to C19 inclusive.
Table 11: Land subject to acquisition upon request
<table>
<tr><th>Acquisition Basis</th><th>Receiver</th></tr>
<tr><td>Air Quality and Noise</td><td>118, 120, 120c, 121, 143b, 143e, 147, 153a, 154, 154b, 156a, 157a, 159</td></tr>
<tr><td>Air Quality</td><td>112</td></tr>
<tr><td>Noise</td><td>136, 143a</td></tr>
</table>
[a] The location of the land referred to in Table 11 is shown in Appendix 3.</td><td>Section 4.3.2</td></tr>
<tr><td>ADDITIONAL MITIGATION UPON REQUEST
C2. Upon receiving a written request for mitigation from the owner of any residence on the privately-owned land[a] listed in Table 11 or Table 12, the Applicant must implement additional mitigation measures at or in the vicinity of the residence in consultation with the landowner. These measures must be consistent with the measures outlined in the Voluntary Land Acquisition and Mitigation Policy for State Significant Mining, Petroleum and Extractive Industry development (DPE, 2018). They must also be reasonable and feasible, proportionate to the level of predicted impact and directed towards reducing the noise and/or air quality impacts of the development. The Applicant must also be responsible for the reasonable costs of ongoing maintenance of these additional mitigation measures until the cessation of mining operations.
Table 12: Land subject to additional mitigation upon request
<table>
<tr><th>Mitigation Basis</th><th>Receiver ID</th></tr>
<tr><td>Noise</td><td>20, 21, 35, 35b, 43, 43b, 47, 67, 74, 86a, 96, 102, 108, 140a</td></tr>
</table>
[a]The locations of the land referred to in Table 12 are shown in Appendix 3.</td><td>Sections 4.1 and 4.3.3</td></tr>
<tr><td>C3. If within three months of receiving this request from the owner, the Applicant and the owner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, the Applicant must arrange an independent review of the measures to be implemented and either party may then refer the matter to the planning Secretary for resolution.</td><td>Section 4.3.3</td></tr>
<tr><td>C4. For the life of the development, the Applicant must continue to contribute to reasonable maintenance and recurrent operating costs associated with the noise mitigation measures installed at privately-owned residences under the development and as described in the documented listed in condition A2(c). The contribution to ongoing</td><td>Section 4.3.3</td></tr>
</table>

Development Consent SSD 10418	Section where addressed in this AQGGMP
maintenance and recurrent operating cost must be consistent with ant existing agreement between the Applicant and the relevant landowner.	
NOTIFICATION OF LANDOWNERS/TENANTS C5. Within one month of the commencement of development under this consent, the Applicant must: (a) notify in writing the owner of: (i) the land listed in Table 11 that they have the right to require the Applicant to acquire their land at any stage during the development; (ii) the residences on the land listed in Table 11 that they are entitled to ask the Applicant to install additional mitigation measures at the residence; and (iii) any privately-owned land within 3 kilometres of the approved open cut mining pit/s that they are entitled to ask the Applicant for an inspection to establish the baseline condition of any buildings or structures on their land, or to have a previous property inspection report updated; (b) notify the tenants of any mine-owned land of their rights under this consent; and (c) send a copy of the fact sheet entitled "*Mine Dust and You*" (NSW Health, 2017) to the owners and/or existing tenants of any land (including mine-owned land) where the predictions in the document/s listed in condition A2(c) identify that dust emissions generated by the development are likely to be greater than the relevant air quality criteria identified in condition B28 at any time during the life of the development.	Section 4.3.5
C6. Prior to entering into any tenancy agreement for any land owned by the Applicant that is predicted to experience exceedances of the recommended air quality criteria in Table 3 and/or noise criteria in Table 1, the Applicant must: (a) advise the prospective tenants of the potential health and amenity impacts associated with living on the land, and give them a copy of the fact sheet entitled "*Mine Dust and You*" (NSW Health, 2017); and (b) advise the prospective tenants of the rights they would have under this consent, to the satisfaction of the Planning Secretary.	Section 4.3.5
NOTIFICATION OF EXCEEDANCES C7. As soon as practicable and no longer than 7 days after obtaining monitoring results showing an exceedance of any noise, blasting or air quality criterion in PART B of this consent, the Applicant must provide the details of the exceedance to any affected landowners, tenants and the CCC.	Section 4.3.5
C8. For any exceedance of any air quality criterion in PART B of this consent, the Applicant must also provide to any affected landowners and/or tenants a copy of the fact sheet entitled "*Mine Dust and You*" (NSW Health, 2017).	Section 4.3.5
INDEPENDENT REVIEW C9. If a landowner considers the development to be exceeding any relevant noise, blasting or air quality criterion in PART B of this consent, they may ask the Planning Secretary in writing for an independent review of the impacts of the development on their residence or land.	Section 4.3.3
C10. If the Planning Secretary is not satisfied that an independent review is warranted, the Planning Secretary will notify the landowner in writing of that decision, and the reasons for that decision, within 21 days of the request for a review.	Section 4.3.3
C11. If the Planning Secretary is satisfied that an independent review is warranted, within three months of the Planning Secretary's decision, the Applicant must: (a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Planning Secretary, to: (i) consult with the landowner to determine their concerns; (ii) conduct monitoring to determine whether the development is complying with the relevant criterion in PART B of this consent; and	Section 4.3.3

Development Consent SSD 10418	Section where addressed in this AQGGMP
(iii) if the development is not complying with the relevant criterion, identify measures that could be implemented to ensure compliance with the relevant criterion; (b) give the Planning Secretary and landowner a copy of the independent review; and (c) comply with any written requests made by the Planning Secretary to implement any findings of the review.	
LAND ACQUISITION C12. Within three months of receiving a written request for acquisition from a landowner with acquisition rights, the Applicant must make a binding written offer to the landowner based on: (a) the current market value of the landowner's interest in the land at the date of this written request, as if the land was unaffected by the development, having regard to the: (i) existing and permissible use of the land, in accordance with the applicable planning instruments at the date of the written request; and (ii) presence of improvements on the land and/or any approved building or structure which has been physically commenced at the date of the landowner's written request, and is due to be completed subsequent to that date, but excluding any improvements that have resulted from the implementation of the additional noise and/or air quality mitigation measures in condition C2; (b) the reasonable costs associated with: (i) relocating within the Muswellbrook Local Government Area, or to any other local government area determined by the Planning Secretary; and (ii) obtaining independent legal advice and expert advice for determining the acquisition price of the land, and the terms upon which it is to be acquired; and (c) reasonable compensation for any disturbance caused by the land acquisition process.	Section 4.3
C13. If, within two months of the binding written offer being made under condition C12, the Applicant and landowner cannot agree on the acquisition price of the land and/or the terms upon which the land is to be acquired, then either party may refer the matter to the Planning Secretary for resolution.	Section 4.3
C14. Upon receiving a request, under condition C13, the Planning Secretary will request the President of the NSW Division of the Australian Property Institute to appoint a qualified independent valuer to: (a) consider submissions from both parties; (b) determine a fair and reasonable acquisition price for the land and/or the terms upon which the land is to be acquired, having regard to the matters referred to in condition C12; (c) prepare a detailed report setting out the reasons for any determination; and (d) provide a copy of the report to both parties.	Section 4.3
C15. Within 14 days of receiving the independent valuer's report, the Applicant must make a binding written offer to the landowner to purchase the land at a price not less than the independent valuer's determination.	Section 4.3
C16. However, if either party disputes the independent valuer's determination, then within 14 days of receiving the independent valuer's report, either party may refer the matter to the Planning Secretary for review. Any request for a review must be accompanied by a detailed report setting out the reasons why the party disputes the independent valuer's determination. Following consultation with the independent valuer and both parties the Planning Secretary will determine a fair and reasonable acquisition price for the land, having regard to the matters referred to in condition C12, the independent valuer's report, the detailed report of the party that disputes the independent valuer's determination and any other relevant submissions.	Section 4.3

Development Consent SSD 10418	Section where addressed in this AQGGMP
C17. Within 14 days of this determination, the Applicant must make a binding written offer to the landowner to purchase the land at a price not less than the Planning Secretary's determination.	Section 4.3
C18. If the landowner refuses to accept the Applicant's binding written offer under this condition within six months of the offer being made, then the Applicant's obligations to acquire the land shall cease, unless the Planning Secretary determines otherwise.	Section 4.3
C19. The Applicant must pay all reasonable costs associated with the land acquisition process described in conditions C12 to C18 inclusive, including the costs associated with obtaining Council approval for any plan of subdivision (where permissible), and registration of this plan at the Office of the Registrar-General.	Section 4.3

APPENDIX B

AIR QUALITY AND GREENHOUSE GAS RELATED CONDITIONS – DEVELOPMENT CONSENT DA 92/97

Table B1
Air Quality and Greenhouse Gas Related Development Consent DA 92/97 Conditions

