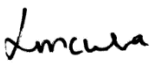
Mannering Colliery Annual Review 2024
Delta Coal

Authors:	
	Lachlan McWha - Environmental Compliance & Approvals Coordinator
Authorised by:	
	Lachlan McWha - Environmental Compliance & Approvals Coordinator
Date:	21 March 2025

Table 1: Annual Review Title Block

Name of operation	Mannering Colliery
Name of operator	Delta Power & Energy (Chain Valley) Pty Ltd (trading as Delta Coal)
Project Approval #	Project Approval MP06_0311 (Mod 5)
Name of Project Approval holder	Delta Power & Energy (Chain Valley) Pty Ltd (trading as Delta Coal)
Titles/Mining Leases #	Nil (all mining leases registered under Chain Valley Colliery Holding)
Name of holder of mining leases	Delta Power & Energy (Chain Valley) Pty Ltd (trading as Delta Coal)
Water License #	WAL40461/20AL217059
Name of holder of water licence	Delta Power & Energy (Chain Valley) Pty Ltd (trading as Delta Coal)
RMP start date	20 October 2022
RMP end date	N/A
Annual Review start date	1 January 2024
Annual Review end date	31 December 2024
I, Lachlan McWha, certify that this audit report is a true and accurate record of the compliance status of Mannering Colliery for the period 1 January to 31 December 2024 and that I am authorised to make this statement on behalf of Delta Power & Energy (Chain Valley) Pty Ltd (trading as Delta Coal). *Note.* *a) The Annual Review is an 'environmental audit' for the purposes of section 122B(2) of the Environmental Planning and Assessment Act 1979. Section 122E provides that a person must not include false or misleading information (or provide information for inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person knows that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, $1 million and for an individual, $250,000.* *b) The Crimes Act 1900 contains other offences relating to false and misleading information: section 192G (Intention to defraud by false or misleading statement—maximum penalty 5 years imprisonment); sections 307A, 307B and 307C (False or misleading applications/information/documents—maximum penalty 2 years imprisonment or $22,000, or both).*	
Reporting Officer	Name: **Lachlan McWha** Title: **Environmental Compliance & Approvals Coordinator** Date: **31st March 2024** Signature: 

Executive Summary

During the 2024 Annual Review reporting period no coal was produced from the Mannering Colliery Project Approval MP06_0311 (Modification 5) project area.

During the reporting period, 1,018,784 tonnes of coal was handled through Mannering Colliery from Chain Valley Colliery (CVC) and transported to Vales Point Power Station (VPPS) via the overland conveyor.

The last modification to Mannering Colliery's Project Approval MP06_0311 (Modification 5) was approved in June 2020. The modification allowed for an extension of approval, increase in ROM coal handling limit and change in allowed mining method (bord and pillar). The site operates under Environmental Protection Licence 191, last issued in June 2023.

A summary of the key environmental performance indicators and statement of compliance for the 2024 reporting period is provided in below.

Indicator	Value
Full time employees (at 31 December 2024)	26
ROM coal produced from site (tonnes)	0
Total product coal transferred to VPPS from site (tonnes)	1,018,784
General waste produced (tonnes)	76
Total waste recycled (tonnes)	108.5
Waste recycling % achieved	58%
Potable water consumed (ML)	70.9
Total water discharged from the operation (ML)	365
Total number of community complaints received	0
Total number of environmental incidents for the period	0
Number of Community Consultative Committee (CCC) meetings undertaken	4
Total greenhouse gas emissions (CO_2 equivalent tonnes) (FY23-24)	91,691

1 Statement of Compliance

There were no reportable environmental incidents during the reporting period. These are summarised in **Table 3**..

Table 2: Statement of Compliance

Were all conditions of the relevant approval(s) complied with?	
Project Approval No. MP06_0311	Yes
EPL191	No
Water Licence WAL40461/20AL217059	Yes

Table 3: Non-compliances for 2024 at Mannering Colliery

Date	Relevant Approval	Condition No.	Condition Description (summary)	Compliance Status	Comment	Where addressed in Annual Review
03/05/2024	EPL 191	L2.4	Water quality limits	Non-compliant	Exceedance of 50 mg/L total suspended solids limit in EPA Point 1 discharge. Result of 169 mg/L recorded in discharged water on 3 May 2024 during a period of heavy rainfall.	Section 11
06/05/2024	EPL 191	L3.1	Daily volumetric discharge limit	Non-compliant	Exceedance of 4,000 kL discharge limit during period of heavy rainfall. Total of 4,382 kL discharged.	Section 11

Compliance status key for Table 3

Risk Level	Colour Code	Description
High	Non-Compliant	Non-compliance with potential for significant environmental consequences, regardless of the likelihood of occurrence
Medium	Non-Compliant	Non-compliance with potential for serious environmental consequences, but is unlikely to occur; or potential for moderate environmental consequences, but is likely to occur
Low	Non-Compliant	Non-compliance with potential for moderate environmental consequences, but is unlikely to occur; or potential for low environmental consequences, but is likely to occur
Administrative non-compliance	Non-Compliant	Non-compliance which does not result in any risk of environmental harm

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2 Introduction

2.1 Background

Mannering Colliery (MC) is an underground coal mine located on the southern side of Lake Macquarie approximately 60 km south of Newcastle and 80 km north of Sydney. The pit-top is located 3 km south of the township of Mannering Park at the southern extent of Lake Macquarie, as shown on **Figure 1**.

Development of the mine (initially known as Wyee Mine) began in 1960 in conjunction with the construction of Vales Point Power Station (VPPS) and was operated by Powercoal Pty Ltd. Production commenced in 1961 with extensive mining (first workings and secondary extraction) having taken place in both the Great Northern and Fassifern Seams. Coal operations temporarily ceased on 30 June 2002 when the operation was placed on care and maintenance.

Centennial Coal acquired control of the Powercoal assets on 7 August 2002 and MC remained on care and maintenance. Wyee Mine was renamed Mannering Colliery and production was recommenced in December 2005, mining the Fassifern Seam to gain access to greater than 5 million tonnes of recoverable reserves beneath Lake Macquarie and surrounding lands.

Mannering was once again placed on care and maintenance in November 2012. In 2013 the owners of Mannering and Chain Valley Colliery (CVC) entered into an agreement with Centennial which enabled LakeCoal to operate Mannering until 2022. LakeCoal became the operator of MC effective 17 October 2013. The underground link road between CVC and Mannering was completed in October 2017.

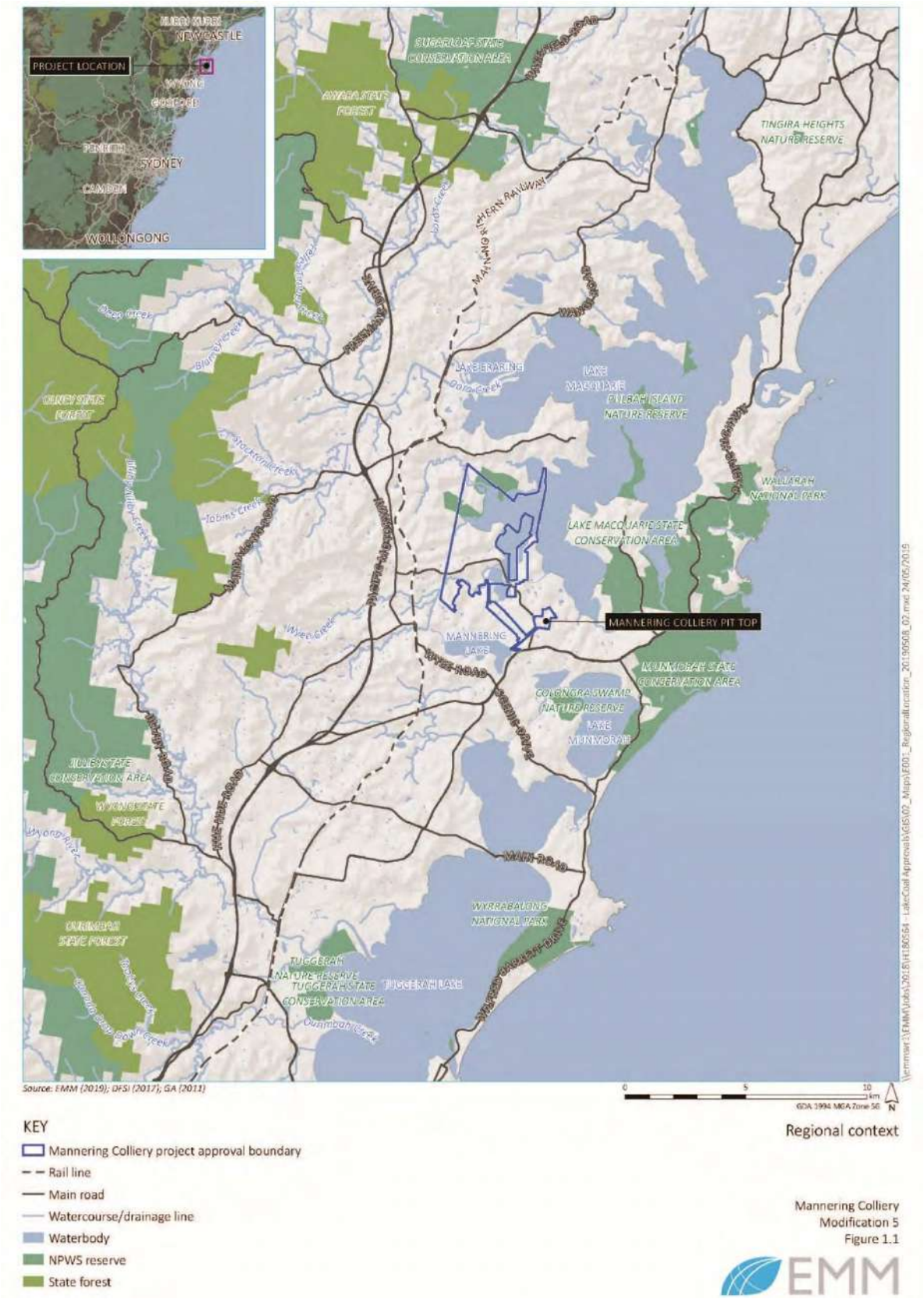
LakeCoal was placed into Voluntary Administration on 3 October 2018. The receivers continued operation of the mines in the period 3 October 2018 to 1 April 2019. As of 1 April 2019, Delta Power & Energy (Chain Valley) Pty Ltd (trading as Delta Coal) own and operate the two underground coal mines, CVC and MC. In the 2024 reporting period, mining was undertaken at CVC only, with the coal being transported underground to MC where the coal is sized and screened and sent directly to VPPS.

2.2 Mine Contacts

The Mannering Colliery contacts as at the end of the reporting period were:

Mine Manager:	Joshua Cornford
Telephone:	02 43580 800
Email:	info@deltacoal.com.au
Environmental Compliance Coordinator:	Lachlan McWha
Telephone:	02 4358 0800
Email:	info@deltacoal.com.au

Figure 1: Mannering Colliery Location and Regional Context



3 Approvals

3.1 Project Approval MP06_0311

MC was granted Project Approval MP06_0311 on 12 March 2008 which has since had five modifications, the most recent being Modification 5 approved on 26 June 2020 (MOD 5) which permitted an extension of mining operations until 31 December 2027 and the use of alternate bord and pillar mine designs. MOD 5 also permitted 2.1 million tonnes per annum (Mtpa) of ROM coal handling for the transfer of coal from CVC to VPPS, in accordance with CVCs approved extraction limit. MC was originally granted approval for the continued production of up to 1.1 Mtpa of run of mine (ROM) coal which was retained in MOD 5. All coal processed at MC is transported via a drift conveyor system to the surface and dedicated overland conveyor to VPPS for domestic energy generation.

Condition 8 within Schedule 5 of MP06_0311 requires the submission of an Annual Review to the satisfaction of the Planning Secretary and in accordance with the *Department of Planning and Environment (DPE), Annual Review Guideline*, 2015.

In 2022 Delta Coal completed an Environmental Impact Statement (EIS) to facilitate and application to consolidate the CVC Development Consent (SSD-5465) and the MC Project Approval (MP06_0311) into a single consent reflecting the joint operating nature of the two mines. At the end of the 2024 reporting period, the approval was pending assessment by the Department of Planning, Housing and Infrastructure (DPHI) before being assessed by the Independent Planning Commission.

3.2 Leases

In the 2022 reporting period all Mining Leases held under the Mannering Colliery Holding were transferred to the CVC holding. In the 2024 reporting period all leases were held under the CVC holding. The surface areas occupied by Mannering Colliery pit-top lie within the Central Coast Council local government area (LGA).

The CVC holding is shown on the Mine Locality Plan **Figure 2**. The applicable mining tenements which are overly the MC Project Approval boundary are listed in **Table 4.**

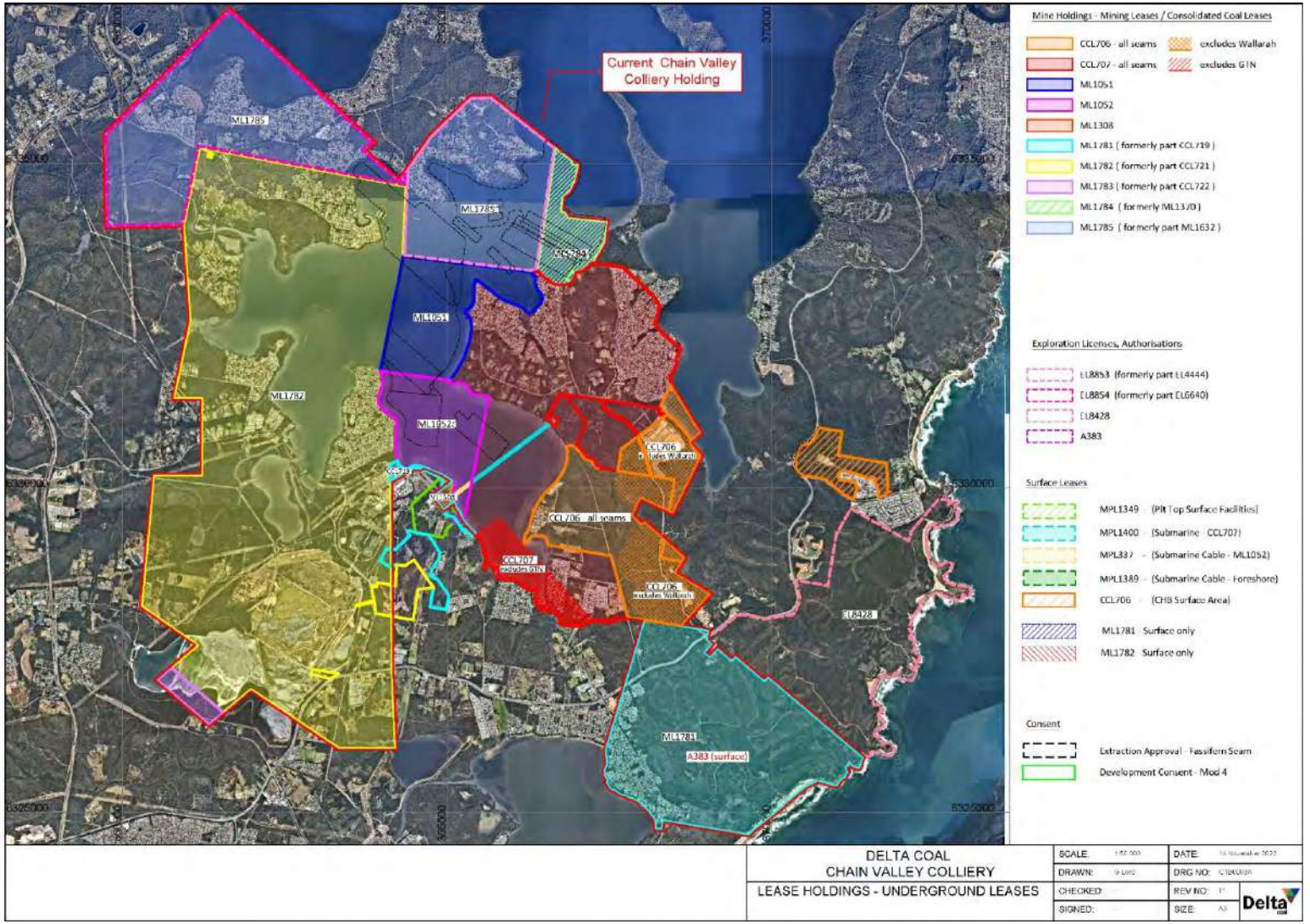
Table 4: Mining tenements

Mining Tenement	Holder	Grant date / Renewal date	Lease expiry date	Applicability
ML 1783	Great Southern Energy	22 April 2022	28 June 2028	Partial transfer of previous subleased area of CCL722 from Centennial Coal to GSE.
ML 1782	Great Southern Energy	24 January 2022	29 July 2026	Partial Transfer of previous sublease area of CCL721 from Centennial coal to GSE. Surface lease for MC Pit-top.

It is noted that while the CVC holding boundary now incorporates a significant portion of what was the Mannering Colliery holding, Annual Reviews for the two Collieries remain separate and relate specifically to the activities occurring within the relevant Project Approval / Development Consent boundaries.

All Mannering Colliery surface operational areas are owned by Delta Power & Energy (Vales Point) Pty Ltd (trading as Delta Electricity) and are operated/occupied under a commercial agreement.

Figure 2 - Delta Coal Mining Tenements



3.3 Licences

Environment Protection Licence (EPL) No. 191 issued by the Environment Protection Authority (EPA) under the *Protection of the Environment Operations Act,1997* covers the Collieries activities and premises. In June 2023, a review of EPL 191 was undertaken by the NSW EPA, a varied licence was issued but there were no tangible alterations.

A current copy of EPL 191 is posted on the Delta Coal website, https://www.deltacoal.com.au/environment/mannering-colliery and is also provided in **Appendix 2**.

Monitoring results obtained in accordance with the licence conditions are made available on the Colliery website (updated monthly), under the environmental reporting page:

https://www.deltacoal.com.au/environment/mannering-colliery/mannering-colliery-environmental-reports/mannering-colliery-environmental-reporting

Delta Coal also holds Water Access License (WAL) 40461 issued under the *Water Act 1912* and permits the extraction of 450 ML per annum.

4 Operations

4.1 Exploration

There was no exploration undertaken at Mannering Colliery during the reporting period.

4.2 Land Preparation

There was no land preparation undertaken during the reporting period, as a result the surface disturbance footprint remains unchanged.

4.3 Construction/Demolition

There were no construction or demolition works undertaken during the reporting period. General maintenance of existing infrastructure was undertaken.

4.4 Mining

There were no mining activities undertaken at Mannering during the reporting period.

Figure 3 and **Figure 4** shows annual ROM production and coal handled at Mannering Colliery between 2012 and 2024. A production summary is provided in **Table 5.**

Existing workings in the Great Northern Seam are shown on the Great Northern Seam Workings Plan and existing workings within the Fassifern Seam are shown on Fassifern Seam Workings Plan presented as **Figure 5** and **Figure 6.**

Figure 3: Annual ROM Production Levels

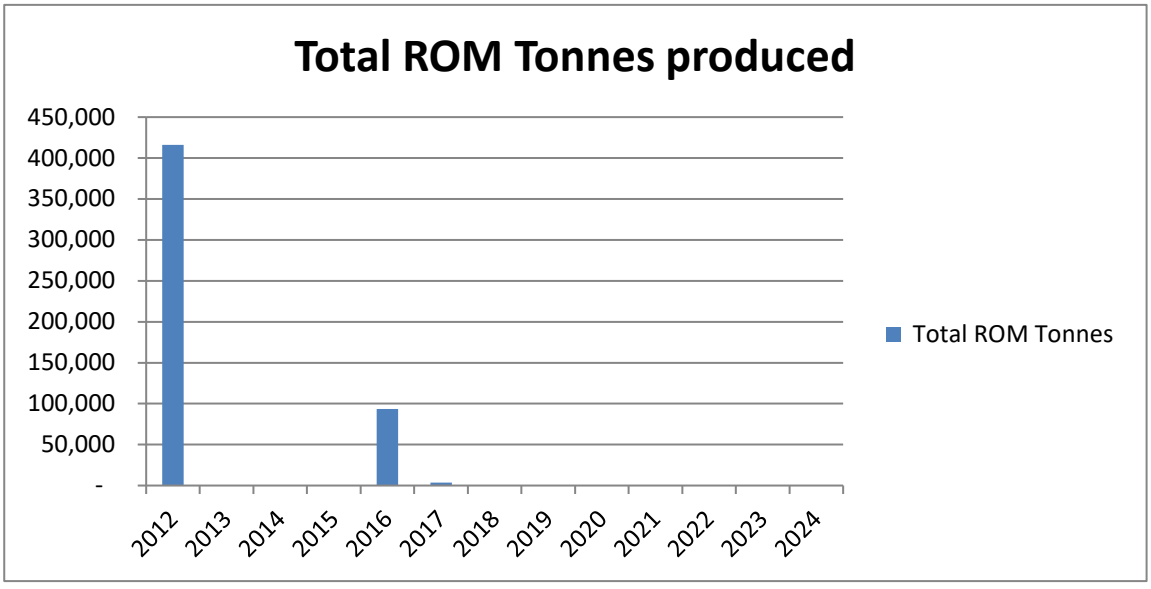


Figure 4: Annual Product Coal Handled

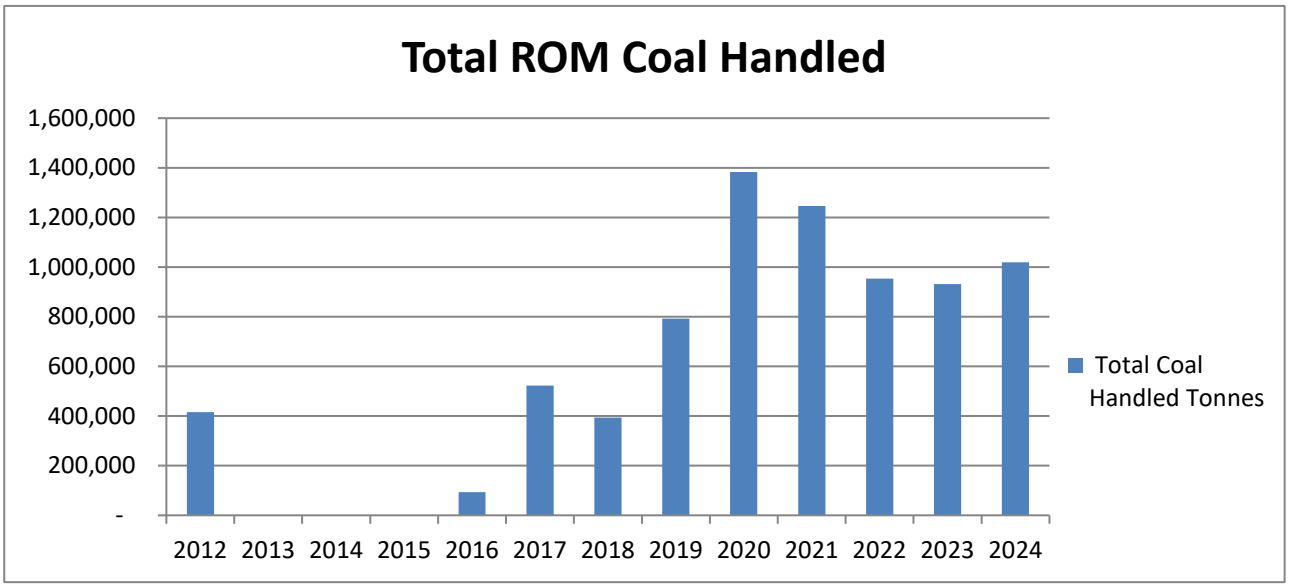


Table 5: Production Summary

Material	Approved Limit (Mt)	Previous Reporting Period (Actual)	This Reporting Period (Actual)	Next Reporting Period
Waste Rock / Overburden	N/A	N/A	N/A	N/A
ROM Coal (mined)	1.1 Mt	0.0 Mt	0.0 Mt	0.0 Mt
Saleable Product (ROM Coal Handled)	2.1 Mt	0.93 Mt	1.0 Mt	1.36 Mt
Coarse Reject	N/A	N/A	N/A^	N/A^
Fine Reject	N/A	N/A	N/A	N/A

^ *Mannering Colliery Rotary Breaker was decommissioned in 2020, as such, Mannering Colliery no longer produces coarse reject.*

All coal handled at Mannering Colliery was dispatched to VPPS via conveyor and mined from Chain Valley Colliery. During the reporting period a total of 1,018,784 tonnes was dispatched to VPPS (domestic market).

Figure 5: Mannering Colliery Existing Great Northern Seam Workings

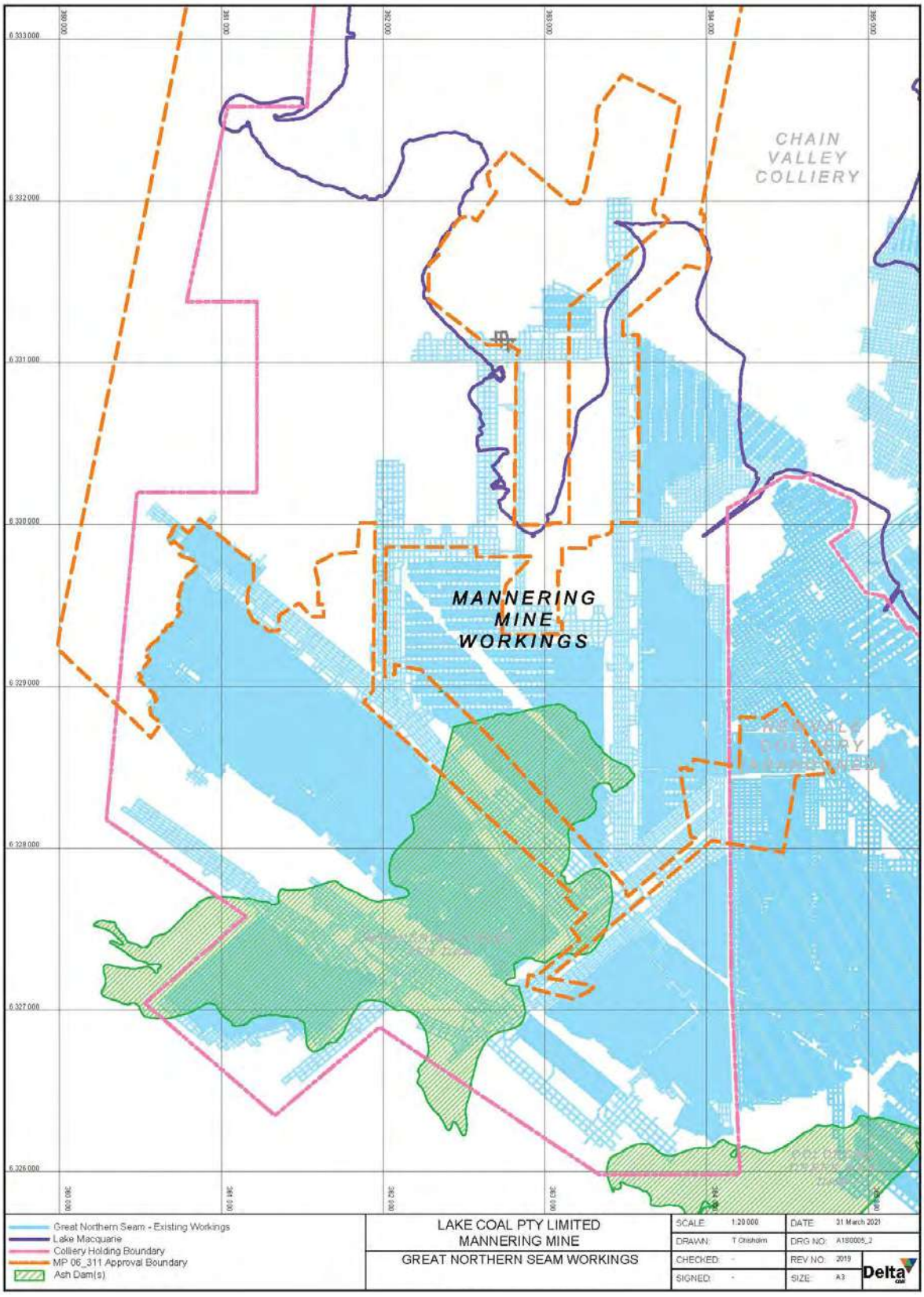
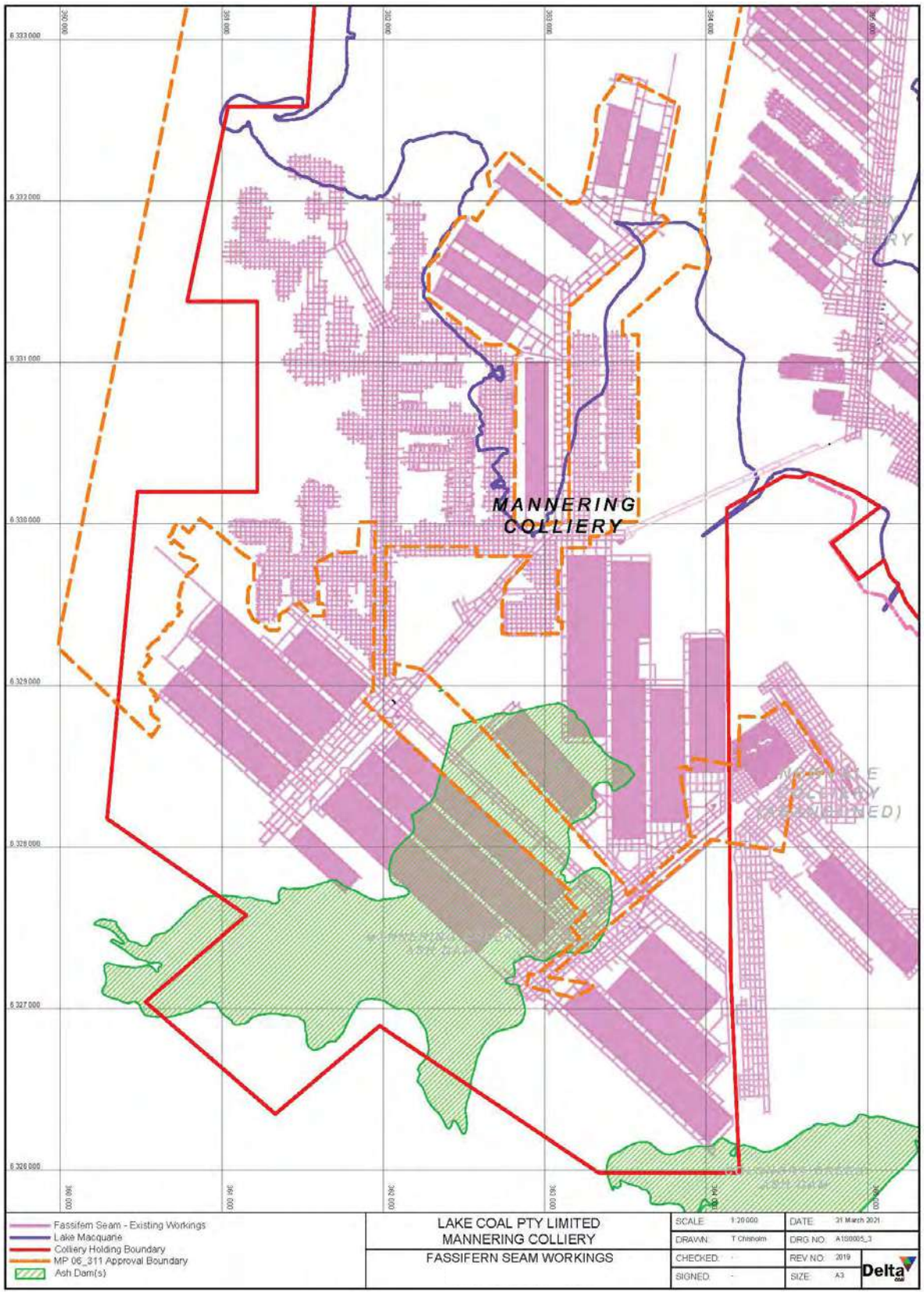


Figure 6: Mannering Colliery Existing Fassifern Seam Workings (including CVC Fassifern Workings to North-east)



4.5 Mine Geology

The most recent mining operations at Mannering Colliery have been located within the Fassifern Seam, which is part of the Boolaroo Formation within the Newcastle Coal Measures (see **Figure 7**). Overlying the Fassifern Seam are the Great Northern, Wallarah and Vales Point Seams (and their associated conglomerates and tuffs), which are part of the Moon Island Beach Formation within the Newcastle Coal Measures. The Wallarah and Fassifern Seams have been mined at Myuna Colliery to the north-east, while the Wallarah, Fassifern and Great Northern seams have been mined at CVC to the east.

The coal resource within the Fassifern and Great Northern seams has a low sulphur content, which makes it a preferable supply for power generation. Within the Colliery holding, the Fassifern Seam lies at around 150 to 205 metres deep and mining is based on a three-metre section of coal (approximate) beneath the B ply, which comprises approximately 1.0 to 1.2 metres of inferior coal left on the roof (Seedsman, 2011). The depth of cover to the Great Northern Seam is between approximately 140 and 155 metres and the typical seam thickness is 2.5 metres (Seedsman, 2011).

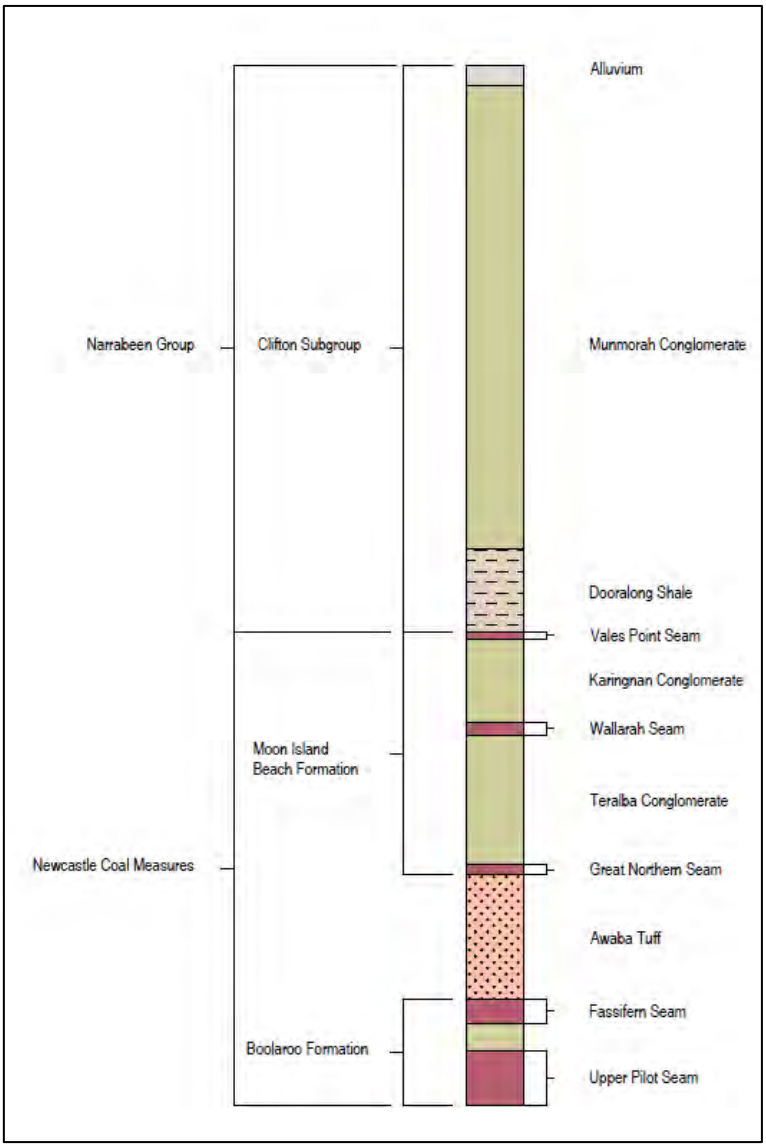
Previous workings within both of these seams are extensive. These workings, in conjunction with various geophysical surveys in the area, provide a solid base of data regarding regional and local structural features. The area within the Colliery holding is dissected by a number of north-west striking faults and dyke zones at a regional spacing of up to two kilometres, with drilling and surface magnetometer surveys confirming the locality of these structural features (Hanson Bailey, 2007).

