Appendix F
Noise and Blasting Impact Assessment

Boggabri Coal Mine Modification 10

Noise and Blasting Impact Assessment

Prepared for Xenith Consulting Pty Ltd

May 2025

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Noise and Blasting Impact Assessment

Xenith Consulting Pty Ltd

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Approved by



Ryan Bruniges
Associate Acoustics Consultant
19 May 2025

Level 3 175 Scott Street
Newcastle NSW 2300
ABN: 28 141 736 558

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ABN: 28 141 736 558

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1 Introduction

1.1 Background

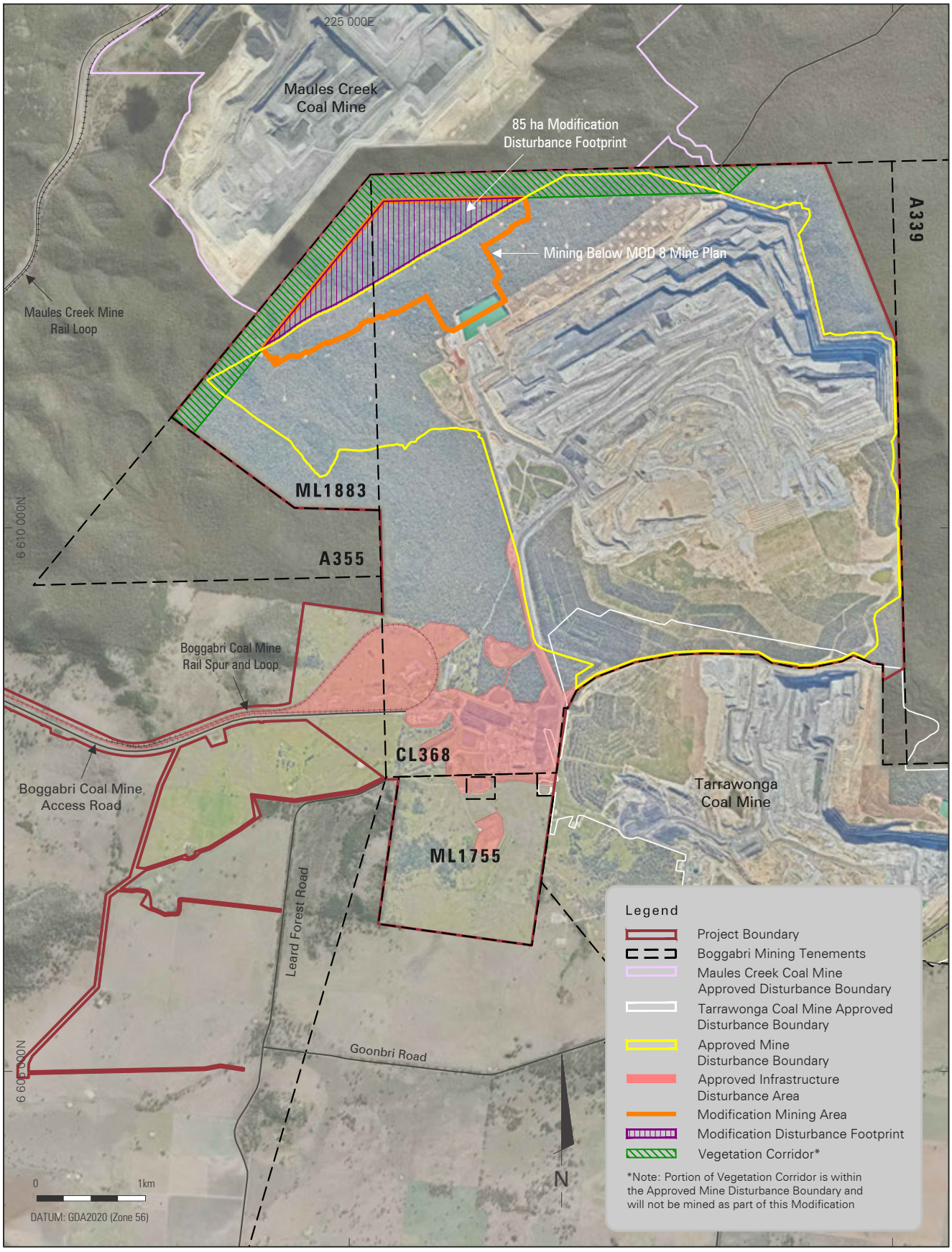
EMM Consulting Pty Limited (EMM) has been commissioned by Xenith Consulting Pty Ltd (Xenith) (formerly James Bailey & Associates Pty Ltd (JBA)) on behalf of Boggabri Coal Operations Pty Limited (BCOPL) to undertake a Noise and Blasting Impact Assessment (NBIA) of proposed changes to the approved operations at the Boggabri Coal Mine (BCM) (MOD 10). The NBIA will be appended to a Modification Report being prepared by Xenith in support of an application to modify the BCM approval (State Significant Development (SSD) approval 09_0182) under Section 4.55(2) of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

BCM is located approximately 15 kilometres (km) north-east of Boggabri in the Gunnedah Basin of New South Wales (NSW) and is located wholly within the Narrabri Local Government Area (LGA). BCM is part of the Boggabri, Tarrawonga, Maules Creek Coal Mining Complex (BTM Complex) and is immediately adjacent to the Tarrawonga Coal Mine to the south and Maules Creek Coal Mine to the north.

MOD 10 to SSD 09_0182 proposes the continuation of mining operations at BCM towards the north-west beyond the approved Mine Disturbance Boundary but entirely within the existing Project Boundary. The additional mining area proposed by MOD 10 is illustrated on Figure 1.1. Key parameters for the Modification include:

- the continued recovery of coal to the Templemore Coal Seam within the existing Mine Disturbance Boundary recovering up to 15.4 Million tonnes (Mt) (approximate) of additional Run of Mine (ROM) coal resource
- the progression of mining operations into the Modification Disturbance Footprint to enable the recovery of an additional 14.5 Mt of ROM coal down to the Templemore Coal Seam
- disturbance to an additional 85 hectares (ha) of land within the Project Boundary, maintaining the existing Vegetation Corridor as conditioned in SSD 09_0182
- extension to the life of mining operations by four years until the end of 2040
- amendments to the Conceptual Final Landform design resulting from the additional mining proposed.

There are no proposed changes to the currently approved mining methods, annual ROM coal extraction rate of up to 8.6 Million tonnes per annum (Mtpa), the operational workforce, nor the coal seams approved to be mined at BCM. Further to this, MOD 10 does not seek to change the approved operational hours, mining related infrastructure, water management system, coal handling and processing, transport methods and rates or access to the mine site.



JBA 2281 BCM MOD10_Conceptual Modification Layout (20/03/2025)

BOGGABRI COAL MINE MODIFICATION

Conceptual Modification Layout

1.2 Assessment approach

The primary objective of this NBIA is to evaluate whether BCM, including the changes sought by MOD 10 can continue to operate in accordance with the approved noise and blasting criteria prescribed in SSD 09_0182.

The last major NBIA undertaken for BCM was the BCM MOD 8 Amendment Noise Impact Assessment (EMM, 2022) (the 2022 NIA). This NBIA has been prepared using generally the same assessment approach as the 2022 NIA.

The following assessments are considered in this report:

- operational noise
- private land area assessment
- maximum noise level event assessment
- low frequency noise
- cumulative noise
- blasting assessment.

There is no change to mine related traffic or rail volumes associated with MOD 10 apart from the proposed increased mine life; therefore, no change in road or rail noise impact relative to the Approved Development should occur. Road and rail noise has not been discussed further in this report.

1.3 Policy and guidelines

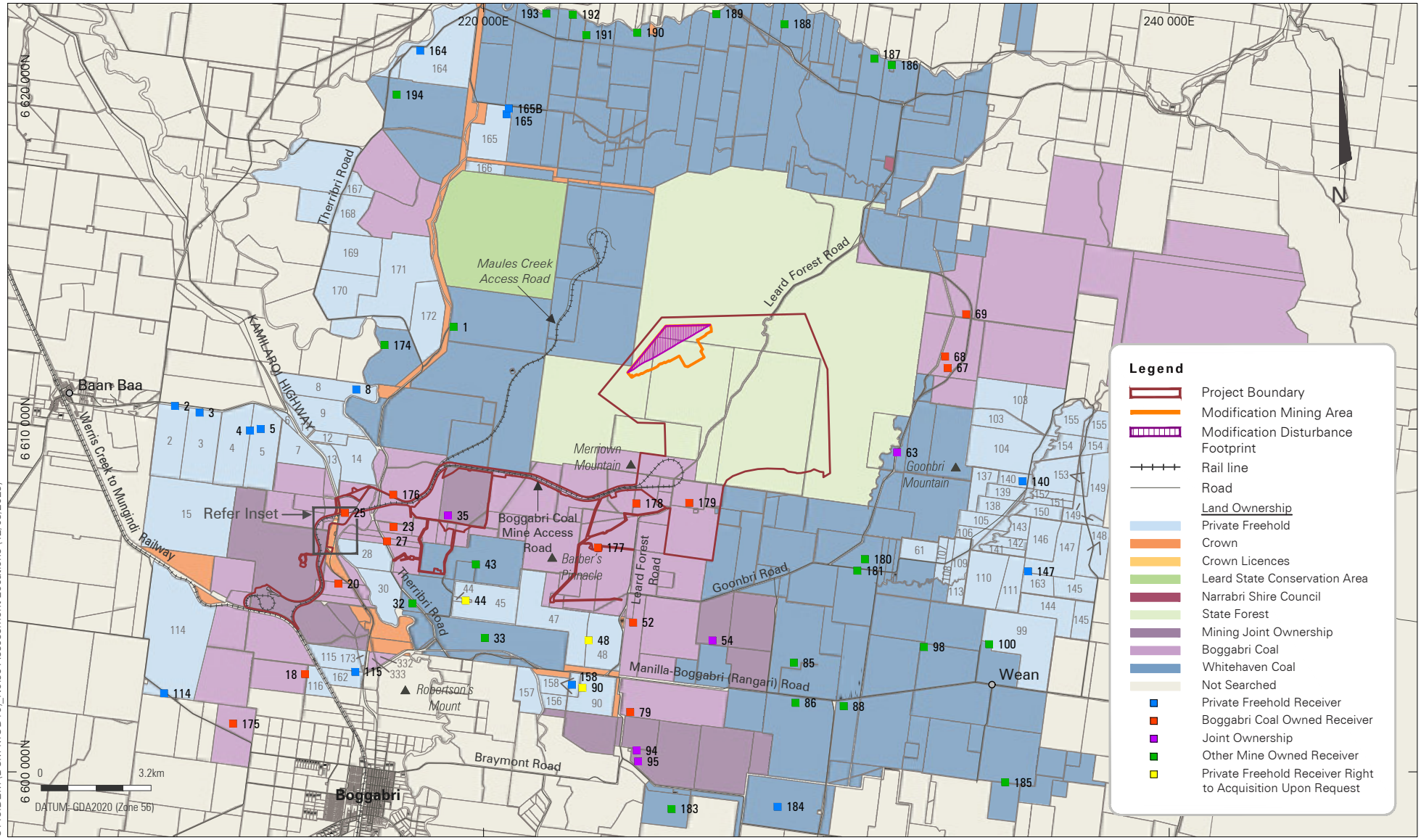
Technical policy and guidelines relevant to the assessment of industrial and transport noise in NSW include:

- Noise Policy for Industry (NPfI) (EPA, 2017)
- Interim Construction Noise Guideline (ICNG) (DECCW[1], 2009)
- Voluntary Land Acquisition and Mitigation Policy for State Significant Mining, Petroleum and Extractive Industry Developments (VLAMP) (NSW Government, 2018)
- Road Noise Policy (RNP) (DECCW, 2011)
- Rail Infrastructure Noise Guideline (RING) (EPA, 2013)
- Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration (ANZEC, 1990)
- AS 2187.2-2006 'Explosives – Storage and use – Part 2: Use of explosives' (Standards Australia, 2006)
- Imperial Chemical Industries (ICI) Explosives Blasting Guide, (ICI Technical Services, 1995).

[1] Now the Environment Protection Authority.

1.4 Assessment locations

Noise assessment locations (including privately owned receivers) that have been considered in this assessment are shown in Figure 1.2 and detailed in Appendix C.