<table>
<tr><th>Development Consent DA 92/97</th><th>Section where addressed in this AQGGMP</th></tr>
<tr><td colspan="2">Schedule 3</td></tr>
<tr><td>ACQUISITION UPON REQUEST
1. If the Applicant receives a written request for acquisition from the owner of any land listed in Table 1, then the Applicant must acquire the land in accordance with the procedures in conditions 6-7 of Schedule 4.
Table 1: Land subject to acquisition upon request
<table>
<tr><th>Basis</th><th>Receiver</th></tr>
<tr><td>Noise</td><td>23, 45, 47, 67, 96, 102, 108, 112, 118, 120, 120c, 121, 136, 143a, 143b, 143c, 143d, 143e, 147, 153a, 153b, 156a, 157a, 158, 159, 447, 448, 449</td></tr>
<tr><td>Noise & Air</td><td>43, 43b</td></tr>
<tr><td>Air</td><td>20[2], 21[2]</td></tr>
</table>
Notes:
1 To identify the locations referred to in Table 1, see the figures in Appendix 5.
2 The Applicant is only required to acquire and/or install mitigation measures at this property if acquisition and/or mitigation is not reasonably achievable under a separate approval for the Bengalla mine.</td><td>Section 4.3</td></tr>
<tr><td>ADDITIONAL MITIGATION UPON REQUEST
2. Upon receiving a written request from the owner of any residence on any land listed in Table 1 (unless the owner of that land has requested acquisition) or Table 2, the Applicant must implement additional:
(a) noise mitigation measures (such as double-glazing, insulation and/or air conditioning); and/or
(b) air quality mitigation measures (such as air filters, a first flush roof water drainage system and/or air conditioning),
as relevant at the residence(s) in consultation with the owner.
These measures must be reasonable and feasible, and directed towards reducing the noise and/or air quality impacts of the development on the residence(s). The Applicant must also be responsible for the reasonable costs of ongoing maintenance of these additional mitigation measures until the cessation of mining operations.
If within 3 months of receiving this request from the owner, the Applicant and the owner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Secretary for resolution.
Table 2: Land where additional mitigation measures are available on request
<table>
<tr><th>Basis</th><th>Receiver</th></tr>
<tr><td>Noise</td><td>19, 20, 21, 68, 74, 77, 79, 80a, 84a, 86a, 139, 140a, 140c, 154, 203, 207, 257, 258, 259, 526</td></tr>
</table>
Note:
1 To identify the locations referred to in Table 2, see the figures in Appendix 5.</td><td>Section 4.3</td></tr>
<tr><td>AIR QUALITY & GREENHOUSE GAS
Odour
18. The Applicant must ensure that no offensive odours are emitted from the site, as defined under the POEO Act, unless otherwise authorised by an EPL.</td><td>Section 7.5</td></tr>
<tr><td>Greenhouse Gas Emissions
19. The Applicant must implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions from the site.</td><td>Section 7.6</td></tr>
<tr><td>Air Quality Criteria
20. Except for the air quality-affected land referred to in Table 1, the Applicant must ensure</td><td></td></tr>
</table>

Development Consent DA 92/97	Section where addressed in this AQGGMP
that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the development do not exceed the criteria listed in Tables 8, 9 or 10 at any residence on privately-owned land.	Sections 4 and 7

Table 8: Long term criteria for particulate matter

Pollutant	***Averaging Period***	***[d]Criterion***
Total suspended particulate (TSP) matter	Annual	[a]90 µg/m^3
Particulate matter < 10 µm (PM10)	Annual	[a]25 µg/m^3
Particulate matter < 2.5 µm (PM2.5)	Annual	[a]8 µg/m^3

Table 9: Short term criteria for particulate matter

Pollutant	***Averaging Period***	***[d]Criterion***
Particulate matter < 10 µm (PM10)	24 hour	[b]50 µg/m^3
Particulate matter < 2.5 µm (PM2.5)	24 hour	[b]25 µg/m^3

Table 10: Long term criteria for deposited dust

Pollutant	***Averaging Period***	***Maximum increase in deposited dust level***	***Maximum total deposited dust level***
[C] Deposited dust	Annual	[b]2 g/m^2/month	[a]4 g/m^2/month

Notes to Tables 8-10:

[a] Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources);

[b] Incremental impact (i.e. incremental increase in concentrations due to the development on its own);

[c] Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method; and

[d] Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents or any other activity agreed by the Secretary.

Operating Conditions	
22. The Applicant must:	
(a) implement best practice air quality management, including all reasonable and feasible measures to minimise the odour, fume and dust emissions of the development;	Section 7
(b) minimise visible air pollution generated by the development;	Section 7.2
(c) minimise, where reasonable and feasible, the extent of potential dust generating surfaces exposed on the site at any given point in time;	Section 7.2
(d) minimise the air quality impacts of the development during adverse meteorological conditions and extraordinary events (see Note d above under Tables 8-10);	Section 7.1
(e) regularly assess the real-time air quality monitoring and meteorological forecasting data and relocate, modify and/or stop operations on site to ensure compliance with the relevant conditions of this consent; and	Sections 7.3 and 7.4
(f) co-ordinate the air quality management on site with the air quality management at nearby mines (including the Bengalla Mine) to minimise cumulative air quality impacts from the mines,	Section 7.8
to the satisfaction of the Secretary.	
METEOROLOGICAL MONITORING	
24. For the life of the development, the Applicant must ensure that there is a meteorological station operating in the vicinity of the site that:	
(a) complies with the requirements in the Approved Methods for Sampling of Air Pollutants in NSW guideline; and	Section 8.2
(b) is capable of continuous real-time measurement of temperature lapse rate in accordance with the NSW Industrial Noise Policy, or as otherwise approved by the Secretary.	Section 8.2

Development Consent DA 92/97	Section where addressed in this AQGGMP
Schedule 4	
NOTIFICATION OF LANDOWNERS 1A. Prior to entering into any tenancy agreement for any land owned by the Applicant that is predicted to experience exceedances of the recommended dust and/or noise criteria, the Applicant must: (a) advise the prospective tenants of the potential health and amenity impacts associated with living on the land, and give them a copy of the NSW Health fact sheet entitled "*Mine Dust and You*" (as may be updated from time to time); and (b) advise the prospective tenants of the rights they would have under this consent, to the satisfaction of the Secretary.	Section 4.3.5
2. As soon as practicable after obtaining monitoring results showing: (a) exceedance of the relevant criteria in Schedule 3, the Applicant must notify the affected landowner and tenants in writing of the exceedance, and provide regular monitoring results to each of these parties until the development is complying with the relevant criteria again; and/or (b) an exceedance of the relevant criteria of Schedule 3, the Applicant must send a copy of the NSW Health fact sheet entitled "*Mine Dust and You*" (as may be updated from time to time) to the affected landowners and/or existing tenants of the land (including the tenants of any mine-owned land).	Section 4.3.5
Schedule 4 – Additional Procedures	
INDEPENDENT REVIEW 3. If an owner of privately-owned land considers the development to be exceeding the criteria in Schedule 3, then he/she may ask the Secretary in writing for an independent review of the impacts of the development on his/her land. If the Secretary is not satisfied that an independent review is warranted, the Secretary will notify the landowner in writing of that decision, and the reasons for that decision, within 21 days of the request for a review. If the Secretary is satisfied that an independent review is warranted, then within 2 months of the Secretary's decision, the Applicant must: (a) commission a suitably qualified, experienced and independent expert, whose appointment has been approved by the Secretary, to: • consult with the landowner to determine his/her concerns; • conduct monitoring to determine whether the development is complying with the relevant criteria; and • if the development is not complying with these criteria then: ○ determine if more than one mine is responsible for the exceedance, and if so the relative share of each mine towards the impact on the land; ○ identify the measures that could be implemented to ensure compliance with the relevant criteria; and (b) give the Secretary and landowner a copy of the independent review.	Section 4.3.3
Land Acquisition 6. Within 3 months of receiving a written request from a landowner with acquisition rights, the Applicant must make a binding written offer to the landowner based on: (a) the current market value of the landowner's interest in the land at the date of this written request, as if the land was unaffected by the development, having regard to the: • existing and permissible use of the land, in accordance with the applicable planning instruments at the date of the written request; and • presence of improvements on the land and/or any approved building or structure which has been physically commenced at the date of the landowner's written request, and is due to be completed subsequent to that date, but	Section 4.3