The stratigraphic sequence beneath the mine plan is comprised of three distinct units:

1. the upper Permian Newcastle Coal Measures, a sandstone/coal sequence with lesser siltstone;
2. the overlying Clifton Sub-group, which is the basal unit of the Triassic Narrabeen Group; and
3. quaternary to recent alluvial sediments.

The Great Northern Seam is separated from the Fassifern Seam within the Newcastle Coal Measure by approximately 25 to 30 metres. The strata directly below the Fassifern Seam are high strength sandstone formations, interbedded with thinner strata of other units such as shale, mudstone and coal (Hansen Bailey 2007). This interval between the Fassifern Seam and the Great Northern Seam is generally made up of two strata characterised in the lower section by the Awaba Tuff, which is the stone roof of the Fassifern Seam, and a conglomerate/coarse-grained sandstone unit in the upper section (Hansen Bailey, 2007). The roof of the Great Northern Seam is Teralba Conglomerate (Seedsman, 2011).

Figure 7 - Typical Stratigraphy at Mannering Colliery



4.6 Mineral Processing

ROM coal was sized above ground at the Mannering Colliery Coal Handling and Preparation Plant (CHPP) during the 2024 reporting period. Product coal (ROM) is transported from the CHPP to VPPS via an overland conveyor system.

4.7 Waste Management

Delta Coal continued to implement a total waste management system for the site during the reporting period. The waste streams provided for in 2024 included:

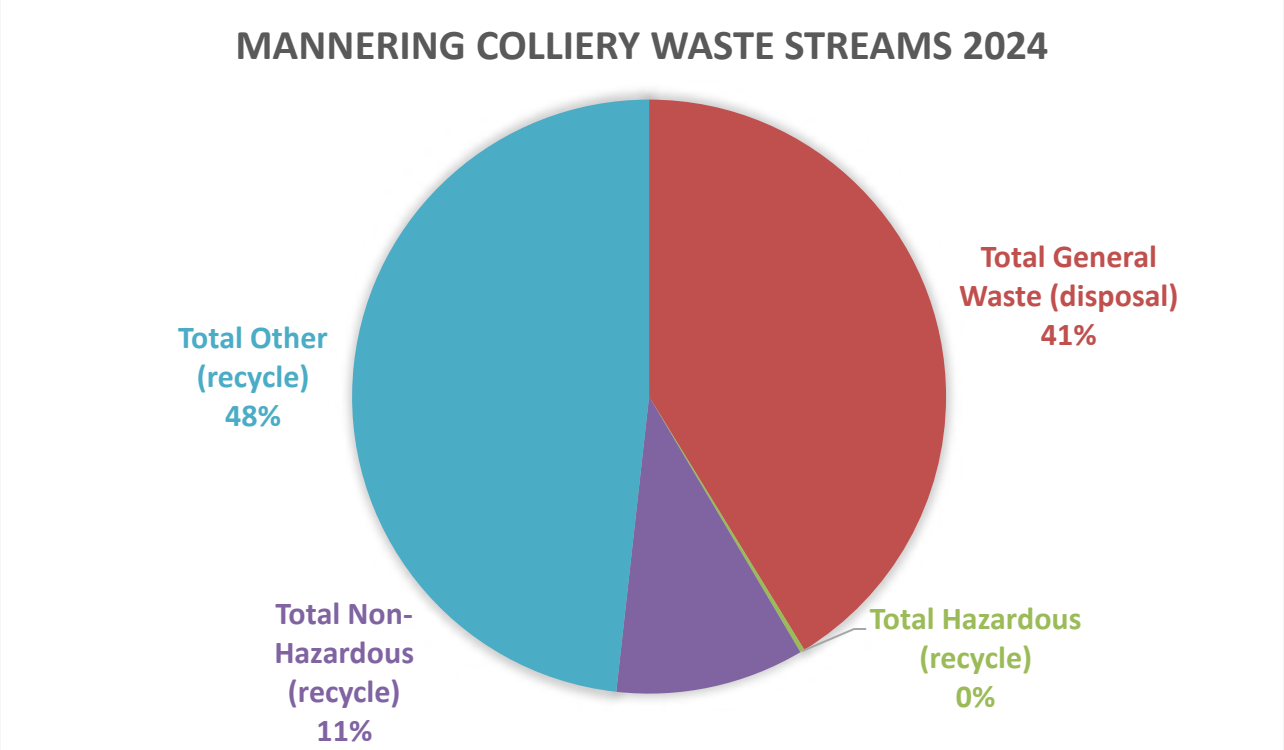
- Other (recycle) - 89 t (48%)
- General waste (disposal) - 76 t (41%)
- Non-hazardous (recycle) - 19 t (10%)
- Hazardous (recycle) - 0.5 t (0.2%)

A total of 58% of waste generate from the Mannering Colliery facility was recycled in the 2024 reporting period.

The total waste management system also involves weekly site inspections by the waste management contractor to facilitate effective waste management and continual improvement along with monthly reporting, with data from key waste streams presented in **Figure 8.** The total waste management system will continue during the next reporting period.

Sewage generated by on-site staff amenities is pumped directly from Mannering Colliery to Mannering Park sewage treatment plant via a dedicated pipeline.

Figure 8: Waste Streams and Volumes for Mannering Colliery



4.8 Stockpiles

When operating, delivery of coal to VPPS occurs via dedicated overland conveyor directly to the power station. Stockpiling of coal at Mannering Colliery only occurs when coal transfer system to VPPS is unavailable and the surface ROM coal bin has been fully utilised. The stockpile has a nominal capacity of approximately 25,000 tonnes. Prior to being received to the stockpile, coal is preferentially held in the pit-top ROM Coal bin, with a capacity of approximately 5000 tonnes.

There were no changes to the coal stockpile area during the reporting period.

4.9 Hazardous Materials Management

A hazardous chemicals and dangerous goods register is maintained onsite and electronically through 'ChemWatch' to assist in management of risks to health and the environment.

There have been no significant changes made to the management of hazardous materials during the reporting period.

4.10 Other Infrastructure Management

No significant changes have been made to other infrastructure during the reporting period.

5 Actions Required from Previous Annual Review

5.1 Actions required from previous Annual Review

Delta Coal received formal acknowledgement from DPIE on 30 August 2024 that the MC 2023 Annual Review generally satisfied the project approval requirements. There were no items requiring amendment from the DPHI review. It was noted for future reviews, that:

- Section 6.5 Methane Drainage and Greenhouse Gas – please include comparison of calculated annual emissions to the greenhouse gas predictions provided in the EA and report on measures undertaken in the reporting period to minimise greenhouse gas emissions from the site.

This Annual Review incorporates the above information as requested.

5.2 Delta Coal Environmental Management System

Environmental management at MC is structured through the environmental management system based on the company's Environmental Policy. The risk assessment of environmental aspects and impacts at MC forms the basis of environmental impact mitigation and control and will be reviewed throughout the life of the Colliery.

The Environmental Management Strategy provides the overview of the environmental management system which has been visually presented in **Figure 9**. Modification 5 to MP06_0311 was granted in June 2020 and allowed the combination of Chain Valley Colliery and Mannering Colliery management plans where practicable and approved by the Planning Secretary. A summary of combined environmental management plans is detailed below. at the end of the reporting period the following combined plans were approved:

- Delta Coal Environmental Management Strategy (incorporating Environmental Monitoring Program);
- Delta Coal Noise Management Plan (combining the Mannering Colliery Noise Management Plan and Noise Monitoring Program and CVC Noise Management Plan);
- Delta Coal Air Quality and Greenhouse Gas Management Plan (combining CVC Air Quality Management Plan and Mannering Colliery Air Quality and Greenhouse Gas Management Plan); and
- Delta Coal Heritage Management Plan (combining CVC Heritage Management Plan, Mannering Colliery Aboriginal Cultural Heritage Management Plan and Mannering Colliery Non-indigenous Management Plan).

The Delta Coal Land Management Plan was pending approval by the Planning Secretary at the end of the 2024 reporting period and is forecasted to be enacted in the 2025 reporting period.

Table 6 provides the status of MC's Environmental Management Plans.

Figure 9 - Environmental Management Strategy Summary

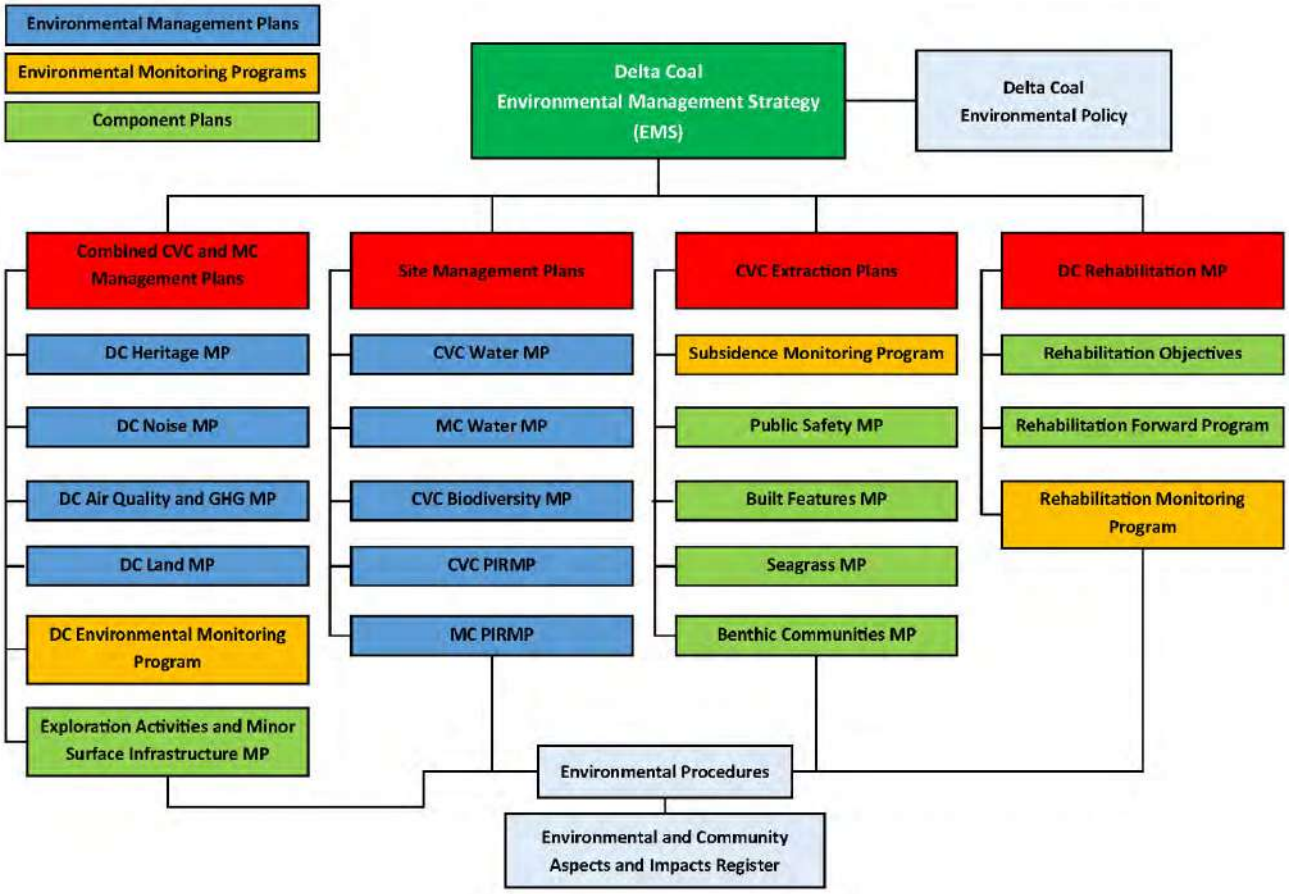


Table 6: Primary Elements of the Environmental Management System

Document Title	Reviewed	Status
Delta Coal Environment Policy	October 2022	Current
Delta Coal Environmental Management Strategy	July 2024	Current
Delta Coal Environmental Monitoring Program	July 2024	Current - Appended to the combined Delta Coal Environmental Management Strategy
Environmental Aspects and Impacts Register and Risk Assessment	June 2020	In revision
Mannering Colliery Water Management Plan	November 2022	Current
Delta Coal Air Quality and Greenhouse Gas Management Plan	January 2024	Current
Delta Coal Noise Management Plan	April 2022	Current
Delta Coal Heritage Management Plan	September 2023	Current
Delta Coal Land Management Plan	Not yet approved	Submitted to DPHI for approval.
Mannering Colliery Land (including Bushfire) Management Plan	December 2019	To be replaced by Delta Coal Land Management Plan upon approval.
Rehabilitation Management Plan	November 2023	Current
Pollution Incident Response Management Plan (PIRMP)	December 2024	Current
Environmental Inspection Forms	May 2023	Current
Complaints Register	December 2024	Updated monthly on www.deltacoal.com.au

6 Environmental Performance

6.1 Air Pollution

The Mannering Colliery: Continuation of Mining Environmental Assessment by Hansen Bailey (March 2007), states the following summary of relevant predictions and trends associated with air quality, specifically depositional dust at Mannering Colliery:

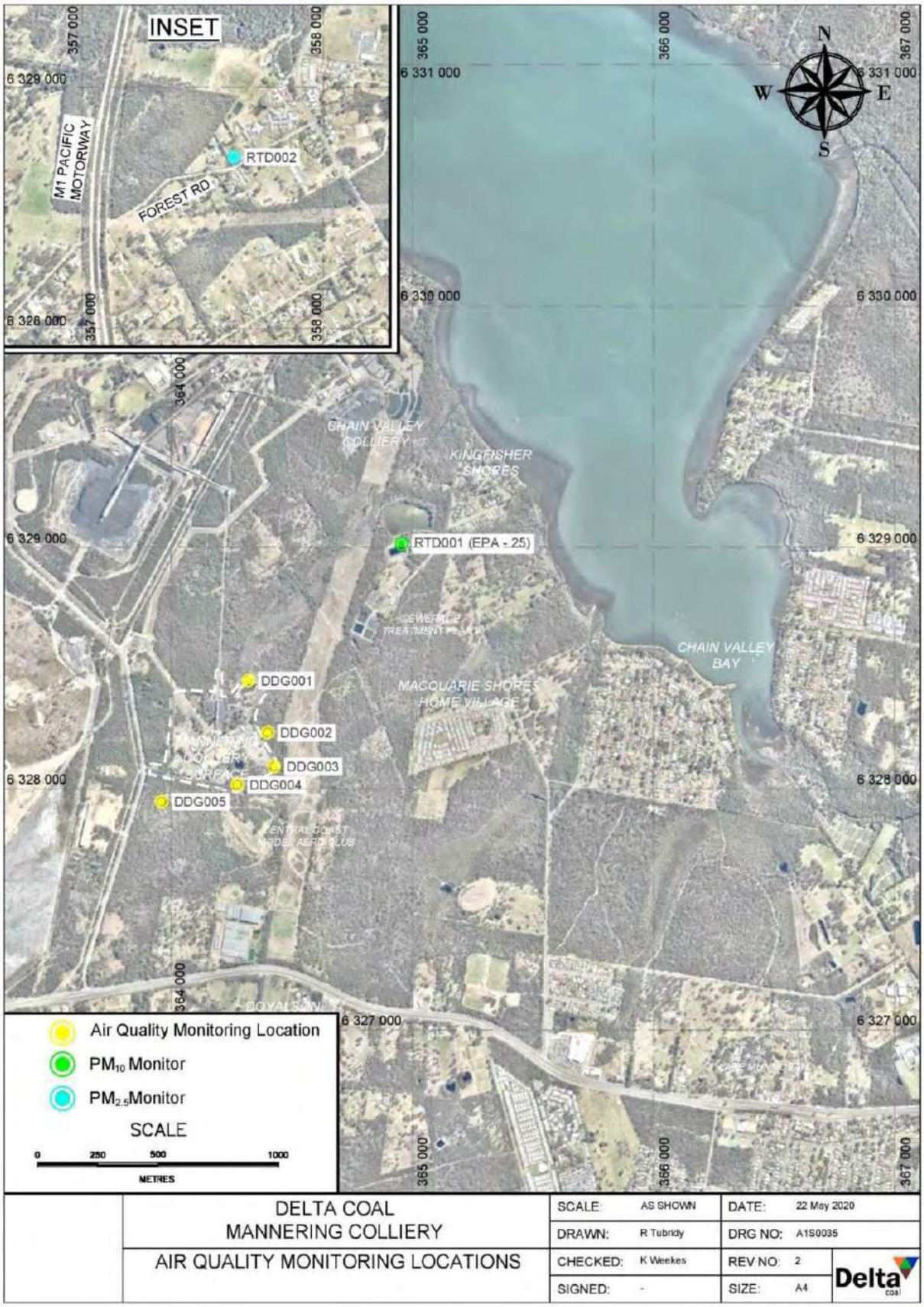
- The estimated total emissions from the mine and operation of the overland conveyor from Mannering to Vales Point Power Station will remain small, at less than 2 g/s. This level of emission will not affect the PM_{10}, TSP or deposition levels significantly at the closest residential location.
- The 24-hour PM_{10} concentrations will exceed the 50 µg/m^3 assessment criterion during periods when bushfires are contributing high concentrations of smoke to the air, or remote dust storms transport significant quantities of particulate matter into the Lake Macquarie air shed.
- Since the mine's ventilation system is already part of the existing operations and the effect of the emissions from the ventilation system will be captured in the historical monitoring data, the only new emissions (i.e TSP) will be 733 kg/y or 0.023 g/s, which is even less than the 1.5 g/s due to all sources.
- In the 2015 modification, the TSP figures presented in the 2007 assessment were contemporised and incorporated revised assumptions for the operation. The emission rate as a result of the modification, though increasing marginally, is still below the previously identified 2 g/s. As a consequence, it was concluded that this will not result in any noticeable change in the concentrations of particulate matter at sensitive receivers.
- To facilitate Modification 5 (June 2020), potential TSP emissions were modelled to consider an increase in coal handling at MC (assumed 20% of total ROM coal produced is handled via the sites stockpile). While increasing marginally, the emissions rate as a result of the modification was modelled to remain below 2 g/s.

In accordance with Schedule 3, Condition 16 of MP06_0311, it must be ensured that all reasonable and feasible avoidance and mitigation measures are employed so that particulate emissions generated by Mannering Colliery do not cause exceedances of the criteria listed in **Table 7** at any residence on privately owned land. Air quality monitoring locations are presented on **Figure 10**.

Table 7: Mannering Colliery, Air Quality Criteria

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

Figure 10 - Mannering Colliery Air Quality Monitoring Locations



6.1.1 Depositional Dust

To measure the effectiveness of the Mannering dust control measures, a network of dust depositional monitoring gauges has been established for surface operations and coal stockpile dust emissions. Depositional gauges are located within the Mannering perimeter, a total of 5 depositional gauges are utilised. Dust deposition gauge locations are shown on **Figure 10**.

Table 8 describes the location of dust monitoring points as outlined in EPL 191 Condition 2, P1.1.

Table 8: Depositional dust monitoring points

Site ID no.	EPA ID no.	GPS Coordinates	Location
DG1	3	Easting 364319 Northing 6328448	North-west of final dam
DG2	4	Easting 364399 Northing 6328232	North of hardstand area
DG3	5	Easting 364427 Northing 6328092	North-east of hardstand area
DG4	6	Easting 364273 Northing 6328016	East of car park
DG5	7	Easting 363959 Northing 6327946	South of main site entry

During the reporting period monitoring was undertaken in accordance with the approved Air Quality Management Plan and EPL 191 licence conditions. Depositional dust monitoring results are shown in **Table 9**. The rolling annual averages for 2024 and longer term annual average results (from 2006 - 2024) are presented on **Figure 11** and **Figure 12** respectively.

No complaints relating to dust or air pollution were received in the reporting period.

Table 9: Depositional Dust Results for 2024

Sampling Point	DG1 (EPA ID#3)	DG2 (EPA ID#4)	DG3 (EPA ID#5)	DG4 (EPA ID#6)	DG5 (EPA ID#7)
Month	Insoluble Solids	Insoluble Solids	Insoluble Solids	Insoluble Solids	Insoluble Solids
Jan-24	0.6	0.7	0.6	1.1	0.7
Feb-24	1.3	1.3	0.6	0.7	1.2
Mar-24	1.0	0.4	0.4	0.1	0.2
Apr-24	0.1	0.2	0.3	0.3	0.3
May-24	0.4	0.3	0.2	0.1	0.8
Jun-24	0.3	0.3	0.2	0.4	0.6
Jul-24	0.1	0.1	0.1	0.2	0.3
Aug-24	0.6	0.4	0.7	0.8	0.7
Sep-24	0.5	0.2	0.2	0.4	0.6
Oct-24	0.5	0.4	0.6	0.4	0.4
Nov-24	0.2	0.5	0.4	0.5	0.2
Dec-24	2.0	0.5	0.8	0.6	0.7
Minimum	0.1	0.1	0.1	0.1	0.2
Maximum	2.0	1.3	0.8	1.1	1.2
Annual Average	**0.6**	**0.4**	**0.4**	**0.5**	**0.6**

Figure 11: Monthly Depositional Dust Results 2024

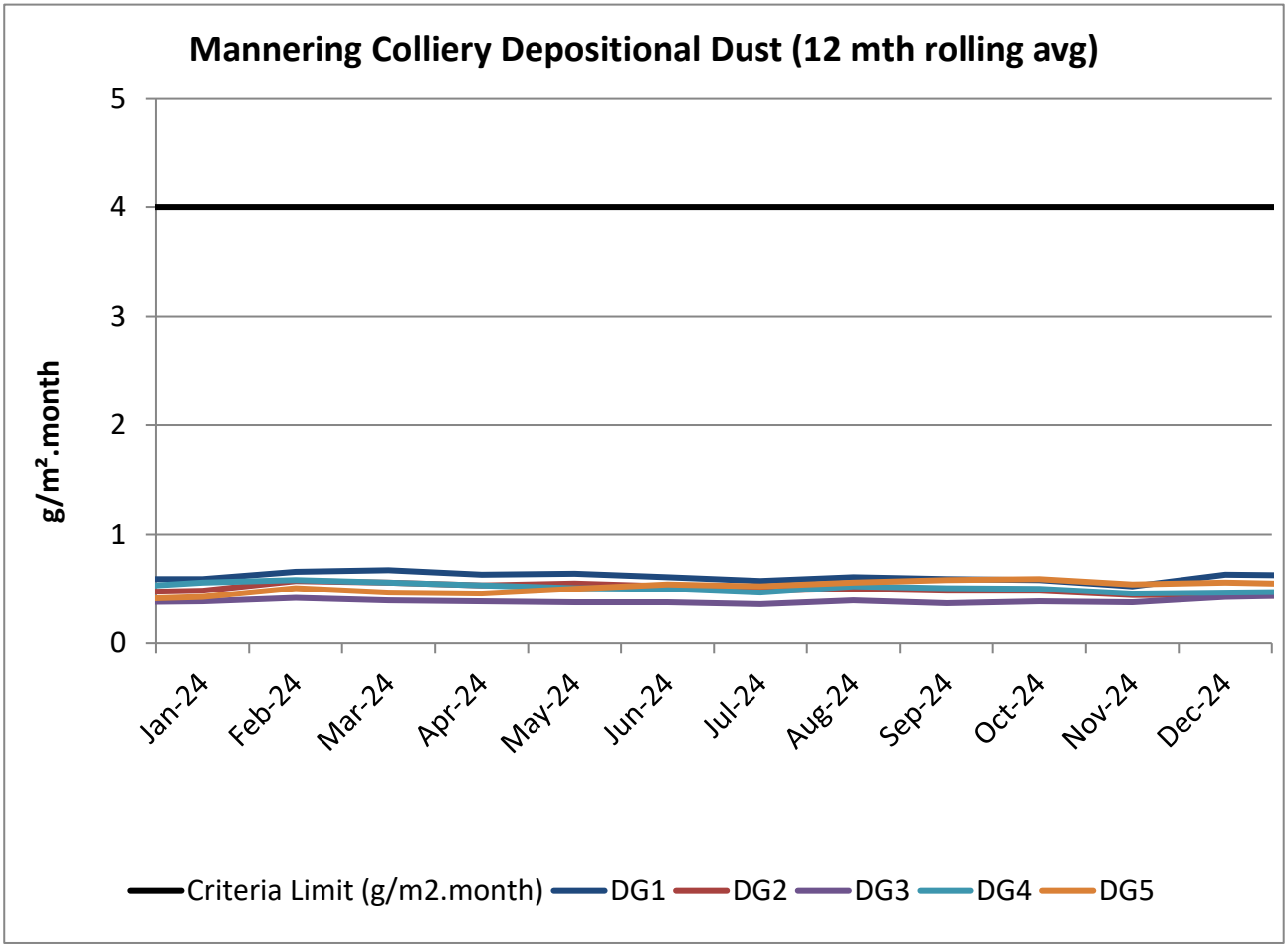
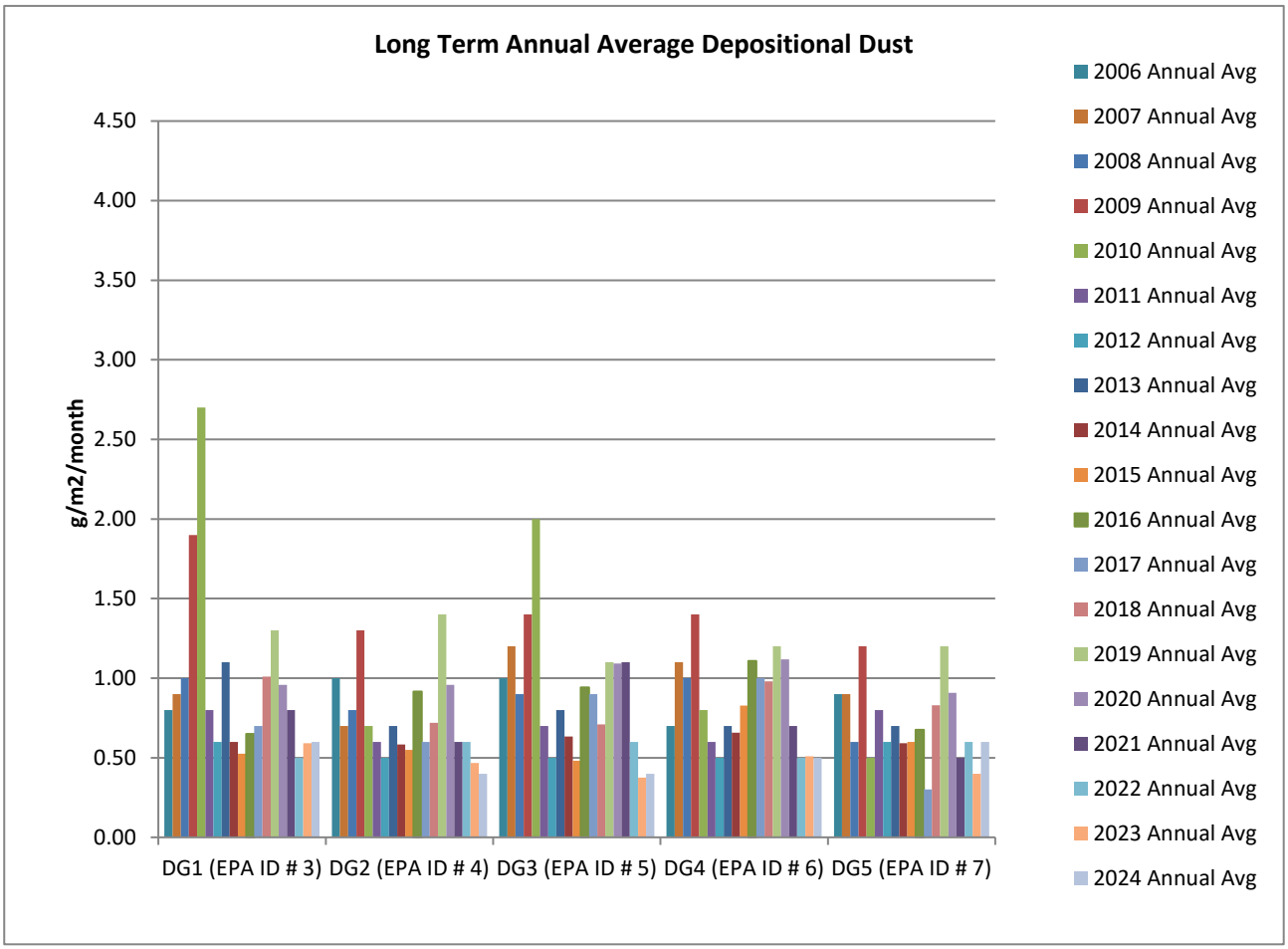


Figure 12: Rolling Annual Average Dust Depositional Results 2006 - 2024



Air quality monitoring results in the 2024 reporting period show that air monitoring criteria has been met and the recorded levels do not exceed the prescribed maximum increase in deposited dust levels of 2 g/m2/month or maximum annual level of 4 g/m2/month. Average annual results were below 0.6 g/m2/month at all monitoring locations.

A comparison of annual average results from 2024 compared with prior years is provided in **Figure 12**. Equivalence or decreases in annual average values were observed at all locations with exception to DG5 which increased marginally (0.2 g/m^2/month). The 2024 depositional dust levels were comparable with years the colliery was in care and maintenance where no production or coal handling was undertaken at the site (2013-2015).

In comparison to the predicted trends and EA data, the air quality results within the 2024 reporting year were less than the predicted 2g/m^2/month.

6.1.2 PM_{10}

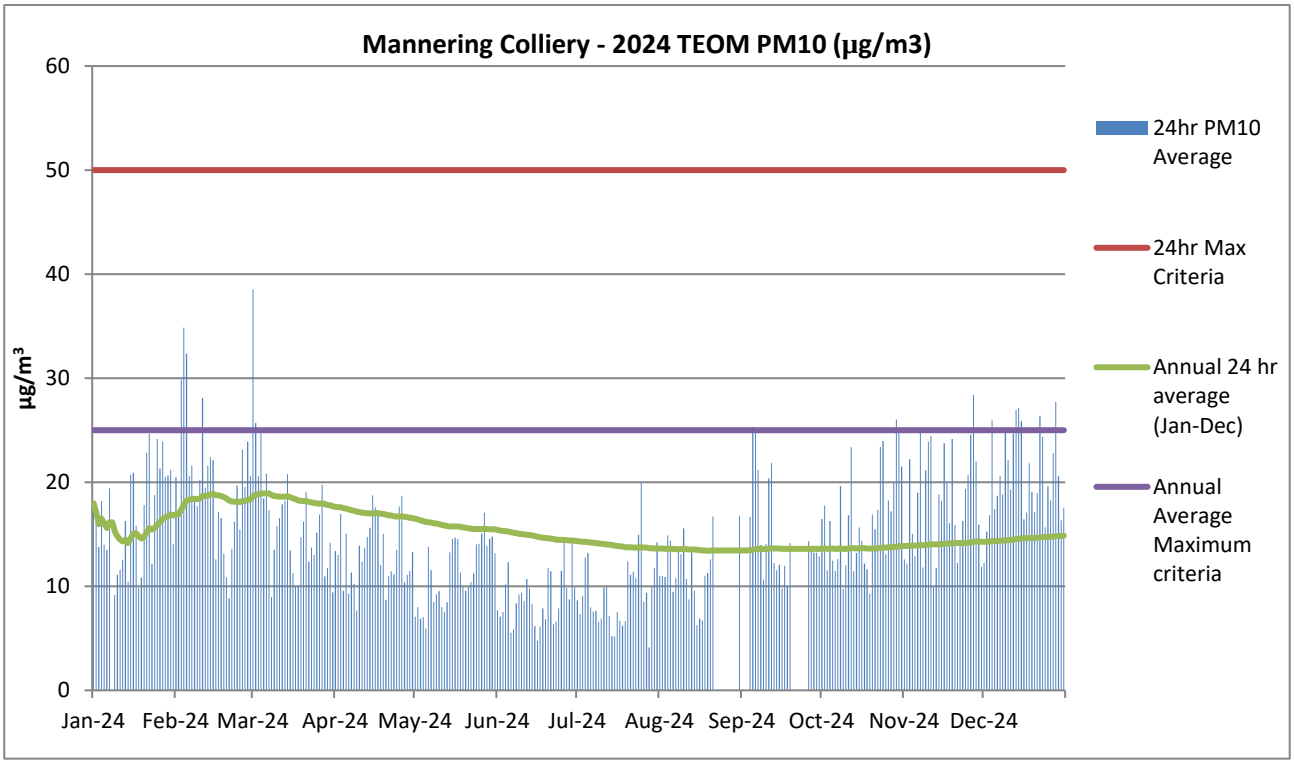
Delta Coal monitors PM_{10} concentrations at a real-time air quality monitor which was installed in late 2013 within the Mannering Park Wastewater treatment Plant site. The site is identified on **Figure 10** as RTD001.

Data capture from the real time monitor for the 2024 period was 94.8% with 347 days monitored of 366 available days. There were no exceedances of the EPA short-term 24hr average criteria (50 µg/m^3) during the reporting period.

The annual average criterion (25 µg/m^3) was not exceeded during the 2024 period. Daily results, the rolling average and relevant limits are shown on **Figure 13.**

Daily (24-hour) results ranged from a minimum of 4 µg/m^3 to a maximum of 39 µg/m^3 during 2024. The 2024 annual average of 24hr PM_{10} results was 15 µg/m^3.