3115IDEM (BCM MOD10)_Noise Assessment Locations (12/05/2025)

BOGGABRI COAL MINE MODIFICATION

Assessment Locations

2 Existing noise and blasting performance

2.1 Compliance history

Compliance monitoring for BCM has comprised routine monthly surveys. An assessment of recent monitoring data from 2019 up until the end of 2024 demonstrates that operations have been compliant with noise criteria. There have been no measured noise non-compliances in this period.

Table 2.1 Summary of noise measurements (2019–2024)

Total measurements ($L_{Aeq,15minute^v}$)	216
Total measurements ($L_{A1,1minute}$)	216
Total number of non-compliances ($L_{Aeq,15minute}$)	Nil
Total number of non-compliances ($L_{A1,1minute}$)	Nil
Percentage of non-compliant measurements ($L_{Aeq,15minute}$)	0%
Percentage of non-compliant measurements ($L_{A1,1minute}$)	0%

Table 2.2 Yearly breakdown of noise measurements

	2019	2020	2021	2022	2023	2024
Total measurements ($L_{Aeq,15minute}$)	36	36	36	36	36	36
Total measurements ($L_{A1,1minute}$)	36	36	36	36	36	36
Total number of non-compliances ($L_{Aeq,15minute}$)	0	0	0	0	0	0
Total number of non-compliances ($L_{A1,1minute}$)	0	0	0	0	0	0
Percentage of non-compliant measurements ($L_{Aeq,15minute}$)	0%	0%	0%	0%	0%	0%
Percentage of non-compliant measurements ($L_{A1,1minute}$)	0%	0%	0%	0%	0%	0%

2.2 Blast performance

Blasting at BCM is undertaken in accordance with the approved BCM Blast Management Plan (BMP). Airblast overpressure and ground vibration is monitored for each blast at BCM. A review of blast monitoring performance from 2019 up until the end of 2024 (a total of 765 blasts) showed blast emissions from site satisfied vibration and overpressure limits (specified within SSD 09_0182) for all blasting events, with the exception of two blasts in June and August 2019. The overpressure limit of 120 dB(L) was exceeded by 3 dB(L) on both occasions. These non-compliant measurements account for a small percentage of the monitoring dataset and demonstrate that there are no sustained exceedances.

2.3 Complaint history

The number of noise and blasting complaints received by BCM per year since 2019 is provided in Table 2.3.

Table 2.3 Noise complaints

Year	Noise complaints	Blasting complaints
2019	0	0
2020	1	2
2021	0	2
2022	0	2
2023	0	0
2024	0	0

3 Criteria

BCM is committed to managing noise emissions from its operations to maintain compliance with the approved noise criteria. Therefore, noise criteria set out in SSD 09_0182 (as modified) have been adopted for assessment of noise impact in this NBIA.

3.1 Approved noise criteria

Schedule 3, Conditions 1 to 14 of SSD 09_0182 outline environmental performance conditions pertaining to noise.

3.1.1 Noise mitigation criteria and acquisition upon request

Table 2 within Condition 4 of Schedule 3 of SSD 09_0182 lists private assessment locations entitled to mitigation or acquisition determined via an independent noise impact assessment at the request of the landowner. Maximum predicted noise levels for the privately owned assessment locations with acquisition rights within SSD 09_0182 are reproduced in Table 3.1.

Table 3.1 Maximum predicted noise levels dB(A)

Location Property / ID	Day $L_{Aeq,15minute}$	Evening $L_{Aeq,15minute}$	Night $L_{Aeq,15minute}$	Night $L_{A1,1minute}$
44	35	35	36	45
48	35	38	39	48
90	35	35	36	45

3.1.2 Intrusive noise criteria

Table 3 within Condition 5 of Schedule 3 of SSD 09_0182 lists noise criteria applicable for residences on privately owned land and is reproduced in Table 3.2.

Table 3.2 Noise impact assessment criteria dB(A)

Location Property / ID	Day $L_{Aeq,15minute}$	Evening $L_{Aeq,15minute}$	Night $L_{Aeq,15minute}$	Night $L_{A1,1minute}$
158	35	36	36	45
All other privately owned residences	35	35	35	45

Maximum noise event criteria, used to assess sleep disturbance impacts during the night period, are prescribed in Table 3 within Schedule 3 of SSD 09_0182 and is reproduced above in Table 3.1 and Table 3.2.

3.1.3 Cumulative noise criteria

Table 4 within Condition 7 of Schedule 3 of SSD 09_0182 lists cumulative noise criteria applicable for residences on privately owned land and is reproduced in Table 3.3.

Table 3.3 Cumulative noise criteria dB(A)

Location	Day $L_{Aeq,period}$	Evening $L_{Aeq,period}$	Night $L_{Aeq,period}$
All privately owned land	40	40	40

3.1.4 Blasting

Table 6 within Condition 15 of Schedule 3 of SSD 09_0182 lists blasting criteria applicable for residences on privately owned land and public infrastructure and is reproduced in Table 3.4. Blasting is managed in accordance with the BCM BMP which includes blast monitoring at two off-site monitoring locations.

Table 3.4 Blasting criteria

Location	Blast component	EPL limits	Allowable exceedance
Residence on privately owned land	Airblast overpressure	115 dB(L)	5% of the total number of blasts over a period of 12 months
		120 dB(L)	0%
	Ground vibration	PPV 5 mm/s	5% of the total number of blasts over a period of 12 months
		PPV 10 mm/s	0%
All public infrastructure	Airblast overpressure	-	0%
	Ground vibration	PPV 50 mm/s or alternatively a specific limit determined to the satisfaction of the Secretary by the structural design methodology in AS 2187.2-2006, or its latest version	0%

3.2 Voluntary and Acquisition and Mitigation Policy

In September 2018, the NSW government published the *Voluntary Land Acquisition and Mitigation Policy (the VLAMP) for State Significant Mining, Petroleum and Extractive Industry Developments* (NSW Government, 2018). This document describes the NSW Government's policy for voluntary mitigation and land acquisition to address noise impacts from state significant mining, petroleum, and extractive industry developments.

3.2.1 Mitigation and acquisition criteria

The VLAMP provides the following guidance on the applicability of noise mitigation and acquisition criteria:

> A consent authority can apply voluntary mitigation and voluntary land acquisition rights to reduce:
>
> - operational noise impacts of a development on privately owned land; and
> - rail noise impacts of a development on privately owned land near a non-network rail line (private rail line), that is on, or exclusively servicing an industrial site (see Appendix 3 of the RING);
>
> But not:
>
> - construction noise impacts, as these impacts are shorter term and can be controlled;
> - noise impacts on the public road or rail network; or
> - modifications of existing developments with legacy noise issues, where the modification would have beneficial or negligible noise impacts.

3.2.2 Voluntary mitigation rights

The VLAMP states:

> A consent authority should only apply voluntary mitigation rights where, even with the implementation of best practice management at the mine site:
>
> - the noise generated by the development would meet the requirements in Table 1 (see following page), such that the impacts would be characterised as marginal, moderate or significant, at any residence on privately owned land; or
> - the development would increase the total industrial noise level at any residence on privately owned land by more than 1 dB(A) and noise levels at the residence are already above the recommended amenity noise levels in Table 2.2 of the Noise Policy for Industry; or
> - the development includes a private rail line and the use of that private rail line would cause exceedances of the recommended acceptable levels in Table 6 of Appendix 3 of the RING by greater than or equal to 3 dB(A) at any residence on privately owned land.
>
> All noise levels must be calculated in accordance with the NPfI or RING (as applicable).

3.2.3 Voluntary acquisition rights

The VLAMP states:

> A consent authority should only apply voluntary land acquisition rights where, even with the implementation of best practice management:
>
> - the noise generated by the development would be characterised as significant, according to Table 1 (see following page), at any residence on privately owned land; or
> - the noise generated by the development would contribute to exceedances of the acceptable noise levels plus 5 dB in Table 2.2 of the NPfI on more than 25% of any privately-owned land where there is an existing dwelling or where a dwelling could be built under existing planning controls [2]; or
> - the development includes a private rail line and the use of that private rail line would cause exceedances of the recommended maximum criteria in Table 6 of Appendix 3 of the RING at any residence on privately owned land.
> - All noise levels must be calculated in accordance with the NPfI or RING (as applicable).

Table 1 of the VLAMP outlines a procedure for characterising noise impact and provides examples of potential receptor-based treatments that could be used to mitigate residual noise impact; this table is reproduced below.

[2] *Voluntary land acquisition rights should not be applied to address noise levels on vacant land other than to vacant land specifically meeting these criteria.*

Table 1 – Characterisation of noise impacts and potential treatments[16]

If the predicted noise level minus the project noise trigger level[17] is:	And the total cumulative industrial noise level is:	Characterisation of impacts:	Potential treatment:
All time periods 0-2dB(A)	Not applicable	Impacts are considered to be **negligible**	The exceedances would not be discernable by the average listener and therefore would not warrant receiver based treatments or controls
All time periods 3-5dB(A)	• ≤ recommended amenity noise level in Table 2.2 of the NPfI; or • > recommended amenity noise level in Table 2.2 of the NPfI, but the increase in total cumulative industrial noise level resulting from the development is ≤1dB	Impacts are considered to be **marginal**	Provide mechanical ventilation / comfort condition systems to enable windows to be closed without compromising internal air quality / amenity.
All time periods 3-5dB(A)	> recommended amenity noise level in Table 2.2 of the NPfI, and the increase in total cumulative industrial noise level resulting from the development is >1dB	Impacts are considered to be **moderate**	As for marginal impacts but also upgraded façade elements like windows, doors or roof insulation, to further increase the ability of the building façade to reduce noise levels.
Day and evening >5dB(A)	≤ recommended amenity noise levels in Table 2.2 of the NPfI	Impacts are considered to be **moderate**	As for marginal impacts but also upgraded façade elements like windows, doors or roof insulation, to further increase the ability of the building façade to reduce noise levels.
Day and evening >5dB(A)	> recommended amenity noise levels in Table 2.2 of the NPfI	Impacts are considered to be **significant**	Provide mitigation as for moderate impacts and see voluntary land acquisition provisions above.
Night >5dB(A)	Not applicable	Impacts are considered to be **significant**	Provide mitigation as for moderate impacts and see voluntary land acquisition provisions above.

Table 1 of the VLAMP (NSW Government, 2018)

3.3 Corrections for annoying noise characteristics (modifying factors)

Fact Sheet C of the NPfI outlines procedures for assessing modifying correction factors. These correction factors, also referred to as modifying factor penalties, are applied to predicted/measured noise levels at the assessment location before comparison with relevant noise trigger levels/criteria, to account for the additional annoyance caused by these noise characteristics.

Intermittency and tonality modifying factors, although not quantitatively assessed in this NBIA, have been assessed during the BCM monthly compliance attended monitoring undertaken by Global Acoustics and EMM since March 2016. There has not been a single incidence of any modifying factor penalty being applicable and it is unlikely they have any relevance for MOD 10.

Open cut mines are not generally tonal or intermittent in nature as per the intent of the NPfI. Whilst individual noise sources, such as machine drives, alarms and hydraulic systems may exhibit tonal characteristics, these sources operate concurrently with the open cut mine, and the resulting combined sound power spectrum is not tonal in nature. BCM operates 24 hours per day, and therefore does not exhibit intermittent noise characteristics. No further assessment of these characteristics has been made. It is reasonable to expect that if the mine continues operations in a similar manner then the absence of tonal and intermittent noise characteristics should continue.

Low frequency noise is assessed in this report through comparison of one-third octave model predictions against NPfI low frequency noise thresholds. Further detail is provided in Section 5.2 of this report.

4 Assessment methodology

4.1 Overview

This section provides an overview of the methodology used to predict noise and blasting emissions from MOD 10, including how the effect of noise enhancing meteorological conditions are accounted for.

4.2 Noise model

Operational noise levels were predicted using RTA Technology's Environmental Noise Model (ENM). ENM is approved by the DPHI and EPA as suitable for prediction of industrial noise involving large propagation distances and is currently the industry standard for NBIA of this nature. ENM Terrain Category 2, representing a rural land environment, was adopted for model input.

In accordance with Section 2.2 of the NPfI, all model predictions in this NBIA are rounded to the nearest integer.

4.3 Operational scenarios

Two indicative operational scenarios were modelled representing stages in progression of mining operations over the proposed life of mine. Each stage modelled is a representative typical worst case operating configuration for that period of operations. The stages nominally relate to years 2028 and 2034, subject to date of approval. The locations of modelled noise sources have been based on information provided by BCOPL.