Development Consent DA 92/97	Section where addressed in this AQGGMP
excluding any improvements that have resulted from the implementation of the additional mitigation measures required under condition 2 of Schedule 3; (b) the reasonable costs associated with: • relocating within the Muswellbrook, Singleton or Scone local government area, or to any other local government area determined by the Secretary; and • obtaining legal advice and expert advice for determining the acquisition price of the land, and the terms upon which it is to be acquired; and (c) reasonable compensation for any disturbance caused by the land acquisition process. However, if at the end of this period, the Applicant and landowner cannot agree on the acquisition price of the land and/or the terms upon which the land is to be acquired, then either party may refer the matter to the Secretary for resolution. Upon receiving such a request, the Secretary shall request the President of the NSW Division of the Australian Property Institute to appoint a qualified independent valuer to: • consider submissions from both parties; • determine a fair and reasonable acquisition price for the land and/or the terms upon which the land is to be acquired, having regard to the matters referred to in paragraphs (a)-(c) above; • prepare a detailed report setting out the reasons for any determination; and • provide a copy of the report to both parties. Within 14 days of receiving the independent valuer's report, the Applicant must make a binding written offer to the landowner to purchase the land at a price not less than the independent valuer's determination. However, if either party disputes the independent valuer's determination, then within 14 days of receiving the independent valuer's report, they may refer the matter to the Secretary for review. Any request for a review must be accompanied by a detailed report setting out the reasons why the party disputes the independent valuer's determination. Following consultation with the independent valuer and both parties, the Secretary will determine a fair and reasonable acquisition price for the land, having regard to the matters referred to in paragraphs (a)-(c) above, the independent valuer's report, the detailed report of the party that disputes the independent valuer's determination and any other relevant submissions. Within 14 days of this determination, the Applicant must make a binding written offer to the landowner to purchase the land at a price not less than the Secretary's determination. If the landowner refuses to accept the Applicant's binding written offer under this condition within 6 months of the offer being made, then the Applicant's obligations to acquire the land shall cease, unless the Secretary determines otherwise.	
7. The Applicant must pay all reasonable costs associated with the land acquisition process described in condition 6 above, including the costs associated with obtaining Council approval for any plan of subdivision (where permissible), and registration of this plan at the Office of the Registrar-General.	Section 4.3

APPENDIX C

CONSULTEE FEEDBACK – KEY CORRESPONDENCE

Table C1
MACH Energy Response to Consultation Comments – NSW EPA

Relevant Development Consent SSD 10418 Condition	Comment Received	Relevant Section in the AQGGMP	Comment Addressed	MACH Response
N/A	*EPA recommends:* *The plan could be improved by adopting emission reduction principles and setting emission reduction goals in accordance with the large emitters guide.*	Section 4.3.1	Partial – dependent on completion of Large Emitters Guide.	As noted in the EPA's comments: *Whilst the large emitters guide currently targets projects involving new developments or modifications to existing activities, GHG emissions estimation and reduction principles can be used to guide the revision of the plan.* Section 4.3.1 of the AQGGMP outlines that MACH Energy has commenced development of an internal Greenhouse Gas Policy Statement and this is expected to be available to guide future iterations of the AQGGMP. Section 4.3.1 of the AQGGMP has been updated to note the principles that will inform the development of this Policy Statement. MACH Energy does not propose to set further emission reduction goals at this stage as the Mount Pleasant Optimisation Project is an approved development and Development Consent SSD 10418 already sets emission targets. MACH Energy notes the EPA's advice that it is currently progressing several actions under its Climate Change Action Plan, including development of sectoral targets and a greenhouse gas mitigation guide for NSW coal mines.

Relevant Development Consent SSD 10418 Condition	Comment Received	Relevant Section in the AQGGMP	Comment Addressed	MACH Response

Part B, Condition B32(d)	*<u>EPA recommends:</u>*
	• *The plan could be improved by including information on how the adopted mitigation measures for all sou brces were evaluated. Consideration could be given to how the measures are:*
	  ○ *reflective of best practice*
	  ○ *in line with national and international industry emission reduction practices*
	• *Where the highest level of control is not being adopted, nominate the existing constraints for their implementation. Any listed constraints should be documented as part of the consent holder's evaluation and re-considered during the preparation of future revisions of the plan.*
		Sections 4.3.1, 7.6 and 10.2	Yes	MACH Energy understands that the NSW Environment Protection Authority (EPA) is in the process of developing NSW sectoral pathways to set emission reduction targets and provide mitigation and adaptation guidance for key industry sectors, such as mining (refer **Attachment 1** to this table). MACH Energy also notes that the Commonwealth Climate Change Authority (CCA) has recently released its *Sector Pathways Review* which examined potential technology transition and emissions pathways in six key emission sectors to support Australia's transition to net zero emissions by 2050, including the resources sector (CCA, 2024):
				Key findings of Part 1 of the *Sectoral Pathways Review* (Resources) of potential relevance to the Project include (CCA, 2024):
				Decarbonisation of the (Resources) *sector requires widespread electrification, and deployment of fugitive abatement technologies in oil, gas and coal mining operations.*
				…
				Electrification can play a significant role in reducing emissions from fuel combustion in the sector. Electric mining haulage and equipment is at pilot scale, with widespread adoption expected after 2030.
				…
				Based on available technologies, several sources of emissions across the sector are expected to remain largely unabated while the activities continue. There are few opportunities to significantly reduce fugitive emissions from surface coal mines.
				…
				Barriers to electrification and deployment of fugitive abatement measures across the sector include high upfront capital costs, integration challenges within existing facilities and the lack of access to a sufficient firmed supply of renewable electricity.
				…
				MACH Energy also understands that the EPA intends to require licensees to conduct emissions benchmarking against the NSW EPA sectoral guidance (once it is available), and then prepare a Climate Change Mitigation and Adaptation Plan. Where a site's performance is not considered acceptable to the EPA, performance improvements will be required under the Environment Protection Licence (refer **Attachment 1** to this table). In this context, MACH Energy believes it is premature to require a detailed greenhouse gas mitigation evaluation in the current AQGGMP, as appropriate NSW sectoral pathway advice and a greenhouse gas mitigation guide for NSW coal mines are currently in preparation by the EPA. Once these EPA

Relevant Development Consent SSD 10418 Condition	Comment Received	Relevant Section in the AQGGMP	Comment Addressed	MACH Response
				frameworks are available to MACH Energy, they would provide the scaffolding for such a detailed evaluation, consistent with the EPA's requirements for other licenced facilities. In accordance with Part B, Condition B34 of Development Consent SSD 10418, a review of all available greenhouse gas management abatement measures relevant to the MPO will be conducted 12 months after approval of the AQGGMP (i.e. nominally commencing in 2025) and every 3 years thereafter during the life of the mining operation. This review and its economic considerations will be submitted to the Planning Secretary and incorporated into this AQGGMP. Section 10.2 of the AQGGMP has been updated to note that the review required under Condition B34 will include review of the proposed abatement measures against industry practice.

Relevant Development Consent SSD 10418 Condition	Comment Received	Relevant Section in the AQGGMP	Comment Addressed	MACH Response
Part B, Condition B34	*<u>EPA recommends:</u>* • *The plan could be improved by including site specific, measurable, auditable objectives and performance indicators to evaluate the implementation of all reasonable and feasible measures as it will be required under condition B34 of the consent.* • *The consent holder could be encouraged to action items i – v above. Findings and conclusions could be used to inform and evaluate targeted actions and implement all reasonable and feasible measures to reduce GHG emissions and during the preparation of future assessments.*		Partial – dependent on completion of Large Emitters Guide.	As noted in the responses above, once NSW sectoral pathway advice and the guide for NSW coal mines are available from the EPA, this framework will be available to MACH Energy and could support a more thorough evaluation of performance measures and criteria in combination with MACH Energy's completed internal Greenhouse Gas Policy Statement (currently in preparation) to determine any reasonable and feasible additional abatement measures. MACH Energy would therefore address the items i.-v. as noted in the EPA's recommendations in the identification of reasonable and feasible additional abatement measures in accordance with Condition B34. As part of this, MACH Energy does intend to undertake further exploration drilling and gas content testwork in the latter part of the approved pit shell over the next 2-3 years. These investigations will assist to identify whether a fugitive abatement trial may potentially be feasible in these (relatively) higher fugitive gas content zones in the medium-term. MACH Energy also notes the conclusions of the CCA (2024) (as reproduced above) support the view that the replacement of diesel as the key on-site energy source for major mobile equipment on large open cut mines is unlikely to occur at scale in the immediate future. Addressing fugitive emissions from open cut coal mines in low-gas environments is also likely to be a long-term journey. It is therefore appropriate to explore these aspects further in the subsequent detailed review required by Condition B34, within one year of the initial approval of the AQGGMP (i.e. nominally in 2025), and associated subsequent reviews. Section 7.6 of the AQGGMP has been updated to include extra tables and context, including emissions abatement evaluation, timing and responsibilities. Section 10.2 of the AQGGMP has been updated to include further detail on the process of evaluating greenhouse gas abatement measures that will occur in the next AGQQMP review.