Figure 13 - PM_{10} Particulate Monitoring at Mannering Park Waste Water Treatment Plant

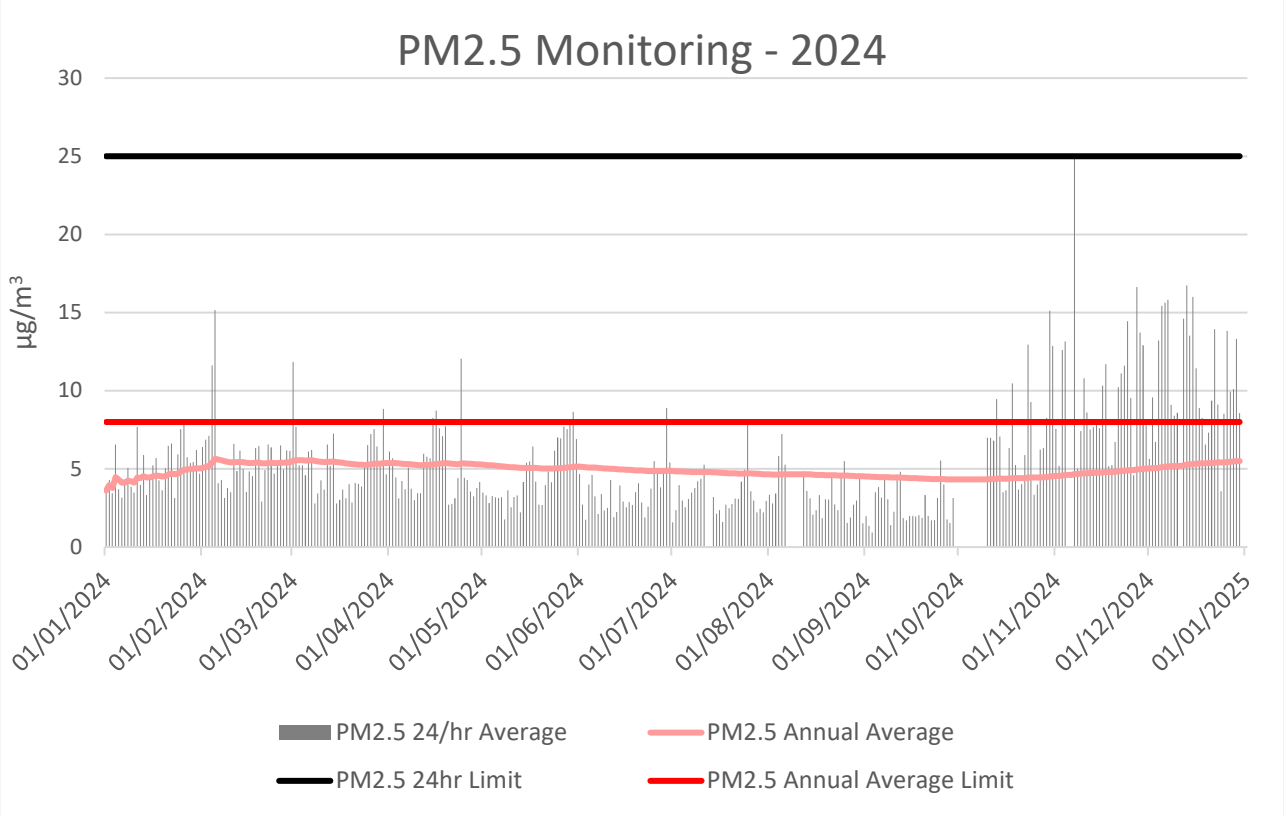


6.1.3 $PM_{2.5}$

In accordance with Table 3, Condition 16 of Schedule 3 MP06_0311 Delta Coal commenced monitoring of $PM_{2.5}$ concentrations in 2020 following the approval of Modification 5 to MP06_0311. $PM_{2.5}$ monitoring for the 2024 period utilised Delta Electricity's TEOM unit during the reporting period at the monitoring location at Tingley Road, Wyee as shown on the inset-on **Figure 10**.

Delta Coal's arrangement to monitor $PM_{2.5}$ was approved within Delta Coal Air Quality and Greenhouse Gas Management Plan last approved in January 2024. $PM_{2.5}$ concentrations for the 2024 reporting period have been displayed on **Figure 14**. No exceedances of $PM_{2.5}$ criteria were observed in the 2024 reporting period. The average $PM_{2.5}$ concentration for the period of 1 January 2024 to 31 December 2024 was 6 µg/m^3 with 24/hour averages between 1 and 25 µg/m^3.

Figure 14: $PM_{2.5}$ Particulate at Wyee Air Quality Monitoring Station



6.2 Erosion and Sedimentation

Mining operations and significant rainfall events have the potential to cause erosion and/or generate sediment and impact on the surrounding catchment areas. Sources of potential erosion were unchanged during the reporting period and include:

- the exposed areas of the laydown areas, workshop and internal access tracks
- coal stockpiles and coal handling equipment areas; and
- vehicle and equipment movements.

The site includes a series of 9 silt traps. These are inspected weekly for functionality and maintenance purposes. Identified actions are provided to the relevant site personnel by the site Environment and Approvals Coordinator or their delegate for completion as required.

Water not managed by the clean water diversion structures enters the sediment ponds. The water draining from the hardstand catchment area reports to the sediment basin, Pond 1. Pond 1 will if required overflow into Pond 2, which then flows into Pond 3 and then Pond B prior to being discharged from site via LDP001. Total suspended solids, electrical conductivity, pH, and oil and grease concentrations are monitored weekly at EPA Point 1(as identified in EPL 191) point of the final dam during discharge (refer to **Section 7.3** for results).

Runoff from the coal handling and stockpile area is contained by a sedimentation-based sump system that helps capture the coal fines prior to entering sediment Pond 1 below the stockpile. Runoff from this area can contain coal fines due to the nature of the activities. This Pond along with Ponds 2 and 3 also function as primary settling ponds before discharging into Pond B. The flocculent system consists of solid flocculent blocks, situated at four locations leading into, or within, the sediment pond system. The flocculent blocks are situated at the following four locations:

- pipeline entry of hardstand area catchment into Pond 1;
- concrete drainage channel from the coal stockpile catchment into Pond 2 (Photo 1);
- outlet of the subsurface drainage system leading into Pond 1; and
- at the outlet of the concrete pipe transferring water into the final dam (Pond B).



Photo 1. Flocculent block located adjacent the coal stockpile area.

The flocculant system was utilised throughout 2024 to manage suspended solid material.

Both volumetric flow and water quality results from the licenced discharge point continue to be reported on a monthly basis on the Delta Coal website.

6.3 Contaminated Land

Mannering has a number of primary diesel and oil storages, which are bunded. There were no significant spills during the reporting period or reports of polluted land. A Phase One Environmental Site Assessment (ESA) has been completed which identified areas of potential contamination. Phase 2 investigations and assessment are likely to be carried out over these areas during the decommissioning stage at end of mine life. Potential areas of concern are the land surrounding the diesel storage and the surface workshop. The development of a Remedial Action Plan following the Phase 2 assessment would occur, if required, based on the results from the site assessment.

The NSW EPA requested a PFAS sampling report in 2018 and this sampling and a subsequent report was provided.

6.4 Threatened Flora

In accordance with the EA (2007), Mannering's environmental footprint, specifically the surface facilities will remain unchanged and any mining activities undertaken at any point will have no noticeable surface implications. There will be no impact on existing flora or fauna within the Environmental Assessment boundary. As such, no known impacts to threatened flora during the reporting period as a result of the Colliery's operations.

6.5 Threatened Fauna

No clearing works were undertaken during the reporting period and as a result potential to impact to threatened fauna or other native fauna was minimised.

As discussed in **Section 4.10** there were no significant changes to the existing infrastructure. The sites footprint remained unchanged during the reporting year.

6.6 Weed Management

Identification, treatment and ongoing monitoring are the key steps in managing weeds that surround the surface infrastructure area.

During the reporting period Delta Coal engaged a land-care contractor to undertake a weed control campaign across its operational areas. The main weeds targeted included Bamboo, Lantana, Bitou Bush, and Pampas Grass. See **Appendix 3** for the Weed Action Plan. Delta Coal will be continuing the weed control program in the 2025 reporting period.

6.7 Blasting

There was no surface blasting undertaken during the reporting period.

6.8 Operational Noise

The current Delta Coal Noise Management Plan approved in March 2022 incorporates the noise monitoring requirements for Mannering Colliery. Noise monitoring is currently undertaken on a monthly basis, which increased from quarterly in November 2019. Noise monitoring results have been compiled in **Appendix 4**

Noise monitoring locations are shown on **Figure 16**, and criteria are detailed in **Table 10**.

Table 10: Noise Monitoring Locations and Criteria for Mannering Colliery

Location	Coordinates	Day LAeq(15 min)	Evening LAeq(15 min)	Night LAeq(15 min)	Night LA1(1 min)
RA1	364646E 6327221N	40	36	36	46
RA2	365164E 6328332N	40	40	40	45
RA3	365069E 6328953N	40	39	39	49

Noise emissions from MC are currently managed in accordance with the approved Noise Management Plan. In summary, within the Annual Review reporting period, noise from Mannering was found to be compliant at the three noise monitoring locations.

Noise monitoring results during the AR reporting period generally reflect that MC is not the dominant source of environmental noise within the vicinity, this was also noted within the sites EA. In accordance with the Hanson Bailey (2007) report within the EA and based on environmental assessment and historical noise levels it is considered that MC is operating within acceptable noise emissions.

In accordance with Condition 3(d)i of Schedule 3 MP06_0311, Delta Coal installed an unattended directional noise logger in February 2020 at Short Street, within Macquarie Shores Home Village adjacent noise monitoring location RA2. The logger has remained in operation throughout the reporting period and has real-time warning and alarming systems to assist in determining real-time noise emissions of Mannering Colliery. The logger is calibrated on a monthly basis and unattended noise monitoring results are compared with attended noise monitoring results to indicate the accuracy of the logger data.

In the 2022 Independent Environmental Audit for MC undertaken by GHD Action 7 requires that Delta Coal include data trends for noise monitoring. Trends for noise monitoring between January 2021 and December 2024 are presented in **Table 11** for $LA_{EQ\ (15\ min)}$ and **Table 12** for $LA_{(1\ min)}$. The $LA_{EQ\ (15\ min)}$ results are also displayed on **Figure 15**.

Table 11: Site Noise Contribution 2021-2024 LA_{EQ} (15 min)

Site Contributions Noise LAEQ (15 min)						
	RA1 Evening	RA1 Night	RA2 Evening	RA2 Night	RA3 Evening	RA3 Night
Jan-21	IA	IA	IA	IA	IA	IA
Feb-21	IA	IA	IA	IA	IA	IA
Mar-21	IA	IA	<40	<40	IA	IA
Apr-21	IA	IA	IA	IA	IA	IA
May-21	IA	IA	<36	IA	≤35	≤32
Jun-21	IA	IA	37	38	<36	≤36
Jul-21	<36	IA	IA	<40	IA	<39
Aug-21	≤36	IA	IA	39	<35	<39
Sep-21	IA	IA	IA	≤40	IA	<39
Oct-21	<36	<36	IA	<30	IA	IA
Nov-21	IA	IA	≤30	33	<35	≤35
Dec-21	IA	<35	IA	≤35	IA	IA
Jan-22	IA	IA	IA	IA	IA	IA
Feb-22	IA	IA	IA	IA	IA	IA
Mar-22	IA	IA	IA	IA	<30	IA
Apr-22	IA	IA	<37	39	IA	<36
May-22	IA	IA	<38	≤39	IA	<39
Jun-22	IA	IA	IA	39	IA	IA
Jul-22	IA	IA	<35	IA	IA	IA
Aug-22	IA	IA	<35	<35	IA	IA
Sep-22	IA	IA	IA	IA	IA	IA
Oct-22	IA	IA	IA	IA	IA	IA
Nov-22	IA	IA	<36	<38	<39	<39
Dec-22	IA	IA	<39	42	IA	38
Jan-23	IA	IA	IA	IA	IA	IA
Feb-23	IA	IA	IA	<30	IA	IA
Mar-23	IA	IA	IA	30	IA	IA
Apr-23	IA	IA	IA	<37	IA	IA
May-23	IA	IA	<40	IA	IA	IA
Jun-23	IA	35	<40	<40	IA	IA
Jul-23	IA	IA	IA	IA	IA	IA
Aug-23	IA	IA	IA	IA	IA	IA
Sep-23	IA	IA	IA	IA	IA	IA
Oct-23	IA	IA	IA	IA	IA	IA
Nov-23	IA	IA	IA	IA	IA	IA
Dec-23	IA	IA	IA	IA	IA	IA
Jan-24	IA	IA	IA	IA	IA	IA
Feb-24	IA	IA	IA	<33	IA	<35
Mar-24	IA	IA	IA	IA	IA	IA
Apr-24	IA	IA	IA	IA	38	IA

Site Contributions Noise LAEQ (15 min)						
	RA1 Evening	RA1 Night	RA2 Evening	RA2 Night	RA3 Evening	RA3 Night
May-24	IA	IA	<40	40	<39	<39
Jun-24	IA	IA	37	36	35	37
Jul-24	IA	IA	39*	39	<39	<39*
Aug-24	IA	IA	IA	IA	IA	IA
Sep-24	IA	IA	IA	IA	IA	IA
Oct-24	IA	IA	IA	IA	IA	IA
Nov-24	IA	IA	IA	IA	IA	IA
Dec-24	IA	IA	IA	IA	IA	IA

IA = Inaudible

Table 12: Site Noise Contribution 2021-2024 LA_1 (1 min)

Site Contributions LA1			
	RA1 Night	RA2 Night	RA3 Night
Jan-21	IA	IA	IA
Feb-21	IA	IA	IA
Mar-21	IA	<40	IA
Apr-21	IA	IA	IA
May-21	IA	IA	≤32
Jun-21	IA	41	36
Jul-21	IA	<40	<39
Aug-21	IA	40	<39
Sep-21	IA	45	≤39
Oct-21	<36	<38	IA
Nov-21	IA	37	36
Dec-21	<35	38	IA
Jan-22	IA	IA	IA
Feb-22	IA	IA	IA
Mar-22	IA	IA	IA
Apr-22	IA	40	<36
May-22	IA	<45	<49
Jun-22	IA	44	IA
Jul-22	IA	IA	IA
Aug-22	IA	≤35	IA
Sep-22	IA	IA	IA
Oct-22	IA	IA	IA
Nov-22	IA	<39	<49
Dec-22	IA	44	42
Jan-23	IA	IA	IA
Feb-23	IA	<30	IA
Mar-23	IA	30	IA
Apr-23	IA	40	IA

Site Contributions LA1			
	RA1 Night	RA2 Night	RA3 Night
May-23	IA	IA	IA
Jun-23	38	44	IA
Jul-23	IA	IA	IA
Aug-23	IA	IA	IA
Sep-23	IA	IA	IA
Oct-23	IA	IA	IA
Nov-23	IA	IA	IA
Dec-23	IA	IA	IA
Jan-24	IA	IA	IA
Feb-24	IA	<35	<38
Mar-24	IA	IA	IA
Apr-24	IA	IA	IA
May-24	IA	41	<39
Jun-24	IA	40	40
Jul-24	IA	42	<39
Aug-24	IA	IA	IA
Sep-24	IA	IA	IA
Oct-24	IA	IA	IA
Nov-24	IA	IA	IA
Dec-24	IA	IA	IA

IA = Inaudible

Figure 15: Noise Monitoring Results - 2021 to 2024

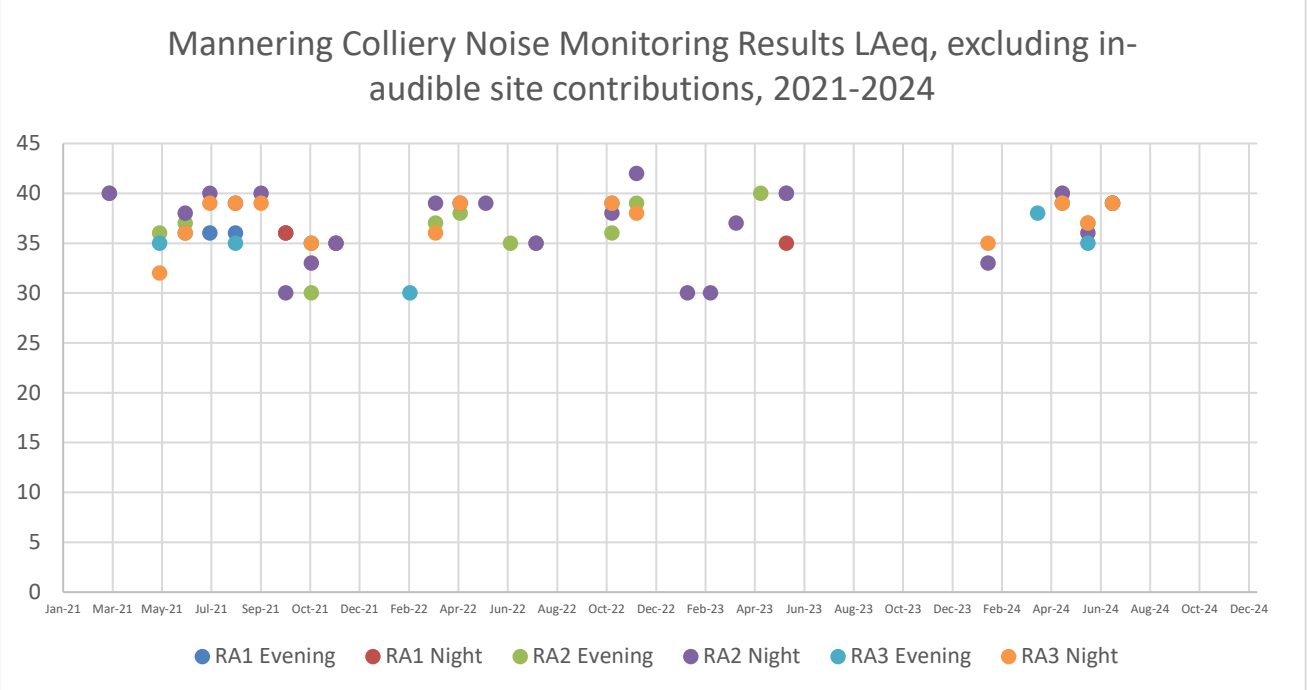
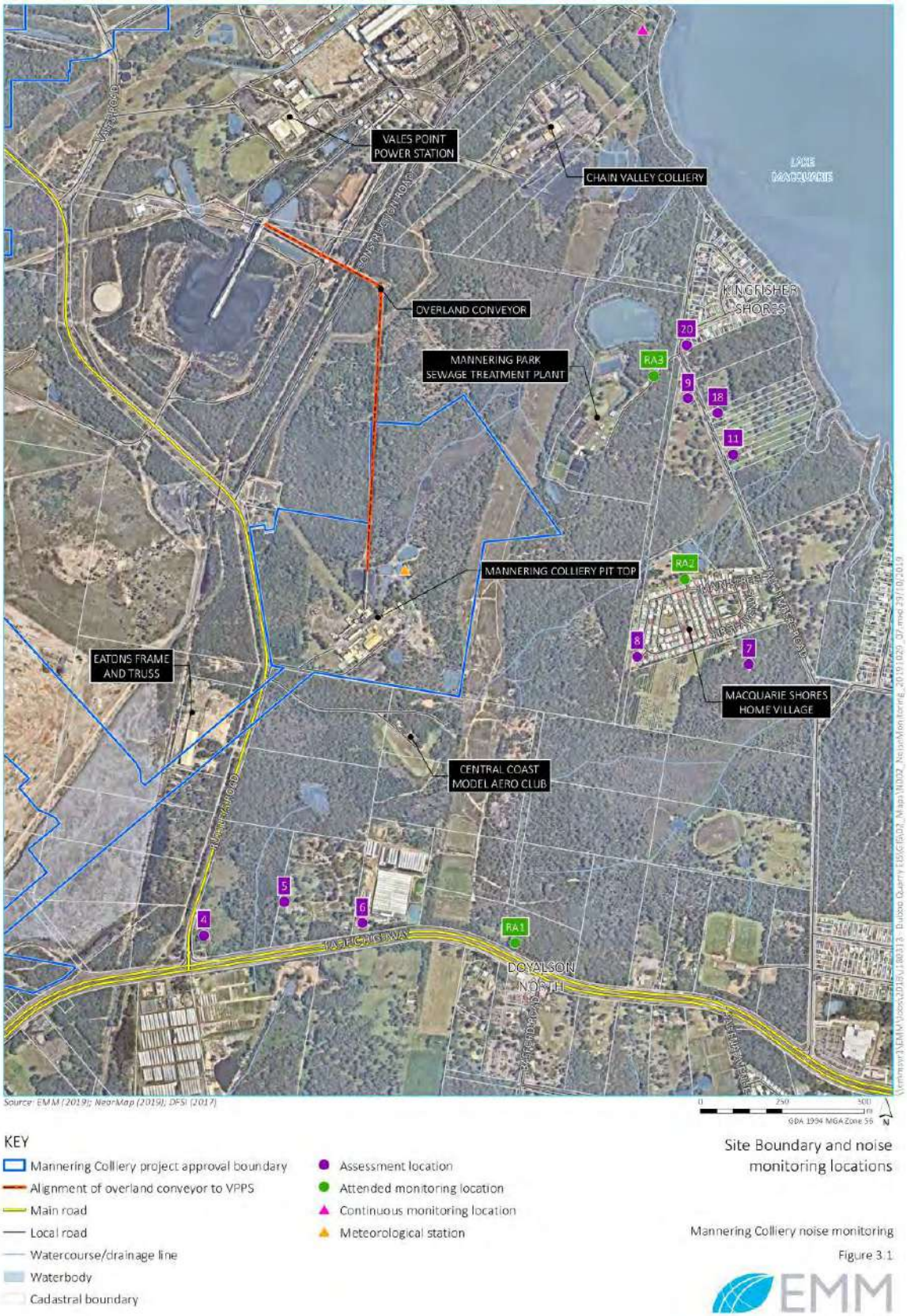


Figure 16: Noise Monitoring Locations for Mannering Colliery



6.9 Visual, Stray Light

Mannering Colliery undertook an external lighting audit during the 2019 reporting period following a recommendation from the independent environmental audit. The lighting audit concluded that all lighting at Mannering Colliery complies with the Australian Standard 4282 – Control of Obtrusive Lighting Effects of outdoor lighting.

In accordance with the standard no lights are directed offsite or installed to shine above the horizontal. In addition, the nearest residents to the site are approximately 800 m from the site. No lighting or visual amenity complaints were received during the reporting period and no additional lighting was installed during the report period.

6.10 Heritage

As there have been no changes to the operational areas on site during the reporting period and there are no identified Aboriginal sites within the pit top areas, there has been no potential for activities at Mannering Colliery to negatively impact on Aboriginal sites during the reporting period.

The development of a Delta Coal Heritage Management Plan was completed during 2020 following consultation with Registered Aboriginal Parties. This plan was updated and approved in September 2023.

There were no activities undertaken on site during the reporting period that had the potential for impact to either of these heritage features.

6.11 Spontaneous Combustion

Current stockpiling of coal is minimal, therefore reducing the risk of spontaneous combustion occurring within the pit top area.

Underground controls to mitigate risk of spontaneous combustion include:

- Spontaneous combustion is considered at the mine design phase.
- The mine has developed Trigger Action Response Plans to identify and manage any deviation from normal operating conditions with respect to indicators of spontaneous combustion.
- The mine monitors gases using a multipoint tube bundle gas analysis system.
- The mine conducts regular underground inspections by Mining Officials.
- A self-heating event was identified and has been managed at Mannering Colliery over the prior years.

The risk potential for spontaneous combustion associated with the coal stockpiles is assessed to be low. This determination was based on the following:

- the coal on the stockpile is Fassifern Seam coal, since this is the only coal mined at CVC. The Fassifern Seam has a medium intrinsic spontaneous combustion reactivity based on R70 self-heating rate.
- when coal is stockpiled it is and will continue to be regularly inspected.

6.12 Bushfire

The pit top area contains vegetation which is considered to be bushfire prone land (Category 1) as shown on **Figure 17**. **Figure 18** shows the approved APZ area.

As required by the Land Management Plan for Mannering, regular inspections were undertaken to ensure bushfire risk is managed appropriately. Delta Coal has, and will continue to, implement appropriate controls to assist in the management of bushfires that threaten the Operation.

In the 2024 reporting period there were no instances of bushfire in the immediate vicinity of the site.

Figure 17 - Bushfire Prone Land Map for Mannering Colliery and Surrounds (Source: ePlanning Spatial Viewer – Bushfire Prone Land Non-EPI)

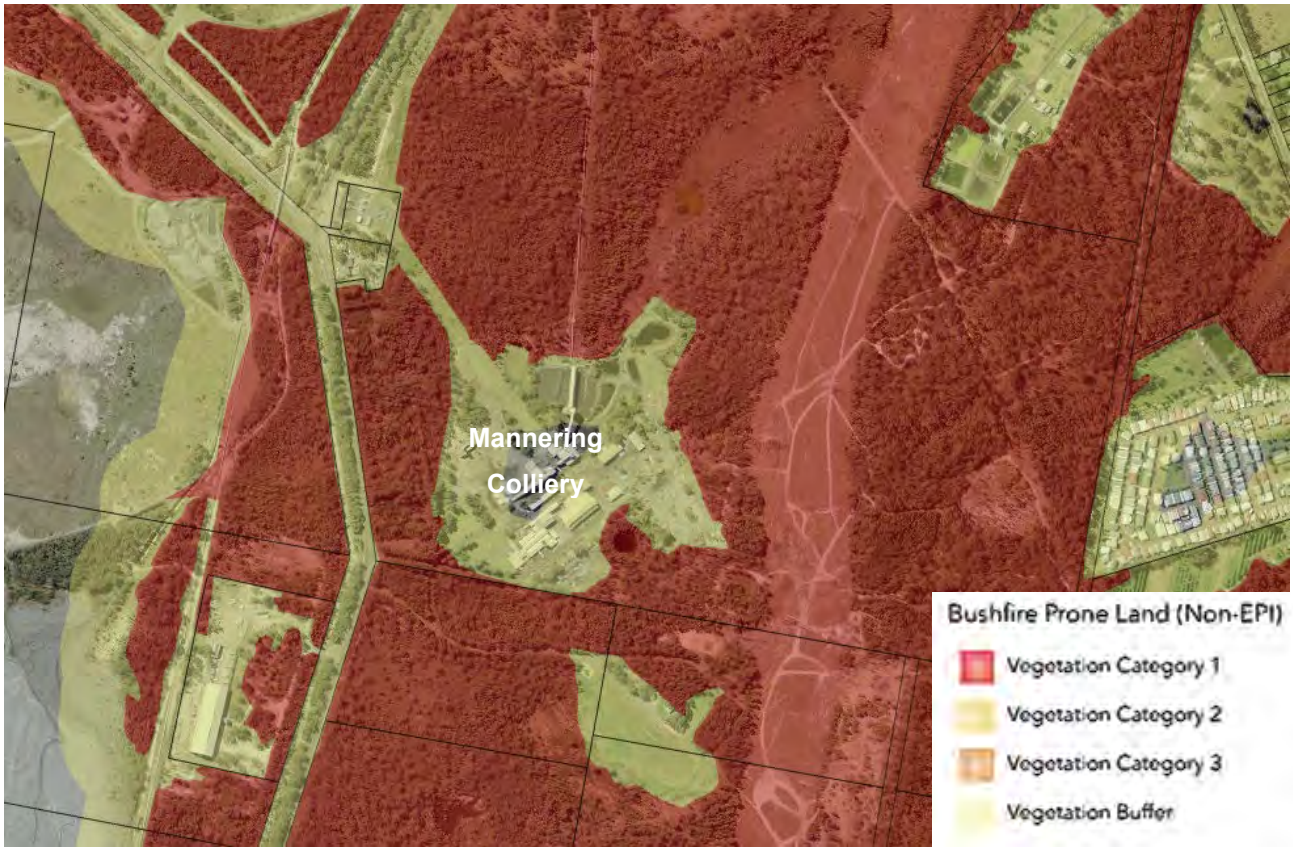


Figure 18: Approved APZ's for Mannering Colliery (SSD-5465 Mod 5)



6.13 Mine Subsidence

Previous subsidence calculations by Centennial Coal using Bord and Pillar mining methods on the approved project lease area give a subsidence figure of <20 mm of cumulative subsidence on the surface. At the commencement of mining operations associated with the link road project between CVC and MC, a subsidence monitoring program was implemented. Due to the sensitive nature of the infrastructure being undermined (VPPS), subsidence monitoring was undertaken on a weekly basis within a 250 m radius of the mining activity. At the completion of mining, the frequency of subsidence monitoring at MC was reduced to an annual survey. Monitoring results have been presented in the Delta Coal Annual Subsidence Report 2024 (**Appendix 5**) and indicate <20 mm subsidence recorded to date. A small number of monitoring points have recorded values to >20mm movement since the baseline surveys, these appear to be damaged/disturbed and located in areas where vehicle & pedestrian traffic paths are present.

There was no mining undertaken at Mannering Colliery during 2024.

6.14 Hydrocarbon Contamination

All hydrocarbon materials are stored within a dedicated bunded building, with emergency spill stations located adjacent to the area. Spill stations are checked weekly to ensure they remain adequately stocked and serviced as required.

Training for spill response is provided within the site induction program, which is a prerequisite before undertaking work at Delta Cal sites. Mannering Colliery also has a Pollution Incident Response Management

Plan in place as well as a duty card for pollution event first responders, to manage and respond accordingly to pollution incidents. The Pollution Incident Response Management Plan was tested and reviewed during the reporting period.

There were no incidents of hydrocarbon contamination, or any significant spills which occurred during the reporting period.

6.15 Methane Drainage and Greenhouse Gases

Methane levels in the Fassifern seam are a relatively low-level content such that no pre or post methane drainage is required to maintain safe levels underground. All methane liberated in the mine enters the main ventilation air and is ventilated via the main fans.

The Mannering Colliery main fans continued to run during the reporting period, albeit at a lower flow than would usually be the case if production was occurring. Monthly ventilation surveys, which document methane concentrations and mine ventilation flow also continued throughout the reporting period.

Methane emissions, and other greenhouse gas emissions, from the Colliery are reported annually to the Clean Energy Regulator in accordance with the *National Greenhouse and Energy Reporting Act 2007* (NGER Act). The emissions from the most recent reporting under the NGER Act are presented in **Table 13**. Note that the data from **Table 13** is presented through for the 2023-2024 Financial Year format as per NGER Act reporting requirements.

Table 13: Mannering Colliery Greenhouse Gas Emissions 1 July 2023 – 30 June 2024 NGER Reporting Period

Mannering GHG Emissions	
Total (Scope 1)	91,691 tonnes CO_2-e

The EA (March, 2007) for the site predicted a total of 571,821 tonnes CO2-e of Scope 1 emissions from mannering colliery, and 11,751 tonnes CO2-e of Scope 2 emissions. No predictions of emissions have been made since the EA. The emissions from MC are significantly less than the EA prediction, this predominately due to no active mining in the MC as well as a reduced fan flow rate as a result. Current greenhouse gas mitigation measures implemented at MC involve:

- Reduced fan flow rate, as there is no requirement to workings;
- All non-essential areas for maintenance of the mine are sealed off and/or flooded as part of the mine design reducing emissions through ventilation streams;
- All handled coal was via conveyor in the 2024 reporting period, no road haulage; and
- Consideration of energy efficiency criteria as part of the procurement process.

6.16 Public Safety

Public safety is primarily a concern around the surface facilities at Mannering Colliery. There is one sealed access road into the area which has chain mesh and barbed wire security fencing and a set of lockable gates. The gates can be closed should the need arise to stop access to the site. These gates may be closed and locked at times of when there is no expected traffic, such as during the night time period but would otherwise remain open for deliveries, employee and authorised visitor access.

A security firm is engaged to undertake scheduled site security checks and remote alarm monitoring and reporting. The security checks are random, but generally undertaken at times of higher unauthorised access risk such as nights, public holidays and weekends.

Public access will be monitored and managed during operation of the mine through the standard incident reporting process which would include reporting of unauthorised access.

A visitor login system onsite ensures that authorised visiting members of the public are assigned a site contact and that upon login the site contact is notified immediately by email of the visitors' presence onsite.

During the reporting period there were no public safety incidents of injury to the public as a result of Delta Coal's operations.

During 2024 security presence and patrols were maintained.

6.17 Other Issues and Risks

There were no other environmental issues or risks encountered during the reporting period.

6.18 Summary of Environmental Performance

In summary, environmental performance during the reporting period for Mannering is detailed in **Table 14**.

Table 14: Environmental Performance

Aspect	Approved criteria/ EIS prediction	Performance during the reporting period	Trend/ key management implications	Implemented/ proposed management actions
Noise	Section 7.5 Acoustics (EA, Hanson Bailey 2007)	During the 2024 reporting period, there were no exceedances of noise criteria.	Main trend 2024: Noise monitoring results during the AR reporting period as well as predictions in the EA, generally reflect that Mannering Colliery is not the dominant source of environmental noise within the vicinity. Typically, Mannering Colliery has been inaudible during monitoring in CY2024.	The noise management plan will continue to be implemented to ensure noise mitigation and management is undertaken as committed.

Aspect	Approved criteria/ EIS prediction	Performance during the reporting period	Trend/ key management implications	Implemented/ proposed management actions
Blasting	N/A	N/A	N/A	N/A
Air Quality	Section 7.7 Air Quality *(EA, Hanson Bailey 2007)*	In accordance with approved criteria and EIS predictions	Main trend (depositional dust results 2024): Based on modelling in the EA, total dust emissions from Mannering are expected to be minor, at less than 2 grams/m^2/month. The depositional dust results for 2024 generally reflect this, remaining minor at all locations for the reporting period.	The air quality monitoring program, in accordance with the approved management plan, were implemented throughout the reporting period. Results are detailed in **Section 6.1**. Management of air quality will continue to be monitored in an effective manner.
Biodiversity	Section 7.12 Flora & Fauna *(EA, Hanson Bailey 2007)*	In accordance with approved criteria and EA predictions/surveys. No predicted impact of biodiversity items was identified.	N/A	N/A
Heritage	Section 7.13 and 7.14 (EA, Hanson Bailey 2007)	In accordance with approved criteria and EIS predictions/surveys. No impact of aboriginal or non-aboriginal heritage items was identified.	N/A	N/A
Greenhouse Gas	Section 7.7 Air Quality *(EA, Hanson Bailey 2007)*	Greenhouse Gas emissions were significantly below the predictions made in the EA, in part due to no production of coal during the reporting period.	Emissions predictions were based on calculations in the EA at a coal production rate of 1.1 Mtpa. Notably there has also been a significant increase in the Global Warming Potential of methane since the EA in 2007. The current emissions profile reflects a mine that is non-producing of product coal.	Ongoing management in accordance with the Delta Coal Air Quality and Greenhouse Gas Management Plan. Continued reporting of emissions through the NGER Act requirements and management in accordance with the NGER Safeguard Mechanism, noting MC and CVC emissions are combined for the purpose of the Safeguard Mechanism.

7 Water Management

7.1 Licenced Mine Dewatering

Delta Coal holds a water access license WAL40461 under the *Water Act, 1912*, which permits the industrial dewatering of groundwater up to volume of 450 megalitres (ML) per year. The following details groundwater extraction volumes during the reporting period.

During the 2024 reporting period, an average of 713 kL of mine water was extracted per day from within the mine workings, before being pumped to the Mannering surface facilities, where it is discharged into sediment dams prior to being discharged into Lake Macquarie under the NSW Environment Protection Authority (EPA) Environment Protection Licence (EPL) No.191 as detailed in **Section 7.2**.

Delta Coal operated within the groundwater extraction limits prescribed by WAL40461. Groundwater extraction data is summarised in **Table 15** and **Figure 19**.