The operating configurations assessed for each year are the same for the day, evening, and night periods.

Modelled source locations for each of the two stages assessed is provided in Appendix B. The equipment type and quantities included in each stage are presented in Table 4.1.

Table 4.1 Open cut equipment included in models

Description	2028	2034
Komatsu 930E	38	36
Komatsu HD1500	3	3
Hitachi EH3500	17	19
Komatsu HD785	2	2
Komatsu 730E	3	3
Caterpillar 16M	1	1
Caterpillar 24M	3	3
Komatsu 475A	12	11
Komatsu 375A	4	4
DR45KS Drill	5	4
Caterpillar 6030	1	1
Caterpillar 6060	2	1
Hitachi EX2600	1	1
Liebherr R9400	2	2

Description	2028	2034
Liebherr R9800	3	3
Komatsu WA600	1	1
Komatsu WA1200	1	1
Caterpillar WD854	1	1
Caterpillar 992	2	2

Notes: 1. Table shows representative typical equipment to allow for assessment.

4.4 Source sound power

Sound powers for the CHPP and open cut equipment used in modelling as provided in Table 4.2 are based on measured in-service levels of plant operating at the BCM.

Mining equipment and associated sound power levels shown in this NBIA are representative of a typical mining equipment fleet proposed for use at BCM. These sound powers represent current or anticipated fleet average levels. It is normal for plant items within an equipment category to vary, with some having sound power either higher or lower than the fleet average. It is important to note that sound power levels adopted for this NBIA are based on actual measured in-service levels of equipment currently operating at the BCM, or on anticipated levels for future equipment.

Haul truck sound powers were incorporated into haul route strings created for the length of each route. This method distributes the acoustic energy of vehicles along the length of each route. Routes comprise a string of segments of fixed length, each segment having a sound power determined by:

- sound power for type of trucks on route
- number of each truck type on route in a 15-minute period, based on loading unit size
- speed of loaded truck on segment grade toward dump/ROM
- speed of empty truck on segment grade from dump/ROM.

Truck speeds are relative to grade in direction of travel and were allocated in accordance with truck speed data collected from mine sites in the Hunter Valley. Speed determines the duration required to traverse each segment, an important variable when calculating L_{Aeq} for a specific time period. Graders and water carts were allocated sound powers in a similar manner. Haul truck and watercart sound powers shown in Table 4.2 are uphill loaded, full power levels.

Table 4.2 Sound power data

Equipment category	Representative sound power, $L_{eq,15minute}$	
	Linear (dB)	Linear (dB)
Komatsu 930E	130	121
Komatsu HD1500	124	118
Hitachi EH3500	129	117
Komatsu HD785	126	120
Komatsu 730E	125	114

Equipment category	Representative sound power, $L_{eq,15minute}$	
	Linear (dB)	Linear (dB)
Caterpillar 16M	114	107
Caterpillar 24M	115	107
Komatsu 475A	122	117
Komatsu 375A	121	116
DR45KS Drill	126	115
Caterpillar 6030	129	122
Caterpillar 6060	129	120
Hitachi EX2600	127	123
Liebherr R9400	130	117
Liebherr R9800	126	117
Komatsu WA600	123	111
Komatsu WA1200	126	118
Caterpillar WD854	124	111
Caterpillar 992	120	106
CPP (wash plant)	134	113
Locomotive x 3 idling during loading	121	105
CV804 A-drive	120	115
CV804 B&C-drives	120	114
CV804 to BN804 transfer (top)	103	95
Train wagon loading (release from bin into wagon)	118	116
CV802 drive 280 kW	99	94
CV803 drive 280 kW	98	94
ROM dump hopper composite (with truck dump)	124	114
CV201 to CV202 + crusher	126	114
CV202 drive 132 kW	101	95
Product bin	118	109
Plant Feed Dump Hopper	128	111
CV701 drive 35 kW	101	95
Plant Feed Surge Bin	123	107
Plant Feed Sizing Station	123	115
Stacker 2 Drive 132 kW plus conveyor (50m)	107	103
Stacker 1 Drive 132 kW plus conveyor (50m)	107	103

Equipment category	Representative sound power, $L_{eq,15minute}$	
	Linear (dB)	Linear (dB)
Conveyor CV101 per metre	90	81
Conveyor CV102 per metre	88	78
Conveyor CV108 per metre	89	81
Conveyor CV201 per metre	92	81
Conveyor CV202 per metre	92	85
Conveyor CV701 per metre	89	78
Conveyor CV801 per metre	87	79
Conveyor CV802 per metre	90	87
Conveyor CV803 per metre	90	87
Conveyor CV804 per metre	96	93

4.5 Meteorological conditions

Under various wind and temperature gradient conditions, noise may be increased or decreased compared with still-isothermal conditions – that is, no wind or temperature gradient. Atmospheric conditions that most affect noise propagation are temperature and wind velocity gradients. They can both enhance or reduce noise propagation from source to receiver due to refraction of sound propagating through the atmosphere, brought about by a change in sound speed with height.

Noise levels are increased when the wind blows from source to receiver or under temperature inversion conditions (both of which are sometimes referred to as 'noise enhancing weather conditions') and decreased when the wind blows from receiver to the source or under temperature lapse conditions.

Table 4.3 lists the neutral and prevailing meteorological conditions included in this assessment. These are consistent with meteorological conditions utilised within the MOD 8 noise impact assessment.

Table 4.3 Modelled meteorological conditions

Temperature C	Humidity %	Wind speed m/s	Wind direction degrees	VTG °/100m
Day period				
10	80	0	-	-0.5
10	80	3	157.5	-0.5
10	80	3	180	-0.5
10	80	3	202.5	-0.5
10	80	3	225	-0.5
Evening period				
10	80	3	67.5	-0.5
10	80	0	90	-0.5
10	80	3	112.5	-0.5

Temperature C	Humidity %	Wind speed m/s	Wind direction degrees	VTG °/100m
10	80	3	135	-0.5
Night period				
5	80	0	-	4
5	80	3	67.5	-0.5
5	80	3	90	-0.5
5	80	3	112.5	-0.5
5	80	3	135	-0.5
5	80	3	180	-0.5

4.6 Maximum noise level assessment

Potential sleep disturbance impact was assessed by predicting levels from plant items known to generate noise levels that at times stand out above the general mining continuum. Excavator bucket noise, first pass loads into empty truck trays, rear dump truck exhaust and dozer track noise are recognised as sources which can generate high, short term noise levels that may cause sleep disturbance.

The following sources were modelled to assess sleep disturbance:

- Impact noise generated by excavator buckets impacting truck bodies or hard ground material, or rocks impacting the bottom of empty haul truck trays was modelled at each dig location. A sound power of L_{max}/L_{Amax} 131/125 dB was modelled for each impact event.
- Dozer track slap was modelled at each dozer operating location. A sound power of L_{max}/L_{Amax} 129/125 dB representing dozer operation in 2nd gear reverse was modelled.
- Haul truck exhaust surges were modelled by assessing a maximum sound power event of L_{max}/L_{Amax} 135/124 dB at each overburden emplacement area, and, at exposed sections along haul routes. This sound power is an addition of 5 dB to the full rated power, uphill loaded sound power spectrum in engine and exhaust frequencies (31.5 to 500 Hz).

Assessment of sleep disturbance involved modelling each of these sources, and then combining the highest prediction with results for the remainder of operational plant to obtain an estimate of possible short-term maximum noise emissions.

4.7 Low frequency noise assessment

Low frequency noise modifying factor adjustment applicability was quantitatively assessed with each stage plan modelled in ENM using one-third octave sound power inputs in order to obtain one-third octave model predictions. Predicted one-third octave L_{Aeq} spectra for each of the prevailing meteorological conditions were evaluated directly against NPfI low frequency noise thresholds.

4.8 Private land area assessment

The VLAMP includes an assessment requirement for privately owned land (refer to Section 3.2.3 for more detail), stating that voluntary land acquisition rights may apply where, even with the implementation of best practice management, noise generated by the development would contribute to exceedances of the acceptable noise amenity levels in Table 2.2 of the NPfI plus 5 dB on more than 25% of any privately-owned land. This requirement is to be assessed where there is an existing dwelling or where a dwelling could be built under existing planning controls. Acceptable noise amenity levels plus 5 dB for the day, evening and night periods for assessment locations in a rural land environment are $L_{Aeq,period}$ 55, 50 and 45 dB respectively. This corresponds to an $L_{Aeq,15minute}$ of 58, 53 and 48 dB respectively to allow for assessment against $L_{Aeq,15minute}$ predictions.

Noise contours were generated over contiguous private lot areas, from which the maximum envelope of predicted noise emission was determined. This was used to evaluate the maximum extent of noise impact for each time period and allow evaluation of impact over private land areas. Properties already subject to acquisition on request in accordance with SSD 09_0182 were excluded.

The outcome of this assessment is presented in Section 5.3.

4.9 Cumulative noise

Other industrial noise sources around BCM with potential to cause cumulative noise impact to assessment locations within the assessment area include:

- Maules Creek Coal Project (MCCP)
- Tarrawonga Coal Mine (TCM).

Year 21 predictions from the MCCP Acoustics Impact Assessment (Bridges Acoustics, 2011) and Year 7 predictions from the TCM Modification 7 Noise Assessment (Wilkinson Murray, 2019) were combined with predictions within this report for privately owned assessment locations to assess cumulative noise impact. The outcome of the cumulative assessment is presented in Section 5.4.

4.10 Noise contours

Noise contours were produced over the assessment area to provide a visual representation of the model results. It should be noted that noise contours are based on interpolation of results determined for individual points, and as such are indicative, and are included for presentation purposes only. These are provided in Appendix D. Noise level predictions for the complete assessment locations set are presented in Appendix A.

4.11 Blasting

Analysis of historical blasting records was undertaken with indicative vibration levels from blasting predicted using the guidance given in AS2187-2-2006: Explosives – Storage and Use Part 2: Use of Explosives and formulae provided in Imperial Chemical Industries (ICI) Explosives Blasting Guide (ICI Technical Services 1995). The ICI formula has been shown to be conservative in calculating overpressure and vibration.

The method considers charge mass delay (kg) or maximum instantaneous charge (MIC), constants relating to rock properties and distance (from the blast to nearest assessment locations) to calculate ground vibration and over pressure levels.

4.12 Mitigation and Management measures

Initial noise modelling was undertaken to assist BCOPL in the planning and development of MOD 10 mine plans to ensure that noise impacts were minimised as far as practicable. Further consideration of the noise levels generated to assessment locations was undertaken to identify mining operations that could be better managed to reduce overall noise levels. This resulted in the adoption of roadside noise bunds along the western edge of mining operations within the MOD 10 mine plans as a mitigation control to achieve the outcomes presented in this report. It is noted that whilst the roadside noise bunds were adopted as a mitigation control within the modelling, there may be other more appropriate controls (either in replacement of or in addition to the roadside noise bunds) which will be implemented at the time to ensure noise levels remain below the noise criteria specified within SSD 09_0182.

5 Results

5.1 Operational noise

Table 5.1 presents operational noise predictions for each stage (2028 and 2034). Modelling was undertaken for all meteorological conditions presented in Table 4.3, with the highest result presented below. Privately owned assessment locations with a prediction for any time period or stage of $L_{Aeq,15minute}$ 35 dB or more are presented in Table 5.1. Predictions for the complete assessment locations set are presented in Appendix A.

Intrusive noise criteria from Table 3 of SSD 09_0182 for each assessment location are listed, and evaluation of impact is made against those criteria. For assessment locations that have acquisition on request status within SSD 09_0182, evaluation of impact is made against the noise levels detailed in Table 2 of SSD 09_0182. These are indicated by a symbol adjacent to the assessment location ID.

Table 5.1 Operational Noise Predictions – $L_{Aeq,15minute}$ dB

ID	Intrusive Noise Criteria			Year 2028			Year 2034		
	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night
8	35	35	35	30	33	34	31	34	35
44 ^	35	35	36	21	35	36	21	35	36
48 ^	35	38	39	25	38	39	26	38	39
90 ^	35	35	36	23	35	36	24	35	36
158	35	36	36	23	35	36	24	35	36

Notes: 1. ^ indicates assessment location entitled to acquisition on request with BCM and is compared against the levels in Table 2 within Condition 4 of Schedule 3 of SSD 09_0182.

No exceedances are predicted for any assessment locations for either of the two modelled stages.