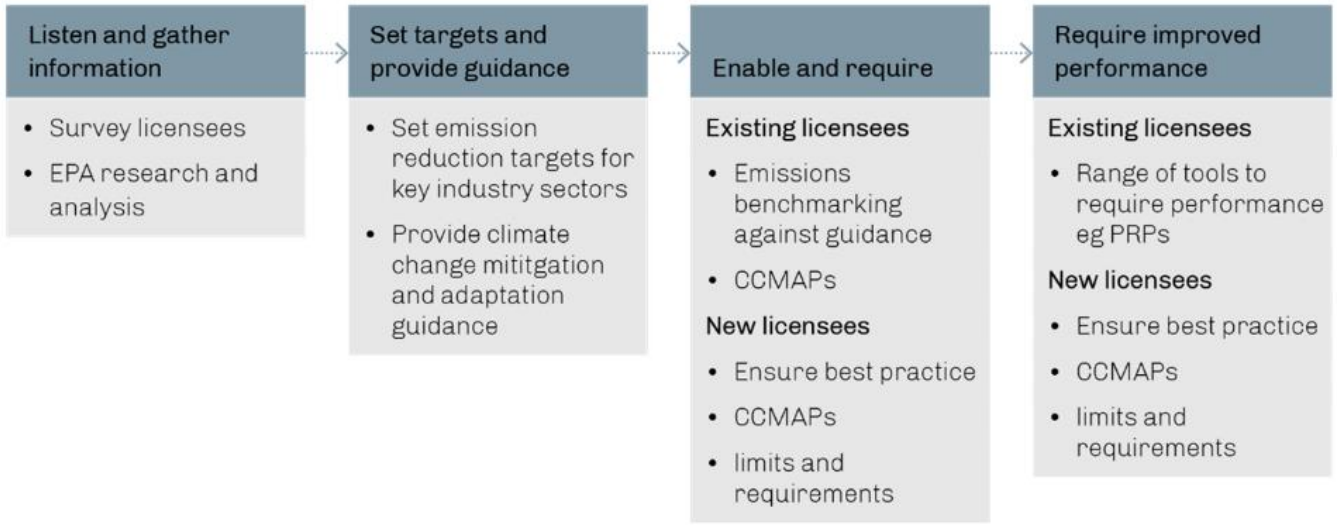
Relevant Development Consent SSD 10418 Condition	Comment Received	Relevant Section in the AQGGMP	Comment Addressed	MACH Response
Part B, Condition B34	*EPA recommends:* *The plan could be improved by including:* • *the estimated emissions for the project's life.*	Sections 4.3.1 and 7.6	Yes	The estimated average and total greenhouse gas emissions for the Project life are presented in Table 9 of the AQGGMP (Section 3.1.1, page 19). Context for the estimated timing of Project fugitive emissions is also provided in Chart 1 of the draft AQGGMP (Section 7.6). This chart illustrates that fugitive emissions are anticipated to materially increase from approximately 2034, and would peak in the early 2040s.
	• *a description of the process used for recording and storing data to evaluate the site's emissions against the projected emissions and performance measures in condition B36.*	Section 7.6	Yes	In order to avoid duplication, MACH Energy would primarily use records kept for National Greenhouse and Energy Reporting Scheme (NGERS), to record/document and report emissions data for use in comparisons to the previous Project emission projections and Development Consent performance measures. It is noted that this will require calendar year reporting, as opposed to the NGERS financial year reporting. However, monthly NGERS energy consumption records and fugitive emission estimates will be used to prepare any calendar year reports for Consent Condition reporting.
	• *the criteria developed to verify and determine whether additional measures could be implemented.*		Partial – dependent on completion of Large Emitters Guide.	As noted in the responses above, once NSW sectoral pathway advice and the guide for NSW coal mines are available from the EPA, this framework will be available to MACH Energy and could provide the scaffolding for the more detailed evaluation, in combination with MACH Energy's completed internal Greenhouse Gas Policy Statement (currently in preparation) to determine any reasonable and feasible additional abatement measures consistent with Condition B34. Section 4.3.1 of the AQGGMP has been updated to note the principles that are expected to guide MACH Energy's internal Greenhouse Gas Policy Statement.
Part B, Condition B34	*EPA recommends:* • *nominating key performance indicators that will be recorded and used to evaluate on-site emissions against performance measures in condition B36.*	Section 7.6	Partial – dependent on completion of Large Emitters Guide.	As noted in the responses above, once NSW sectoral pathway advice and the guide for NSW coal mines are available from the EPA, this framework will be available to MACH Energy and could provide the scaffolding for the more detailed evaluation of performance measures and criteria in combination with MACH Energy's completed internal Greenhouse Gas Policy Statement (currently in preparation) to determine any reasonable and feasible additional abatement measures in accordance with Condition B34.

Relevant Development Consent SSD 10418 Condition	Comment Received	Relevant Section in the AQGGMP	Comment Addressed	MACH Response
	• *detailing and justifying the criteria developed to verify and determine whether additional measures could be implemented.*			

ATTACHMENT 1 – Staging of EPA Actions

How our actions will be staged

Our climate change actions will be staged, progressive and iterative – allowing time for licensees to adjust and for data to inform what actions must be taken and where.



Note:

- CCMAPs = climate change mitigation and adaptation plans
- PRPs = pollution reduction programs

Source: https://www.epa.nsw.gov.au/your-environment/climate-change/policy-and-action-plan

DOC24/732963-4 21 October 2024

Tegan Cole
Senior Environmental Assessment Officer
Energy & Resources Assessments
Department of Planning, Housing and Infrastructure

via Major Projects Planning Portal

EPA comments on the greenhouse gas (GHG) component of the Air Quality and GHG Management Plan for the Mount Pleasant Optimisation Project (SSD-10418)

Dear Tegan,

Thank you for your request for the NSW Environment Protection Authority (EPA) to review the greenhouse gas component of Air Quality and Greenhouse Gas Management Plan (the plan) for the Mount Pleasant optimisation project (Public Authority Consultation No PAE-75538462).

The EPA understands that the plan was prepared to address requirements under Conditions B32 and B36 of development of consent SSD-10418. In providing this advice, the EPA followed the scope of work (see Attachment A) provided by the Department of Planning, Housing and Infrastructure (DPHI).

The EPA has reviewed the following plan:

- Mount Pleasant Operation, Air Quality and Greenhouse Gas Management Plan, prepared by MACH Energy Australia Pty Ltd. (undated).

EPA's comments on the information provided

EPA's review of the plan found it to be generic, not site specific, and lacking in detail to allow the consent holder to:

- Demonstrate that all reasonable and feasible mitigation measures are being implemented to minimise the development's Scope 1 and Scope 2 GHG emissions as required under condition B32.
- Evaluate the performance of the adopted mitigation measures as required under condition B32.
- Assess site's GHG emissions performance against projected emissions and performance measures in condition B36.
- Identify whether additional mitigation measures are required to achieve performance measures in condition B36.
- Evaluate the technical feasibility of implementing all reasonable mitigation measures as it will be required under condition B34.
- Set specific emission reduction targets for the remaining life of the project.
- Show how obligations under the Safeguard mechanism align with the estimated emissions and reduction targets over the life of the project.

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(from outside NSW) NSW 2124 Australia NSW 2150 Australia

EPA's recommendation:

- When preparing a revised version of the plan, the consent holder to consider the EPA's comments and recommendations in Attachment B.

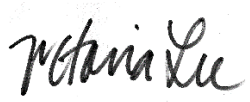
Limitations on the EPA's review of the management plan

This review does not include the air quality component of this management plan. Also, EPA is not commenting on the independent review of the plan that was prepared on 14 December 2023 by Katestone Environmental Pty Ltd.

The consent holder should be aware that the EPA's review of the Air Quality and Greenhouse Gas Management Plan does not constitute or infer EPA's approval of this plan. Furthermore, EPA's review of the plan does not guarantee that its implementation will:

- result in compliance with conditions of the Environment Protection Licence (EPL). The licensee is ultimately responsible for meeting their obligations under the Consent and EPL including the outcomes of the on-site operations, plant maintenance, and implementation of mitigation measures.
- preclude the consent holder to prepare and provide additional information in accordance with requirements under the EPA's regulatory framework.

Yours sincerely



21/10/2024

VICTORIA LEE
Unit Head - Environment Protection Planning
Environment Protection Authority

Air Quality and Greenhouse Gas Management Plan Review

EPA Scope of Work

Mount Pleasant Coal Mine (DA 92/97 and SSD 10418)

Purpose

The purpose of this scope of work is to review the controls and mitigation measures included in the Air Quality and Greenhouse Gas Management Plan (AQGGMP) for improving energy efficiency and reducing greenhouse gas emissions from the development.

Background

MACH Energy Australia Pty Ltd (MACH) owns the Mount Pleasant Coal Mine which is located approximately 4km northwest of Muswellbrook in the Upper Hunter Valley.