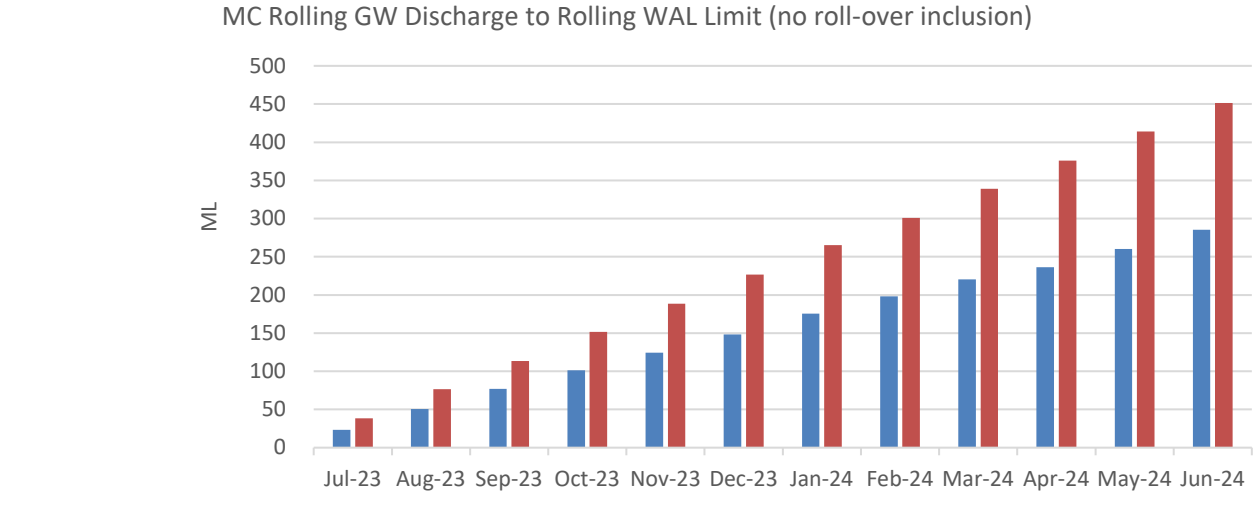
Water in underground workings is generated from ground water which is released from the strata into mine workings along with process water. The collected water is pumped through an extensive goaf system that allows filtration and settlement. The water is then pumped from the mine into the surface settlement pond systems prior to discharge via EPA licensed discharge point 1 (LDP001).

No evidence of groundwater pollution and no known groundwater pollution have been identified at Mannering during the reporting period.

Table 15: Mannering Colliery Water Take - 2024 Reporting Period

Water Access Licence	Water sharing plan, source and management zone (as applicable)	Entitlement	Passive Take / inflows	Active pumping	TOTAL
WAL40461	Sydney Basin-North Coast Groundwater Source	450 ML	N/A	260 ML	260 ML

Figure 19 - Mannering Colliery Groundwater Extraction Volume and Water Access License Limits (WAL reporting period FY23-24)



	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24
MC Rolling GW Discharge (ML)	24	46	69	88	114	130	164	187	211	235	241	270	23	50	77	101	124	148	176	198	220	236	260	286
MC Rolling WAL Limit (no rollover inclusion)	38	76	113	152	189	227	265	300	338	375	413	450	38	76	113	152	189	227	265	301	339	376	414	451

7.2 Licenced discharge under EPL 191

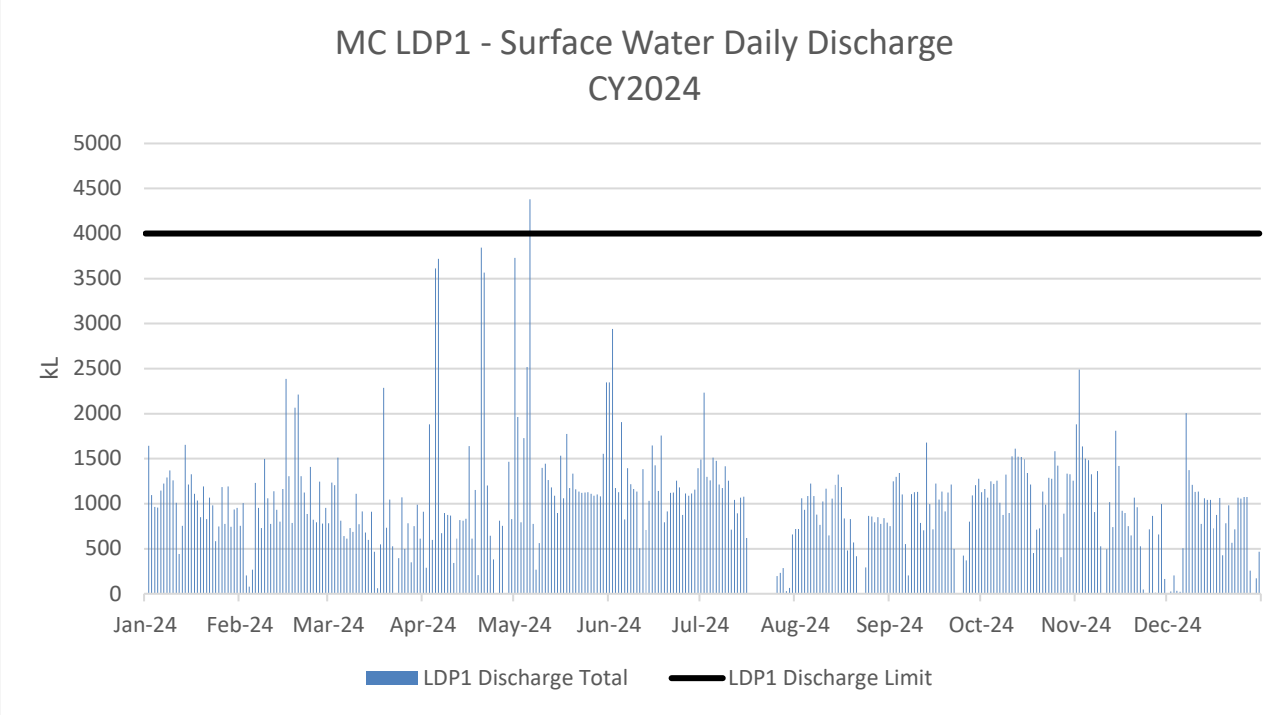
Delta Coal holds EPL 191, which licences the discharge of up to 4,000 kL per day from the site. Discharge is monitored via a real-time flow meter at the outlet pipe. It is noted that EPL 191 has the following condition (L3.2) in relation to underground dewatering and the 4,000 kL daily discharge limit:

"Exceedance of the volume limit for Point 1 is permitted only if the discharge from Point 1 occurs solely as a result of rainfall at the premises exceeding 10mm during the 24 hours immediately prior to the commencement of discharge."

During the 2024 reporting period the daily average discharges were 996 kL with a maximum of 4382 kL and a minimum of 0 kL. The total volume discharged over the reporting period was 365 ML.

Figure 20 presents the daily discharge data during the reporting period, daily discharge volumes are also reported in the monthly reports on the Delta Coal website.

Figure 20 - Mannering Colliery Surface Discharge Volumes - 2024



The EA states the following summary of relevant predictions and trends associated with water management at Mannering Colliery:

- The critical issue for the water management system will be its ability to continue to control and discharge excess water which may be generated during mining. The water balance for the Project has been assessed for the maximum coal production of 1.1 Mtpa which will correspond to the maximum surplus water inflow;
- The mine water surplus predicted to occur is approximately 660 ML/annum, in a year of high rainfall which corresponds to an average daily discharge volume of approximately 1.7 ML.
- Mannering's EPL 191 licenses discharge up to 4 ML per day and will be required to be maintained due to the variability of daily discharge volumes from site.
- The estimated maximum inflow from the Fassifern Seam will increase from the current 0.76 ML/day to about 1.03 ML/day. The total volume of water inflow from both the Great Northern and Fassifern Seams will increase from the current 1.14 ML/day to 1.41 ML/day which equates to approximately 515 ML/annum.
- Mannering's EPL 191 permits a discharge of 4 ML/day and based on the above analysis it is concluded that the Project will not result in this licensed discharge volume being exceeded, under normal climatic conditions.

Based on these predictions (**Table 16**) and trend analysis data, Mannering Colliery has been operating within the licenses levels and conditions.

Table 16: Predicted Water Generation (Environmental Assessment, Hansen Bailey, 2007)

Water supply sources	Annual water volume (ML)		
	Dry year (10th percentile rainfall)	Average year (Average rainfall)	Wet year (90th percentile rainfall)
Surface water run-off	55	80	105
Process mine water	40	40	40
Groundwater inflow	515	515	515
Total surplus	610	635	660

Extensive mining has occurred for about 60 years at Mannering Colliery. Mining operations have led to current depressurisation of both seams with the potentiometric surface declining to the base of the seams, where coal has been extracted. According to the EA (*Hanson Bailey, 2007)*, current on-going mining/dewatering in the area suggests that at a regional level the piezometric surface/groundwater level will remain depressed into the future.

7.3 Water Quality

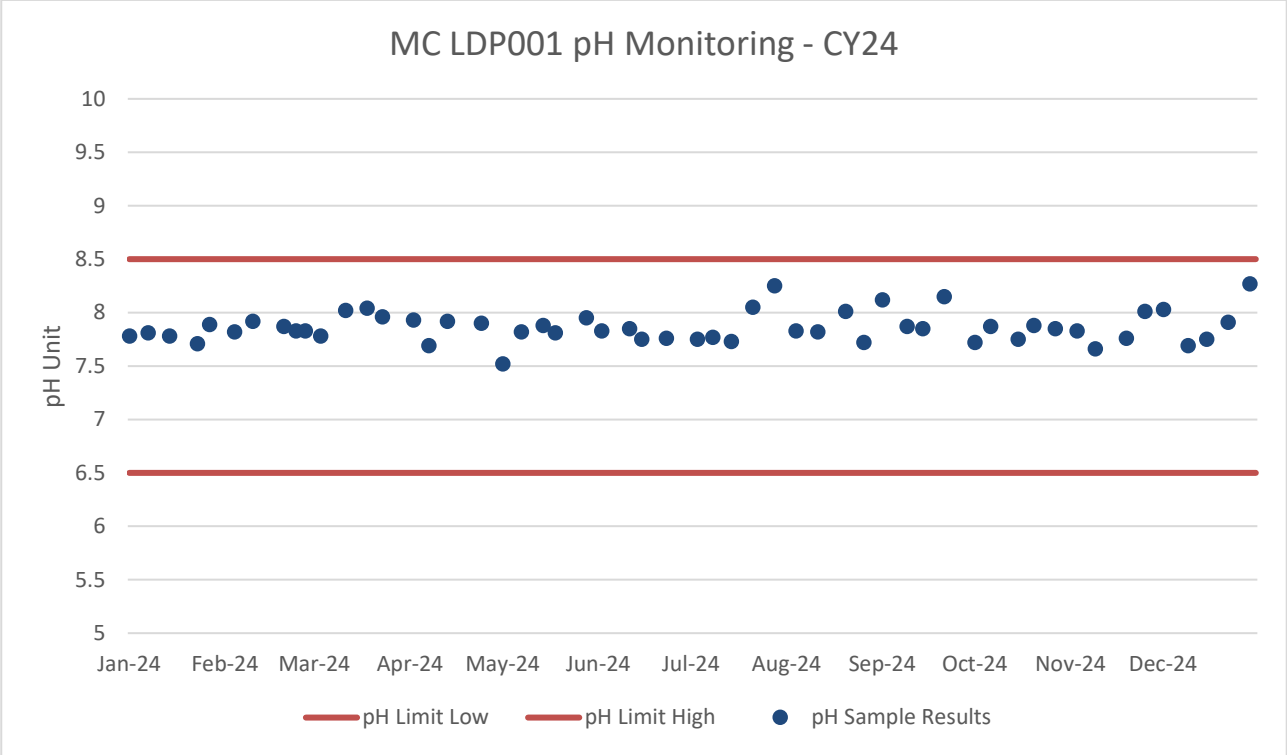
In accordance with EPL191, water quality monitoring was conducted at a weekly interval, with an extended analysis undertaken once per month for metals/metalloids and major nutrients (potassium, nitrogen and phosphorus). Water quality criteria as per condition L2.4 of EPL 191 are detailed in **Table 17**.

Table 17: Water quality limits from EPL 191

Pollutant	Concentration limit
pH	pH range 6.5 to 8.5
Total suspended solids (TSS)	50 mg/L
Oil & grease	10 mg/L

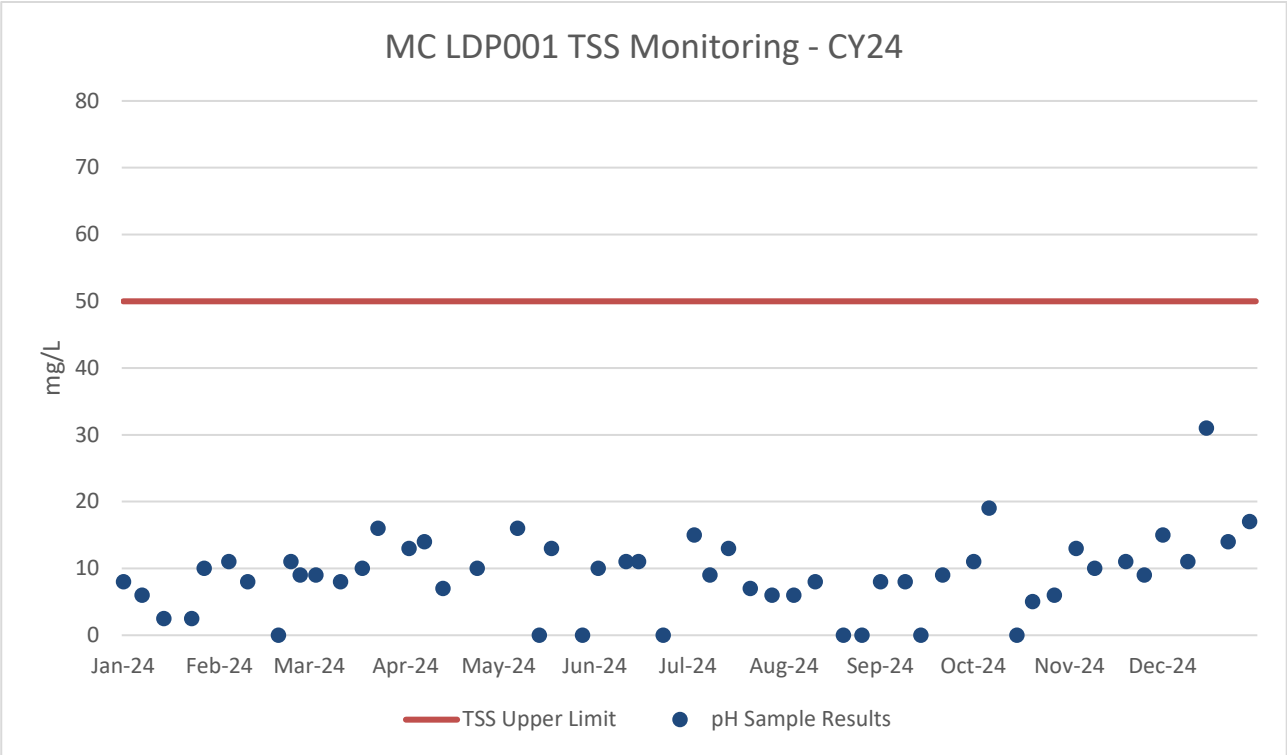
Weekly water quality monitoring results for pH, total suspended solids (TSS) and oil and grease along with associated limits at the licenced discharge 'EPA Point 1' are shown in **Figure 21**, **Figure 22** and **Figure 23**.

Figure 21 - Mannering Colliery LDP001, pH Monitoring 2024



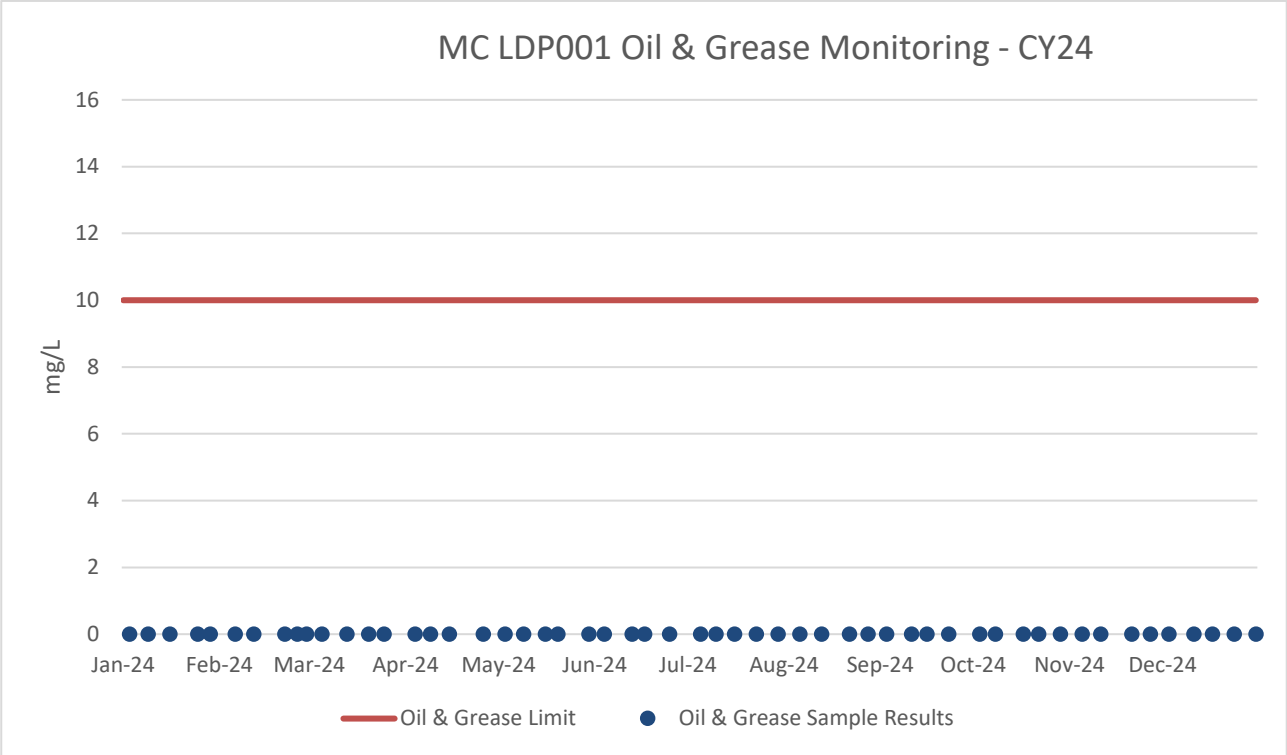
pH monitoring results throughout the reporting period were within the criteria ranges detailed in EPL 191.

Figure 22: Mannering Colliery EPA Point 1, Total Suspended Solids Monitoring 2024



Where concentrations where less than the limit of detection (5 mg/L) the values in **Figure 22** is expressed as zero.

Figure 23: Mannering Colliery EPA Point 1, Total Oil and Grease Monitoring 2024



All oil and grease results less than the laboratory reporting limit of <5 mg/L were recorded as a zero result in **Figure 23**. There were no detections of oil and grease in the 2024 reporting year in weekly discharge sampling at LDP001.

The EA by Hanson Bailey 2007, does not detail any exact monitoring data to compare, however it outlines that random sampling of surface water quality was undertaken in November 2006 at EPA Point 1 and relevant sites in Lake Macquarie. The EC level in Lake Macquarie recorded at the time indicated that it is more saline than the mine water discharged upstream at EPA Point 1, with a recording of 24,900 uS/cm at the discharge point in comparison to 39,000 uS/cm at Lake Macquarie. From this result, it was predicted that water from Mannering is of higher quality, has lower salinity levels than downstream waters and generally has no predicted significant adverse impacts on either downstream or natural environments.

In accordance with the EPL 191, Mannering will continue to discharge off-site regularly and monitor results.

7.4 Long Term Water Quality

To assess any long-term trends in both water quality and quantity, ten years of monthly water quality results are presented for the Downstream and EPA Point 1 monitoring locations for pH (**Figure 24**), total suspended solids (**Figure 25**) and oil and grease (**Figure 26**) from 2014 – 2024.

From the below figures it is evident that there are no significant trends or changes in the water quality parameters.

Figure 24 - Mannering Colliery EPA Point 1 (LDP001) and Downstream Monitoring Long-Term pH

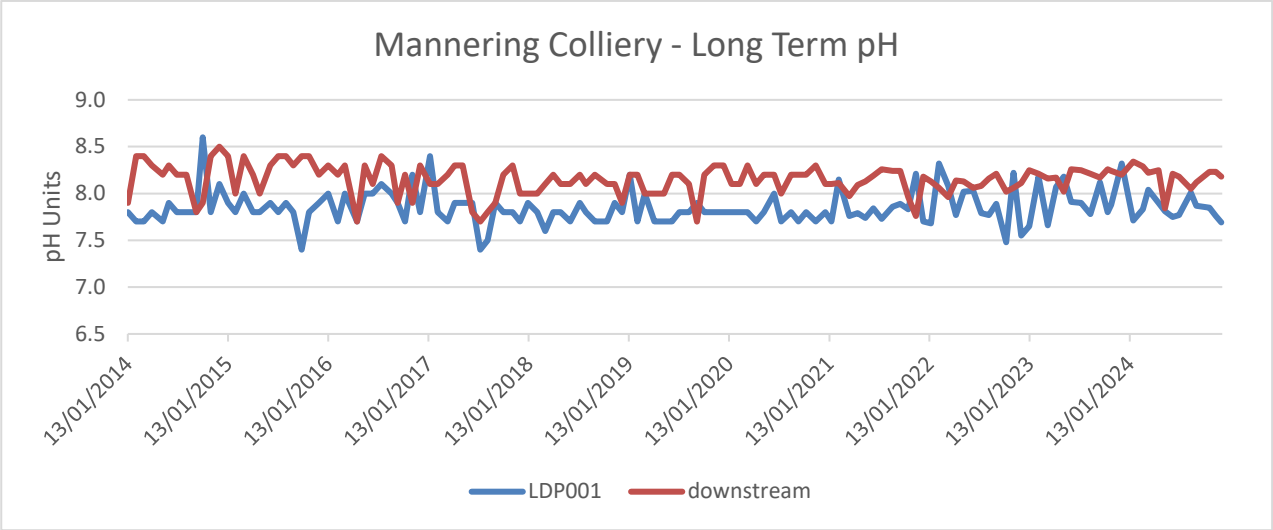


Figure 25: Mannering Colliery EPA Point 1 (LDP001) and Downstream Monitoring Long-Term TSS

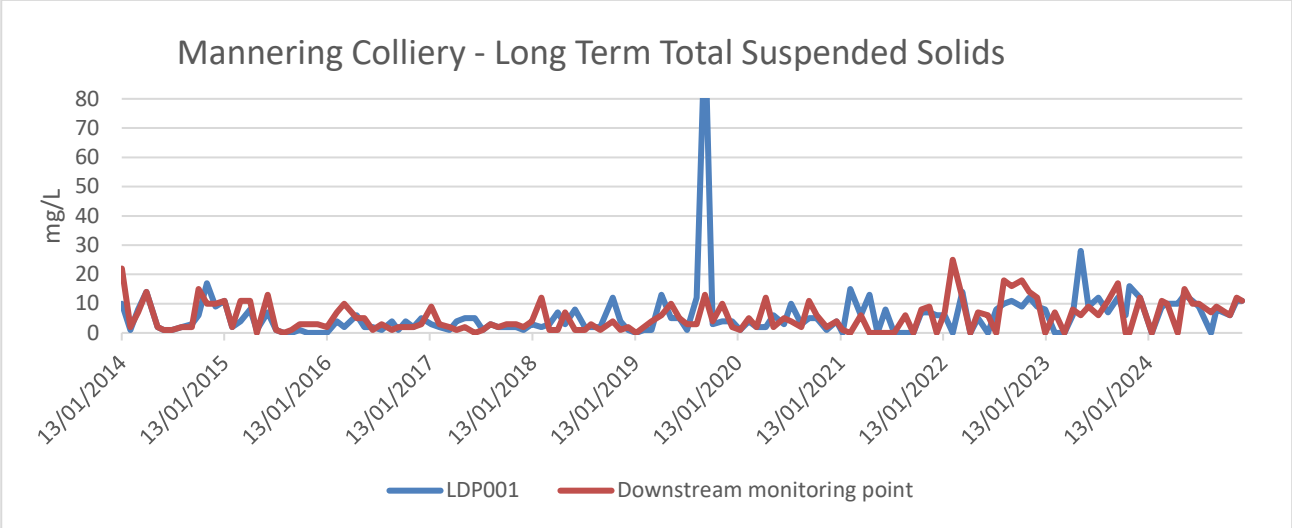
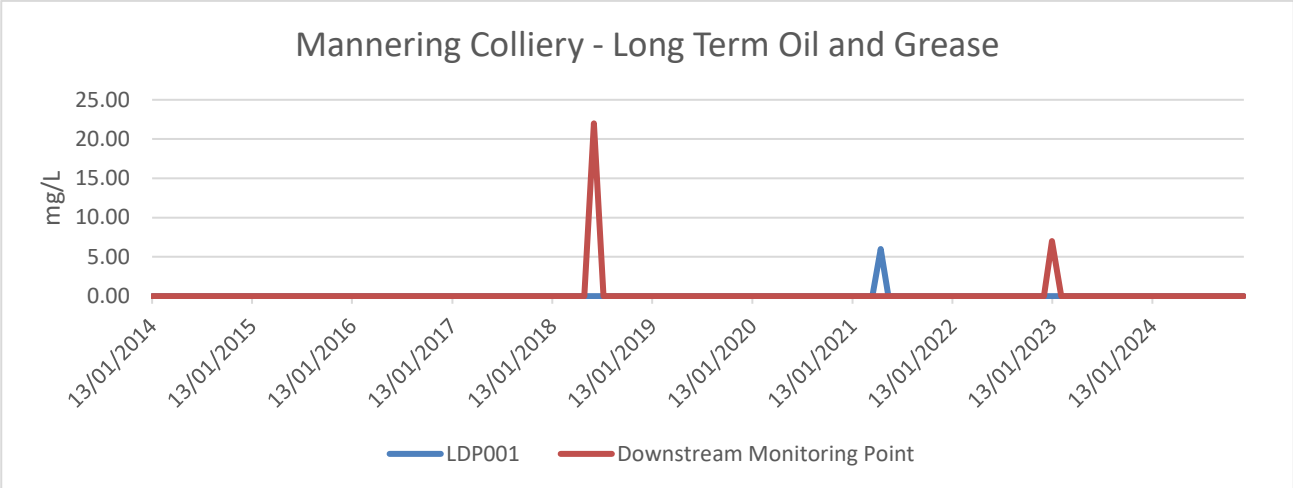


Figure 26: Mannering Colliery EPA Point 1 (LDP001) and Downstream Monitoring Long-Term Oil & Grease



It is noted that weekly sampling of EPA Point 1 was undertaken during the monitoring period, however, monthly sampling is undertaken of the downstream monitoring location. For the purpose of analysing long-term trends in data, only monthly results for EPA Point 1 have been presented in **Figures 24, 25** and **Figure 26**.

7.5 Stream monitoring

As detailed in the Water Management Plan (WMP) for Mannering Colliery, monitoring of the channel stability and potential erosion and scour impact to the unnamed creek downstream of EPA Point 1 is required. The monitoring inspections involve undertaking a visual assessment and photographs of the creek on a quarterly basis to identify any potential instabilities that may form as a result of operations. The results of the visual inspection of watercourse stability are recorded on a proforma field inspection sheet.

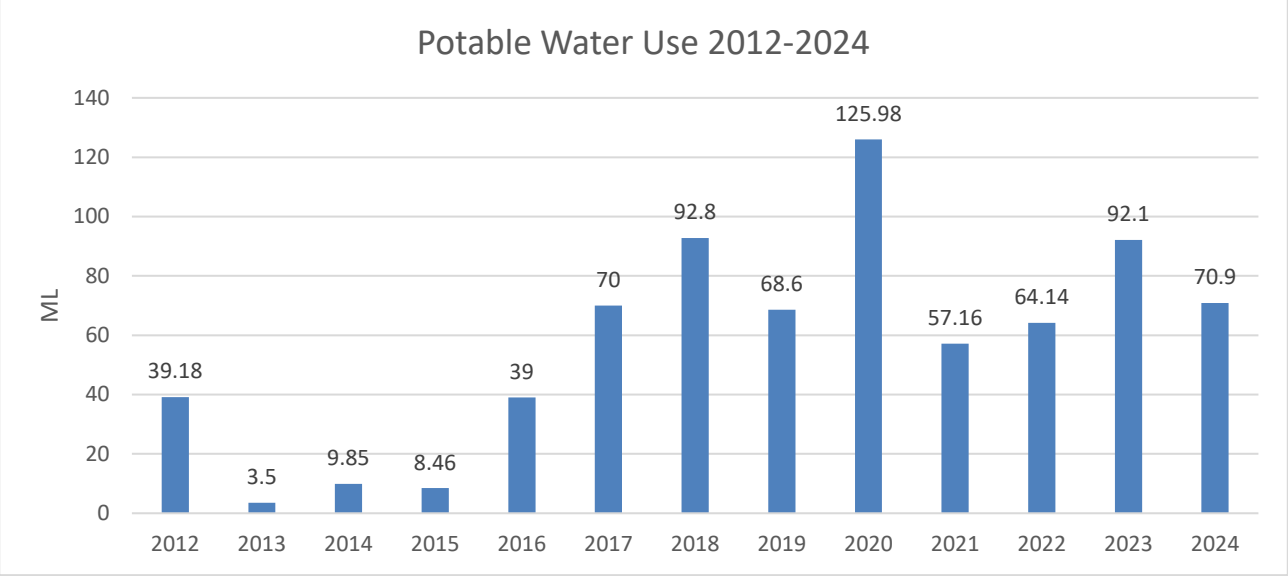
Monitoring has been undertaken at four locations along the unnamed creek since 2014, which also receives discharge from Chain Valley Colliery downstream of Mannering Colliery and the Mannering Colliery downstream monitoring location. There has been no noticeable degradation of stream and riparian health during the reporting period.

The triggers and responses to any instabilities identified as a part of the monitoring program are provided in the Mannering Colliery Water Management Plan. No significant changes to the creek stability, vegetation or bank erosion was observed in the 2024 period.

7.6 Potable Water Use

Potable water use during the reporting period was 70.9 ML, which was a decrease on the previous reporting period of 92.1 ML. Mannering Colliery and Chain Valley Colliery water supplies were linked underground in 2017, Mannering Colliery water supply was utilised to boost pressure in the CVC underground water supply. MC reverted to the secondary potable underground water source throughout 2024. this corresponds with an increase in CVC potable water usage in 2024 compared to 2023. Potable water usage from 2012 to 2024 at Mannering is detailed in **Figure 27**.

Figure 27 - Mannering Colliery Long Term Potable Water Usage



7.7 Surface Water Management

The site surface water management system comprises both clean and dirty water catchments. A number of water management diversions direct clean water around the site to avoid increased hydraulic load on the sedimentation dams that treat the site dirty water prior to discharge.

Clean water from areas unaffected by the operational activities and water that runs onto the site area due to the contours of the surrounding land, i.e. primarily areas to the south and east, are diverted through clean water management structures (such as diversion drains and culverts under roads), enabling the water to ultimately report to Pond 1. The clean water flow paths are shown on **Figure 28**.

The dirty water management system comprises a number of both surface and subsurface management structures to control the flow of water and ultimately direct the dirty water into the site sediment dams. **Figure 28** shows the dirty water flow paths.

The sediment dam system comprises a total of four main dams, labelled Pond 1, Pond 2, Pond 3 and Dam B, as shown on **Figure 28**. References to “Pond” and “Dam” are used interchangeably and refer to the same water management structures.

As shown on **Figure 28**, water from the dirty water catchments enters into Pond 1 or Pond 2, when both these dams are full water overflows into Pond 3. Once Pond 3 reaches capacity it subsequently over flows into Pond B. Finally, when Pond B reaches capacity, it overflows out EPA Point 1.

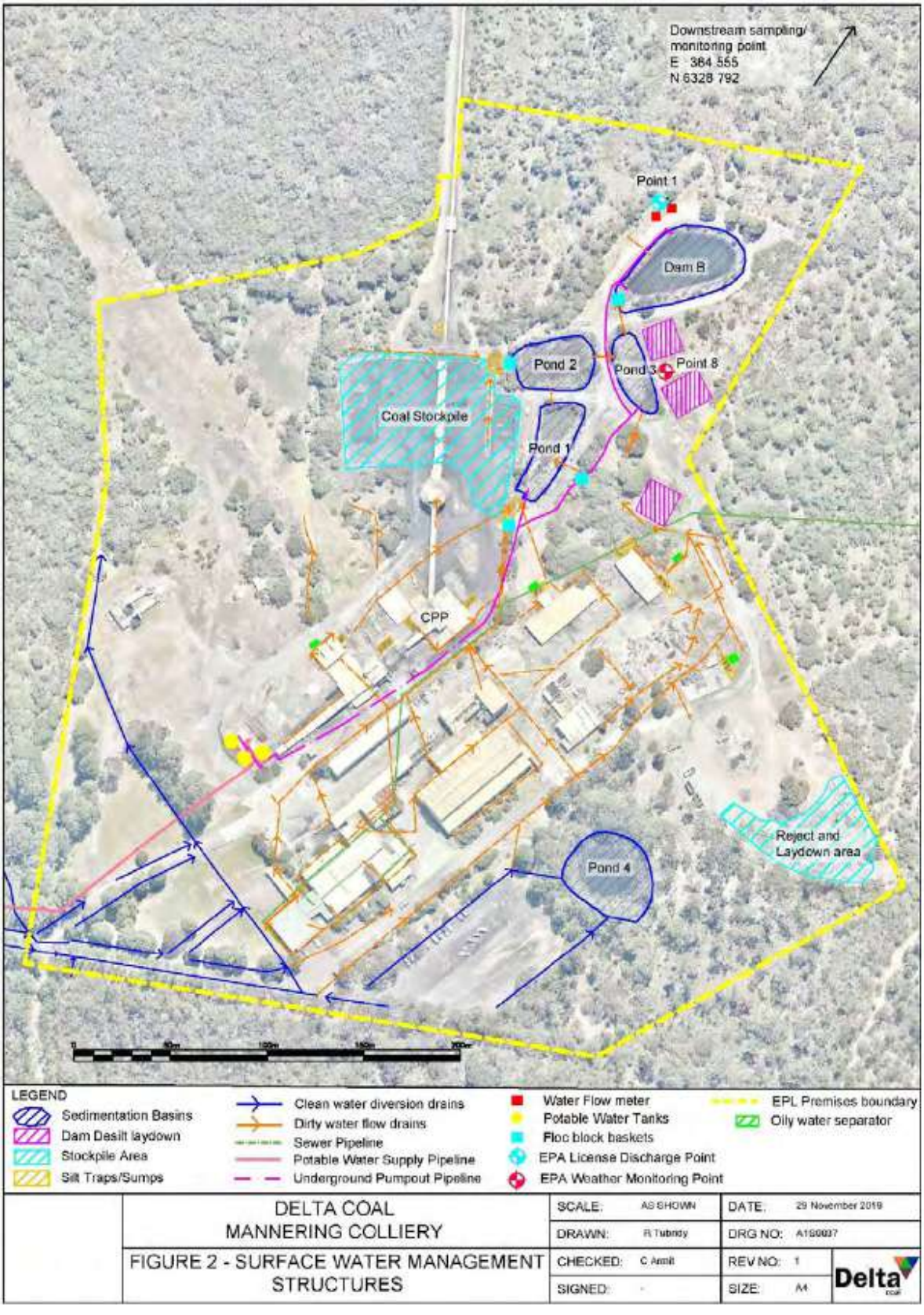
A series of interconnecting pipes and valves also allows Pond 2 to be drained into Pond 3, Pond 3 to be drained into Pond B and Pond B to be discharged via EPA Point 1. These valves are generally kept shut to maximise storage capacity of the dams, but are opened after rainfall events, once water quality is suitable for discharge, to minimise water the volume of water stored and again increase storage capacity of the dams for the next rainfall event.