5.2 Low frequency assessment

To evaluate low frequency noise modifying factor applicability, each scenario was modelled in ENM using one-third octave sound power inputs to obtain one-third octave model predictions. Predicted one-third octave L_{Aeq} spectra for each modelled scenario were evaluated directly against NPfI low frequency noise thresholds.

All results were below NPfI thresholds, meaning low frequency noise modifying factor adjustment applicability is not predicted.

As detailed in Section 3.3, BCM has no history of modifying factors being applicable during compliance noise monitoring.

5.3 Maximum noise level assessment

Sleep disturbance model predictions are less than the relevant $L_{A1,1minute}$ criterion prescribed in SSD 09_0182 (and reproduced in Section 3.1.2) for all assessment locations. As such, there is no sleep disturbance impact predicted.

5.4 Private land area assessment

An assessment of operational noise impact over privately-owned land where there is an existing dwelling or where a dwelling could be built under existing planning controls was completed in accordance with the VLAMP.

The outcome of this assessment was that no private landholdings have more than 25% of the land area predicted to exceed VLAMP criteria in any time period, for either of the two stages assessed. Therefore, no additional properties would be entitled to voluntary land acquisition rights due to predicted impact over their land area.

5.5 Cumulative noise

Predictions from the MCCP Acoustics Impact Assessment (Bridges Acoustics, 2011) and the TCM Modification 7 Noise Assessment (Wilkinson Murray, 2019) were combined with predictions within this report for privately owned assessment locations to assess cumulative noise impact.

All results were below cumulative noise criteria prescribed in SSD 09_0182, indicating cumulative noise impact is not predicted.

5.6 Blasting

BCM has contemporary blast design and management procedures in place that are consistent with industry best practice. Detailed design is undertaken for all blasts to ensure compliance with relevant project approval criteria.

The continuation of mining operations at BCM towards the north-west will result in new blasting locations outside the approved Mine Disturbance Boundary, however the nearest assessment locations to the north-west would be approximately 8 km away from the additional mining area proposed by MOD 10.

Blasting has been undertaken in compliance with approved limits, with the exception of two blasts in June and August 2019. The overpressure limit of 120 dB(L) was exceeded by 3 dB(L) on both occasions. These non-compliant measurements account for a small percentage of the monitoring dataset and demonstrate that there are no sustained exceedances. Reoccurring blasting in the previously approved mining areas should result in continued compliance with approved limits.

Recent blast data from October 2023 to July 2024 indicate maximum instantaneous charge (MIC) weights in the range 1,000 to 10,000 kg have been used at BCM with all monitored results less than 1 mm/s PPV, well within the 5 and 10 mm/s criteria.

Calculations based on AS2187-2-2006 and formulae provided in the ICI Explosives Blasting Guide indicate blasting in the additional mining area proposed by MOD 10 with an MIC of 10,000 kg or less would result in ground vibration and overpressure levels well below the SSD 09_0182 criteria at the nearest assessment locations.

Blast management is extremely complex involving numerous variables both beneath the ground and in the atmosphere that are not considered by site law equations and associated calculations. Each blast must be assessed by the blast manager and/or contractor(s) on a case-by-case basis to ensure ongoing compliance with relevant limits.

BCOPL should continue to undertake blast monitoring to validate the blast impacts and consult with blast manager and/or contractor(s) regarding techniques and timing to control the air blast and ground vibration impacts from mine blasting, and continue with the implementation of design, management and monitoring protocols outlined in the BMP to ensure ongoing compliance with approved blasting criteria.

6 Noise management

Procedures for the management and monitoring noise are outlined in the BCM Noise Management Plan (NMP). Proactive noise mitigation measures are detailed in Table 5.1 of the NMP, with the intent to minimise operational, low frequency and rail noise. BCOPL operates a real-time noise monitoring and management system on site that, in the event of elevated noise levels, triggers an investigation and action-based risk response matrix, which guides the implementation of reactive noise mitigation measures. The NMP will be updated to reflect any changes to the relevant conditions resulting from this application and will include mitigation measures along the western edge of mining operations within the MOD 10 mine plans as discussed in Section 4.12. Monitoring should continue to be undertaken as required to maintain compliance with approved noise criteria. Throughout the life of the mine, alternative noise controls and management strategies may be implemented to ensure ongoing compliance with approved noise criteria.

7 Summary

This NBIA has considered potential noise impacts associated with MOD 10, including operational noise, cumulative noise, modifying factor adjustments, sleep disturbance and blasting. The assessment was appropriately completed in accordance with relevant NSW guidelines and policies, including the NPfI.

BCOPL has demonstrated ongoing compliance with approved noise criteria prescribed in SSD 09_0182 for the last 7 years. This NBIA demonstrates that BCOPL should be able to continue operations at BCM assessed herein whilst maintaining compliance with approved noise and blasting criteria set out in SSD 09_0182.

7.1 Operational noise

Operational noise levels for MOD 10 are predicted to meet the criteria prescribed in SSD 09_0182 at all assessment locations for either of the two modelled stages.

7.2 Maximum noise level assessment

Sleep disturbance model predictions are less than the relevant $L_{A1,1minute}$ criterion prescribed in SSD 09_0182 for all assessment locations. As such, there is no sleep disturbance impact predicted.

7.3 Private land assessment

No private landholdings have more than 25% of the land area predicted to exceed VLAMP criteria in any time period, for either of the two stages assessed.

7.4 Cumulative noise

All cumulative noise results were below cumulative noise criteria prescribed in SSD 09_0182, indicating cumulative noise impact is not predicted.

7.5 Blasting

The blasting assessment indicated MIC up to 10,000 kg is likely to maintain compliance with air blast overpressure criteria at the nearest assessment locations.

BCOPL should continue to undertake blast monitoring to validate the blast impacts and consult with blast manager and/or contractor(s) regarding techniques and timing to control the air blast and ground vibration impacts from mine blasting, and continue with the implementation of design, management and monitoring protocols outlined in the BMP to ensure ongoing compliance with approved blasting criteria.

Glossary

Acronym, term, or abbreviation	Definition
BCM	Boggabri Coal Mine
BCOPL	Boggabri Coal Operations Pty Ltd, a wholly owned subsidiary of Idemitsu Australia Pty Ltd (IA). BCOPL operates the BCM on behalf of IA and its joint venture partners.
Day period	Monday to Saturday: 7 am to 6 pm. Sundays and public holidays: 8 am to 6 pm.
dB	Decibels. Relative unit of measurement on a logarithmic scale used extensively in the field of acoustics.
dB(A)	Decibels adjusted using the "A"-weighting scale to consider human response to sound.
dB(C)	Decibels adjusted using the "C"-weighting scale used to take into account low-frequency components of noise within the audibility range of humans.
DPE	Department of Planning and Environment
EP&A Act	Environmental Planning & Assessment Act 1979
Evening period	Monday-Sunday: 6 pm to 10 pm.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
IA	Idemitsu Australia Pty Ltd
km	Kilometre
km	kilometres
L_{A1}	The noise level which is exceeded for 1 per cent of the time.
$L_{A1,1minute}$	The noise level which is exceeded for 1 per cent of the specified time period of 1 minute (or 0.6 seconds).
L_{A10}	The noise level which is exceeded for 10 percent of the time.
L_{A50}	The noise level which is exceeded for 50 per cent of the time and the median noise level during a measurement period.
L_{A90}	The level exceeded for 90 percent of the time. The L_{A90} level is often referred to as the "background" noise level and is commonly used to determine noise targets for assessment purposes.
L_{Aeq}	The average noise A-weighted energy during a measurement period.
$L_{Aeq,t}$	The average A-weighted sound energy during a measurement period of time (t).
L_{Amax}	The maximum A-weighted noise level over a time period.
L_{Amin}	The minimum A-weighted noise level over a time period.
L_{Ceq}	The average C-weighted noise energy during a measurement period. The "C" weighting scale is used to take into account low-frequency components of noise within the audibility range of humans.
LGA	Local Government Area
L_{peak}	The peak unweighted or linear noise energy during a measurement period.

Acronym, term, or abbreviation	Definition
L_W	Sound power level. Measured as 10 times the logarithmic ratio of power of a source relative to a reference level of one picowatt.
L_{WA}	A-weighted sound power level
m	metre
m^2	square metres
m^3	cubic meter
MIC	Maximum instantaneous charge
MOD 10	Modification 10 to SSD 09_0182
Mt	Million tonnes
Mtpa	Million tonnes per annum
NBIA	Noise and Blasting Impact Assessment
Night period	Night period Monday-Saturday: 10 pm to 7 am. Sundays and public holidays: 10 pm to 8 am.
NPfI	Noise Policy for Industry
NMP	Noise Management Plan
NSW	New South Wales
NSW	New South Wales
ROM	Run of Mine
SPL	Sound pressure level. Measured as 10 times the logarithmic ratio of pressure fluctuations relative to a reference level of 20 micropascals.
SSD	State Significant Development Approval
Temperature inversion	A meteorological condition where the atmospheric temperature increases with altitude.
tpa	tonnes per annum
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.

Appendix A
Operational noise results

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A.1 Operational noise results

Table A.1 Operational noise predictions – $L_{Aeq,15minute}$ dB

Assessment location	Intrusive noise criteria			2028			2034		
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night
1 *	NA	NA	NA	32	35	36	34	39	40
2	35	35	35	26	29	28	26	28	28
3	35	35	35	26	29	29	26	29	29
4	35	35	35	26	29	29	26	30	30
5	35	35	35	26	30	30	26	30	31
8	35	35	35	30	33	34	31	34	35
18 *	NA	NA	NA	11	26	27	11	26	26
20 *	NA	NA	NA	17	31	31	17	31	32
23 *	NA	NA	NA	22	34	35	23	34	35
27 *	NA	NA	NA	20	33	34	21	34	34
32 *	NA	NA	NA	19	33	34	20	34	34
33 *	NA	NA	NA	20	34	35	20	33	34
35 *	NA	NA	NA	23	32	33	23	32	33
43 *	NA	NA	NA	21	36	37	23	36	37
44 ^	35	35	36	21	35	36	21	35	36
48 ^	35	38	39	25	38	39	26	38	39
52 *	NA	NA	NA	24	33	34	25	34	34

Assessment location	Intrusive noise criteria			2028			2034		
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night
54 *	NA	NA	NA	28	36	39	28	37	40
63 *	NA	NA	NA	33	18	38	33	17	37
67 *	NA	NA	NA	41	17	40	36	15	36
68 *	NA	NA	NA	40	17	39	36	16	36
69 *	NA	NA	NA	37	16	36	34	14	34
79 *	NA	NA	NA	23	34	35	24	34	35
85 *	NA	NA	NA	21	24	37	22	24	38
86 *	NA	NA	NA	20	24	35	22	26	36
88 *	NA	NA	NA	18	21	34	19	19	34
90 ^	35	35	36	23	35	36	24	35	36
94 *	NA	NA	NA	22	32	33	22	32	33
98 *	NA	NA	NA	21	16	35	21	15	35
100 *	NA	NA	NA	22	14	33	23	13	33
114	35	35	35	12	24	24	12	24	24
115	35	35	35	18	30	31	18	31	31
140	35	35	35	26	8	28	27	6	28
147	35	35	35	29	12	32	30	13	33
158	35	36	36	23	35	36	24	35	36
159 *	NA	NA	NA	17	16	34	17	15	34
164	35	35	35	30	30	30	30	30	30

Assessment location	Intrusive noise criteria			2028			2034		
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night
165	35	35	35	33	33	33	33	33	34
165b	35	35	35	33	33	34	33	33	34
174 *	NA	NA	NA	32	34	35	33	35	36
175 *	NA	NA	NA	15	26	26	15	26	26
176 *	NA	NA	NA	21	30	31	21	31	32
177 *	NA	NA	NA	32	44	45	34	44	45
178 *	NA	NA	NA	44	52	52	45	52	53
179 *	NA	NA	NA	57	62	62	59	63	63
180 *	NA	NA	NA	24	19	36	24	19	36
181 *	NA	NA	NA	21	19	37	22	18	38
182 *	NA	NA	NA	24	18	37	24	17	37
183 *	NA	NA	NA	19	30	30	20	29	30
184 *	NA	NA	NA	18	28	31	19	28	31
185 *	NA	NA	NA	14	13	29	14	12	29
186 *	NA	NA	NA	30	22	30	28	20	28
187 *	NA	NA	NA	30	23	30	28	20	28
188 *	NA	NA	NA	30	28	30	28	24	29
189 *	NA	NA	NA	33	32	33	33	32	33
190 *	NA	NA	NA	30	30	31	29	27	29
191 *	NA	NA	NA	30	30	30	31	31	32