Mt Pleasant currently operates under development consent DA92/97 which was originally granted in 1999. In January 2021, MACH lodged the new SSD application, the Mount Pleasant Optimisation Project (SSD 10418), which sought to change the mine design and extend mining operations from 2026 to 2048. The Independent Planning Commission approved this application in September 2022 however it has been held up in legal challenges ever since.

Upon commencement of works under the new development consent (SSD 10418), DA 92/97 would be surrendered.

Management Plan Requirements

The AQGGMP has been prepared to address the requirements of both development consents, particularly Condition 23 of Schedule 3 of development consent DA 92/97 and Condition B32 of development consent SSD 10418.

Following approval of the AQGGMP, the conditions of consent require the Applicant to implement and regularly revise the AQGGMP to reflect operational changes over time. This includes future revisions to incorporate new energy efficiency and greenhouse gas reduction technologies as they become available.

Objectives

The Department is seeking advice on the greenhouse gas abatement measures included in the AQGGMP with respect to the following:

PART A:

For the purposes of providing guidance to the Applicant on the recent policy changes, what updates would be required to the AQGGMP to meet the and the EPA's Climate Change Policy and Climate Action Plan, including the intention for environment protection licence (EPL) holders to implement Climate Mitigation and Adaptation Plans.

Note: any recommendations made by the EPA in this regard will be considered by the Applicant, however may not be enforceable under the existing conditions of consent and may be more appropriate in any requirements under the EPL.

PART B:

Identify any gaps or areas of improvement in the AQGGMP with respect to proposed measures for improving energy efficiency and reducing greenhouse gas emissions from the development, in consideration of the following:

- the independent review of the AQGHGMP, prepared by Katestone Environmental Pty Ltd, commissioned by the Department;

- the Applicant's likely obligations under the EPA's Climate Change Policy and Climate Change Action Plan; and
- the relevant conditions of consent outlined below:

Conditions of Consent

Consent conditions require the Applicant to (inter alia):

- implement all reasonable and feasible measures to improve energy efficiency and minimise the release of scope 1 and scope 2 greenhouse gas emissions from the development;
- ensure best practice management is being employed to improve energy efficiency and minimise the release of scope 1 and scope 2 greenhouse gas emissions from the development; and
- comply with the greenhouse gas performance measures in the below table:

Feature	Performance Measure
Scope 1 (Fugitive Emissions and Diesel Use)	• Less than 0.87 million tonnes CO2-e emitted per calendar year, or lower emissions • Less than 0.80 million tonnes CO2-e emitted per calendar year (5-year rolling average), or lower emissions • Less than 13.9 million tonnes CO2-e emitted over the life of the development, or lower emissions
Scope 2 (Electricity Consumption)	• Minimise CO2-e emissions by using electricity generated by renewable or carbon neutral energy sources where reasonable and feasible

Attachment B: EPA's detailed comments and recommendations

In providing comments and recommendations, the EPA referred to items nominated in the Scope of Works provided in Attachment A. Detailed comments below.

1. ***Consent holder's likely obligations under the EPA's Climate Change Policy and Climate Change Action Plan***

The EPA is currently progressing several actions under its Climate Change Action Plan that will affect licensees in the short to medium term. These actions may include, but are not limited to:

- progressively requiring and supporting licensees to prepare, implement and report on Climate Change Mitigation and Adaptation Plans (CCMAPs). These will ensure that licensees consider how they can minimise their greenhouse gas emissions and exposure to climate risks.
- developing a series of greenhouse gas emission reduction targets and related pathways for key industry sectors that EPA licenses, to help guide the EPA's regulatory effort.
- progressively placing greenhouse gas emission limits and other requirements on licences for key industry sectors, including the potential for enhanced monitoring requirements for key sectors and the possible requirement to contribute to area-based monitoring networks.

The EPA has started to adopt principles and requirements in the *Draft NSW EPA Guide for Large Emitters* (large emitters guide). This document includes guidance on how to identify GHG emissions sources, how to estimate emissions, and considerations to prioritise measures to avoid and reduce emissions and, to set emission reduction goals.

Whilst the large emitters guide currently targets projects involving new developments or modifications to existing activities, GHG emissions estimation and reduction principles can be used to guide the revision of the plan.

EPA recommends:
The plan could be improved by adopting emission reduction principles and setting emission reduction goals in accordance with the large emitters guide.

2. ***Consideration of relevant conditions of consent:***

2.1. Implement all reasonable and feasible measures to improve energy efficiency and minimise the release of scope 1 and scope 2 greenhouse gas emissions from the development

2.1.a Justification of adopted mitigation measures

Selection of feasible mitigation measures should be informed by site-specific conditions, engineering constraints and any obligations or proactive commitments to reduce emissions.

The plan does not include feasibility evaluation process that was used to assess the adequacy of the adopted measures. The current version of the plan does not clearly demonstrate that all reasonable and feasible measures are being adopted.

A summary of the adopted Scope 1 mitigation measures for the operations is included in Table 23 of the plan. These measures focus on optimising processes and reducing diesel use. The methodology to evaluate the adequacy or effect of their implementation is not provided.

It is unclear whether all feasible and reasonable measures to reduce Scope 2 emissions have been evaluated. The plan specifies that a 99.75 kW rooftop solar system was installed in 2023. However, it does not discuss its effect on reducing projected Scope 2 emissions.

It is also noted that the Response to Submission letter[1] indicated that the feasibility of installing a floating solar farm on the Mine Water Dam to provide an on-site source of renewable energy (reducing Scope 2 emissions) was being investigated. Yet, no additional information relevant to this was included in the plan.

The plan could evaluate and include the effect of achieving rehabilitation targets throughout the project's life.

EPA recommends:

- The plan could be improved by including information on how the adopted mitigation measures for all sources were evaluated. Consideration could be given to how the measures are:
    - reflective of best practice
    - in line with national and international industry emission reduction practices
- Where the highest level of control is not being adopted, nominate the existing constraints for their implementation. Any listed constraints should be documented as part of the consent holder's evaluation and re-considered during the preparation of future revisions of the plan.

2.1.b Project's baseline and information that could be used to evaluate reasonable and feasible measures

The plan indicates that in accordance with Condition of Consent B34, revised versions of the plan will investigate and implement all reasonable and feasible abatement measures. However, additional information should be provided by the consent holder to identify and prioritise tangible actions to be implemented in the future.

To identify, evaluate and implement all reasonable and feasible abatement measures required under condition B34, the consent holder could be encouraged to:

i. Use conclusions in the fugitive gas assignment model to nominate the total number of domains, zones within each domain, gas content and composition within each zone.

ii. Undertake a desktop modelling assessment of potentially drainable coal seams to assess the effect on reducing the peak emissions. This information should be used to benchmark projected fugitive emissions provided in the Response to Submission letter[4].

iii. Commit to investigate and trial the feasibility to pre-drain gas. Feasibility should focus on what is technically possible to be implemented at the premises from an engineering perspective.

iv. Undertake an assessment of the current technology readiness and commercial readiness of alternative power sources to diesel for its mining operations.

v. Investigate on-site renewable energy generation and energy efficiency measures.

EPA recommends:

- The plan could be improved by including site specific, measurable, auditable objectives and performance indicators to evaluate the implementation of all reasonable and feasible measures as it will be required under condition B34 of the consent.
- The consent holder could be encouraged to action items i – v above. Findings and conclusions could be used to inform and evaluate targeted actions and implement all reasonable and feasible measures to reduce GHG emissions and during the preparation of future assessments.

[1] Mount Pleasant Optimisation Project – Greenhouse Gas emissions, prepared by MACH Energy Australia Pty Ltd., dated 31 March 2022.

2.2. Ensure best practice management is being employed to improve energy efficiency and minimise the release of scope 1 and 2 greenhouse gas emissions from the development

Mitigation measures in the plan referred to the efficient use of diesel and optimising on-site operations. It is reasonable to expect that diligent and ongoing implementation of this approach can result in a reduction of GHG emissions. However, there is no information regarding specific, measurable, auditable objectives and performance indicators that will help inform and evaluate adequacy of the mitigation measures, the effect of their implementation, and prioritise areas of improvement.

The plan does not include GHG emissions estimates for the life of the project, including the projected emissions that can be used to benchmark annual emissions during the project's life. This is critical to:

- evaluate the ongoing emissions performance of the operations.
- identify and prioritise changes to mitigation measures to reduce emissions as much as practicable.

EPA recommends:
The plan could be improved by including:

- the estimated emissions for the project's life.
- a description of the process used for recording and storing data to evaluate the site's emissions against the projected emissions and performance measures in condition B36.
- the criteria developed to verify and determine whether additional measures could be implemented.

2.3. Comply with the greenhouse gas performance measures

The EPA does not currently set emissions limits or monitoring requirements for regulatory purposes. The EPA highlights that the performance measures specified in condition of consent B36 were not provided by the EPA.