Water underground is derived from two sources: excess process water which is generated from mining operations and ground water which is released from the strata into underground mine workings. The collected water is pumped through an extensive goaf system that allows filtration and settlement.

The mine water discharge line consists of the main pump, flow meter, turbidity meter, valves and outlets. The mine water can be directed to pond 1, 3, B or EPA Point 1. Under normal operation the mine water will be directed to LDP 1 to maintain capacity in the sediment dams for rainfall events.

Management of the 4 interconnected ponds is undertaken via weekly and monthly documented inspections and management as required following rainfall events. The intent of this active management is to maintain dams at their lowest possible levels whilst adhering to water quality criteria at the discharge point (EPA Point 1).

Figure 28 - Surface Water Management Structures



8 Rehabilitation

8.1 Buildings

Mannering Colliery surface infrastructure comprises:

- mine entry / exit for personnel and materials (1:3.5 Decline) including a winch house;
- coal conveyor drift;
- limited coal-handling facilities for breaking, crushing, sizing and storing product;
- coal stockpile and reclaiming system;
- overland conveyor systems;
- administration and bathroom facilities;
- workshop facilities;
- pollution control apparatus and structures;
- enclosed and bulk open material and equipment stores facilities;
- mine ventilation;
- air compressors; and
- internal roads and car parking facilities.

The total area of effect of the Mannering surface infrastructure is approximately 13.2 hectares.

8.2 Rehabilitation of Disturbed Land

There was no significant rehabilitation works on disturbed lands during the reporting period (**Table 18** and **Table 19**), which relates to the fixed nature of the surface infrastructure and that upon recommencement of mining activities all existing infrastructure and lay down areas will again be required for use.

Table 18: Summary of rehabilitation at Mannering Colliery

	This period (2024)	Next period (2025)
A. Total mine footprint (managed by Delta Coal)	Approximately 13.2	Approximately 13.2
B Total active disturbance	13.2	13.2
C. Land being prepared for rehabilitation	Nil	Nil
D Land under active rehabilitation	Nil	Nil
E Completed rehabilitation	Nil	Nil

Table 19: Maintenance activities on rehabilitated land at Mannering Colliery

Nature of Treatment	Area Treated (Ha) This period (2024)	Area Treated (Ha) Next period (2025)	Comment/Control Strategies/Treatment Detail
Additional erosion control works (drains re-contouring, rock protection)	0	0	No additional works required.
Re-covering (further topsoil, subsoil sealing etc.)	0	0	N/A
Soil treatment (fertiliser, lime, gypsum etc.)	0	0	N/A
Treatment/management (grazing, cropping, slashing etc.)	0	0	N/A
Re-seeding/replanting (species density, season etc.)	0	0	N/A
Adversely affected by weeds (type and treatment)	13.2	13.2	Ongoing implementation of a weed control program developed in 2019 was undertaken during the 2024 reporting period. Ongoing weed treatment works in accordance with the Weed Action Plan are planned for the next reporting period.
Feral animal control (additional fencing, trapping, baiting etc.)	0	0	No feral animal control undertaken during the reporting period. There is none currently planned to be undertaken in the next reporting period.

8.3 Rehabilitation Trials and Research

No rehabilitation trials or research was undertaken during the reporting period.

8.4 Further Development of the Final Rehabilitation Plan

Delta Coal developed a revised Rehabilitation Management Plan and Rehabilitation Risk Assessment for sites under Delta Coals control in 2022 following Schedule 8A reforms to the Mining Regulations. A rehabilitation monitoring program was submitted to DRE in Quarter 2 2019 and baseline monitoring conducted during Quarter 3 2019. Given that CVC and MC are underground coal mines there is generally no land that is not utilised for critical site infrastructure and as such there is minimal progressive rehabilitation forecasted until closure of the mine sites. Currently, CVC and MC are approved to continue mining operations until 31 December 2027, with an EIS currently being assessed for the Chain Valley Colliery Consent Consolidation Project seeking approval to continue operations until 31 December 2029 in accordance with the VPPS current planned operational timeframe.

8.5 Other Infrastructure

There was no other rehabilitation works completed during the reporting period.

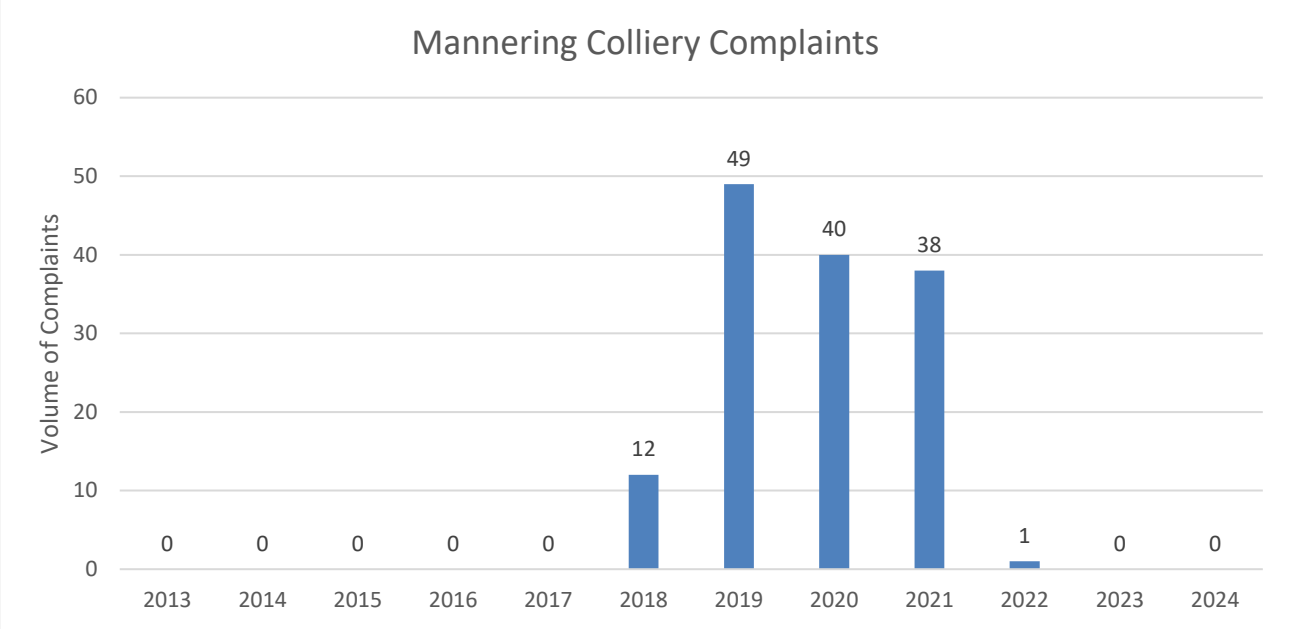
9 Community

9.1 Community Complaints

There were no community complaints received during the reporting period. A copy of the complaints register is provided on the Delta Coal website and is reproduced in **Appendix 6**.

The volume of noise complaints received in 2024 compared to prior years are detailed in **Figure 29**. In previous reporting years (2018-2021) there were numerous noise complaints in relation to noise emissions from Mannering Colliery, correlating to the recommencement of coal handling at the site. In response to the complaints, a noise mitigation project was implemented at Mannering Colliery, with the Rotary Breaker decommissioned and noise mitigating materials placed on and around coal transfer points. Noise limits were also reduced for receivers in the Macquarie Shores Home Village, to the east of the site.

Figure 29 - Mannering Colliery Noise Complaints



9.2 Community Liaison

The Chain Valley Colliery and Mannering Colliery combined Community Consultative Committee (CCC) continued to operate in accordance with the *Community Consultative Committee Guidelines* (June 2023) during the reporting period.

There were four CCC meetings held during the reporting period on the 14 February 2024, 15 May 2024, 14 August 2024 and 13 November 2024. Minutes for each of the committee meetings are available on the Delta Coal website https://www.deltacoal.com.au/community/community-consultative-committee.

In addition, the Delta Coal website was updated on a monthly basis with monitoring data, management plans, reports, audits and complaint details among other items.

The community hotline number (**1800 687 260**) also remained in place during the reporting period and is displayed prominently and permanently on the website.

9.3 Community Support / Engagement

A Voluntary Planning Agreement (VPA) between Delta Coal and Central Coast Council was successfully established during 2017. Following extensive consultation with Central Coast Council, the Community Advisory Panel was established and met to plan and coordinate the framework for the VPA funding.

The VPA fund was launched during September 2017 via the Council grants and sponsorship scheme.

The Delta Coal Community funding program was established as a joint initiative between Delta Coal and Central Coast Council to provide funding for organisations to deliver projects that improve community infrastructure and services in the following communities:

- Summerland Point
- Gwandalan
- Chain Valley Bay; and
- Mannering Park.

The VPA is subject to indexation and in the 2024 reporting period was $0.047 per tonne of ROM coal sold, which started at $0.035 in 2013. In the 2024 reporting period, Delta Coal generated and paid $48,693 to the Central Coast Council, Voluntary Planning Agreement.

10 Independent Audit

An independent environmental audit (IEA) was undertaken by GHD in 2022. The IEA report and action plan was submitted to the DPE on 11 July 2022 and accepted on 21 September 2022. The IEA is provided in **Appendix 7** and a current IEA Action Plan has been provided as **Appendix 8**.

Throughout the 2022-2024 period, Delta Coal completed all outstanding actions and recommendations from the 2022 IEA that were achievable (i.e. not ongoing recommendations).

10.1 Key Audit Outcomes

Actions immediately relating to the Annual Review have been included in **Table 20**.

Table 20: Key Audit Outcomes

Item	Issue/Observation	Action	Status
MP06_0311			
1	Operational Noise	Action 7: Include historical trends in noise monitoring data in the annual review.	See **Section 6.8**

10.2 Action Plan

The IEA Action Plan has been provided in **Appendix 8**.

10.3 Future Audit

The next Independent Environmental Compliance Audit will be undertaken in 2025.

11 Incidents and Non-compliances During the Reporting Period

There were two non-compliances recorded for Mannering Colliery in the 2024 reporting period.

Table 21: Summary of reportable incidents/non-compliances for 2024

Date	Description of Non-compliance	Approval/ Condition /Clause	Actions taken to address Non-compliance
3 May 2024	Exceedance of 50 mg/L total suspended solids limit in EPA Point 1 discharge. Result of 169 mg/L recorded	EPL 191 L2.4	Following the non-compliance, Delta Coal completed the following actions: • Revised the Delta Coal TARP system controlling the underground mine dewatering to assist in maximising surge capacity during high rainfall events. • Re-positioned the sites silt curtain to ensure full functionality.
6 May 2024	Exceedance of 4,000 kL discharge limit under EPL 191 during period of heavy rainfall. A Total of 4,382 kL was discharged.	EPL 191 L3.1	Following the non-compliance Delta Coal completed the following actions: • Revision of the Delta Coal TARP system controlling underground mine dewatering (TARP 00089) during high rainfall events. Reduction of the rainfall trigger level to cease dewatering (when deemed not to risk mine personnel safety) of Mannering Colliery was undertaken. No environmental harm (as defined under the POEO Act 1997) was observed as a result of the non-compliance.

12 Activities to be completed in the next reporting period

12.1 Activities update from 2024 Reporting Period

A summary of the activities that were proposed to be undertaken during the 2024 reporting period and current status is provided in **Table 22.**

Table 22: Update on activities to be undertaken in the 2024 reporting period

Activity Proposed	Status Update	31 December 2024 Update, percentage complete
Desilting of Ponds 1, 2, 3 and minor desilting of Pond B.	Desilting of Ponds 2, 3, and B was undertaken in November and December of 2024	100%
Ongoing implementation of Weed Action Plan and weed management	Weed management undertaken by Hunter Land Management Pty Ltd in 2024 reporting period at monthly intervals.	100%

12.2 Activities Proposed for 2025 Reporting Period

A summary of the activities that are proposed to be undertaken during 2025 are detailed in **Table 23**.

Table 23: Activities to be undertaken in 2025

Activity Proposed
Ongoing weed management in accordance with the Weed Action Plan.
Ongoing desilting of site sedimentation ponds in accordance with the sites Water Management Plan.

13 References

Documents used in the preparation of this report are detailed in **Table 24**.

Table 24: References

Reference	Title
Legislation and Regulations	Environment Protection Licence (EPL) 191 Mining Act 1992 National Greenhouse and Energy Reporting Act 2007 Project Approval MP06_0311 (as modified) Protection of the Environment Operations Act, 1997 Environmental Planning & Assessment Act, 1979
External documents	Hanson Bailey 2007, Centennial Coal Company Limited: Mannering Colliery Continuation of Mining: Environmental Assessment, March 2007. NSW DPHI (June 2023) Community Consultative Guidelines for State Significant Development

Acronyms / Definitions

AEMR Annual Environmental Management Report, now known as the Annual Review

Annual Review The annual environmental report compiled for Mannering, the Annual Review also fulfils the requirement for an Annual Environmental Report or an Annual Environmental Management Report required by mining leases.

CCC Community Consultative Committee

CVC Chain Valley Colliery

DP&E Department of Planning & Environment (former)

DPIE (former) Department of Planning, Industry and Environment

DPHI Department of Planning, Housing and Infrastructure

EA Environmental Assessment

EMS Environmental Management System

EPA NSW Environment Protection Authority

EP&A Act	Environmental Planning and Assessment Act 1979
EPL	Environmental Protection License
kL	Kilolitre
LDP1	Licenced Discharge Point 1 (per EPL 191)
Mannering	Mannering Colliery
NGER	National Greenhouse and Energy Reporting
NSW	New South Wales
OEH	NSW Office of Environment and Heritage (former)
PA 06_0311	Project approval MP 06_0311, as modified, issued under Section 75J of the Environmental *Planning and Assessment Act 1979* for the Mannering Colliery Extension of Mine Project
POEO Act	Protection of the Environment Operations Act 1997
ROM	Run of mine
t - CO_2-e	Tonnes of carbon dioxide equivalent
The website	The website of Delta Coal - Mannering Colliery, which is www.deltacoal.com.au
VPPS	Vales Point Power Station

Appendices

Appendix 1: Project Approval

Project Approval

Section 75J of the *Environmental Planning and Assessment Act 1979*

I approve the project application referred to in Schedule 1, subject to the conditions in Schedules 2 to 5.

These conditions are required to:
- prevent, minimise, and/or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the ongoing environmental management of the project.

Project Approval signed by Frank Sartor on 12 March 2008

Frank Sartor MP
Minister for Planning

Sydney 2008

SCHEDULE 1

Application No:	06_0311
Proponent:	Great Southern Energy Pty Limited
Approval Authority:	Minister for Planning
Land:	See Appendix 1
Project:	Mannering Colliery – Continuation of Mining Project

Red text represents Modification 1 of October 2012 (06_0311 MOD 1)
Blue text represents Modification 2 of November 2014 (06_0311 MOD 2)
Green text represents Modification 3 of December 2015 (06_0311 MOD 3)
Orange text represents Modification 4 of August 2016 (06_0311 MOD 4)
Purple text represents Modification 5 of June 2020 (06_0311 MOD 5)

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DEFINITIONS

Aboriginal Object / Place	Has the same meaning as the definition of the term in section 5 of the NP&W Act
Annual review	The review required by condition 8 of Schedule 5
Applicant	Great Southern Energy Pty Limited, or any person carrying out development under this consent
Affected councils	Central Coast Council and Lake Macquarie City Council
APZs	The asset protection zones shown in Figure 4 in Appendix 2
BCA	Building Code of Australia
BCD	Biodiversity and Conservation Division within the Department
Built features	Includes any building or work erected or constructed on land, and includes dwellings and infrastructure such as any formed road, street, path, walk, or driveway; and any pipeline, water, sewer, telephone, gas or other service main
Calendar year	A period of 12 months from 1 January to 31 December
CCC	Community Consultative Committee
CC Council	Central Coast Council
Conditions of this consent	Conditions contained in Schedules 2 to 5 inclusive
Day	The period from 7 am to 6 pm on Monday to Saturday, and 8 am to 6 pm on Sundays and Public Holidays
Department	Department of Planning, Industry and Environment
DPIE Water	Water Group within the Department
EA	Environmental Assessment titled *Mannering Colliery Environmental Assessment*, dated March 2007, including the response to submissions, dated 27 July 2007
EA (Mod 1)	Environmental Assessment titled *Mannering Colliery – Extension of Mine Project Section 75W Modification to Project Approval 06_0311*, as modified by the associated response to submissions dated 4 September 2012
EA (Mod 2)	Environmental Assessment titled *'Mannering Colliery – Modification 2, Environmental Assessment, Section 75W Modification to MP 06_0311'* dated April 2014, as modified by the associated response to submissions dated 15 September 2014
EA (Mod 3)	Environmental Assessment titled *'Mannering Colliery – Modification 3 Environmental Assessment, Section 75W Modification to MP 06_0311'* dated June 2015, including the associated Response to Submissions dated September 2015
EA (Mod 4)	Environmental Assessment titled *'Administrative modification to MP06_0311 – Environmental Assessment'* dated 25 July 2016
Environment	Includes all aspects of the surroundings of humans, whether affecting any human as an individual or in his or her social groupings
EPA	NSW Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000*
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
EPL	Environment Protection Licence issued under the *Protection of the Environment Operations Act 1997*
Evening	The period from 6pm to 10pm
Feasible	Means what is possible and practical in the circumstances
First workings	The extraction of coal by bord and pillar mining methods (including herringbone pattern workings) and from main headings, gateroads and cut-throughs and the like, provided that such workings are long-term stable and do not generate more than 20 mm of vertical subsidence at the surface
Heritage item	An Aboriginal object, an Aboriginal place, or a place, building, work, relic, moveable object, tree, or precinct of heritage significance, that is listed under any of the following: • the State Heritage Register under the *Heritage Act 1977;* • a state agency heritage and conservation register under section 170 of the *Heritage Act 1977*; • a Local Environmental Plan under the EP&A Act; • the World Heritage List; • the National Heritage List or Commonwealth Heritage List under the EPBC Act; or

	• anything identified as a heritage item under the conditions of this consent.
Incident	An occurrence or set of circumstances that causes or threatens to cause material harm that may or may not be or cause a non-compliance
Land	Has the same meaning as the definition of the term in section 1.4 of the EP&A Act, except where the term is used in the noise and air quality conditions in Schedules 3 and 4 of this consent where it is defined to mean the whole of a lot, or contiguous lots owned by the same landowner, in a current plan registered at NSW Land Registry Services at the date of this consent
Material harm	Is harm to the environment that: • involves actual or potential harm to the health or safety of human beings or to the environment that is not trivial; or • results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000, (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment)
Minimise	Implement all reasonable and feasible mitigation measures to reduce the impacts of the development
Mining operations	The carrying out of underground mining, including the extraction, processing, stockpiling and transportation of coal on the site and the emplacement of coarse/fine reject material resulting from underground mining
Minister	The Minister for Planning and Public Spaces, or delegate
Minor	Not very large, important or serious
Modification 1	The modification to the development as described in EA (Mod 1)
Modification 2	The modification to the development as described in EA (Mod 2)
Modification 3	The modification to the development as described in EA (Mod 3)
Modification 4	The modification to the development as described in EA (Mod 4)
Modification 5	The modification to the development as described in SEE (Mod 5)
Negligible	Small and unimportant, such as to be not worth considering
Night	The period from 10pm to 7am on Monday to Saturday, and 10pm to 8am on Sundays and Public Holidays
NP&W Act	*National Parks and Wildlife Act 1974*
NPfI	Noise Policy for Industry (EPA, 2017)
Planning Secretary	Planning Secretary under the EP&A Act, or nominee
Privately-owned land	Land that is not owned by a public agency, Delta Electricity (or its subsidiary) or a mining company (or its subsidiary)
Reasonable	Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements
Registered Aboriginal Parties	As described in the *National Parks and Wildlife Regulation 2009*
Rehabilitation	The restoration of land disturbed by the development to a good condition, to ensure it is safe, stable and non-polluting
RFS	NSW Rural Fire Service
ROM	Run-of-mine
RR	Regional NSW - Resources Regulator
SA NSW	Subsidence Advisory NSW
Second workings	Extraction of coal by longwall, miniwall, pillar extraction, pillar splitting or pillar reduction methods, and inclusive of any first workings methods that would generate more than 20 mm of vertical subsidence at the surface
SEE (Mod 5)	Statement of Environmental Effects titled '*Statement of Environmental Effects, Mannering Colliery – Modification 5*' dated May 2019, prepared by EMM Consulting, and the associated Response to Submissions dated August 2019, prepared by EMM Consulting.
Site	Land referred to in Appendix 1
SMP	Subsidence Management Plan
Statement of Commitments	The Statement of Commitments in Appendix 3
Subsidence	Subsidence of the land surface caused by underground coal mining
TfNSW	Transport for NSW

SCHEDULE 2
ADMINISTRATIVE CONDITIONS

Obligation to Minimise Harm to the Environment

1. In addition to meeting the specific performance measures and criteria established under this development, the Applicant must 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 this consent.

Terms of Approval

2. The development may only be carried out:
   (a) in compliance with the conditions of this consent;
   (b) in accordance with the statement of commitments in Appendix 3;
   (c) in accordance with the approved mine plan in Appendix 2;
   (d) in accordance with all written directions of the Planning Secretary; and
   (e) generally in accordance with the EA, EA (Mod 1), EA (Mod 2), EA (Mod 3), EA (Mod 4) and SEE (Mod 5).

3. Consistent with the requirements in this consent, the Planning Secretary may make written directions to the Applicant in relation to:
   (a) the content of any strategy, study, system, plan, program, review, audit, notification, report or correspondence submitted under or otherwise made in relation to this consent, including those that are required to be, and have been, approved by the Planning Secretary; and
   (b) the implementation of any actions or measures contained in any such document referred to in condition 3(a).

4. The conditions of this consent and directions of the Planning Secretary prevail to the extent of any inconsistency, ambiguity or conflict between them and a document/s listed in condition 2(e). In the event of an inconsistency, ambiguity or conflict between any of the document/s listed in condition 2(e), the most recent document prevails to the extent of the inconsistency, ambiguity or conflict.

Limits on Consent

5. Mining operations may take place until 31 December 2027.

   Note: Under this consent, the Applicant is required to rehabilitate the site to the satisfaction of the Planning Secretary and RR. Consequently, this consent will continue to apply in all other respects other than the right to conduct mining operations until the site has been rehabilitated to a satisfactory standard.

6. The Applicant must not extract more than 1.1 million tonnes of ROM coal a year from the site.

6A. The Applicant must not transport more than 2.1 million tonnes of ROM coal a year from the site.

7. The Applicant must ensure all coal produced and/or received on the site is transported by overland conveyor to Vales Point Power Station.

8. Deleted.

Structural Adequacy

9. The Applicant must ensure that all new buildings and structures, and any alterations or additions to existing buildings and structures, are constructed in accordance with the relevant requirements of the BCA.

   Notes:
   - *Under Part 6 of the EP&A Act, the Applicant is required to obtain construction and occupation certificates for any proposed building works.*
   - *Part 8 of the EP&A Regulation sets out the requirements for the certification of the development.*
   - *Under section 21 of the Coal Mine Subsidence Compensation Act 2017, the Applicant is required to obtain the Chief Executive of SANSW's approval before carrying out certain development in a Mine Subsidence District.*

Demolition

10. The Applicant must ensure that all demolition work is carried out in accordance with *Australian Standard AS 2601-2001: The Demolition of Structures*, or its latest version.

Operation of Plant and Equipment

11. All plant and equipment used on site, or to monitor the performance of the development must be:
    (a) maintained in a proper and efficient condition; and
    (b) operated in a proper and efficient manner.

Community Enhancement Program

12. The Applicant must pay the affected councils $0.02 for each tonne of ROM coal produced by the development for the purpose of improving water quality in the Lake Macquarie catchment. This payment must be:
    (a) shared equally by the affected councils;
    (b) made by the end of March 2009, and at yearly intervals thereafter;
    (c) calculated on the ROM coal produced in the previous calendar year; and
    (d) subject to indexation by the Implicit Price Deflator, as published by the Australian Bureau of Statistics.

Community Consultative Committee

13. A Community Consultative Committee (CCC) must be established for the development in accordance with the Department's *Community Consultative Committee Guidelines: State Significant Developments* (2019). The CCC must continue to operate during the life of the development, or other timeframe agreed by the Planning Secretary.

    Notes:
    - *The CCC is an advisory committee only.*
    - *In accordance with the Guidelines, the Committee should comprise an independent chair and appropriate representation from the Applicant, affected Councils and the local community.*

14. With the approval of the Planning Secretary, the Applicant may combine the CCC required by this development with any similar CCC required by a consent or approval for any adjoining mine subject to common, shared or related ownership or management.

Evidence of Consultation

15. Where conditions of this consent require consultation with an identified party, the Applicant must:
    (a) consult with the relevant party prior to submitting the subject document;
    (b) provide details of the consultation undertaken including:
        i. the outcome of that consultation, matters resolved and unresolved; and
        ii. details of any disagreement remaining between the party consulted and the Applicant and how the Applicant has addressed the matters not resolved.

Staging, Combining and Updating Strategies, Plans or Programs

16. With the approval of the Planning Secretary, the Applicant may:
    (a) prepare and submit any strategy, plan or program required by this consent on a staged basis (if a clear description is provided as to the specific stage and scope of the development to which the strategy, plan or program applies, the relationship of the stage to any future stages and the trigger for updating the strategy, plan or program);
    (b) combine any strategy, plan or program required by this consent (if a clear relationship is demonstrated between the strategies, plans or programs that are proposed to be combined);
    (c) update any strategy, plan or program required by this consent (to ensure the strategies, plans and programs required under this consent are updated on a regular basis and incorporate additional measures or amendments to improve the environmental performance of the development); and

(d) combine any strategy, plan or program required by this consent with any similar strategy, plan or program required by an adjoining mining consent or approval, in common ownership or management.

17. If the Planning Secretary agrees, a strategy, plan or program may be staged or updated without consultation being undertaken with all parties required to be consulted in the relevant condition in this consent.

18. If the Planning Secretary agrees, a strategy, plan or program may be staged without addressing particular requirements of the relevant condition of this consent if those requirements are not applicable to the particular stage.

Application of Existing Strategies, Plans or Programs

19. The Applicant must continue to apply existing management strategies, plans or monitoring programs approved prior to the approval of Modification 5, until the approval of a similar plan, strategy or program following the approval of Modification 5.

Protection of Public Infrastructure

20. Unless the Applicant and the applicable authority agree otherwise, the Applicant must:
(a) repair, or pay the full costs associated with repairing, any public infrastructure[a] that is damaged by carrying out the development; and
(b) relocate, or pay the full costs associated with relocating, any public infrastructure[a] that needs to be relocated as a result of the development.

[a] *This condition does not apply to any damage to roads caused as a result of general road usage or to damage that has been compensated under the Mining Act 1992.*

Compliance

21. The Applicant must ensure that all of its employees, contractors (and their sub-contractors) are made aware of, and are instructed to comply with, the conditions of this consent relevant to activities they carry out in respect of the development.

Applicability of Guidelines

22. References in the conditions of this consent to any guideline, protocol, Australian Standard or policy are to such guidelines, protocols, Standards or policies in the form they are in as at the date of inclusion (or later update) in the condition.

23. However, consistent with the conditions of this consent and without altering any limits or criteria in this consent, the Planning Secretary may, in respect of ongoing monitoring and management obligations, agree to or require compliance with an updated or revised version of such a guideline, protocol, Standard or policy, or a replacement of them.

SCHEDULE 3
SPECIFIC ENVIRONMENTAL CONDITIONS

NOISE

Construction Noise

1. The Applicant must ensure that the noise generated by any construction work is managed in accordance with the requirements outlined in the *Interim Construction Noise Guideline* (DECC, 2009).

Operational Noise Criteria

2. Except for the carrying out of construction works, the Applicant must ensure that the noise generated by the development does not exceed the criteria in Table 1 at any residence[a] on privately-owned land.

***Table 1**: Operational noise criteria dB(A)*

Noise Assessment Location	***Day*** $L_{Aeq\ (15\ min)}$	***Evening*** $L_{Aeq\ (15\ min)}$	***Night*** $L_{Aeq\ (15\ min)}$	***Night*** $L_{A1\ (1\ min)}$
4 – di Rocco	40	36	36	46
5 - Keighran	40	39	39	49
6 – Swan	40	37	37	47
7 – Druitt	40	35	35	45
8 – Macquarie Shores Home Village	42	42	42	47
9 - Jeans	40	37	37	47
11 - Jeans	40	36	36	46
18 - Jeans	40	36	36	46
20 – Knight and all other privately-owned residences	40	36	36	46

[a] *The Noise Assessment Locations referred to in Table 1 are shown in Appendix 4.*

Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the *NSW Noise Policy for Industry* (EPA, 2017).

3. The noise criteria in Table 1 do not apply if the Applicant has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Noise Operating Conditions

3A. The Applicant must:

(a) take all reasonable steps to minimise noise from construction and operational activities, including low frequency noise and other audible characteristics, associated with the development;

(b) implement reasonable and feasible noise attenuation measures on all plant and equipment that will operate in noise sensitive areas;

(c) operate a comprehensive noise management system commensurate with the risk of impact;

(d) take all reasonable steps to minimise the noise impacts of the development during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);

(e) carry out regular attended noise monitoring (at least once a month, unless otherwise agreed by the Planning Secretary) to determine whether the development is complying with the relevant conditions of this consent;

(f) regularly assess the noise monitoring data and modify or stop operations on the site to ensure compliance with the relevant conditions of this consent; and
(g) implement reasonable and feasible measures to further enclose the structure housing the coal crusher in order to further mitigate noise from operational activites.

3B. The Applicant must decommission the surface rotary breaker identified in the Statement of Commitments at Appendix 3, within 3 months of approval of Modification 5.

Noise Management Plan

3C. The Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
(a) be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;
(b) describe the measures to be implemented to ensure:
i. compliance with the noise criteria and operating conditions in this consent;
ii. best practice management is being employed; and
iii. noise impacts of the development are minimised during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);
(c) describe the noise management system in detail; and
(d) include a monitoring program that:
i. uses a combination of real-time and supplementary attended monitoring to evaluate the performance of the development;
ii. monitors noise at the nearest and/or most affected residences;
iii. includes a program to calibrate and validate the real-time noise monitoring results with the attended monitoring results over time;
iv. adequately supports the noise management system;
v. includes a protocol for distinguishing noise emissions of the development from any neighbouring developments; and
vi. includes a protocol for identifying any noise-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of any such event.

The Applicant must implement the Noise Management Plan as approved by the Planning Secretary.

SUBSIDENCE

4. The Applicant must limit its coal extraction methods on the site to first workings only, and must not undertake second workings.

5. Deleted.

SOIL AND WATER

Discharge

6. The Applicant must only discharge water from the site as expressly provided for by its EPL.

7. The Applicant must investigate, assess and report on the ecological interactions of minewater discharged from the site with the aquatic ecology of the unnamed creek and wetlands (and associated vegetation) between the minewater discharge point/s and Lake Macquarie. This report must:
(a) be prepared in consultation with EPA by suitably qualified expert/s whose appointment/s have been approved by the Planning Secretary;
(b) be submitted to the Planning Secretary by the end of March 2009; and
(c) assess the probable alterations in the local ecology attributable to previous and proposed minewater discharges and any future cessation of minewater discharge flows.

Water Management Plan

8. The Applicant must prepare a Water Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
(a) be prepared in consultation with DPIE Water by suitably qualified expert/s whose appointment/s have been approved by the Planning Secretary;
(b) be submitted the Planning Secretary by the end of March 2009; and
(c) include a:
- Site Water Balance;

- Erosion and Sediment Control Plan;
- Surface Water Monitoring Plan; and
- Groundwater Monitoring Program.

The Applicant must implement the Water Management Plan approved by the Planning Secretary.

Site Water Balance

9. The Site Water Balance must:
   (a) include details of:
      - sources and security of water supply;
      - water use on site;
      - water management on site; and
   (b) investigate, assess and report on measures to minimise water use by the development, particularly potable water from the Wyong Shire town water supply.

Erosion and Sediment Control

10. The Erosion and Sediment Control Plan must:
   (a) be consistent with the requirements of *Managing Urban Stormwater: Soils and Construction* (Landcom 2004, or its latest version);
   (b) identify activities that could cause soil erosion and generate sediment;
   (c) describe measures to minimise soil erosion and the potential for transport of sediment from the site;
   (d) describe the location, function, and capacity of erosion and sediment control structures; and
   (e) describe what measures would be implemented to monitor and maintain the structures over time.

Surface Water Monitoring Program

11. The Surface Water Monitoring Plan must include:
   (a) detailed baseline data on surface water flows and quality in creeks and other waterbodies that could be affected by the development;
   (b) surface water impact assessment criteria;
   (c) a program to monitor the impact of the development on surface water flows and quality; and
   (d) procedures for reporting the results of this monitoring.

Groundwater Monitoring Program

12. The Groundwater Monitoring Program must include:
   (a) detailed baseline data to benchmark the natural variation in groundwater levels, yield and quality;
   (b) groundwater impact assessment criteria;
   (c) a program to monitor the impact of the development on groundwater levels, yield and quality; and
   (d) procedures for reporting the results of this monitoring.

REHABILITATION

13. The Applicant must rehabilitate the site in accordance with the conditions imposed on the mining lease(s) associated with the development under the *Mining Act 1992*. Rehabilitation must be generally consistent with the proposed rehabilitation described in the EA and the Statement of Commitments, and comply with the objectives in Table 2.

Table 2: Rehabilitation Objectives

Feature	***Objective***
Mine site (as a whole of the disturbed land and water)	Safe, stable and non-polluting, fit for the purpose of the intended post-mining land use(s).
Surface Infrastructure	To be decommissioned and removed, unless the RR agrees otherwise.
Portals and ventilation shafts	To be decommissioned and made safe and stable.
Other land affected by the development	Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of: • local native plant species (unless the RR agrees otherwise); and • a landform consistent with the surrounding environment.
Built features damaged by mining operations	Repair to pre-mining condition or equivalent unless: • the owner agrees otherwise; or

	• the damage is fully restored, repaired or compensated under the *Mine Subsidence Compensation Act 1961*.
Community	Ensure public safety.

13A. The Applicant must carry out all surface disturbing activities in a manner that, as far as practicable, minimises potential for dust emissions and must carry out rehabilitation of disturbed areas progressively, that is, as soon as reasonably practicable following disturbance.