Assessment location	Intrusive noise criteria			2028			2034		
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night
192 *	NA	NA	NA	29	29	29	31	30	31
193 *	NA	NA	NA	27	27	27	29	29	29
194 *	NA	NA	NA	29	29	29	29	30	30
GA0a	35	35	35	31	30	31	31	30	31
GA10	35	35	35	27	27	27	27	27	27
GA33a	35	35	35	29	29	29	29	29	30
GA33b	35	35	35	29	29	29	30	30	30
GA35	35	35	35	29	29	29	30	30	30
GA37	35	35	35	27	27	27	28	28	28
GA38	35	35	35	27	27	27	28	28	28
GA39	35	35	35	28	28	28	29	28	28
GA42	35	35	35	27	27	27	28	28	28
GA43	35	35	35	28	28	28	29	29	29
GA44	35	35	35	28	28	28	29	29	29
GA50	35	35	35	29	29	29	29	29	30
GA52a	35	35	35	28	28	28	29	29	29
GA52b	35	35	35	28	28	28	29	29	29
GA67	35	35	35	30	30	31	31	30	31
GA68	35	35	35	30	30	31	31	30	31
GA74	35	35	35	30	29	30	29	28	30

Assessment location	Intrusive noise criteria			2028			2034		
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night
GA77	35	35	35	31	30	31	31	30	31
GA78	35	35	35	29	29	30	30	29	30
GA83	35	35	35	32	31	33	32	31	33
GA89a	35	35	35	31	29	31	31	30	31
GA89b	35	35	35	31	29	31	31	29	31
GA94	35	35	35	31	28	32	31	28	31
GA97a	35	35	35	27	27	27	27	28	28
GA97b	35	35	35	26	27	27	27	28	28
GA98	35	35	35	25	26	26	27	28	28
GA196	35	35	35	30	15	30	27	13	26
GA199	35	35	35	30	16	27	24	13	21
GA200a	35	35	35	27	28	28	28	28	28
GA200b	35	35	35	27	28	28	28	28	28
GA204	35	35	35	27	28	28	27	28	28
GA214	35	35	35	28	29	29	29	30	30
GA215	35	35	35	27	28	28	27	28	28
GA222	35	35	35	30	31	31	30	32	32
GA318	35	35	35	26	26	26	27	27	26
GA322	35	35	35	33	25	32	30	22	30
GA323	35	35	35	30	22	30	28	20	28

Assessment location	Intrusive noise criteria			2028			2034		
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night
GA324	35	35	35	32	20	32	30	17	29
GA326	35	35	35	31	24	31	28	18	27
GA327	35	35	35	32	21	32	30	17	29
GA349	35	35	35	26	27	27	27	28	28
GA350	35	35	35	27	28	27	27	28	28
GA351	35	35	35	27	28	28	27	28	28
R1	35	35	35	16	24	24	17	25	25
R2	35	35	35	14	25	25	14	25	25
R4	35	35	35	15	28	28	14	27	27
R5	35	35	35	11	24	24	11	23	24
R7	35	35	35	13	24	25	14	24	25
R8	35	35	35	17	30	31	19	30	30
R9	35	35	35	16	30	30	19	29	30
R19	35	35	35	20	30	30	20	30	30
R23	35	35	35	20	30	30	20	30	30
R37	35	35	35	17	9	28	18	9	27
R38	35	35	35	25	9	29	27	9	29
R39	35	35	35	27	8	29	26	6	27
R40	35	35	35	22	9	22	19	9	19
R41	35	35	35	26	11	26	25	10	24

Assessment location	Intrusive noise criteria			2028			2034		
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night
R49	35	35	35	32	31	33	32	31	33
R56	35	35	35	27	27	27	28	28	28
R61	35	35	35	25	26	26	27	28	28
R62	35	35	35	27	28	28	28	28	29
R63	35	35	35	30	32	32	31	32	33
R64	35	35	35	31	33	33	32	34	34
R68	35	35	35	19	31	32	18	31	32
R70	35	35	35	33	12	34	31	11	31

Notes: 1. “NA” denotes criteria not applicable as property is owned by BCM or a neighbouring mine.

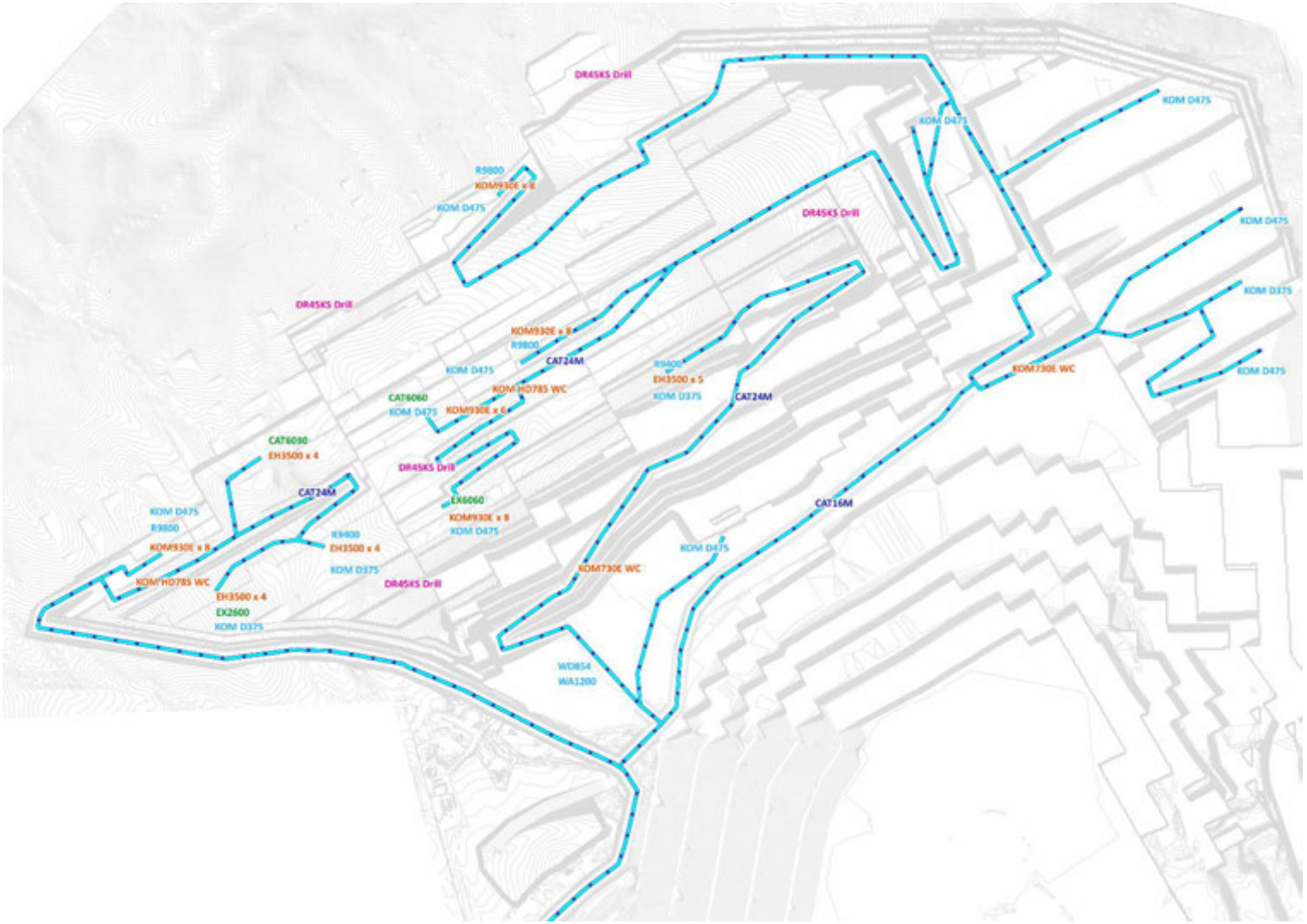
2. ^ indicates assessment location entitled to acquisition on request with BCM, and is compared against the maximum predicted levels in Table 2 within Condition 4 of Schedule 3 of SSD 09_0182.

3. * denotes mine owned property.

Appendix B
Modelled source locations

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B.1 Modelled source locations



2028 source locations



2034 source locations



CHPP source locations (both stages)

Appendix C
Assessment locations

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C.1 Assessment locations

Table C.1 Assessment locations

ID	Owner	Lot	Coordinates	
			Easting	Northing
2	Francis John Maunder	111//DP755470	210999	6610667
3	Robert Anthony Maunder	110//DP755470	211714	6610476
4	Glek Pty Limited	109//DP755470	213190	6609950
5	Unknown		213497	6610002
8	Unknown		216289	6611151
44	David Victor Gillham	11//DP775513	219478	6604993
48	Aidan Nils Rodstrom	22//DP618032	223064	6603832
90	Richard John Gillham	143//DP754926	222883	6602450
114	Robert Ernest Stoltenberg & Margaret Joan Stoltenberg	80//DP755475	210680	6602288
115	Dennis William Keys & Anne Marie Keys	168//DP755475	216260	6602915
140	MHPF Bellevue Land Pty Ltd	17//DP754953	235725	6608475
147	MHPF Bellevue Land Pty Ltd	1//DP509031	235880	6605845
158	Keith Lionel Grover	192//DP754926	222575	6602540
164	Sydney Patrick & Jennifer Ruth Brummell	36//DP754948	218150	6621035
165	Jeanette Mary Morris	62//DP754948	220676	6619178
165b	Unknown		220735	6619347
1	Whitehaven owned previously owned by MJ & ML Nott	76//DP754948	219124	6612978
18	Boggabri Coal owned	153//DP755475	214795	6602850
20	Boggabri Coal owned	2//DP748046	215765	6605485
23	Boggabri Coal owned previously owned by RW & A Grover	1//DP754926	217375	6607145
27	Boggabri Coal owned previously owned by RW & A Grover	41//DP754926	217185	6606725
32	Whitehaven owned previously owned by RJ EJ Browning	1//DP1099042	217925	6604910
33	Whitehaven owned previously owned by RJ Heiler	1//DP1092050	220035	6603905
35	Mining Joint ownership previously owned by KR Druce	60//DP754948	215955	6607555
43	Whitehaven owned previously owned by RJ Heiler	1//DP509312	219777	6606049
52	Boggabri Coal owned previously owned by HM Lockwood	2//DP716002	224362	6604354

ID	Owner	Lot	Coordinates	
			Easting	Northing
54	Mining Joint ownership previously owned by RP & RD McGregor	121//DP754926	226677	6603830
63	Whitehaven Coal owned	86//DP754953	232065	6609313
67	Boggabri Coal owned previously owned by VP & SM McAuliffe	2//DP754927	233537	6611781
68	Boggabri Coal owned previously owned by VP & SM McAuliffe	3//DP754927	233465	6612117
69	Boggabri Coal owned previously owned by Bank of NSW	12//DP754927	234080	6613347
79	Boggabri Coal owned previously owned by RR & PL Crosby	132//DP754926	224280	6601740
85	Whitehaven owned previously owned by DJ Wellwood	A//DP367991	229050	6603181
86	Whitehaven owned previously owned by RR PL Crosby	2//DP1131282	229100	6602010
88	Whitehaven owned previously owned by MA, CM, JM & SL Bull	1//DP1015921	230505	6601915
94	Mining Joint ownership previously owned by RP & RD McGregor	149//DP754926	224470	6600625
98	Whitehaven owned previously owned by JL Alker	65//DP754953	232846	6603640
100	Whitehaven owned previously owned by AIM Johnson & TR Hall	A//DP100331	234748	6603721
159	Whitehaven owned previously owned by JL Alker	62//DP754953	232690	6602345
174	Whitehaven Coal owned	822//DP1074515	217110	6612451
175	Boggabri Coal owned	125//DP755475	212690	6601405
176	Boggabri Coal owned	59//DP754948	217363	6608083
177	Boggabri Coal owned	8//DP754940	223335	6606537
178	Boggabri Coal owned	12//DP754940	224455	6607826
179	Boggabri Coal owned	279//DP1196626	225998	6607845
180	Whitehaven owned previously Joint Ownership	29//DP1192663	231122	6606201
181	Whitehaven owned previously Joint Ownership	33//DP754953	230902	6605865
182	Whitehaven owned previously Joint Ownership	106//DP754953	231910	6605660
183	Whitehaven Coal owned	147//DP754926	225485	6598915
184	Whitehaven Coal owned	1//DP1145592	228575	6598980
185	Whitehaven Coal owned	6//DP754951	234935	6599355
186	Whitehaven owned previously owned by M Shaw, S Beckett & ZN Mexted	120//DP808273	231905	6620615
187	Whitehaven Coal owned	87//DP754924	231400	6620800