The EPA understands that the consent holder is to evaluate their performance against these measures. Based on EPA's review, the plan does not provide detailed information on how on-site emissions will be recorded, stored and evaluated against the performance measures in condition B36.

The EPA is currently progressing several actions under its Climate Change Action Plan that will affect licensees in the short- to medium- term. Including, (but are not limited to) developing emission reduction targets and progressively placing emissions limits and other requirements on licences for key industry sectors. Thus, the Consent holder is encouraged to nominate key performance indicators that will be recorded and used to evaluate on-site emissions.

EPA recommends:
The plan could be improved by:

- nominating key performance indicators that will be recorded and used to evaluate on-site emissions against performance measures in condition B36.
- detailing and justifying the criteria developed to verify and determine whether additional measures could be implemented.

APPENDIX D

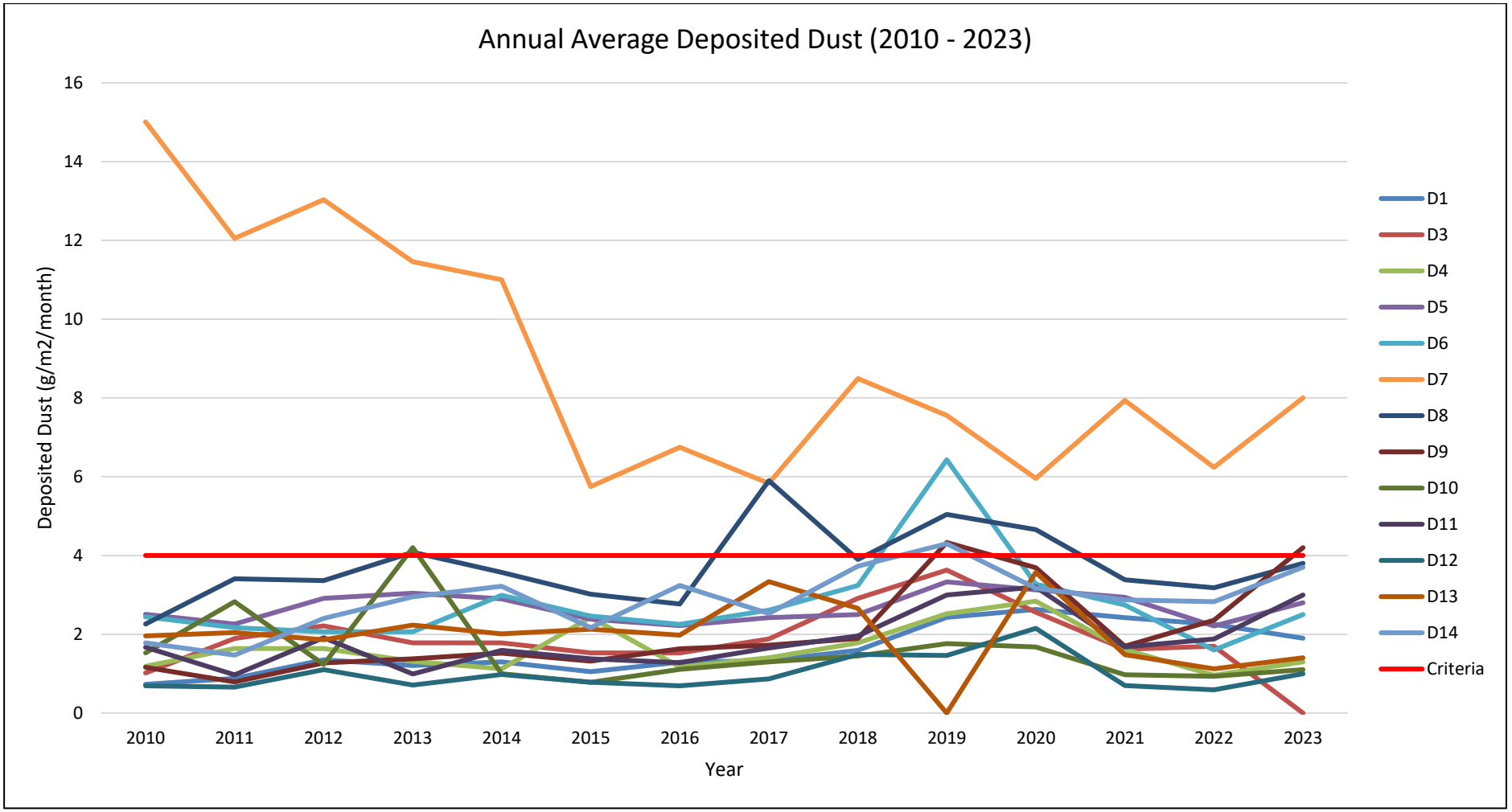
DUST DEPOSITION MONITORING RESULTS (2010 – 2023)

Annual Average Dust Deposition (g/m^2/month)														
Year	**Dust Deposition Gauge**													**Criteria**
	D1	**D3a**	**D4**	**D5**	**D6**	**D7b**	**D8**	**D9a**	**D10**	**D11**	**D12**	**D13**	**D14**	
2010	0.73	1.02	1.19	2.51	2.44	15.01	2.26	1.16	1.53	1.67	0.69	1.96	1.78	4.0
2011	0.88	1.89	1.64	2.26	2.17	12.05	3.41	0.79	2.83	0.97	0.66	2.04	1.47	4.0
2012	1.35	2.21	1.64	2.91	2.06	13.03	3.36	1.27	1.23	1.91	1.10	1.86	2.40	4.0
2013	1.21	1.78	1.31	3.04	2.06	11.46	4.08	1.38	4.20	0.99	0.71	2.23	2.95	4.0
2014	1.30	1.78	1.12	2.90	2.99	11.00	3.57	1.52	1.00	1.59	0.98	2.01	3.22	4.0
2015	1.05	1.53	2.43	2.38	2.46	5.75	3.02	1.32	0.78	1.38	0.78	2.13	2.17	4.0
2016	1.29	1.53	1.17	2.22	2.25	6.75	2.77	1.63	1.11	1.28	0.69	1.98	3.24	4.0
2017	1.33	1.88	1.40	2.42	2.61	5.83	5.90	1.72	1.30	1.65	0.87	3.34	2.53	4.0
2018	1.59	2.91	1.78	2.50	3.24	8.49	3.90	1.89	1.45	1.96	1.49	2.66	3.73	4.0
2019	2.43	3.63	2.52	3.33	6.43	7.56	5.04	4.33	1.76	3.00	1.46	N/A	4.30	4.0
2020	2.63	2.56	2.84	3.13	3.27	5.96	4.66	3.69	1.68	3.20	2.15	3.57	3.17	4.0
2021	2.42	1.62	1.61	2.94	2.74	7.94	3.38	1.70	0.97	1.68	0.70	1.48	2.87	4.0
2022	2.25	1.70	0.96	2.21	1.60	6.24	3.18	2.36	0.93	1.88	0.59	1.12	2.83	4.0
2023	1.90	-	1.30	2.80	2.50	8.00	3.80	**4.20**	1.10	3.00	1.00	1.40	3.70	4.0
Average	**1.60**	**2.00**	**1.64**	**2.68**	**2.77**	**8.93**	**3.74**	**2.07**	**1.56**	**1.87**	**0.99**	**2.14**	**2.88**	-

Notes:

1 Site D7b is located in close proximity to the northern boundary of the Bengalla Mine main pit and is heavily influenced by Bengalla Mine operations. Additionally, there are no privately-owned receivers in the vicinity of the site. As such, this site will continue to be monitored but will not be used to assess compliance or to represent residential receivers in the area.

- Red cells indicate values greater than the long term dust deposition criteria (for all sources) of 4 g/m^2/month.