Land Management Plan

14. The Applicant must prepare a detailed Land Management Plan for the site to the satisfaction of the Planning Secretary. This plan must:
    (a) be submitted to the Planning Secretary by the end of September 2008;
    (b) be prepared by suitably qualified expert/s whose appointment/s have been endorsed by the Planning Secretary;
    (c) be prepared in consultation with RR, BCD and affected councils; and
    (d) include measures to:
        - minimise visual impacts;
        - control weeds, feral pests and access; and
        - manage bushfires; and
    (e) provide details of who is responsible for monitoring, reviewing and implementing the plan.

    Prior to the end of April 2016, the Applicant must revise the Land Management Plan to incorporate the measures required to implement its commitments described in new row 2 of the Terrestrial Ecology section of its Statement of Commitments, and submit it to the Planning Secretary for approval.

    The Applicant must implement the Land Management Plan approved by the Planning Secretary.

14A. The Applicant must implement its preferred option of the three options set out in new row 2 of the Terrestrial Ecology section of its Statement of Commitments by 1 December 2016, following consultation with BCD and to the satisfaction of the Planning Secretary.

Rehabilitation Management Plan

15. The Applicant must prepare a Rehabilitation Management Plan for the site in accordance with the conditions imposed on the mining lease(s) associated with the development under the *Mining Act 1992*. This plan must:
    (a) be submitted within 3 months of approval of Modification 2 to the RR prior to carrying out any disturbing activities of the development, unless otherwise agreed by the Planning Secretary;
    (b) be prepared in accordance with RR guidelines and in consultation with the Department, BCD, EPA, DPIE Water, affected councils and the mine's CCC;
    (c) incorporate and be consistent with the rehabilitation objectives in the EA, Statement of Commitments and Table 2 above;
    (d) integrate and build on, to the maximum extent practicable, the other management plans required under this consent; and
    (e) address all aspects of mine closure and rehabilitation, including post-mining land use domains, rehabilitation objectives, completion criteria and rehabilitation monitoring and management.

    Note: The approved Mining Operations Plan (which will become the REMP once the Mining Act Amendments have commenced) required as a condition of the Mining Lease(s) issued in relation to this development, will satisfy the requirements of this condition for a Rehabilitation Plan.

AIR QUALITY

Impact Assessment Criteria

16. 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*

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

***Notes**:*
[a] Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources).
[b] Incremental impact (i.e. incremental increase in concentrations due to the development on its own).
[c] Excludes extraordinary events such as bushfires, prescribed burning, dust storms, fire incidents or any other activity agreed by the Planning Secretary.
[d] Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method.

16A. 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.

Air Quality and Greenhouse Gas Management Plan

17. The Applicant must prepare an Air Quality and Greenhouse Gas Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
    (a) be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;
    (b) describe the measures to be implemented to ensure:
        i. capture and flaring of methane produced by underground coal mining;
        ii. compliance with the air quality criteria and operating conditions in this consent;
        iii. best practice management is being employed (including in respect of minimisation of greenhouse gas emissions from the site and energy efficiency); and
        iv. the air quality impacts of the development are minimised during adverse meteorological conditions and extraordinary events;
    (c) describe the air quality management system in detail; and
    (d) include an air quality monitoring program, undertaken in accordance with the *Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales* (DEC, 2007), that:
        i. uses monitors to evaluate the performance of the development against the air quality criteria in this consent and to guide day to day planning of operations;
        ii. adequately supports the air quality management system; and
        iii. includes a protocol for identifying an air quality incident and notifying the Department and relevant stakeholders of any such incident.

***Note:** "Methane produced by underground coal mining" does not include methane within mine ventilation air.*

17A. The Applicant must implement the Air Quality and Greenhouse Gas Management Plan as approved by the Planning Secretary.

METEOROLOGICAL MONITORING

17B. For the life of the development, the Applicant must ensure that there is a suitable meteorological station operating in the vicinity of the site that:

(a) complies with the requirements in the *Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales* (DEC, 2007); and

(b) is capable of measuring meteorological conditions in accordance with the *NSW Noise Policy for Industry* (EPA, 2017), unless a suitable alternative is approved by the Planning Secretary following consultation with the EPA.

HERITAGE

Protection of Aboriginal Heritage

18. The Applicant must ensure that the development does not cause any direct or indirect impact on any identified heritage item located outside the approved disturbance area, beyond those predicted in the documents listed in condition 2(e) of Schedule 2.

Heritage Management Plan

18A. The Applicant must prepare a Heritage Management Plan for the development to the satisfaction of the Planning Secretary. This Plan must:

(a) be prepared by suitably qualified and experienced persons whose appointment has been endorsed by the Planning Secretary;

(b) be prepared in consultation with BCD and Registered Aboriginal Parties;

(c) include consideration of the Aboriginal and non-Aboriginal cultural context and significance of the site;

(d) describe the procedures and management measures to be implemented on the site or within any offset area to:

i. ensure all workers receive suitable Aboriginal cultural heritage inductions prior to carrying out any activities which may cause impacts to Aboriginal objects or Aboriginal places, and that suitable records are kept of these inductions;

ii. protect, monitor and manage identified non-Aboriginal heritage, Aboriginal objects and Aboriginal places (including any proposed archaeological investigations of potential subsurface objects and salvage of objects within the approved disturbance area) in accordance with the commitments made in the document/s listed in condition 2(e) of Schedule 2;

iii. protect non-Aboriginal heritage, Aboriginal objects and Aboriginal places located outside the approved disturbance area from impacts of the development;

iv. manage the discovery of suspected human remains and any new Aboriginal objects or Aboriginal places, including provisions for burials, over the life of the development;

v. maintain and manage reasonable access for relevant Aboriginal stakeholders to Aboriginal objects and Aboriginal places (outside of the approved disturbance area); and

vi. facilitate ongoing consultation and involvement of Registered Aboriginal Parties in the conservation and management of Aboriginal cultural heritage on the site; and

(e) include a strategy for the care, control and storage of Aboriginal objects salvaged on site, both during the life of the development and in the long term.

The Applicant must implement the Heritage Management Plan approved by the Planning Secretary.

VISUAL

19. The Applicant must:

(a) ensure no outdoor lights shine above the horizontal;

(b) ensure that all external lighting associated with the development complies with *Australian Standard AS4282 (INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting*;

(c) take all practicable measures to mitigate off-site lighting impacts from the development; and

(d) minimise the visual impacts of the development,

to the satisfaction of the Planning Secretary.

TRANSPORT

Monitoring of Coal Transport

20. The Applicant must keep records of the amount of coal transported from the site each year, and include these records in the Annual Review.

Ruttleys Road Intersection

21. The Applicant must:
    (a) complete a road safety audit of the intersection of Ruttleys Road and Mannering Colliery Access Road by the end of March 2009;
    (b) provide copies of this audit to TfNSW, Central Coast Council and the Planning Secretary within one month of its completion; and
    (c) within 3 months of approval of Modification 2, install additional sections of guardrail (safety barrier) on the eastern side of Ruttleys Road between the Mannering Colliery access road and existing sections of guardrail further to the north;
    (d) be responsible for the maintenance and upkeep of the pavement of the Ruttleys Road/Mannering Colliery access road intersection whilst the site is used for mining purposes or until the intersection is upgraded to a Type CHR intersection treatment; and
    (e) prior to the number of workers (direct employees and contractors) at Mannering Colliery exceeding 70, the Applicant must upgrade the Ruttleys Road/Mannering Colliery access road intersection to a Type CHR treatment in accordance with Construction Certificate SCC/69/2011 issued by Central Coast Council, or later updated versions of this Construction Certificate;
    to the satisfaction of the Planning Secretary.

BUSHFIRE MANAGEMENT

22. The Applicant must:
    (a) ensure that the development:
        - provides for asset protection in accordance with the relevant requirements in the *Planning for Bushfire Protection* (RFS, 2006) guideline; and
        - ensure that there is suitable equipment to respond to any fires on the site; and
    (b) assist the RFS and emergency services to the extent practicable if there is a fire in the vicinity of the site.

WASTE

23. The Applicant must:
    (a) monitor the amount of waste generated by the development;
    (b) investigate ways to minimise waste generated by the development;
    (c) implement reasonable and feasible measures to minimise waste generated by the development; and
    (d) report on waste management and minimisation in the Annual Review,
    to the satisfaction of the Planning Secretary.

EXPLORATION ACTIVITIES AND SURFACE INFRASTRUCTURE

Exploration Activities and Minor Surface Infrastructure Management Plan

24. Prior to carrying out exploration activities on the site under this consent that would cause temporary surface disturbance, or exploration activities within the waters or lake bed of Lake Macquarie, or the construction and/or upgrade of minor surface infrastructure on the site, the Applicant must prepare an Exploration Activities and Minor Surface Infrastructure Management Plan for the development to the satisfaction of the Planning Secretary. This Plan must:
    (a) be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;
    (b) be prepared in consultation with RR, NSW Maritime Division of TfNSW, NSW Fisheries and BCD;
    (c) include a description of the measures to be implemented for:
        i. managing exploration activities;
        ii. managing construction and operation of minor surface infrastructure and associated access tracks;
        iii. consulting with and if necessary compensating affected landowners;

iv. assessing noise, air quality, traffic, biodiversity, heritage, public safety and other impacts;
v. beneficial re-use or flaring of drained hydrocarbon gases, wherever practicable;
vi. avoiding significant impacts and minimisation of impacts generally;
vii. avoiding or minimising impacts on threatened species, populations or their habitats and EECs;
viii. minimising clearance and disturbance of native vegetation (including seagrasses);
ix. minimising and managing erosion and sedimentation; and
x. rehabilitating disturbed areas.

Note: *Consultation with NSW Maritime Division of TfNSW and NSW Fisheries is not required for land-based exploration activities and minor surface infrastructure.*

The Applicant must implement the Exploration Activities and Minor Surface Infrastructure Management Plan as approved by the Planning Secretary.

SCHEDULE 4
ADDITIONAL PROCEDURES

INDEPENDENT REVIEW

1. If a landowner considers the development to be exceeding the impact assessment criteria in schedule 3, then he/she may ask the Planning Secretary in writing for an independent review of the impacts of the development on his/her land.

   If the Planning Secretary is satisfied that an independent review is warranted, the Applicant must within 2 months of the Planning Secretary's decision:
   (a) consult with the landowner to determine his/her concerns;
   (b) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Planning Secretary, to conduct monitoring on the land, to:
   - determine whether the development is complying with the relevant impact assessment criteria in schedule 3; and
   - identify the source(s) and scale of any impact on the land, and the development's contribution to this impact; and
   - give the Planning Secretary and landowner a copy of the independent review.

2. If the independent review determines that the development is complying with the relevant impact assessment criteria in schedule 3, then the Applicant may discontinue the independent review with the approval of the Planning Secretary.

3. If the independent review determines that the development is not complying with the relevant impact assessment criteria in schedule 3, and that the development is primarily responsible for this non-compliance, then the Applicant must:
   (a) take all reasonable and feasible measures, in consultation with the landowner, to ensure that the development complies with the relevant criteria; and
   (b) conduct further monitoring to determine whether these measures ensure compliance.

   If the additional monitoring referred to above subsequently determines that the development is complying with the relevant criteria in schedule 3, or the Applicant and landowner enter into a negotiated agreement to allow these exceedances, then the Applicant may discontinue the independent review with the approval of the Planning Secretary.

4. If the independent review determines that the relevant criteria in schedule 3 are being exceeded, but that more than one development is responsible for this non-compliance, then the Applicant must, together with the relevant development/s:
   (a) take all reasonable and feasible measures, in consultation with the landowner, to ensure that the relevant criteria are complied with; and
   (b) conduct further monitoring to determine whether these measures ensure compliance; or
   (c) secure a written agreement with the landowner and other relevant developments to allow exceedances of the criteria in schedule 3,
   to the satisfaction of the Planning Secretary.

   If the additional monitoring referred to above subsequently determines that the developments are complying with the relevant criteria in schedule 3, then the Applicant may discontinue the independent review with the approval of the Planning Secretary.

5. If the landowner disputes the results of the independent review, either the Applicant or the landowner may refer the matter to the Planning Secretary for resolution.

   If the matter cannot be resolved within 21 days, the Planning Secretary shall refer the matter to an Independent Dispute Resolution Process.

SCHEDULE 5
ENVIRONMENTAL MANAGEMENT, MONITORING, AUDITING AND REPORTING

ENVIRONMENTAL MANAGEMENT

Environmental Management Strategy

1. The Applicant must prepare an Environmental Management Strategy for the development to the satisfaction of the Planning Secretary. This strategy must:
   (a) provide the strategic framework for environmental management of the development;
   (b) identify the statutory approvals that apply to the development;
   (c) set out the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the development;
   (d) set out the procedures to be implemented to:
      - keep the local community and relevant agencies informed about the operation and environmental performance of the development;
      - receive record, handle and respond to complaints;
      - resolve any disputes that may arise during the course of the development;
      - respond to any non-compliance and any incident; and
      - respond to emergencies; and
   (e) include:
      - references to any strategies, plans and programs approved under the conditions of this consent; and
      - a clear plan depicting all the monitoring to be carried out under the conditions of this consent.

   The Applicant must implement the Environmental Management Strategy as approved by the Planning Secretary.

Adaptive Management

2. The Applicant must assess and manage development-related risks to ensure that there are no exceedances of the criteria and performance measures in this consent. Any exceedance of these criteria or performance measures constitutes a breach of this consent and may be subject to penalty or offence provisions under the EP&A Act or EP&A Regulation.

Where any exceedance of these criteria or performance measures has occurred, the Applicant must, at the earliest opportunity:
   (a) take all reasonable and feasible steps to ensure that the exceedance ceases and does not recur;
   (b) consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and
   (c) implement reasonable remediation measures as directed by the Planning Secretary.

Management Plan Requirements

3. Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:
   (a) a summary of relevant background or baseline data;
   (b) details of:
      - the relevant statutory requirements (including any relevant approval, licence or lease conditions);
      - any relevant limits or performance measures and criteria; and
      - the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;
   (c) any relevant commitments or recommendations identified in the document/s listed in condition 2(e) of Schedule 2;
   (d) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;
   (e) a program to monitor and report on the:
      - impacts and environmental performance of the development; and

- effectiveness of the management measures set out pursuant to condition 2(e) of Schedule 2;

(f) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;

(g) a program to investigate and implement ways to improve the environmental performance of the development over time;

(h) a protocol for managing and reporting any:
- incident, non-compliance or exceedance of any impact assessment criterion or performance criterion;
- complaint; or
- failure to comply with other statutory requirements;

(i) public sources of information and data to assist stakeholders in understanding environmental impacts of the development; and

(j) a protocol for periodic review of the plan.

Note: *The Planning Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.*

4. The Applicant must ensure that management plans prepared for the development are consistent with the conditions of this consent and any EPL issued for the site.

REVISION OF STRATEGIES, PLANS AND PROGRAMS

5. Within three months of:
(a) the submission of an incident report under condition 6;
(b) the submission of an Annual Review under condition 8;
(c) the submission of an Independent Environmental Audit under condition 9; or
(d) the approval of any modification of the conditions of this consent (unless the conditions require otherwise),
the suitability of existing strategies, plans and programs required under this consent must be reviewed by the Applicant.

If necessary, to either improve the environmental performance of the development, cater for a modification or comply with a direction, the strategies, plans and programs required under this consent must be revised, to the satisfaction of the Planning Secretary. Where revisions are required, the revised document must be submitted to the Planning Secretary for approval within six weeks of the review.

Note: *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.:*

REPORTING AND AUDITING

Incident Notification

6. The Applicant must immediately notify the Department and any other relevant agencies immediately after it becomes aware of an incident. The notification must be in writing to compliance@planning.nsw.gov.au and identify the development (including the development application number and name) and set out the location and nature of the incident.

Non-Compliance Notification

7. Within seven days of becoming aware of a non-compliance, the Applicant must notify the Department of the non-compliance. The notification must be in writing to compliance@planning.nsw.gov.au and identify the development (including the development application number and name), set out the condition of this consent that the development is non-compliant with, why it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.

Note*: A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.*

Annual Review

8. By the end of March in each year after the commencement of the development, or other timeframe agreed by the Planning Secretary, a report must be submitted to the Department reviewing the environmental performance of the development, to the satisfaction of the Planning Secretary. This review must:

(a) 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 financial/calendar year;
(b) include a comprehensive review of the monitoring results and complaints records of the development over the previous calendar year, including a comparison of these results against the:
- relevant statutory requirements, limits or performance measures/criteria;
- requirements of any plan or program required under this consent;
- monitoring results of previous years; and
- relevant predictions in the document/s listed in condition 2(e) of Schedule 2;

(c) 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;
(d) evaluate and report on:
- the effectiveness of the noise and air quality management systems; and
- compliance with the performance measures, criteria and operating conditions of this consent;

(e) identify any trends in the monitoring data over the life of the development;
(f) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and
(g) describe what measures will be implemented over the next calendar year to improve the environmental performance of the development.

Copies of the Annual Review must be submitted to the affected Councils and made available to the CCC and any interested person upon request.

Independent Environmental Audit

9. By the end of February 2022, and every three years after, unless the Planning Secretary directs otherwise, the Applicant must commission and pay the full cost of an Independent Environmental Audit of the development. The audit must:
(a) led by a suitably qualified, experienced and independent auditor whose appointment has been endorsed by the Planning Secretary;
(b) be led and conducted by a suitably qualified, experienced and independent team of experts (including any be expert in field/s specified by the Planning Secretary) whose appointment has been endorsed by the Planning Secretary;
(c) be carried out in consultation with the relevant agencies and the CCC;
(d) assess the environmental performance of the development and whether it is complying with the relevant requirements in this consent, water licences and mining leases for the development (including any assessment, strategy, plan or program required under these approvals);
(e) review the adequacy of any approved strategy, plan or program required under the abovementioned approvals and this consent;
(f) recommend appropriate measures or actions to improve the environmental performance of the development and any assessment, strategy, plan or program required under the abovementioned approvals and this consent; and
(g) be conducted and reported to the satisfaction of the Planning Secretary.

10. Within three months of commencing an Independent Environmental Audit, or other timeframe agreed by the Planning Secretary, the Applicant must submit a copy of the audit report to the Planning Secretary, and any other NSW agency that requests it, together with its response to any recommendations contained in the audit report, and a timetable for the implementation of the recommendations. The recommendations must be implemented to the satisfaction of the Planning Secretary.

Monitoring and Environmental Audits

11. Any condition of this consent that requires the carrying out of monitoring or an environmental audit, whether directly or by way of a plan, strategy or program, is taken to be a condition requiring monitoring or an environmental audit under Division 9.4 of Part 9 of the EP&A Act. This includes conditions in respect of incident notification, reporting and response, non-compliance notification, compliance report and independent audit.

For the purposes of the condition, as set out in the EP&A Act, “monitoring” is monitoring of the development to provide data on compliance with the consent or on the environmental impact of the development, and an “environmental audit” is a periodic or particular documented evaluation of the

development to provide information on compliance with the consent or the environmental management or impact of the development.

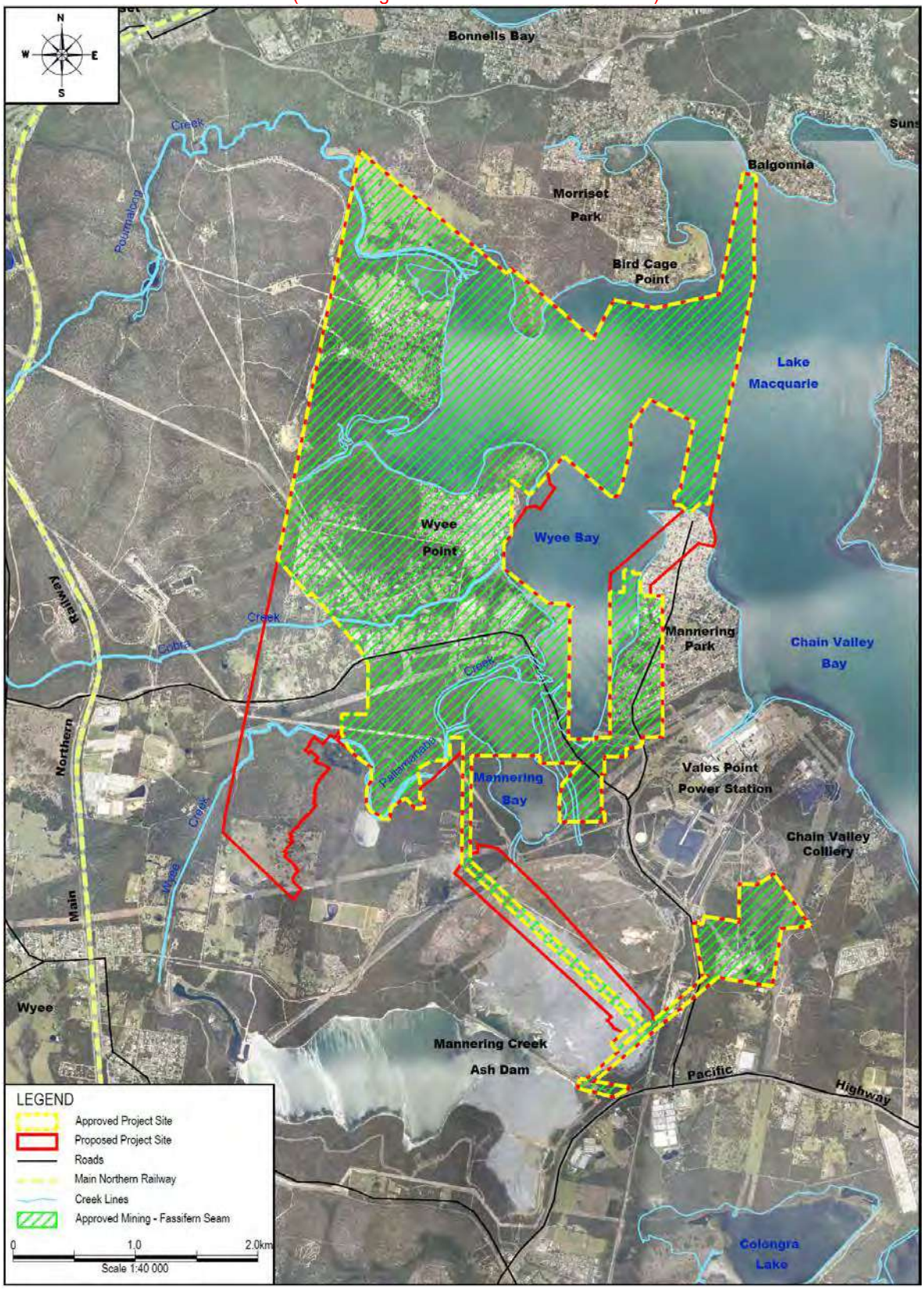
12. Noise and/or air quality monitoring under this consent may be undertaken at suitable representative monitoring locations instead of at privately-owned residences or other locations listed in Schedule 3, providing that these representative monitoring locations are set out in the respective management plan/s.

ACCESS TO INFORMATION

13. Until the completion of all rehabilitation required under this consent, the Applicant must:
    (a) make the following information and documents (as they are obtained, approved or as otherwise stipulated within the conditions of this consent) publicly available on its website:
        - the documents referred to in condition 2(e) of Schedule 2 of this consent;
        - all current statutory approvals for the development;
        - all approved strategies, plans and programs required under the conditions of this consent;
        - the proposed staging plans for the development if the construction, operation or decommissioning of the development is to be staged;
        - minutes of CCC meetings;
        - regular reporting on the environmental performance of the development in accordance with the reporting requirements in any plans or programs approved under the conditions of this consent;
        - a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs;
        - a summary of the current 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 Independent Environmental Audit of the development and the Applicant's response to the recommendations in any audit report; and
        - any other matter required by the Planning Secretary; and
    (b) keep such information up to date, to the satisfaction of the Planning Secretary.

APPENDIX 1: DEVELOPMENT LAND

Mannering Colliery – Land to which the Development Consent applies
(shown edged in solid and dashed red lines)



APPENDIX 2: DEVELOPMENT MAPS

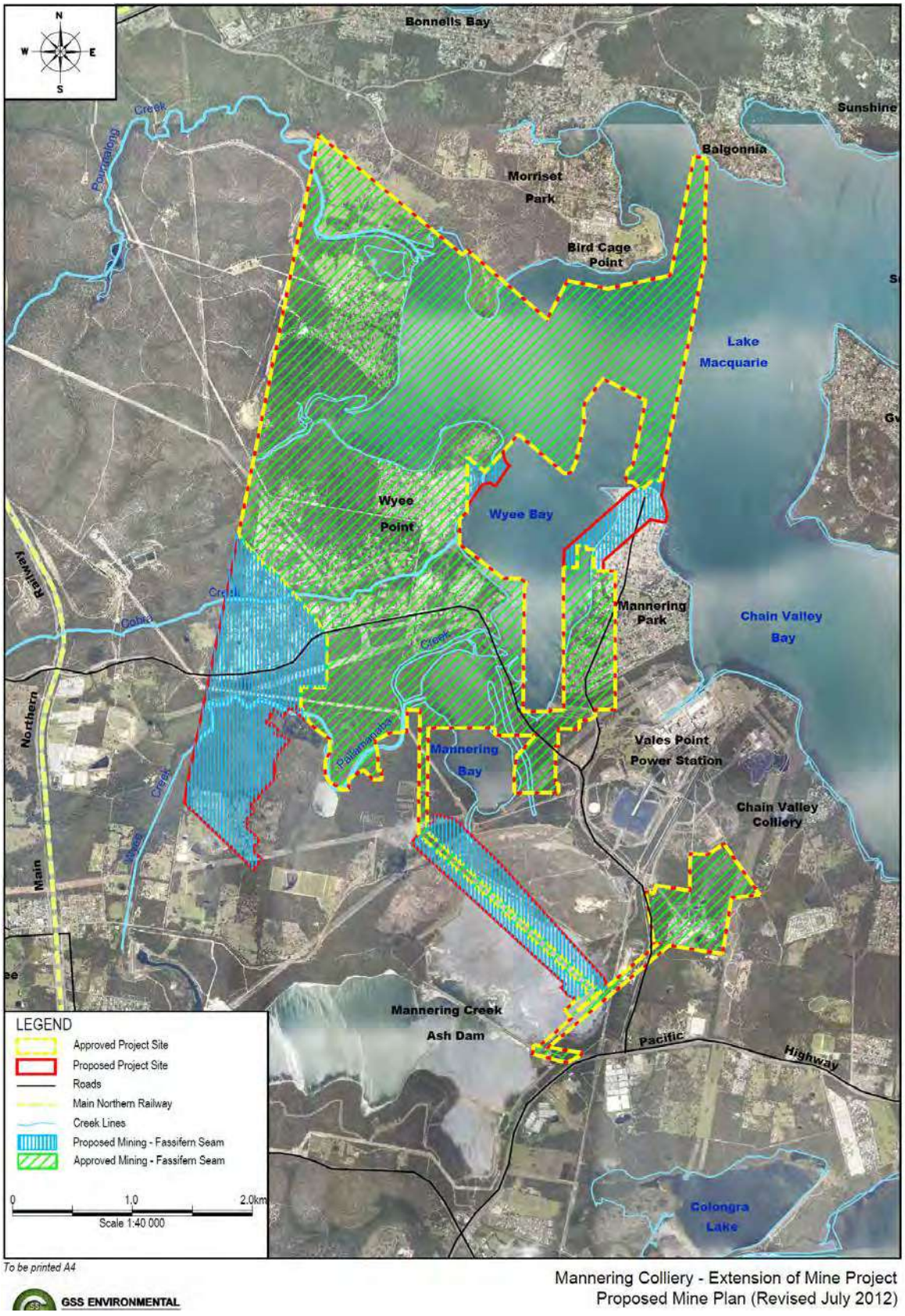
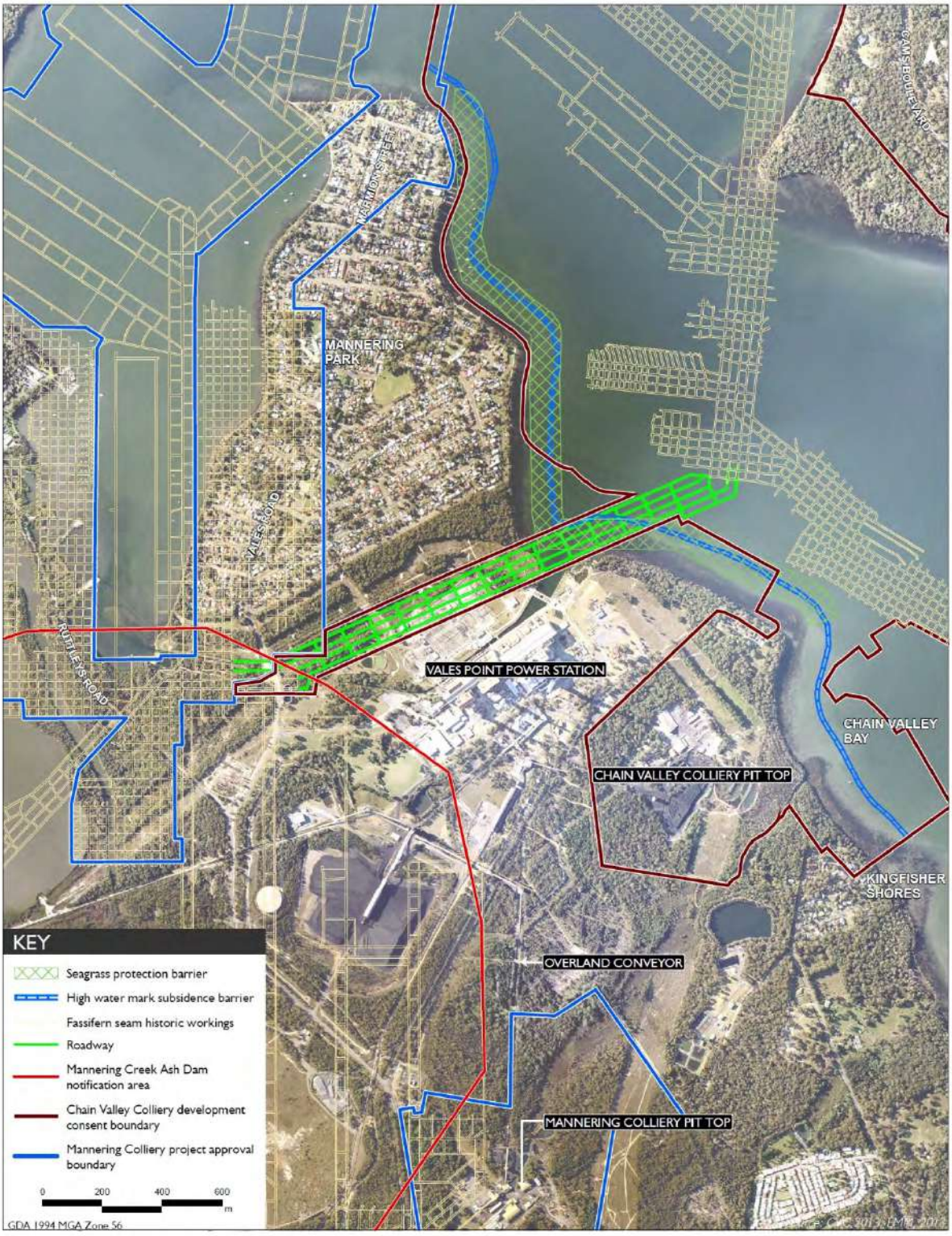
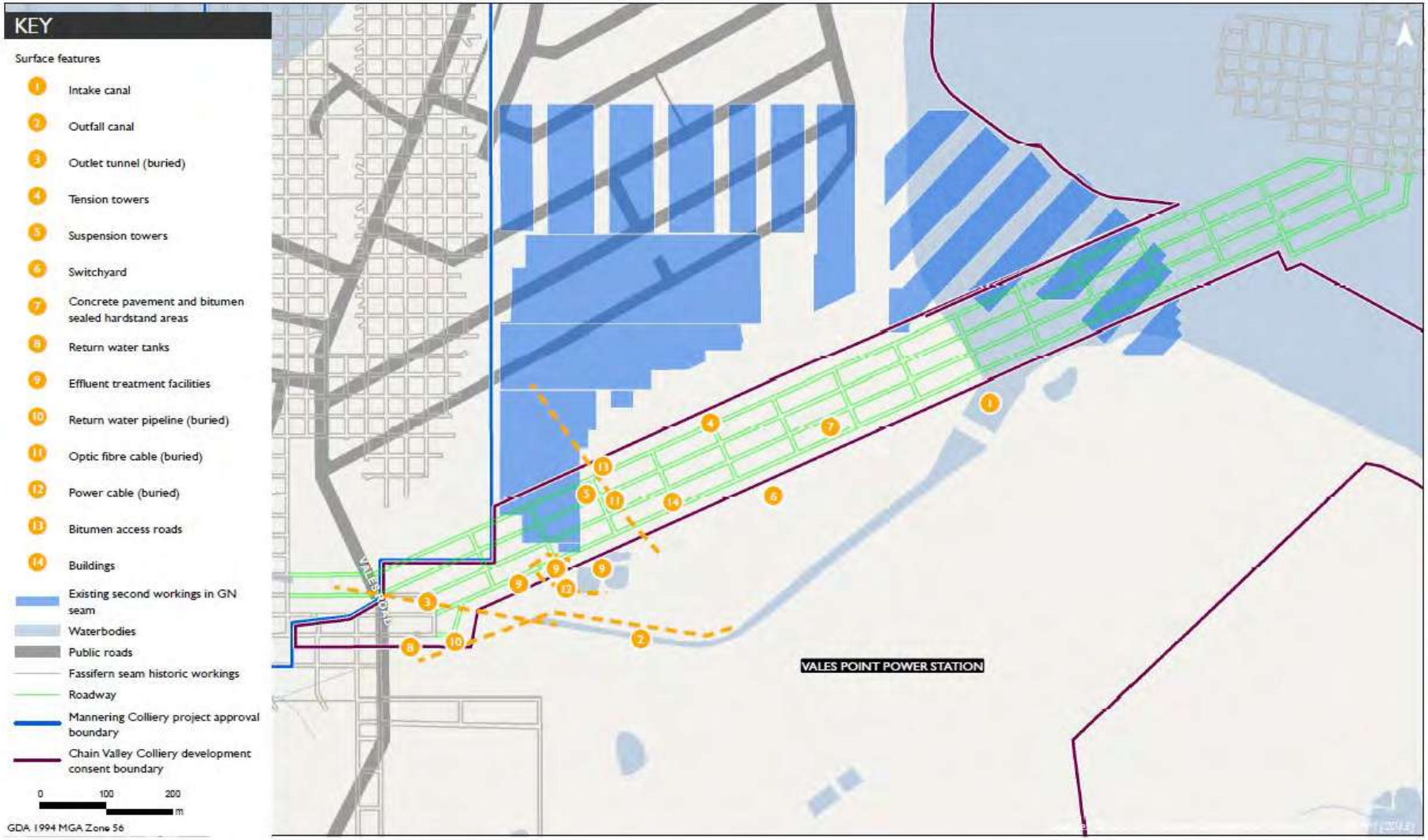