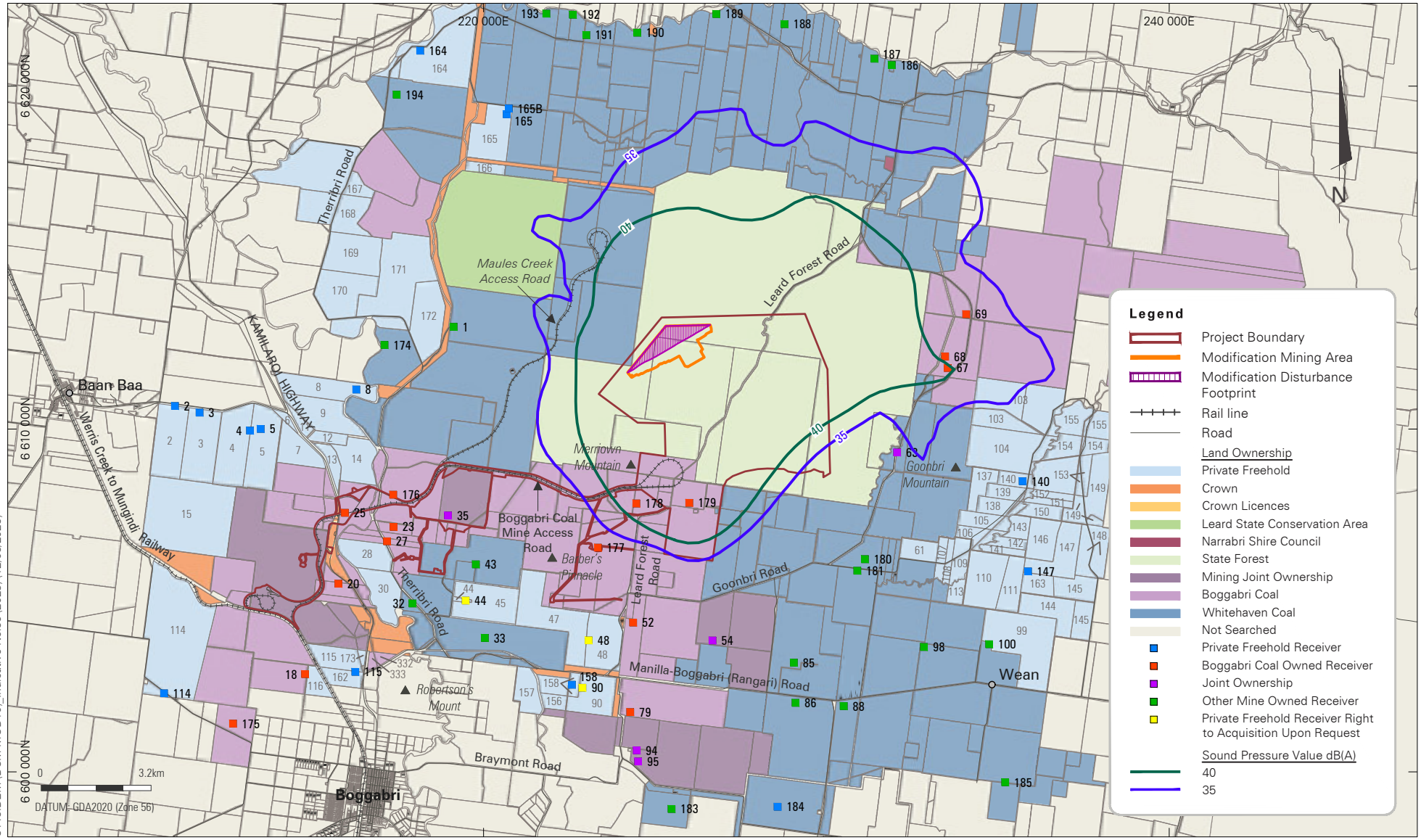
ID	Owner	Lot	Coordinates	
			Easting	Northing
188	Whitehaven Coal owned	12//DP754924	228775	6621810
189	Whitehaven Coal owned	53//DP654577	226790	6622105
190	Whitehaven Coal owned	83//DP754948	224481	6621560
191	Whitehaven Coal owned	69//DP754948	222996	6621493
192	Whitehaven Coal owned	66//DP754948	222605	6622085
193	Whitehaven owned previously owned by PF Murphy	64//DP754948	221830	6622115
194	Whitehaven owned previously owned by LA SL Leitch	77//DP754948	217465	6619750
GA0a	Unknown		224928	6623048
GA10	Unknown		215382	6621673
GA196	Unknown		235916	6620541
GA199	Unknown		235087	6618265
GA200a	Unknown		213180	6617449
GA200b	Unknown		213196	6617379
GA204	Unknown		210762	6611895
GA214	Unknown		214173	6616450
GA215	Unknown		211730	6614981
GA222	Unknown		214838	6614287
GA318	Unknown		216279	6624843
GA322	Unknown		233750	6621019
GA323	Unknown		232409	6621120
GA324	Unknown		235116	6621068
GA326	Unknown		232772	6620873
GA327	Unknown		235066	6621059
GA33a	Unknown		218841	6622532
GA33b	Unknown		218907	6622400
GA349	Unknown		211546	6617052
GA35	Unknown		219598	6622663
GA350	Unknown		212951	6617838
GA351	Unknown		212011	6616553
GA37	Unknown		220641	6623080
GA38	Unknown		220703	6623068
GA39	Unknown		220726	6624448

ID	Owner	Lot	Coordinates	
			Easting	Northing
GA42	Unknown		221047	6622982
GA43	Unknown		221799	6623429
GA44	Unknown		221831	6623335
GA50	Unknown		224478	6624230
GA52a	Unknown		222177	6623274
GA52b	Unknown		222124	6624516
GA67	Unknown		224599	6623014
GA68	Unknown		224668	6623053
GA74	Unknown		225645	6624020
GA77	Unknown		224622	6622902
GA78	Unknown		225935	6624862
GA83	Unknown		226757	6622579
GA89a	Unknown		229100	6623372
GA89b	Unknown		229351	6623560
GA94	Unknown		230597	6621871
GA97a	Unknown		213499	6618139
GA97b	Unknown		213492	6618274
GA98	Unknown		214381	6618800
R1	Unknown	31//DP755525	209989	6606042
R19	Unknown	2//DP396475	221270	6599180
R2	Unknown	65//DP755530	209768	6602839
R23	Unknown	402//DP858087	223325	6599000
R37	Unknown	B//DP431899	238915	6599975
R38	Unknown	78//DP754953	239135	6603355
R39	Unknown	103//DP754953	238435	6607265
R4	Unknown	201//DP755475	216250	6601820
R40	Unknown	9//DP754927	239380	6610885
R41	Unknown	19//DP754927	238445	6611320
R49	Unknown	38//DP754925	226865	6622490
R5	Unknown	252//DP755475	216730	6602050
R56	Unknown	64//DP754948	220815	6622240
R61	Unknown	1//DP1175856	216975	6618965

ID	Owner	Lot	Coordinates	
			Easting	Northing
R62	Unknown	1//DP1175679	214320	6617800
R63	Unknown	2//DP791323	215405	6613105
R64	Unknown	81//DP754948	216371	6613097
R68	Unknown	1//DP110400	218960	6602615
R7	Unknown	1//DP1105555	217920	6601930
R70	Unknown	6//DP754927	237495	6610870
R8	Unknown	302//DP814632	219235	6600985
R9	Unknown	301//DP814632	219125	6600475

Appendix D
Operational noise contours

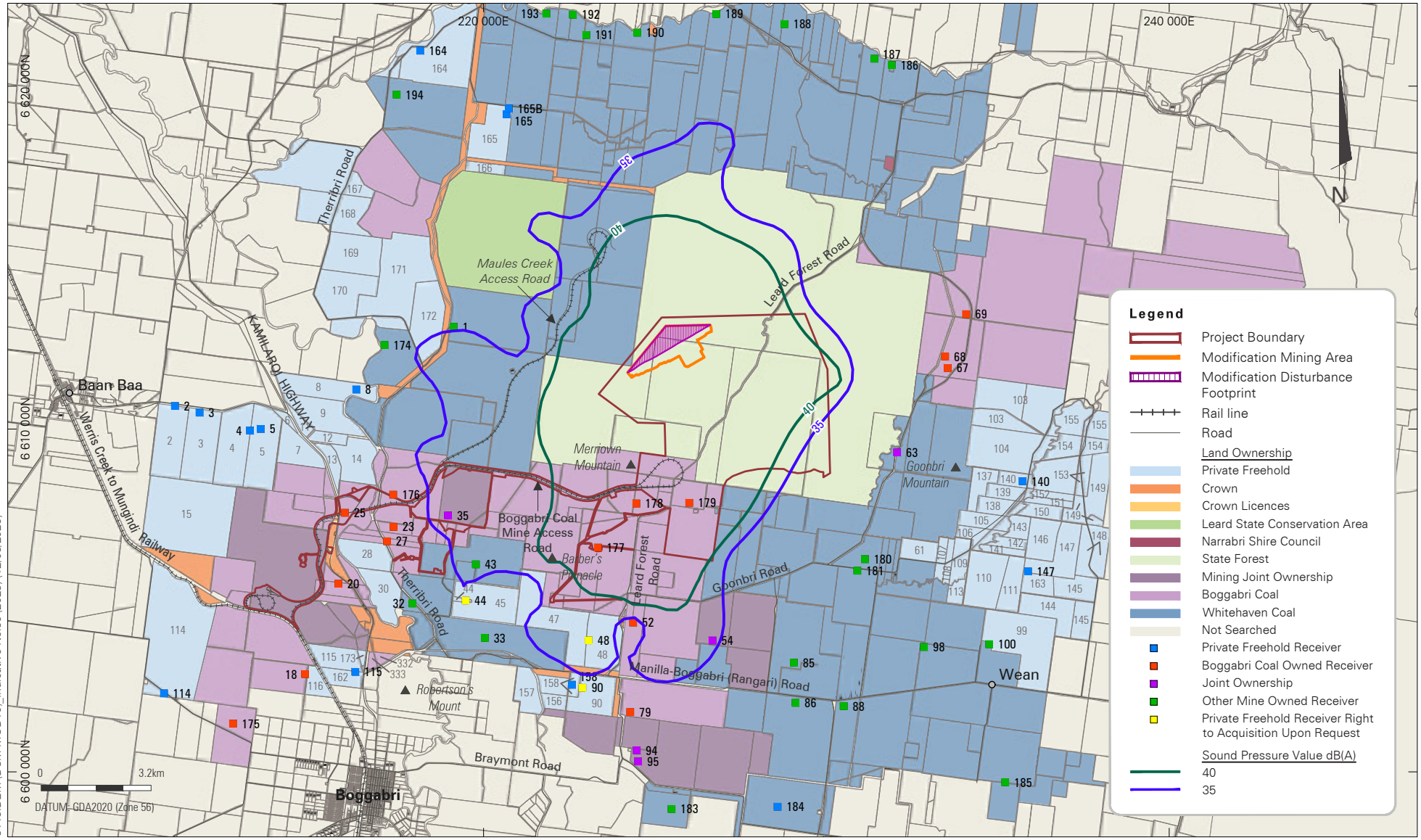
EMM
creating opportunities



3115IDEM (BCM MOD10)_Indicative Noise (2028) (12/05/2025)