Annual Average Deposited Dust (2010 - 2023)
Deposited Dust (g/m2/month)
16
14
12
10
8
6
4
2
0
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
Year
D1
D3
D4
D5
D6
D7
D8
D9
D10
D11
D12
D13
D14
Criteria

APPENDIX E

RELEVANT SENSITIVE RECEPTOR LOCATIONS

Table E1
Relevant Sensitive Receptor Locations

ID	Landholders	Structure Type	Easting (m)	Northing (m)
4	JR SCRIVEN	Dwelling	299202	6425195
6	MUSWELLBROOK RACE CLUB LTD	Commercial	298605	6426135
19	DP ENGLEBRECHT	Dwelling	299120	6426779
20	KB & JA BARNETT	Dwelling	298866	6426826
21	MJ MCGOLDRICK	Dwelling	298804	6426823
35	C HORNE	Dwelling	299980	6428580
35b	C HORNE	Dwelling	299986	6428649
43	JB MOORE	Dwelling	292318	6429012
43b	JB MOORE	Dwelling	291384	6428700
45	BA & TE STRACHAN	Dwelling	291263	6428277
47	BL & ML BATES	Dwelling	291276	6429615
67	PN SIMPSON	Dwelling	299896	6429202
77	BE & WB WHITEHEAD	Dwelling	300332	6429501
79	MH RAY	Dwelling	300572	6429448
82	AK BIRCH	Dwelling	301020	6429170
83	LG & CM KELMAN	Dwelling	300956	6429298
84a	GE PITMAN	Dwelling	300800	6429358
84b	GE PITMAN	Dwelling	291180	6437472
86a	COWTIME INVESTMENTS PTY LTD	Dwelling	300342	6429734
86b	COWTIME INVESTMENTS PTY LTD	Dwelling	301865	6431879
102	AJPS MATHER	Dwelling	299829	6430440
108	JS GIBSON	Dwelling	299715	6430470
112	BD BARRY	Dwelling	299566	6430447
118	JM & CA HAYES	Dwelling	299655	6430627
120	DL & PA MOORE	Dwelling	299721	6430731
121	CM & JM MOORE	Dwelling	299656	6430778
136	DG YORE	Dwelling	300336	6432453
140a	DAPKOS PTY LTD	Dwelling	300978	6433030
205	DAPKOS PTY LTD	Commercial	301126	6431439
140c	DAPKOS PTY LTD	Dwelling	301236	6431474
143a	JS & NM LONERGAN	Dwelling	299928	6434457
143b	JS & NM LONERGAN	Dwelling	299209	6435244
147	MJ & RG ADNUM	Dwelling	299165.34	6434674
153a	EM LEECE	Dwelling	295898	6435444
154	PD & F STANDING	Dwelling	298537	6435520
154b	PD & F STANDING	Dwelling	298530	6435540
156a	JE LONERGAN	Dwelling	298882	6435173
156b	ST, JE & JM LONERGAN, LA PARKES & PM HOWARD	Dwelling	289455	6428815
157a	RB PARKINSON	Dwelling	298965	6434977
157b	RB PARKINSON	Dwelling	289024	6427910
159	JE & MS DUCEY	Dwelling	299127	6435011
169	L GREENSILL and J WATTUS	Dwelling	298868	6436638
171	L GREENSILL and J WATTUS	Dwelling	299038	6436955
172	RL & CE THOMPSON	Dwelling	299157	6437224
172b	RL & CE THOMPSON	Dwelling	299167	6437280
172c	RL & CE THOMPSON	Dwelling	299380	6437633

ID	Landholders	Structure Type	Easting (m)	Northing (m)
310	RL & CE THOMPSON	Dwelling	299130	6437280
173	TL KING and JA WARD	Dwelling	298878	6437773
174	TJ & ML POWER	Dwelling	298908	6437676
175	TJ & ML POWER	Dwelling	298928	6437622
175b	TJ & ML POWER	Dwelling	298907	6437621
176	JAF & LA ALLAN	Dwelling	298988	6437509
177	FW & HM & SA WHEATLEY	Dwelling	298731	6438046
178	PA NEELY	Dwelling	299347	6438053
179	F.A. WHEATLEY & SON PTY LTD	Dwelling	299191	6438159
180	F.A. WHEATLEY & SON PTY LTD	Dwelling	299230	6438233
180b	F.A. WHEATLEY & SON PTY LTD	Dwelling	299562	6438055
180c	F.A. WHEATLEY & SON PTY LTD	Dwelling	299444	6438872
181	K.L. & H.R. DAY PTY LTD	Dwelling	300474	6437756
181c	K.L. & H.R. DAY PTY LTD	Dwelling	300023	6437409
182	JG & AJ SADLER	Dwelling	300849	6437839
189	OB O'BRIEN	Dwelling	301236	6434698
190	OB O'BRIEN	Dwelling	301113	6434682
191	JA & JE FIBBINS	Dwelling	301421	6434533
192	IG & CW INGLE	Dwelling	301290	6434531
193	GM & KL SMITH	Dwelling	301529	6434365
311	GM & KL SMITH	Dwelling	301388	6434419
193c	GM & KL SMITH	Dwelling	302406	6433964
194	TC & JBA HARRIS	Dwelling	302021	6433456
195	T & RK YOUNG	Dwelling	302121	6432949
196	T & RK YOUNG	Dwelling	302234	6432240
197	T & RK YOUNG	Dwelling	302117	6432365
195d	T & RK YOUNG	Dwelling	302170	6432128
195e	T & RK YOUNG	Commercial	302034	6432899
198	TJ & NP GOLDRICK	Dwelling	301994	6431847
199	NA BURLING	Dwelling	302094	6431842
200	R EASTON	Dwelling	302258	6431847
202	DN RAPHAEL	Dwelling	301546	6431292
202b	DN RAPHAEL	Dwelling	301940	6431205
203	RF & MA MILLARD	Dwelling	301451	6431324
203b	RF & MA MILLARD	Dwelling	301482	6431298
206	WJ HARDES	Dwelling	299806	6427069
207	SW & KL BARKLEY	Dwelling	299389	6426888
212	DR & CJ TUBB	Dwelling	299568	6426381
212b	DR & CJ TUBB	Dwelling	299544	6426341
213	ENGLEBRECHT RACING STABLES PTY LTD	Dwelling	299175	6426554
214	AL THOMSON-WEIR and RC WEIR	Dwelling	299183	6426574
215	WJ & CB MCINTOSH	Dwelling	299184	6426607
216	NJ KEEVERS	Dwelling	299187	6426634
216b	NJ KEEVERS	Dwelling	299215	6426621
217	RRA FARNSWORTH	Dwelling	299192	6426663
218	SY JOHNSON	Dwelling	299137	6426583
219	GL & KL ANDREWS	Dwelling	299139	6426600
220	RA BYRNES and MA MOLLER	Dwelling	299144	6426635
221	TD BARRON	Dwelling	299150	6426680
222	ML & EA SWEENEY	Dwelling	299154	6426716

ID	Landholders	Structure Type	Easting (m)	Northing (m)
223	MC & LJ DOBIE	Dwelling	299125	6426722
223b	MC & LJ DOBIE	Dwelling	299113	6426701
224	DL ROBINSON	Dwelling	299097	6426732
225	MR CRANFIELD and JR GLEESON	Dwelling	299204	6426692
249	TW ROOTS	Dwelling	290948	6423468
252	RM & KF MERRICK	Dwelling	289457	6424899
258a	NJ & RY ELLIS	Dwelling	291000	6426441
258c	NJ & RY ELLIS	Dwelling	290978	6426456
259	MR PEEL	Dwelling	290868	6426152
259b	MR PEEL	Dwelling	290771	6426234
260	PSJ MURRAY	Dwelling	291002	6426002
261	PR ELLIS	Dwelling	290650	6425665
271	DE KILGANNON and DS MACDOUGALL	Dwelling	289009	6434418
272	GC SPARRE	Dwelling	290603	6433696
272b	GC SPARRE	Dwelling	290597	6433720
273	IJ & CM RICHARDS	Dwelling	289237	6435180
273b	IJ & CM RICHARDS	Dwelling	289270	6434795
285	THE NEW SOUTH WALES GREYHOUND BREEDERS OWNERS & TRAINERS ASSOCIATION LTD	Commercial	300280	6427411
287	TELSTRA CORPORATION LTD	Commercial	300454	6427537
288	LA & JM WEBSTER	Dwelling	300479	6427545
288b	LA & JM WEBSTER	Dwelling	300493	6427559
289	RA & EA LAWMAN	Dwelling	300328	6428692
292	GR & MK WALSH	Dwelling	290611	6422527
292b	GR & MK WALSH	Dwelling	290459	6422499
302a	MJ & MJ DUNCAN	Dwelling	290914	6421267
302c	MJ & MJ DUNCAN	Dwelling	290718	6421463
305	RH ENGLEBRECHT	Commercial	299173	6426508
401	JL & DG DAY	Dwelling	289649	6437858
402	PC BRITTAN	Dwelling	290201	6438459
404	JL, DG & RW DAY	Dwelling	290589	6437642
405	GL & JL DANIELS	Dwelling	292459	6439852
406	LE & SB HOLDSWORTH	Dwelling	291408	6439011
407	AD LONERGAN	Dwelling	291736	6437533
408	SN BATEMAN	Dwelling	300656	6440603
409	AP CORLISS	Dwelling	294094	6439216
410a	V BATEMAN	Dwelling	300631	6440563
410b	V BATEMAN	Dwelling	300610	6440560
411a	DL CADDEY	Dwelling	294623	6439788
411b	DL CADDEY	Dwelling	294701	6439774
411c	DL CADDEY	Dwelling	294939	6439950
412	JA BAILEY	Dwelling	300573	6440442
413b	MJH LUMBY	Dwelling	288465	6437096
414a	PG LUCK	Dwelling	300751	6440513
415	SJ FRANKLAND	Dwelling	288448	6436265
417	M & JA CASTELLANA	Dwelling	288300	6435593
418	PB WATTS	Dwelling	287814	6435336
418b	PB WATTS	Dwelling	287964	6435284
419	KM BATES and TG WOODS	Dwelling	288703	6436630