***Figure 1**: Revised Mine Plan for Fassifern Seam*



EMM

Figure 2: *Location of the underground linkage to Chain Valley Colliery*



EMM

Figure 3: *Location of the underground link and surface infrastructure*



Figure 4. *Location of asset protection zones*

APPENDIX 3: STATEMENT OF COMMITMENTS

Revised Statement of Commitments (April 2020)

Revised Statement of Commitments

Subsidence
Mining to be limited to bord-and-pillar methods where coal recovery is limited to first workings only.
Monitoring of the existing subsidence monitoring marks will continue and additional subsidence monitoring marks will be installed above the proposed mining areas to measure the subsidence and verify that subsidence is within the predicted levels.
If it is identified that subsidence levels are greater than the predicted maximum of 20 millimetres, the RR will be consulted to determine appropriate management and mitigation actions.
Water Management
Great Southern Energy Pty Limited will undertake a review of the existing site water management system in consultation with the EPA.
The water level within the sediment pond system will be monitored and kept at a relatively low operating level, such that the ponds can provide a detention function in a significant rainfall event.
A visual assessment of the unnamed creek will be undertaken every 6 months to monitor stability and erosion.
Where practicable, underground water levels will be recorded to monitor changes in the level of water stored in underground depressions and to verify that the rate of extraction is sufficient.
The extraction of underground water from the mine workings will be undertaken in accordance with the Water Access Licence (WAL40461) issued under the Water Management Act 2000.
To enable on-going assessment of the quality of water discharged, the existing monitoring program will be maintained for the life of the Development with the following enhancements: • An assessment of the surrounding catchments summarising land uses and other background information to characterise an appropriate water quality; and • Annual monitoring of heavy metals at the monitoring location identified as 'Downstream'.
Terrestrial Ecology
The following measures to manage the impacts of vegetation clearing/disturbance associated with the APZ requirements will be ongoing: • weed management; • large trees will be retained as a priority where possible; • felled trees will be relocated adjacent to the APZs to create additional fauna habitat; • any injured fauna will be taken to the nearest veterinary hospital for treatment before release; and • an ecologist will complete a pre-disturbance survey to determine important components of the Swamp Oak Floodplain Forest EEC for retention in the APZs.
LakeCoal will investigate the following options for biodiversity offsets: • provide $10,000 of funding, which is equivalent to the biodiversity being lost (ie 5 credits x $2,000 per credit) to existing environmental programs at the site which benefits the Swamp Oak Floodplain Forest EEC; or • consult with BCD to identify a suitable conservation program and provide $10,000 of funding; or

• purchase and retire 5 credits on the Biobanking register. These options will be considered by the Applicant in consultation with BCD and will reflect BCD's 'Approved BioBanking Assessment Methodology 2014'. The option that achieves the greatest benefit to the biodiversity impacted by the proposed modification will be selected.
If monitoring indicates that mine-induced subsidence levels exceed 20 millimetres, a review will be undertaken to identify any potential impacts to terrestrial ecology.
Aquatic Ecology
If monitoring indicates that mine-induced subsidence levels exceed 20 millimetres, a review will be undertaken to identify any potential impacts to aquatic ecology.
Aboriginal Heritage
Activities will continue to be managed in accordance with the Colliery's Aboriginal Cultural Heritage Management plan (ACHMP).
If monitoring indicates that mine-induced subsidence levels exceed 20 millimetres, a review will be undertaken to identify any potential impacts to cultural heritage in consultation with BCD.
All relevant Mannering staff and contractors will be made aware of their statutory obligations for Aboriginal cultural heritage under the NP&W Act as part of the existing mine induction process.
An Aboriginal Cultural Heritage Management Plan (ACHMP) will be developed and implemented for the identified Aboriginal heritage items within the Development Site in consultation with the relevant Aboriginal stakeholders. If additional sites are identified they will be assessed for cultural significance and be incorporated into the ACHMP.
In the unlikely event that skeletal remains are identified, the NSW Police Coroner will be contacted to determine if the material is of Aboriginal origin. If determined to be Aboriginal, contact will be made with the BCD, a suitably qualified archaeologist and representatives of the relevant Aboriginal stakeholder groups to determine an action plan for the management of the skeletal remains and formulate management recommendations if required.
European Heritage
If monitoring indicates that mine-induced subsidence levels exceed 20 millimetres, a review will be undertaken to identify any potential impacts to non-indigenous heritage.
All relevant Mannering staff and contractors will be made aware of their statutory obligations for European cultural heritage under the Heritage Act 1977 as part of the existing mine induction process.
If, during the course of development works, significant non-indigenous cultural heritage material is uncovered within the Development Site, the Heritage Branch of BCD will be notified and any required monitoring or management strategies instigated.
Air Quality
A review of dust management strategies and mitigation measures will be undertaken against the best practice dust mitigation measures identified in the NSW Coal Mining Benchmarking Study: International Best Practice Measures to Prevent and/or Minimise Emissions of Particulate Matter from Coal Mining (Katestone Environmental Pty Ltd 2011), which was prepared for BCD. The review will identify any additional dust management practices that are reasonable and feasible for implementation at Mannering Colliery and will be undertaken generally in accordance with any requirements of a pollution reduction program that may be imposed by the EPA on the Manning Colliery EPL in the future.
Traffic

Great Southern Energy Pty Limited will upgrade the Ruttleys Road - Mannering Colliery Access Road intersection to improve safety and operational efficiency.
Socio-Economic
Great Southern Energy Pty Limited is committed to on-going community consultation and will continue to engage the community for the purposes of providing information relating to on-going operations and the development of the Colliery.
Rehabilitation
Rehabilitation will be undertaken in accordance with the Colliery's Rehabilitation Management Plan, which will be updated to include any changes as a result of any modification.
The Rehabilitation Management Plan will be amended to reflect any modification and will include integrated rehabilitation and environmental management.
Monitoring
The Environmental Monitoring Program will be reviewed and updated, as required, to incorporate the commitments made in the Environmental Assessment and any additional consent conditions.
Commitments for Modification 5
Great Southern Energy Pty Limited will undertake environmental management incorporating the requirements of any modification and in accordance with the existing environmental management processes of the various approvals, licences and management plans that apply to the development.
Great Southern Energy Pty Limited will apply to the EPA for a variation to EPL No. 191 to reflect the increase in the rate of ROM coal throughput from 1.3 to 2.1 Mtpa.
Great Southern Energy Pty Limited will commission a suitably qualified geotechnical engineer to undertake detailed geotechnical assessments as part of the Colliery's detailed mine plan design process.
Great Southern Energy Pty Limited will decommission the surface rotary breaker to reduce noise emissions.

APPENDIX 4: NOISE ASSESSMENT LOCATIONS

Private Property Surrounding Mannering
(Location of ID numbers are shown on following figure)

ID	Owner	ID	Owner	ID	Owner
1	Energy Australia	**27**	H Gleeson	**53**	H & J Beukers
2	Alcevski Investments	**28**	C Stead & M Garner	**54**	A Taylor-Stewart
3	Eaton & Sons Pty Ltd	**29**	A O'Keefe	**55**	G Kettles
4	O & J di Rocco	**30**	P Groen	**56**	R & E Brokenshire
5	A & M Keighran	**31**	M Parkin	**57**	B & S Fowler
6	Swan HydroPonics Pty Ltd	**32**	I Maclaren	**58**	B Sneddon
7	R Druitt	**33**	P Kranz	**59**	J & P Hanson
8	Macquarie Shores Home Village	**34**	T & V Wilding	**60**	L Crook & L Kelly
9	L F Jeans	**35**	G Williams	**61**	P & G Becker
10	L & J Jeans	**36**	P & C Byrnes	**62**	B Clover & R Alaban
11	L & J Jeans	**37**	G Holmes	**63**	T & O Becker
12	L & J Jeans	**38**	R & B Croucher	**64**	R Harris & D Kingsford
13	L & J Jeans	**39**	R & C Calvert	**65**	N Singleton
14	L & J Jeans	**40**	T & D Stolz	**66**	M Smith
15	L & J Jeans	**41**	A & S Whitbread	**67**	D & B Johnston
16	L & J Jeans	**42**	B Kelly	**68**	R & B Amos
17	L & J Jeans	**43**	L Preston	**69**	H & C Strand
18	L & J Jeans	**44**	G Bain	**70**	PhystonPty Ltd
19	L & J Jeans	**45**	C Clarke	**71**	R Howland
20	E & K Knight	**46**	W Carpenter	**72**	R & D Shannon
21	Jonita Homes Pty Ltd	**47**	S Mackay	**73**	P & B Williams
22	W & D Buchmasser	**48**	R Allen	**74**	P Batten
23	P McKee	**49**	S Jopp	**75**	G & A Dyer
24	J Farrell	**50**	P & M Davie	**76**	S Harrison & N Robertson
25	P Kretchmer & E Castle	**51**	D Olsen		
26	A Mearns	**52**	D Poulson & K Toope		

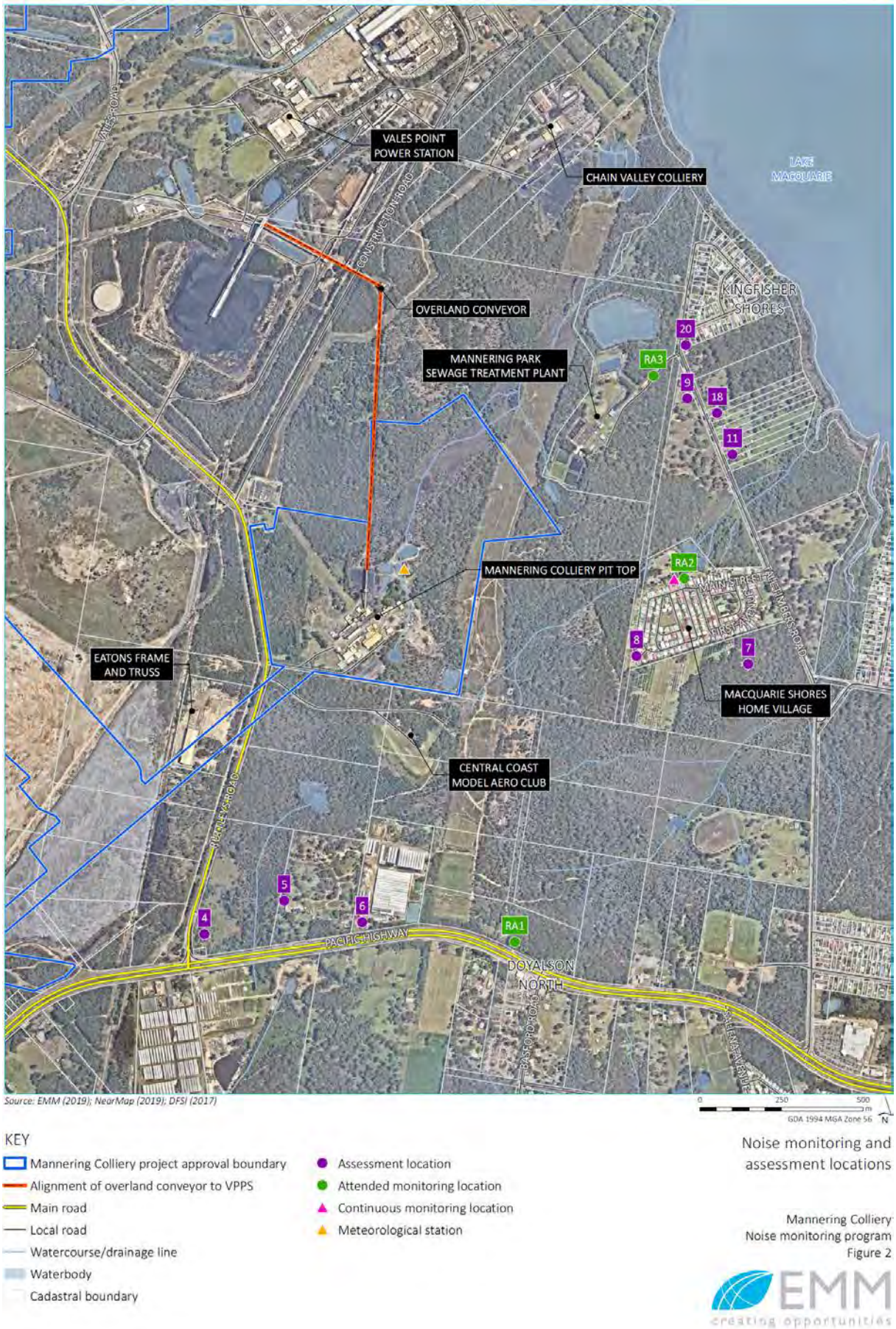
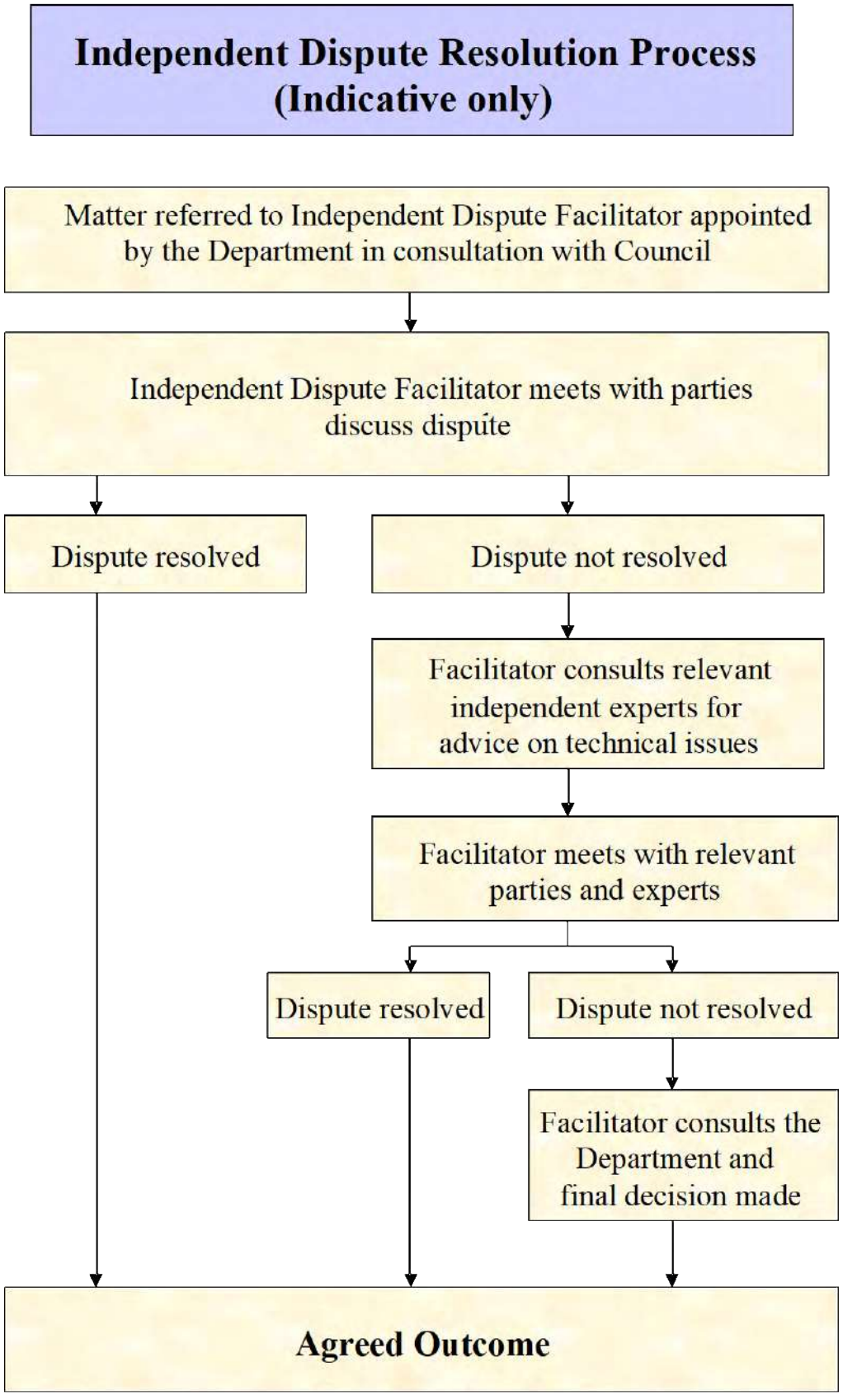


***Figure 5**: Noise monitoring locations*

APPENDIX 5: INDEPENDENT DISPUTE RESOLUTION



Appendix 2: Environment Protection Licence 191

Environment Protection Licence

Licence - 191

Licence Details	
Number:	191
Anniversary Date:	01-January

Licensee
GREAT SOUTHERN ENERGY PTY LTD
PO BOX 7115
MANNERING PARK NSW 2259

Premises
MANNERING COLLIERY
RUTLEYS ROAD
DOYALSON NSW 2262

Scheduled Activity
Coal works
Mining for coal

Fee Based Activity	Scale
Coal works	> 2000000-5000000 T annual handing capacity
Mining for coal	> 500000-2000000 T annual production capacity

Contact Us
NSW EPA
6 Parramatta Square
10 Darcy Street
PARRAMATTA NSW 2150
Phone: 131 555
Email: info@epa.nsw.gov.au
Locked Bag 5022
PARRAMATTA NSW 2124

Environment Protection Licence

Licence - 191

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Environment Protection Licence

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Environment Protection Licence

Information about this licence

Dictionary

A definition of terms used in the licence can be found in the dictionary at the end of this licence.

Responsibilities of licensee

Separate to the requirements of this licence, general obligations of licensees are set out in the Protection of the Environment Operations Act 1997 ("the Act") and the Regulations made under the Act. These include obligations to:

- ensure persons associated with you comply with this licence, as set out in section 64 of the Act;
- control the pollution of waters and the pollution of air (see for example sections 120 - 132 of the Act);
- report incidents causing or threatening material environmental harm to the environment, as set out in Part 5.7 of the Act.

Variation of licence conditions

The licence holder can apply to vary the conditions of this licence. An application form for this purpose is available from the EPA.

The EPA may also vary the conditions of the licence at any time by written notice without an application being made.

Where a licence has been granted in relation to development which was assessed under the Environmental Planning and Assessment Act 1979 in accordance with the procedures applying to integrated development, the EPA may not impose conditions which are inconsistent with the development consent conditions until the licence is first reviewed under Part 3.6 of the Act.

Duration of licence

This licence will remain in force until the licence is surrendered by the licence holder or until it is suspended or revoked by the EPA or the Minister. A licence may only be surrendered with the written approval of the EPA.

Licence review

The Act requires that the EPA review your licence at least every 5 years after the issue of the licence, as set out in Part 3.6 and Schedule 5 of the Act. You will receive advance notice of the licence review.

Fees and annual return to be sent to the EPA

For each licence fee period you must pay:

- an administrative fee; and
- a load-based fee (if applicable).

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The EPA publication “A Guide to Licensing” contains information about how to calculate your licence fees. The licence requires that an Annual Return, comprising a Statement of Compliance and a summary of any monitoring required by the licence (including the recording of complaints), be submitted to the EPA. The Annual Return must be submitted within 60 days after the end of each reporting period. See condition R1 regarding the Annual Return reporting requirements.

Usually the licence fee period is the same as the reporting period.

Transfer of licence

The licence holder can apply to transfer the licence to another person. An application form for this purpose is available from the EPA.

Public register and access to monitoring data

Part 9.5 of the Act requires the EPA to keep a public register of details and decisions of the EPA in relation to, for example:

- licence applications;
- licence conditions and variations;
- statements of compliance;
- load based licensing information; and
- load reduction agreements.

Under s320 of the Act application can be made to the EPA for access to monitoring data which has been submitted to the EPA by licensees.

This licence is issued to:

GREAT SOUTHERN ENERGY PTY LTD
PO BOX 7115
MANNERING PARK NSW 2259

subject to the conditions which follow.

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1 Administrative Conditions

A1 What the licence authorises and regulates

A1.1 This licence authorises the carrying out of the scheduled activities listed below at the premises specified in A2. The activities are listed according to their scheduled activity classification, fee-based activity classification and the scale of the operation.

Unless otherwise further restricted by a condition of this licence, the scale at which the activity is carried out must not exceed the maximum scale specified in this condition.

Scheduled Activity	Fee Based Activity	Scale
Coal works	Coal works	> 2000000 - 5000000 T annual handing capacity
Mining for coal	Mining for coal	> 500000 - 2000000 T annual production capacity

A1.2 The licensee must not:
(a) Produce by mining activities more than 1.1 million tonnes of coal within any 12 month period.
(b) Undertake coal works of more than 2.1 million tonnes within any 12 month period, where ROM coal handled on the premises may be made up of coal produced by mining activities from both the Mannering premises as defined in this licence or Chain Valley premises as defined in Environment Protection Licence number 1770.

Note: These limits on the scale of the fee based activities are based on project Approval 06_0311 MOD5 granted under the *Environmental Planning and Assessment Act 1979* which limits extraction to 1.1 million tonnes of run of mine (ROM) coal per year and its modifications, the most recent of which is dated 5 June 2020.

A2 Premises or plant to which this licence applies

A2.1 The licence applies to the following premises:

Premises Details
MANNERING COLLIERY
RUTLEYS ROAD
DOYALSON
NSW 2262

Environment Protection Licence

SURFACE EXTENTS AND MONITORING LOCATIONS DESCRIBED BY PLAN OF PREMISES TITLED DELTA COAL MANNERING COLLIERY EPL 191 SURFACE EXTENTS AND ENVIRONMENTAL MONITORING LOCATIONS DRAWING NUMBER A1S0012_2, DATED 1 NOVEMBER 2019 (EPA REFERENCE DOC19/993639-1); UNDERGROUND EXTENTS DESCRIBED BY PLAN OF PREMISES TITLED DELTA COAL MANNERING COLLIERY EPL 191 SURFACE AND UNDERGROUND EXTENTS PREMISES PLAN DRAWING NUMBER A1S0012_2 REV2 (EPA REFERENCE DOC23/423384).

A3 Information supplied to the EPA

A3.1 Works and activities must be carried out in accordance with the proposal contained in the licence application, except as expressly provided by a condition of this licence.

In this condition the reference to "the licence application" includes a reference to:
a) the applications for any licences (including former pollution control approvals) which this licence replaces under the Protection of the Environment Operations (Savings and Transitional) Regulation 1998; and
b) the licence information form provided by the licensee to the EPA to assist the EPA in connection with the issuing of this licence.

2 Discharges to Air and Water and Applications to Land

P1 Location of monitoring/discharge points and areas

P1.1 The following points referred to in the table below are identified in this licence for the purposes of monitoring and/or the setting of limits for the emission of pollutants to the air from the point.

Air

EPA identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
3	Dust monitoring		Dust deposition gauge identified as point 3 on plan titled "Delta Coal Mannering Colliery, EPL 191, Surface Extents & Environmental Monitoring Locations drawing No: A180012_02, Dated 1 November 2019" EPA Reference Doc 19/993639.
4	Dust monitoring		Dust deposition gauge identified as point 4 on plan titled "Delta Coal Mannering Colliery, EPL 191, Surface Extents & Environmental Monitoring Locations drawing No: A180012_02, Dated 1 November 2019" EPA Reference Doc 19/993639.
5	Dust monitoring		Dust deposition gauge identified as point 5 on plan titled "Delta Coal Mannering Colliery, EPL 191, Surface Extents & Environmental Monitoring Locations drawing No: A180012_02, Dated 1 November 2019" EPA Reference Doc 19/993639.

6	Dust monitoring	Dust deposition gauge identified as point 6 on plan titled "Delta Coal Mannering Colliery, EPL 191, Surface Extents & Environmental Monitoring Locations drawing No: A180012_02, Dated 1 November 2019" EPA Reference Doc 19/993639.
7	Dust monitoring	Dust deposition gauge identified as point 7 on plan titled "Delta Coal Mannering Colliery, EPL 191, Surface Extents & Environmental Monitoring Locations drawing No: A180012_02, Dated 1 November 2019" EPA Reference Doc 19/993639.

P1.2 The following points referred to in the table are identified in this licence for the purposes of the monitoring and/or the setting of limits for discharges of pollutants to water from the point.

Water and land

EPA Identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
1	Discharge to waters Discharge quality monitoring	Discharge to waters Discharge quality monitoring	Discharge Point 1 (surface and groundwater) identified as point 1 on plan titled "Delta Coal Mannering Colliery, EPL 191, Surface Extents & Environmental Monitoring Locations", Drawing No:A180012_02, dated 1 November 2019, EPA Reference Doc19/993639.

P1.3 The following points referred to in the table below are identified in this licence for the purposes of weather and/or noise monitoring and/or setting limits for the emission of noise from the premises.

Noise/Weather

EPA identification no.	Type of monitoring point	Location description
8	Meteorological Station	As identified as point 8 in "Delta Coal Mannering Colliery, EPL 191, Surface Extents & Environmental Monitoring Locations, Drawing No: A180012_02, Dated 1 November 2019" EPA Reference Doc19/993639.

3 Limit Conditions

L1 Pollution of waters

L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with

section 120 of the Protection of the Environment Operations Act 1997.

L2 Concentration limits

L2.1 For each monitoring/discharge point or utilisation area specified in the table/s below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.

L2.2 Where a pH quality limit is specified in the table, the specified percentage of samples must be within the specified ranges.

L2.3 To avoid any doubt, this condition does not authorise the pollution of waters by any pollutant other than those specified in the table\s.

L2.4 Water and/or Land Concentration Limits

POINT 1

Pollutant	Units of Measure	50 percentile concentration limit	90 percentile concentration limit	3DGM concentration limit	100 percentile concentration limit
Oil and Grease	milligrams per litre				10
pH	pH				6.5-8.5
Total suspended solids	milligrams per litre				50

L3 Volume and mass limits

L3.1 For each discharge point or utilisation area specified below (by a point number), the volume/mass of:
a) liquids discharged to water; or;
b) solids or liquids applied to the area;
must not exceed the volume/mass limit specified for that discharge point or area.

Point	Unit of Measure	Volume/Mass Limit
1	kilolitres per day	4000

L3.2 Exceedance of the volume limit for Point 1 is permitted only if the discharge from Point 1 occurs solely as a result of rainfall at the premises exceeding 10mm during the 24 hours immediately prior to the commencement of discharge

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L4 Waste

L4.1 The licensee must not cause, permit or allow any waste to be received at the premises, except the wastes expressly referred to in the column titled “Waste” and meeting the definition, if any, in the column titled “Description” in the table below.
Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled “Activity” in the table below.
Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste contained in the column titled “Other Limits” in the table below.
This condition does not limit any other conditions in this licence.

Code	Waste	Description	Activity	Other Limits
NA	Waste	Any other waste received on the premises for storage, treatment, processing, sorting or disposal and which receipt is not a scheduled activity under Schedule 1 of the POEO Act, as in force from time to time.		
NA	General or Specific exempted waste	Waste that meets all the conditions of a resource recovery exemption under Clause 51A of the Protection of the Environment Operations (Waste) Regulation 2014	As specified in each particular resource recovery exemption	N/A

L4.2 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.

L4.3 This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if it requires an environment protection licence.

L5 Noise limits

Note: Noise limits are not specified as a condition of this licence. Noise limits are prescribed with the conditions of Project Approval 06_0311 granted under the *Environmental Planning and Assessment Act 1979.* Under the *Environmental Planning and Assessment Act 1979* the Department of Planning is the appropriate authority in respect of the administration and regulation of the Project Approval.

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4 Operating Conditions

O1 Activities must be carried out in a competent manner

O1.1 Licensed activities must be carried out in a competent manner.
This includes:
a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and
b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

O2 Maintenance of plant and equipment

O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity:
a) must be maintained in a proper and efficient condition; and
b) must be operated in a proper and efficient manner.

O3 Dust

O3.1 The premises must be maintained in a condition which minimises or prevents the emission of dust from the premises.

O3.2 Activities occurring in or on the premises must be carried out in a manner that will minimise the generation, or emission from the premises, of wind-blown or traffic generated dust.

O3.3 All trafficable areas, coal storage areas and vehicle manoeuvring areas in or on the premises must be maintained, at all times, in a condition that will minimise the generation, or emission from the premises, of wind-blown or traffic generated dust.

O3.4 The tailgates of all haulage trucks leaving the premises must be securely fixed prior to loading or immediately after unloading to prevent loss of materials.

O3.5 Coal stockpiles must be maintained in a condition that will minimise the generation and emission of dust on the premises.

O4 Emergency response

Note: The licensee must maintain, and implement as necessary, a current Pollution Incident Response Management Plan (PIRMP) for the premises. The PIRMP must be developed in accordance with the requirements in Part 5.7A of the Protection of the Environment Operations (POEO) Act 1997 and POEO regulations. The licensee must keep the incident response plan on the premises at all times. The incident response plan must document systems and procedures to deal with all types of incidents (e.g. spills, explosions or fire) that may occur at the premises or that may be associated with activities that occur at the premises and which are likely to cause harm to the environment. The PIRMP must be tested at least annually or following a pollution incident.

O5 Processes and management

O5.1 All above ground tanks containing material that is likely to cause environmental harm must be bunded or have an alternative spill containment system in place.

O5.2 Bunds must:
a) have walls and floors constructed of impervious materials;
b) be of sufficient capacity to contain 110% of the volume of the tank (or 110% volume of the largest tank where a group of tanks are installed);
c) have floors graded to a collection sump; and
d) not have a drain valve incorporated in the bund structure,

or be constructed and operated in a manner that achieves the same environmental outcome.

O6 Other operating conditions

O6.1 The licensee must ensure that activities are conducted in an environmentally satisfactory manner. So as to minimise and prevent the pollution of air and water the licensee must:
(a) Ensure that vehicles or containers prior to leaving the premises are clean and sealed in a manner that will not cause materials or wastes used in conducting the activities at the premises to be tracked, thrown from, blown, fall, or cast from any vehicle or container onto a public road.
(b) The licensee must have in place and implement procedures to ensure that vehicles and containers exiting the premises are in a condition to ensure that materials are not tracked, thrown, blown, fall or cast onto a public road.

5 Monitoring and Recording Conditions

M1 Monitoring records

M1.1 The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition.

M1.2 All records required to be kept by this licence must be:
a) in a legible form, or in a form that can readily be reduced to a legible form;
b) kept for at least 4 years after the monitoring or event to which they relate took place; and
c) produced in a legible form to any authorised officer of the EPA who asks to see them.

M1.3 The following records must be kept in respect of any samples required to be collected for the purposes of this licence:
a) the date(s) on which the sample was taken;
b) the time(s) at which the sample was collected;
c) the point at which the sample was taken; and
d) the name of the person who collected the sample.

M2 Requirement to monitor concentration of pollutants discharged

M2.1 For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in

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Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:

M2.2 Air Monitoring Requirements

POINT 3,4,5,6,7

Pollutant	Units of measure	Frequency	Sampling Method
Particulates - Deposited Matter	grams per square metre per month	Monthly	AM-19

M2.3 Water and/ or Land Monitoring Requirements

POINT 1

Pollutant	Units of measure	Frequency	Sampling Method
Aluminium (dissolved)	micrograms per litre	Monthly during discharge	Grab sample
Aluminium (total)	micrograms per litre	Monthly during discharge	Grab sample
Antimony	micrograms per litre	Monthly during discharge	Grab sample
Arsenic (dissolved)	micrograms per litre	Monthly during discharge	Grab sample
Arsenic (total)	micrograms per litre	Monthly during discharge	Grab sample
Barium	micrograms per litre	Monthly during discharge	Grab sample
Beryllium (dissolved)	micrograms per litre	Monthly during discharge	Grab sample
Beryllium (total)	micrograms per litre	Monthly during discharge	Grab sample
Boron	micrograms per litre	Monthly during discharge	Grab sample
Cadmium (dissolved)	micrograms per litre	Monthly during discharge	Grab sample
Cadmium (total)	micrograms per litre	Monthly during discharge	Grab sample
Calcium	micrograms per litre	Monthly during discharge	Grab sample
Chromium (dissolved)	micrograms per litre	Monthly during discharge	Grab sample
Chromium (total)	micrograms per litre	Monthly during discharge	Grab sample
Cobalt (dissolved)	micrograms per litre	Monthly during discharge	Grab sample

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Cobalt (total)	micrograms per litre	Monthly during discharge	Grab sample
Conductivity	microsiemens per centimetre	Weekly during any discharge	Grab sample
Copper (dissolved)	micrograms per litre	Monthly during discharge	Grab sample
Copper (total)	micrograms per litre	Monthly during discharge	Grab sample
Iron	micrograms per litre	Monthly during discharge	Grab sample
Lead (dissolved)	micrograms per litre	Monthly during discharge	Grab sample
Lead (total)	micrograms per litre	Monthly during discharge	Grab sample
Lithium	micrograms per litre	Monthly during discharge	Grab sample
Magnesium	micrograms per litre	Monthly during discharge	Grab sample
Manganese (dissolved)	micrograms per litre	Monthly during discharge	Grab sample
Mercury (dissolved)	micrograms per litre	Monthly during discharge	Grab sample
Mercury (total)	micrograms per litre	Monthly during discharge	Grab sample
Molybdenum (dissolved)	micrograms per litre	Monthly during discharge	Grab sample
Molybdenum (total)	micrograms per litre	Monthly during discharge	Grab sample
Nickel (dissolved)	micrograms per litre	Monthly during discharge	Grab sample
Nickel (total)	micrograms per litre	Monthly during discharge	Grab sample
Nitrogen (ammonia)	micrograms per litre	Monthly during discharge	Grab sample
Oil and Grease	milligrams per litre	Weekly during any discharge	Grab sample
pH	pH	Weekly during any discharge	Grab sample
Phosphorus	micrograms per litre	Monthly during discharge	Grab sample
Potassium	micrograms per litre	Monthly during discharge	Grab sample
Selenium (dissolved)	micrograms per litre	Monthly during discharge	Grab sample
Selenium (total)	micrograms per litre	Monthly during discharge	Grab sample
Silica	micrograms per litre	Monthly during discharge	Grab sample
Silver (dissolved)	micrograms per litre	Monthly during discharge	Grab sample
Silver (total)	micrograms per litre	Monthly during discharge	Grab sample
Sulfur	micrograms per litre	Monthly during discharge	Grab sample

Tin	micrograms per litre	Monthly during discharge	Grab sample
Titanium	micrograms per litre	Monthly during discharge	Grab sample
Total suspended solids	milligrams per litre	Weekly during any discharge	Grab sample
Vanadium (dissolved)	micrograms per litre	Monthly during discharge	Grab sample
Vanadium (total)	micrograms per litre	Monthly during discharge	Grab sample
Zinc (dissolved)	micrograms per litre	Monthly during discharge	Grab sample
Zinc (total)	micrograms per litre	Monthly during discharge	Grab sample

M3 Testing methods - concentration limits

M3.1 Monitoring for the concentration of a pollutant emitted to the air required to be conducted by this licence must be done in accordance with:
a) any methodology which is required by or under the Act to be used for the testing of the concentration of the pollutant; or
b) if no such requirement is imposed by or under the Act, any methodology which a condition of this licence requires to be used for that testing; or
c) if no such requirement is imposed by or under the Act or by a condition of this licence, any methodology approved in writing by the EPA for the purposes of that testing prior to the testing taking place.

Note: The *Protection of the Environment Operations (Clean Air) Regulation 2022* requires testing for certain purposes to be conducted in accordance with test methods contained in the publication "Approved Methods for the Sampling and Analysis of Air Pollutants in NSW".