BOGGABRI COAL MINE MODIFICATION

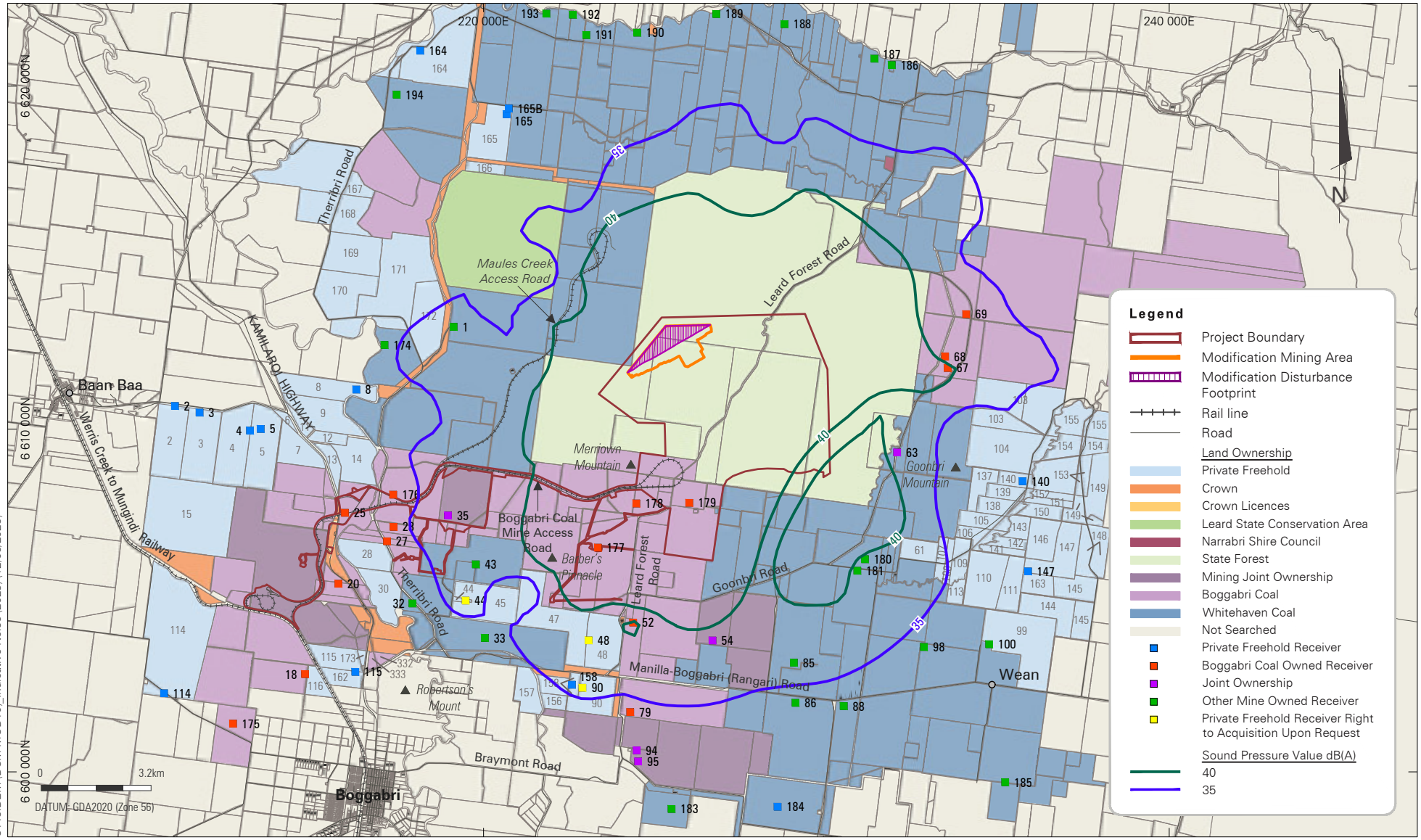
Indicative Noise Contours Year 2028, Day Period (LAeq,15minute dB)



3115IDEM (BCM MOD10)_Indicative Noise (2028) (12/05/2025)

BOGGABRI COAL MINE MODIFICATION

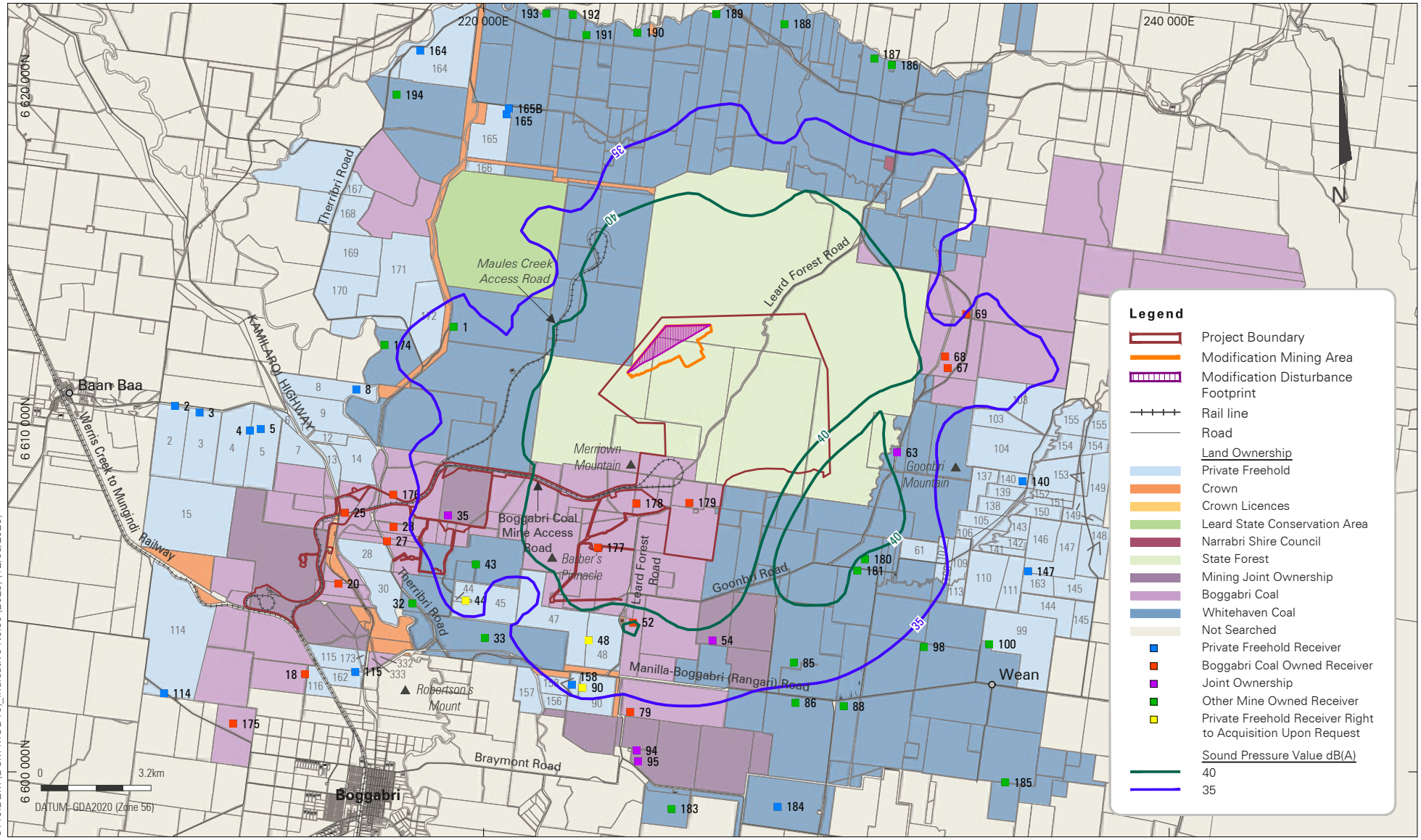
Indicative Noise Contours Year 2028, Evening Period (LAeq,15minute dB)



3115IDEM (BCM MOD10)_Indicative Noise (2028) (12/05/2025)

BOGGABRI COAL MINE MODIFICATION

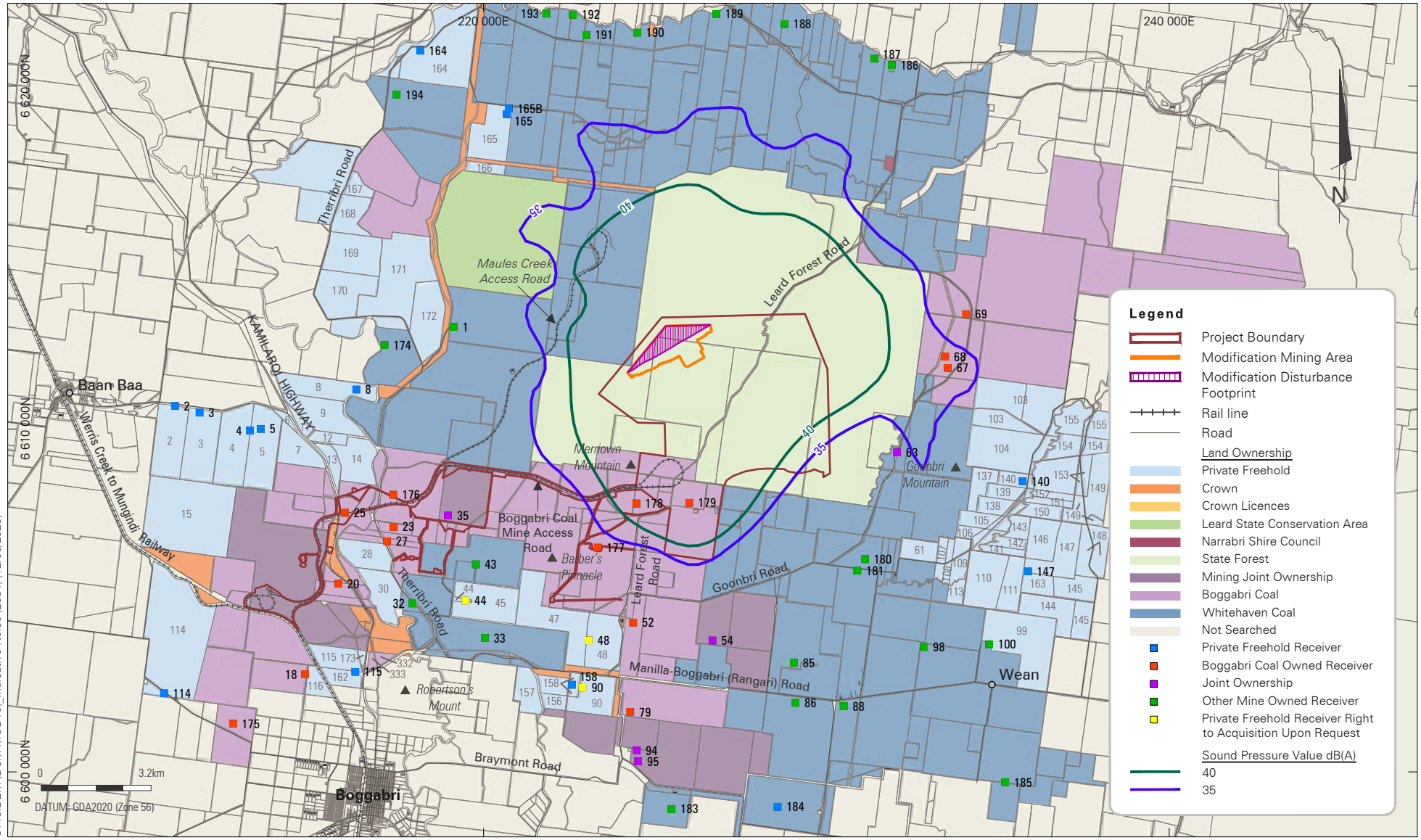
Indicative Noise Contours Year 2028, Max All Periods (LAeq,15minute dB)



3115IDEM (BCM MOD10)_Indicative Noise (2028) (12/05/2025)