ID	Landholders	Structure Type	Easting (m)	Northing (m)
421	GW RICHARDS	Dwelling	289314	6435713
422a	ME DANIELS	Dwelling	297505	6438903
422c	ME DANIELS	Dwelling	292052	6440193
428	JM GOWING	Dwelling	297359	6439377
429a	JJ, KP, & MD COLLINS and ML WILLIAMSON	Dwelling	297808	6439616
430	DJ HULBERT	Dwelling	297849	6439727
431a	GJ DAY	Dwelling	300058	6439816
431b	GJ DAY	Dwelling	299476	6439794
432	KL CONE, REN ADAM & TR ADAM	Dwelling	299493	6439313
433	CJ ASHFORD and JP BRENNAN	Dwelling	299413	6439062
434	GJ & RL JONES	Dwelling	299588	6438940
434b	GJ & RL JONES	Dwelling	299533	6439471
436	MEDEGATE PTY LTD	Dwelling	299863	6438778
437	BG & S CANVIN	Dwelling	299729	6438830
438	WALFERTAN PROCESSORS PTY LIMITED	Dwelling	302429	6440644
440a	DARLEY AUSTRALIA PTY LTD	Dwelling	303777	6440030
440b	DARLEY AUSTRALIA PTY LTD	Dwelling	303810	6440026
440c	DARLEY AUSTRALIA PTY LTD	Dwelling	304527	6439929
440d	DARLEY AUSTRALIA PTY LTD	Dwelling	304322	6440005
440e	DARLEY AUSTRALIA PTY LTD	Dwelling	304249	6440021
440f	DARLEY AUSTRALIA PTY LTD	Dwelling	303736	6440339
440g	DARLEY AUSTRALIA PTY LTD	Dwelling	304063	6439958
441	MACQUEEN PROJECTS PTY LTD	-	301154	6438223
442	WJ BOURKE	Dwelling	304683	6437541
443	K & RG BRADLEY	Dwelling	301121	6438168
451	GK & HM SANSOM	Dwelling	303247	6434331
452	AJR MADDEN	Dwelling	303395	6431851
453a	SC & ME DEVER	Dwelling	288345	6434693
453b	SC & ME DEVER	Dwelling	288307	6434751
454	AP & PE MCMANUS	Dwelling	287912	6434470
455	RP KEAST	Dwelling	286340	6434252
456	GT KEAST	Dwelling	286641	6434111
456b	GT KEAST	Dwelling	286650	6434092
458	HJ WRIGHT	Dwelling	288254	6433349
460	RG GOWING	Dwelling	286411	6430732
460b	RG GOWING	Dwelling	286350	6430974
462a	SH JENNAR	Dwelling	286648	6429789
462b	SH JENNAR	Dwelling	286662	6429918
462c	SH JENNAR	Dwelling	286664	6429905
464	KL BALMER and JL SMITH	Dwelling	289097	6428232
465	FN & WL GOOGE	Dwelling	288366	6427931
466	GT MCNEILL	Dwelling	289103	6426847
467	AR & F FLETCHER	Dwelling	290367	6427991
467b	AR and F FLETCHER	-	290362	6428029
468a	S.R. & J.W. LAWSON (LINDISFARNE) PTY LTD	Dwelling	288665	6422488
468b	S.R. & J.W. LAWSON (LINDISFARNE) PTY LTD	Dwelling	288416	6422514
468c	S.R. & J.W. LAWSON (LINDISFARNE) PTY LTD	Dwelling	288743	6422667
470	JI & PJ BROWN	Dwelling	289351	6423345
471	PJ BROWN	Dwelling	289165	6423423
472a	JDM MARKHAM	Dwelling	289360	6423043

ID	Landholders	Structure Type	Easting (m)	Northing (m)
472b	JDM MARKHAM	Dwelling	289390	6423191
472c	JDM MARKHAM	Dwelling	289154	6422757
474	AA & BT MEYER	Dwelling	289062	6422372
475	EJ & CA DENTON	Dwelling	290869	6421541
475b	EJ & CA DENTON	Dwelling	290870	6421557
476	LA & CA MACPHERSON	Dwelling	289424	6420978
477a	MW TURNER	Dwelling	290064	6421064
477b	MW TURNER	Dwelling	290021	6421067
481	RL WILKS	Dwelling	288731	6420218
482	DJ PHILLIPS	Dwelling	288291	6420169
483	RW JONES	Dwelling	287961	6420256
484	TR & KM PAULSEN	Dwelling	288865	6419989
485a	PR & M BURGMANN	Dwelling	288070	6419004
485b	PR & M BURGMANN	Dwelling	288065	6419050
485c	PR & M BURGMANN	Dwelling	287991	6419081
485d	PR & M BURGMANN	Dwelling	287936	6419095
485e	PR & M BURGMANN	Dwelling	287940	6419101
490	RL GORDON	Dwelling	295469	6440374
490	CR and HM GOODSELL	Dwelling	295927	6440522
492	BJ and K FLAHERTY	Dwelling	296874	6440609
494	DAVHAM NOMINEES PTY LIMITED	Dwelling	297697	6440526
495a	DAVHAM NOMINEES PTY LIMITED	Dwelling	297490	6440531
495b	RW DAVIS	Dwelling	297307	6440734
496a	RW DAVIS	Dwelling	297413	6440820
496b	RW DAVIS	Dwelling	297448	6440787
496c	RD and TL JONES	Dwelling	299595	6440475
499	GWRD HOLDINGS PTY LIMITED	Dwelling	299549	6440260
500	JW TAYLOR	Dwelling	299518	6440043
501a	RL GORDON	Dwelling	295469	6440374
502a	LC SCOWEN	Dwelling	299525	6440537
502b	LC SCOWEN	Dwelling	299575	6440542
502c	LC SCOWEN	Dwelling	299598	6440534
504a	MT O'CONNELL	Dwelling	299827	6440661
504b	MT O'CONNELL	Dwelling	299849	6440673
505	GC O'HARA	Dwelling	300012	6440495
506	RP and SA WITHERS	Dwelling	300054	6440492
507a	MJ and NJ ORMSBY KELAHER	Dwelling	300091	6440496
507b	MJ and NJ ORMSBY KELAHER	Dwelling	300176	6440541
508	VG FOSTER	Dwelling	299810	6440203
509	GJ DAY and J WATTUS	Dwelling	300258	6440669
510	SG and YR WILKS	Dwelling	300185	6440043
511	CL and DJ CLYDSDALE	Dwelling	299817	6440019
513	DC and GJ WILTON	Dwelling	300618	6440648
515a	JA and SB REICHEL	Dwelling	303771	6435159
515b	JA and SB REICHEL	Dwelling	304395	6435587
516	MP CLIFFORD	Dwelling	304535	6436159
517	FL and JC COLEMAN	Dwelling	304772	6434939
518	VM FRENCH	Dwelling	305208	6433773
519	GL and KR HAYDEN	Dwelling	304636	6435454
522a	BJ and VR PASSLOW	Dwelling	303468	6431491

ID	Landholders	Structure Type	Easting (m)	Northing (m)
522b	BJ and VR PASSLOW	Dwelling	301251	6429626
522c	BJ and VR PASSLOW	Dwelling	301256	6429585
522d	BJ and VR PASSLOW	Dwelling	301266	6429599
526	LG WICKS	Dwelling	300537	6429477
527	DJ & GH CORK	Dwelling	300600	6428695
528	AS CHICK	Dwelling	300622	6428693
529	TH HAMILTON and AM SMITH	Dwelling	300641	6428693
530	SC & NJ BULLARD and JM HARRISON	Dwelling	300678	6428689
531	GJ & EA MUNZENBERGER	Dwelling	300678	6428670
532	VL ROSE	Dwelling	300677	6428649
533	MJ BROWN	Dwelling	300673	6428627
534	EE MARKS	Dwelling	300673	6428611
535	GL & DN HORTON	Dwelling	300665	6428593
536	LJ CUMMINS	Dwelling	300665	6428573
537	RJ & SJ FARLEY	Dwelling	300664	6428556
538	KD POWER and T VERO	Dwelling	300511	6427651
539	PH CURTAIN and CA SINGLETON	Dwelling	300540	6427645
540	GRENTELL PTY LTD	Commercial	300569	6427621
541	JG HINDER and VG MATHEWS	Dwelling	300560	6427606
542	PE & GJ CHAPMAN	Dwelling	300550	6427597
543	SM CROUCH	Dwelling	300534	6427590
544	DS & RM NEWTON	Dwelling	300523	6427578
545	JA GREEN	Dwelling	300509	6427568
546	SJ SCOTT	Commercial	300302	6427587
547	LA & FK & G BRYANT	Dwelling	302122	6433354