BOGGABRI COAL MINE MODIFICATION

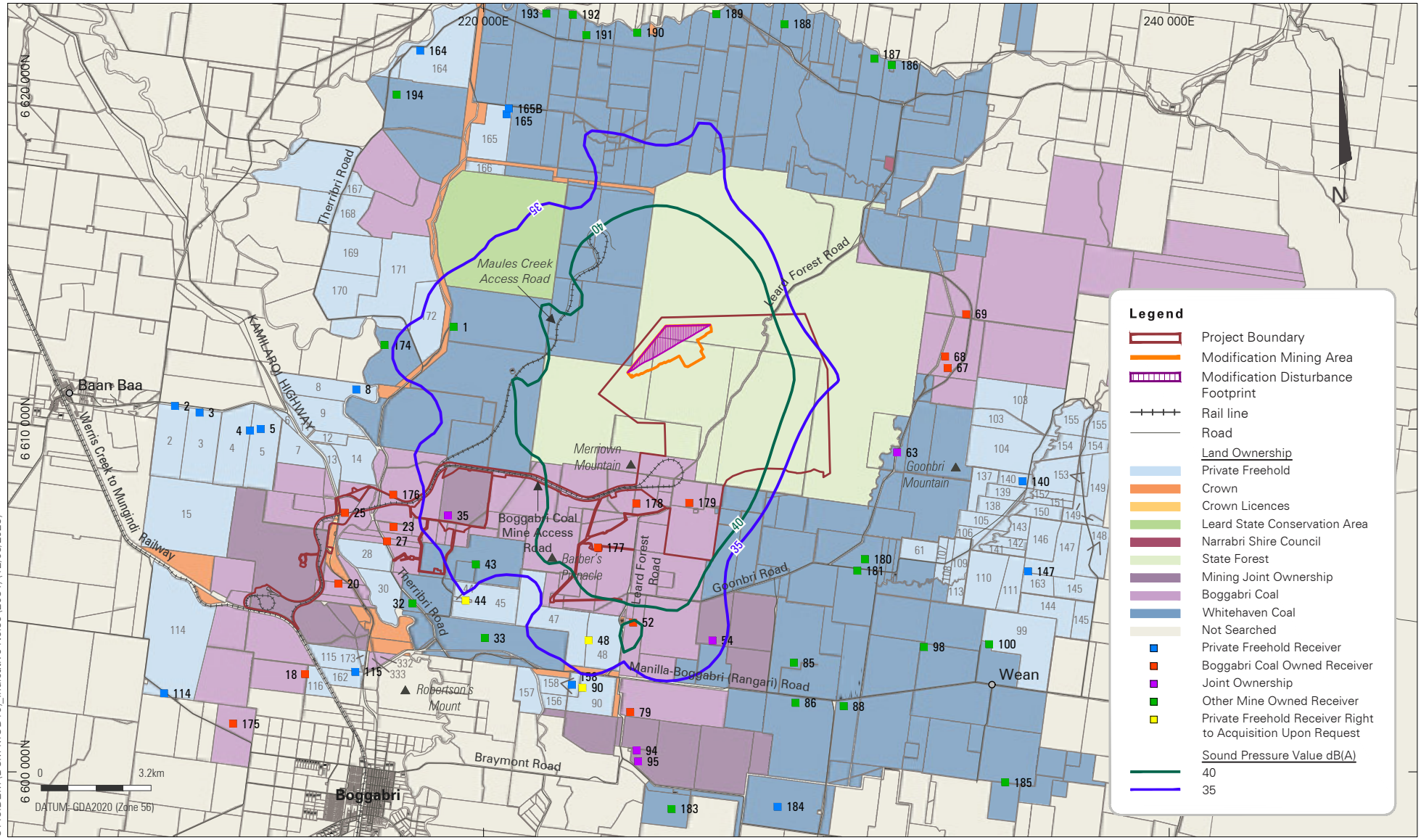
Indicative Noise Contours Year 2028, Night Period (LAeq,15minute dB)



3115IDEM (BCM MOD10)_Indicative Noise (2034) (12/05/2025)

BOGGABRI COAL MINE MODIFICATION

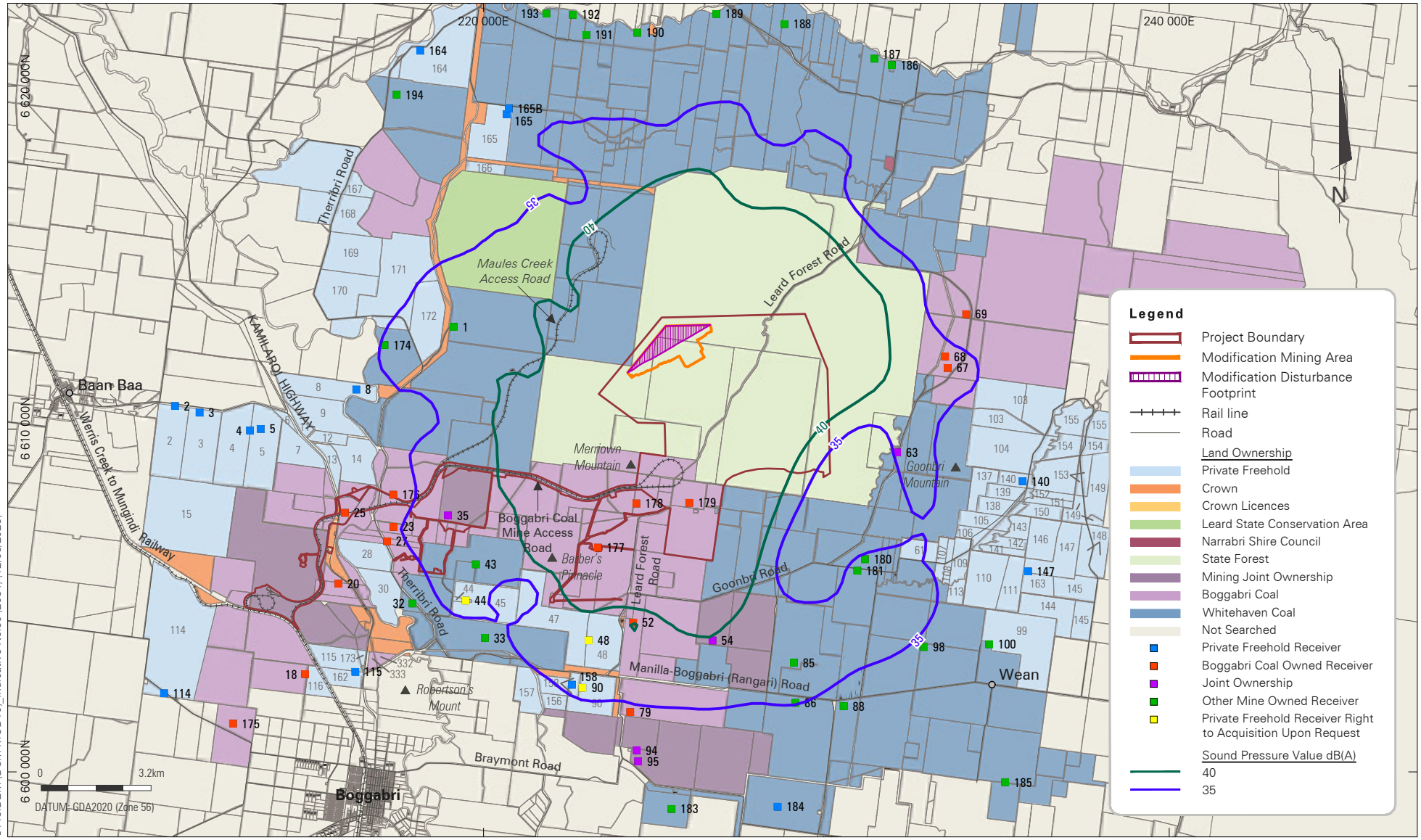
Indicative Noise Contours Year 2034, Day Period (LAeq,15minute dB)



3115IDEM (BCM MOD10)_Indicative Noise (2034) (12/05/2025)

BOGGABRI COAL MINE MODIFICATION

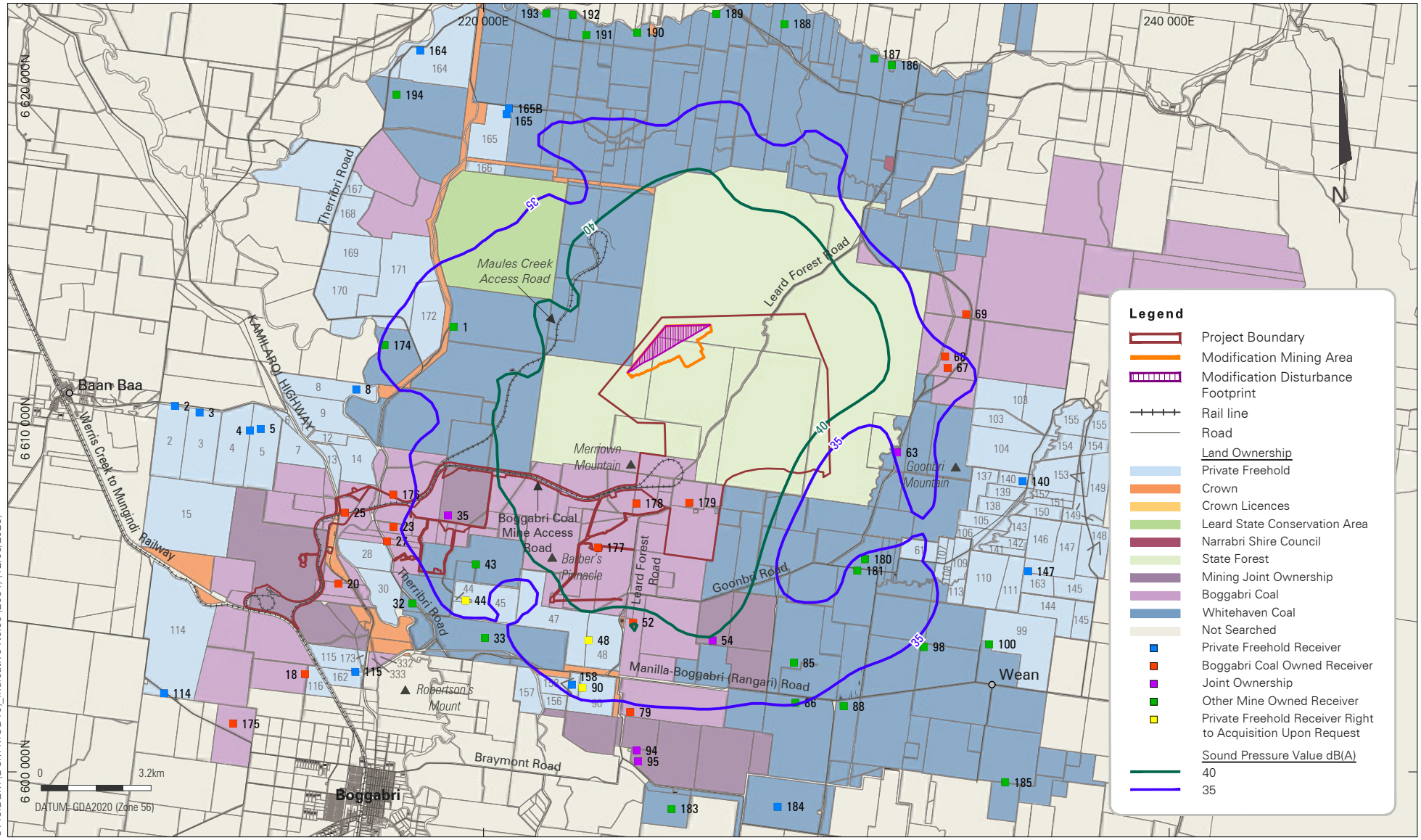
Indicative Noise Contours Year 2034, Evening Period (LAeq,15minute dB)



3115IDEM (BCM MOD10)_Indicative Noise (2034) (12/05/2025)

BOGGABRI COAL MINE MODIFICATION

Indicative Noise Contours Year 2034, Max All Periods (LAeq,15minute dB)



3115IDEM (BCM MOD10)_Indicative Noise (2034) (12/05/2025)

BOGGABRI COAL MINE MODIFICATION

Indicative Noise Contours Year 2034, Night Period (LAeq,15minute dB)

Australia

SYDNEY
Level 10, 201 Chandos Street
St Leonards NSW 2065
T 02 9493 9500

NEWCASTLE
Level 3 175 Scott Street
Newcastle NSW 2300
T 02 4907 4800

BRISBANE
Level 1 87 Wickham Terrace
Spring Hill QLD 4000
T 07 3648 1200

CANBERRA
Suite 2.04 Level 2
15 London Circuit
Canberra City ACT 2601

ADELAIDE
Level 4 74 Pirie Street
Adelaide SA 5000
T 08 8232 2253

MELBOURNE
Suite 9.01 Level 9
454 Collins Street
Melbourne VIC 3000
T 03 9993 1900

PERTH
Suite 3.03
111 St Georges Terrace
Perth WA 6000
T 08 6430 4800

Canada

TORONTO
2345 Yonge Street Suite 300
Toronto ON M4P 2E5
T 647 467 1605

VANCOUVER
422 Richards Street Unit 170
Vancouver BC V6B 2Z4
T 604 999 8297

CALGARY
606 4th Street SW 11 Floor
Calgary Alberta T2P 1T1



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