M3.2 Subject to any express provision to the contrary in this licence, monitoring for the concentration of a pollutant discharged to waters or applied to a utilisation area must be done in accordance with the Approved Methods Publication unless another method has been approved by the EPA in writing before any tests are conducted.

M4 Weather monitoring

M4.1 The licensee may use the meteorological station established at Vales Point Power Station provided the licensee has authority from Sunset Power International Pty Ltd to access data from the Vales Point Power Station at all times. However, if this station is not available at any time then condition M4.2 applies.

M4.2 At the point(s) identified below, the licensee must monitor (by sampling and obtaining results by analysis) the parameters specified in Column 1 of the table below, using the corresponding sampling method, units of measure, averaging period and sampling frequency, specified opposite in the Columns 2, 3, 4 and 5 respectively.

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POINT 8

Parameter	Sampling method	Units of measure	Averaging period	Frequency
Rainfall	AM-4	millimetres	24 hours	Continuous
Wind Direction at 10 metres	AM-2 & AM-4	Degrees	1 hour	Continuous

M5 Recording of pollution complaints

M5.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.

M5.2 The record must include details of the following:
a) the date and time of the complaint;
b) the method by which the complaint was made;
c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
d) the nature of the complaint;
e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
f) if no action was taken by the licensee, the reasons why no action was taken.

M5.3 The record of a complaint must be kept for at least 4 years after the complaint was made.

M5.4 The record must be produced to any authorised officer of the EPA who asks to see them.

M6 Telephone complaints line

M6.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.

M6.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.

M6.3 The preceding two conditions do not apply until 3 months after: the date of the issue of this licence.

M6.4 The licensee must nominate a representative of the company that is available at all times and is capable of providing immediate assistance or response during emergencies or any other incidents at the premises. The name of the nominated representative and their contact details, including a telephone number, must be current at all times.

M7 Requirement to monitor volume or mass

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M7.1 For each discharge point or utilisation area specified below, the licensee must monitor:
a) the volume of liquids discharged to water or applied to the area;
b) the mass of solids applied to the area;
c) the mass of pollutants emitted to the air;
at the frequency and using the method and units of measure, specified below.

POINT 1

Frequency	Unit of Measure	Sampling Method
Continuous during discharge	kilolitres per day	In line instrumentation

6 Reporting Conditions

R1 Annual return documents

R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:

1. a Statement of Compliance,
2. a Monitoring and Complaints Summary,
3. a Statement of Compliance - Licence Conditions,
4. a Statement of Compliance - Load based Fee,
5. a Statement of Compliance - Requirement to Prepare Pollution Incident Response Management Plan,
6. a Statement of Compliance - Requirement to Publish Pollution Monitoring Data; and
7. a Statement of Compliance - Environmental Management Systems and Practices.

At the end of each reporting period, the EPA will provide to the licensee notification that the Annual Return is due.

R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below.

Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.

R1.3 Where this licence is transferred from the licensee to a new licensee:
a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.

Note: An application to transfer a licence must be made in the approved form for this purpose.

R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:
a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or

b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.

R1.5 The Annual Return for the reporting period must be supplied to the EPA via eConnect *EPA* or by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').

R1.6 The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA.

R1.7 Within the Annual Return, the Statements of Compliance must be certified and the Monitoring and Complaints Summary must be signed by:
a) the licence holder; or
b) by a person approved in writing by the EPA to sign on behalf of the licence holder.

R2 Notification of environmental harm

Note: The licensee or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.

R2.1 Notifications must be made by telephoning the Environment Line service on 131 555.

R2.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which they became aware of the incident.

R3 Written report

R3.1 Where an authorised officer of the EPA suspects on reasonable grounds that:
a) where this licence applies to premises, an event has occurred at the premises; or
b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence,
and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.

R3.2 The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.

R3.3 The request may require a report which includes any or all of the following information:
a) the cause, time and duration of the event;
b) the type, volume and concentration of every pollutant discharged as a result of the event;
c) the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event;
d) the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
e) action taken by the licensee in relation to the event, including any follow-up contact with any complainants;
f) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an

event; and
g) any other relevant matters.

R3.4 The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.

7 General Conditions

G1 Copy of licence kept at the premises or plant

G1.1 A copy of this licence must be kept at the premises to which the licence applies.

G1.2 The licence must be produced to any authorised officer of the EPA who asks to see it.

G1.3 The licence must be available for inspection by any employee or agent of the licensee working at the premises.

G2 Other general conditions

G2.1 **Completed Programs**

Program	Description	Completed Date
PRP 1 - Assessment of Potential Impacts of Metals	The licensee must conduct an assessment of metals detected in wastewater discharges from the mine in accordance with the ANZECC water quality guidelines.. To obtain a greater understanding of the type and concentration of metals discharged in mine water and entering the receiving waters. To limit the concentration of metals discharged in mine water within ANZECC guidelines.	26-June-2013
Coal Mine Particulate Matter Control Best Practice	Requires licensee to conduct a site specific Best Management Practice (BMP) determination to identify ways to reduce particle emissions.	19-September-2012
Coal Handling and Preparation Plant Commissioning Water Quality Monitoring Study	CHPP commissioning water quality monitoring study	12-October-2016

Environment Protection Licence

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Dictionary

General Dictionary

3DGM [in relation to a concentration limit]	Means the three day geometric mean, which is calculated by multiplying the results of the analysis of three samples collected on consecutive days and then taking the cubed root of that amount. Where one or more of the samples is zero or below the detection limit for the analysis, then 1 or the detection limit respectively should be used in place of those samples
Act	Means the Protection of the Environment Operations Act 1997
activity	Means a scheduled or non-scheduled activity within the meaning of the Protection of the Environment Operations Act 1997
actual load	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
AM	Together with a number, means an ambient air monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.
AMG	Australian Map Grid
anniversary date	The anniversary date is the anniversary each year of the date of issue of the licence. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
annual return	Is defined in R1.1
Approved Methods Publication	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
assessable pollutants	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
BOD	Means biochemical oxygen demand
CEM	Together with a number, means a continuous emission monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.
COD	Means chemical oxygen demand
composite sample	Unless otherwise specifically approved in writing by the EPA, a sample consisting of 24 individual samples collected at hourly intervals and each having an equivalent volume.
cond.	Means conductivity
environment	Has the same meaning as in the Protection of the Environment Operations Act 1997
environment protection legislation	Has the same meaning as in the Protection of the Environment Administration Act 1991
EPA	Means Environment Protection Authority of New South Wales.
fee-based activity classification	Means the numbered short descriptions in Schedule 1 of the Protection of the Environment Operations (General) Regulation 2009.
general solid waste (non-putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997

Environment Protection Licence

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flow weighted composite sample	Means a sample whose composites are sized in proportion to the flow at each composites time of collection.
general solid waste (putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environmen t Operations Act 1997
grab sample	Means a single sample taken at a point at a single time
hazardous waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
licensee	Means the licence holder describe d at the front of this licence
load calculation protocol	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
local authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
material harm	Has the same meaning as in section 147 Protection of the Environment Operations Act 1997
MBAS	Means methylene blue active substances
Minister	Means the Minister administering the Protection of the Environment Operations Act 1997
mobile plant	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
motor vehicle	Has the same meaning as in the Protection of the Environment Operations Act 1997
O&G	Means oil and grease
percentile [in relation to a concentration limit of a sample]	Means that percentage [eg.50%] of the number of samples taken that must meet the concentration limit specified in the licence for that pollutant over a specified period of time. In this licence, the specified period of time is the Reporting Period unless otherwise stated in this licence.
plant	Includes all plant within the meaning of the Protection of the Environment Operations Act 1997 as well as motor vehicles.
pollution of waters [or water pollution]	Has the same meaning as in the Protection of the Environment Operations Act 1997
premises	Means the premises described in condition A2.1
public authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
regional office	Means the relevant EPA office referred to in the Contacting the EPA document accompanying this licence
reporting period	For the purposes of this licence, the reporting period means the period of 12 months after the issue of the licence, and each subsequent period of 12 mo nths. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
restricted solid waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
scheduled activity	Means an activity listed in Schedule 1 of the Protection of the Environment Operations Act 1997
special waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
TM	Together with a number, means a test method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.

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TSP	Means total suspended particles
TSS	Means total suspended solids
Type 1 substance	Means the elements antimony, arsenic, cadmium, lead or mercury or any compound containing one or more of those elements
Type 2 substance	Means the elements beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements
utilisation area	Means any area shown as a utilisation area on a map submitted with the application for this licence
waste	Has the same meaning as in the Protection of the Environment Operations Act 1997
waste type	Means liquid, restricted solid waste, general solid waste (putrescible), general solid waste (non-putrescible), special waste or hazardous waste
Wellhead	Has the same meaning as in Schedule 1 to the Protection of the Environment Operations (General) Regulation 2021.

Ms Debbie Maddison

Environment Protection Authority

(By Delegation)

Date of this edition: 06-April-2000

Environment Protection Licence

Licence - 191

End Notes

1	Licence varied by notice V/M upgrade, issued on 10-Jul-2000, which came into effect on 10-Jul-2000.
2	Licence varied by notice 1005801, issued on 13-Aug-2001, which came into effect on 07-Sep-2001.
3	Licence varied by Change of contact details, issued on 16-Apr-2002, which came into effect on 16-Apr-2002.
4	Licence transferred through application 141582, approved on 21-Nov-2002, which came into effect on 07-Aug-2002.
5	Licence varied by notice 1024680, issued on 04-Feb-2003, which came into effect on 06-Feb-2003.
6	Licence varied by notice 1043601, issued on 14-Jan-2005, which came into effect on 08-Feb-2005.
7	Licence varied by notice 1055208, issued on 01-Mar-2006, which came into effect on 26-Mar-2006.
8	Condition A1.3 Not applicable varied by notice issued on <issue date> which came into effect on <effective date>
9	Licence varied by notice 1105215, issued on 23-Feb-2011, which came into effect on 23-Feb-2011.
10	Licence varied by notice 1502466 issued on 21-Dec-2011
11	Licence transferred through application 1517779 approved on 29-Oct-2013 , which came into effect on 17-Oct-2013
12	Licence varied by notice 1527523 issued on 13-May-2015
13	Licence varied by notice 1551540 issued on 12-May-2017
14	Licence transferred through application 1578020 approved on 01-Apr-2019 , which came into effect on 01-Apr-2019
15	Licence varied by notice 1587330 issued on 25-Nov-2019
16	Licence varied by notice 1606232 issued on 09-Apr-2021
17	Licence varied by notice 1608120 issued on 14-Apr-2021

Appendix 3: Weed Action Plan

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Weed Action Plan

Chain Valley Colliery, Mannering Colliery and Summerland Point Ventilation Shaft

Total Earth Care Pty Ltd

January 20

Weed Action Plan

Chain Valley Colliery, Mannering Colliery and Summerland Point Ventilation Shaft

January 20

Quality Control	© Total Earth Care Pty Ltd 2019		
Revision/Version No.	Final	**Date of revision**	17 January 2020
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Prepared for:	Delta Coal		
TEC Job No.	C11483		

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1 INTRODUCTION

1.1 Background

Total Earth Care (TEC) has been commissioned by Delta Coal to prepare this update for the Weed Action Plan for the three (3) Delta Coal sites: Chain Valley Colliery, Mannering Colliery and Summerland Point Ventilation Shaft. The site is within the Central Coast LGA (formerly Wyong LGA).

A Weed Action Plan was developed for Lake Coal in 2016 to guide weed management of the aforementioned sites in a consolidated report. The sites are now managed by Delta Coal and an updated Weed Action Plan is required to assess the current weed densities on the site and provide relevant management actions that will assist in the development of updated Biodiversity Management Plans for each site. The Weed Action Plan will guide on ground weed management and assist in tracking the progress of since the previous Weed Action Plan developed in 2016.

1.2 Subject Sites and Study Area

The “Study Area” has been defined as each of the three (3) sites: Chain Valley Colliery, Mannering Colliery and Summerland Point Ventilation Shaft. Management Zones have previously been defined for these sites. Please see the Maps 1 to 3 below which indicate the boundaries of the Project Area and the existing management zones.

All three (3) sites fall within the Local Land Services Greater Sydney Region, bordering on the Hunter Region.

1.3 Goals and Objectives

The objectives of this management program are to:

- Describe the existing flora and fauna within the subject site based on current survey effort and database searches of the subject site and surveys of the wider study area.
- Provide ground-truthed weed density maps, highlighting priority weeds under the *NSW Biosecurity Act 2015.*
- Report any threats to Endangered Ecological Communities.
- Provide a program for ongoing weed management and/or eradication.

Title: Chain Valley Colliery:
Subject Site & Survey Effort

Map No: 1

Site: Chain Valley Colliery

Client: Delta Coal

Date: November 2019

Project No: 11483

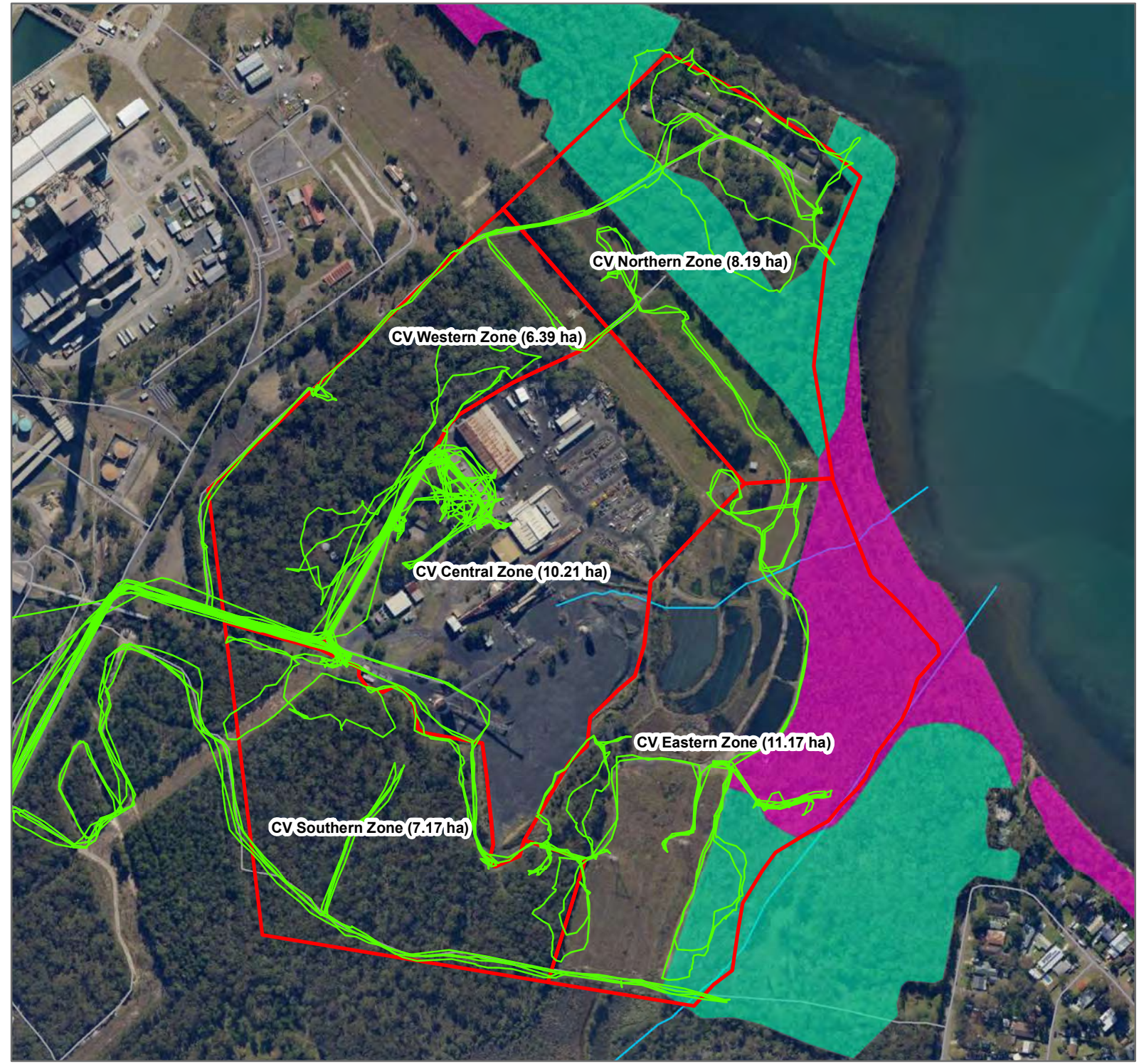
Author: G Barron

Legend

- Management Zones
- Road
- Creek
- Survey Effort

EEC under BC Act 2016

- Swamp Oak Floodplain Forest
- Swamp Sclerophyll Forest on Coastal Floodplains EEC



0 50 100 200 Meters

N

Data Source:
Total Earth Care
Nearmap
Wyong ELA 2016 v2

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Title: Mannering Colliery:
Subject Site & Survey Effort

Map No: 2

Site: Mannering Colliery

Client: Delta Coal

Date: November 2019

Project No: 11483

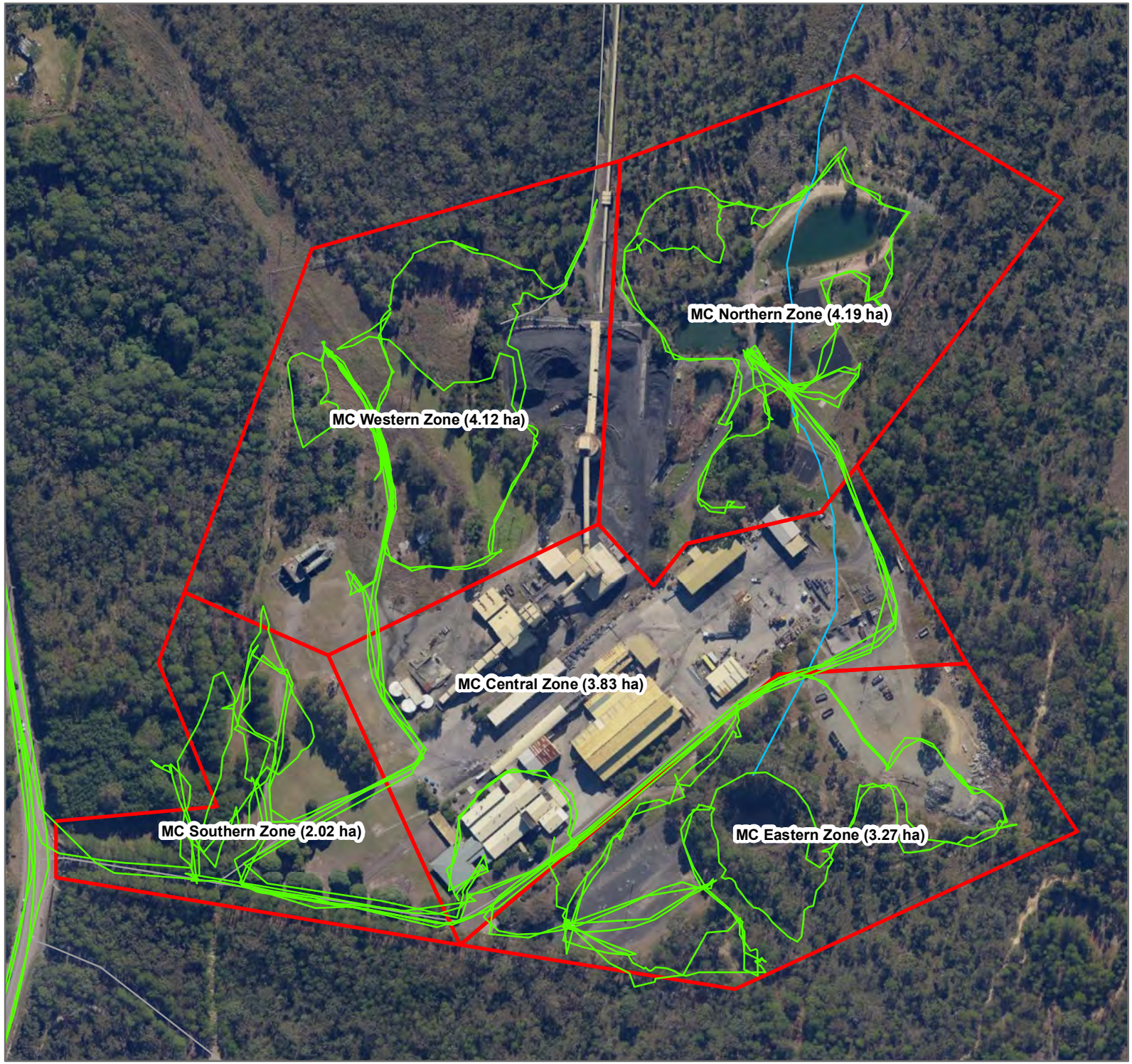
Author: G Barron

Legend

- Management Zones
- Road
- Creek
- Survey Effort

0 25 50 100 Meters

N



Data Source:
Total Earth Care
Nearmap

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Title: Summerland Point Ventilation Shaft: Subject Site, EECs & Survey Effort
Map No: 3
Site: Summerland Point Ventilation Shaft
Client: Delta Coal
Date: November 2019
Project No: 11483
Author: G Barron

Legend

- Summerland Point
- Road
- Creek
- Survey Effort

EEC under BC Act 2016

- Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion
- Swamp Sclerophyll Forest on Coastal Floodplains EEC

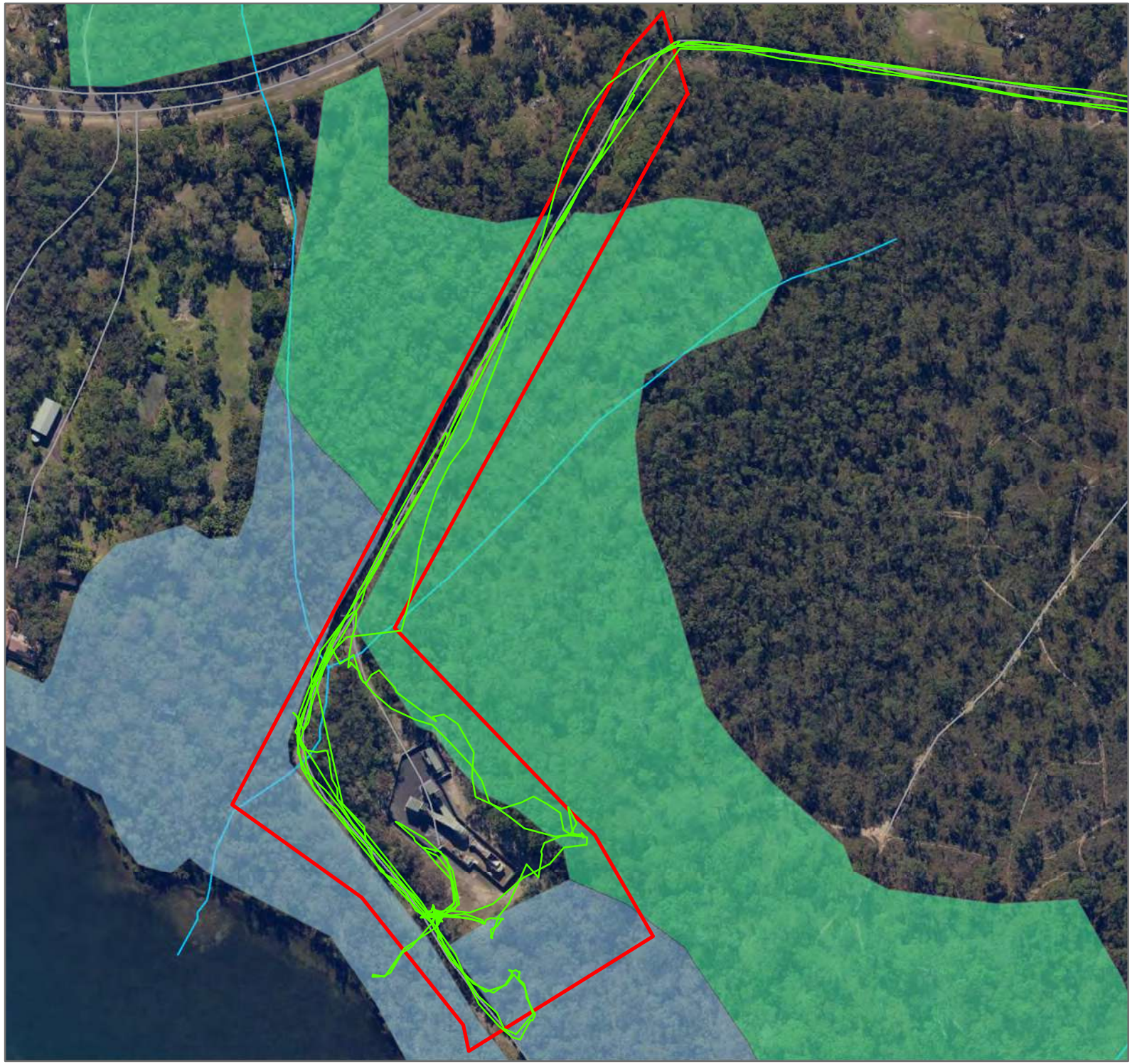
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Data Source:
Total Earth Care
SIX Maps
Wyong ELA 2016 v2

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1.4 Relevant Legislation and Strategies

This Weed Action Plan will be written in accordance with:

1 Commonwealth laws including:
   a. *Environment Protection and Biodiversity Conservation Act 1999*
2 NSW laws including:
   a. *Biodiversity Conservation Act 2016*
   b. *Biosecurity Act 2015*
3 Local laws LGA:
   a. *Wyong Local Environment Plan 2013*
   b. *Wyong Development Control Plan 2013*
4 Weed Strategies
   a. *Australian Weeds Strategy 2017-2027*
   b. *Greater Sydney Regional Strategic Management Plan*

1.4.1 NSW Biosecurity Act 2015 – Weeds

The NSW *Biosecurity Act 2015*, repealed the NSW *Noxious Weeds Act 1993* on the 1st of July 2017.

The purpose of the NSW *Biosecurity Act 2015* is to provide framework for risk-based prevention, elimination and minimisation of biosecurity risks. These include pests, diseases, contaminants, non-indigenous animals, bees, weeds and other biosecurity matter. One of the main objectives of the Biosecurity Act 2015 is to promote biosecurity issues as a shared responsibility between government, industry, and communities, i.e. private and public land managers have the same obligations under the Act. Local Council is the control authority who enforces this Act. A State Weeds Committee has been established, as well as eleven (11) Regional Weeds Committees who will provide guidance and facilitate community and stake holder input into weed management.

Under the *Biosecurity Act 2015*, the definition of a weed is a plant that is a pest, and the definition of a pest is a plant or animal (other than a human) that has an adverse effect on, or is suspected of having an adverse effect on, the environment, the economy or the community.

Schedule 1 describes the special provisions relating to weeds. Under this Schedule, land occupiers have a duty to:

- control weeds on roads which bound their occupied land;
- control aquatic weeds along a watercourse, river, or inland water which bound their occupied land; and
- control weeds on land extended from their occupied land if that land is an irrigation area forming any part of a public road, public reserve or public channel, or watercourse, river or inland water.

Regional Strategic Weed Management Plans have been developed which describe the land occupier's expectations for managing weeds and form the basis for an enforceable general biosecurity duty. The three (3) Delta Coal sites fall within the Greater Sydney Local Land Services area, therefore the *Greater Sydney Regional Strategic Management Plan* applies to these sites.

1.4.2 Australian Weeds Strategy – Weeds of National Significance (WoNS)

Australian Weeds Strategy provides a national framework for addressing weed issues. It lists thirty-two (32) weed species or genera that are required to be managed under state legislation. These are Weeds of National Significance (WoNS). Five (5) of these have been identified on site and are listed in Section 3 of this management plan.

1.4.3 NSW Biodiversity Conservation Act 2016

The NSW *Biodiversity Conservation Act 2016* (BC Act), with associated regulations and maps, repealed the *Threatened Species Conservation Act 1995* on the 25th of August 2017. The BC Act is now the key piece of legislation protecting threatened species, populations and ecological communities within NSW.

There are a number of Endangered Ecological Communities (EEC) mapped on the Delta Coal sites (ELA 2016). These include;

- *Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions;*
- *Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*; and

- *Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion.*

Refer to Maps 1, 2 and 3 for mapped EECs. The Mannering Colliery does not contain any EECs.

One aim of the BC Act is to eliminate or manage certain Key Threatening Processes (KTPs) that threaten the survival or evolutionary development of threatened species, populations and ecological communities.

KTPs listed by the BC Act are identified as having significant impacts on the conservation of native flora and fauna. There are currently thirty-seven (37) KTPs listed under the BC Act including:

i. Invasion and establishment of exotic vines and scramblers.
ii. Invasion, establishment and spread of *Lantana camara*.
iii. Invasion of native plant communities by *Chrysanthemoides monilifera* (Bitou Bush and Boneseed).
iv. Invasion of native plant communities by exotic perennial grasses.
v. Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants.

2 METHODS

2.1 Desktop Research

A preliminary desktop study was conducted to assess the previously mapped weed locations (Kleinfelder 2016) and existing plant community types using the Wyong ELA 2016 PCT (ELA, 2016) mapping.

2.2 Site Survey

A site survey was conducted over two (2) days on the 15th and 16th October 2019. Weather conditions were clear with maximum temperatures of approximately 25˚C on the 15th and 24˚C on the 16th. See Maps 1, 2 and 3 for survey effort.

A general weed survey was conducted using random meanders. Edges of bushland, creek lines, disturbed areas and any other areas likely to contain weeds were targeted as were areas where weeds were previously identified in the 2016 Weed Action Plan.

- The identification of native and exotic plant species according to *Field Guide to the Native Plants of Sydney* (Robinson, 2003), Flora of NSW, Volumes 1-4 (Harden 1992, 1993, 2000, 2002), *Weeds of the south-east: an identification guide for Australia* (Richardson et al, 2006) and PlantNET (2019), with reference to recent taxonomic changes;

Any “weed infestations” found during survey were recorded using a hand held GPS. Weed infestations are defined as:

- Areas where weeds make up >80% percentage foliage cover.
- Weeds of national significance
- Priority weeds and other weeds of regional concern as listed in the Greater Sydney Regional Strategic Weed Management Plan

Any WoNS and/or any priority weeds for the Greater Sydney Region which were identified on site, are listed in Appendix A which includes their biosecurity status under the *Biosecurity Act 2015*.

2.3 Weed Density Mapping

Weed density maps were developed for each zone. All weeds present were considered when determining the weed densities for each area.

GPS locations were mapped to provide clear locations for WoNS, significant weed infestation and Priority Weeds.

2.4 Priorities

The priorities of targeted weed work detailed in Section 4 - Management Zones, were determined by the species listing and the landholder’s obligations under the *Biosecurity Act 2015* and the Greater Sydney Regional Strategic Weed Management Plan. Species listed as WoNS are considered a high priority. Other weeds that were deemed to have the potential to significantly impact biodiversity were also included as Priority Weeds.

Priority areas were determined by the resilience and condition of existing bushland and the location of weed infestations. Infestation or small outbreaks of weeds in high quality, undisturbed or resilient bushland are considered a high priority to conserve the existing biodiversity values and to prevent further spread which could become more costly to address in the future. Infestations along property boundaries, creek lines and waterways are considered high priority as weeds are more susceptible to spread onto neighbouring properties downstream or across boundary edges.

2.5 Limitations

The diurnal field survey was conducted over two (2) days during October 2019. Random meanders were conducted across the site and targeted searches for weeds along creek line, bushland edges and disturbed areas where weeds are likely to occur. Some areas were not searched due to access issues and time constraints. The central zones mainly consist of infrastructure and planted species and were not surveyed for this report.

When reviewing maps please note that the hand-held GPS equipment used is only accurate to 3 metres.

3 RESULTS

The weed survey identified thirty-six (36) weed species under the *Biosecurity Act 2015.* These are listed in Appendix A along with the land holder's obligations under the Act. Of these, five (5) are WoNS. These are:

- Asparagus Fern (*Asparagus aethiopicus*)
- Bitou Bush (*Chrysanthemoides monilifera subsp rotundata*)
- Lantana (*Lantana camara*)
- Blackberry (*Rubus fruticosus* aggregate)
- Fireweed (*Senecio madagascariensis*)

Bitou Bush, Lantana and Fireweed are also listed as State Priority Weeds. Six (6) weeds are listed as Priority Weeds under the Greater Sydney Regional Strategic Weed Management Plan. These include Giant Reed (*Arundo donax*), Pampas Grass (*Cortaderia jubata*) and the above mentioned WoNS.

Weeds are mostly contained to disturbed areas, bushland edges, tracks and riparian areas across all three (3) sites. There are some small outbreaks within large resilient bushland areas which have been prioritised within this Plan. Many of these have been treated as part of primary bush regeneration efforts and require follow up treatment of new shoots.

Two (2) areas with two (2) to three (3) individual orchids of the genus Microtis were identified. One (1) area is located in the easement of the eastern zone of Chain Valley Colliery and another along the disturbed edges of the eastern zone at Mannering Colliery. These have been mapped in Map 7 and Map 11.

The current condition, locations of weed infestation and weed densities have been discussed in detail within Section 4 - Management Zones.

4 MANAGEMENT ZONES

TEC have based the management zones on those created for the 2016 Weed Action Plan (Kleinfelder, 2016). The boundaries have been adjusted slightly to follow existing structural boundaries such as roads, tracks, clearings, easements and fences to allow for clearer delineation of management zones during on ground works.

The Central Zone of both the Chain Valley Colliery and Mannering Park Colliery are entirely disturbed and contain the site infrastructure. The zones are mostly void of native vegetation except for remnant canopy trees and planted native and ornamental species, as such these zones were not included in the weed survey.

4.1 Chain Valley Colliery

The Chain Valley Colliery site is made up of the following EECs:

- *Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions;* and
- *Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*

See Map 1 for EEC locations.

Chain Valley Colliery contains high quality resilient bushland in most zones. Managing weed outbreaks in these areas is a high priority to prevent degradation and further encroachment on bushland areas. Most weed outbreaks occur in the disturbed areas including cleared easements, easement edges, along tracks, creek lines and dam edges. These outbreaks are small and in their early stages of growth and therefore should be targeted before they progress any further. Bush regeneration efforts targeting Lantana and Pampas Grass (*Cortaderia selloana*) are evident throughout the site but now require follow up treatment. The following maps and tables provide further details on each management zone including priority weeds and management issues.



Figure 1. Eastern Zone of Chain Valley Colliery along creek line.



Figure 2. Treated Lantana and Blackberry in Northern Zone of Chain Valley Colliery near cottages.



Figure 3. Fishbone Fern and Crofton Weed in Western Zone Area B of Chain Valley Colliery along drainage area.

4.1.1 Chain Valley Colliery – Northern Zone

Table 1. Chain Valley Colliery – Northern Zone Area Descriptions

Description	This zone is approximately 8.2 ha and includes cleared powerline easements and modified areas surrounding the cottages and bushland. **Area A – <5% weed cover** The most resilient area of the zone with low weed densities. Some weed encroachments on the edges of the bushland. A small area of treated Lantana and Blackberry is located to the south-east of this zone. **Area B – 5-25% weed cover** Highest weed densities are found along the edge of the bushland and species present include Blackberry, Asparagus Fern, Fishbone Fern (*Nephrolepis cordifolia*), *Monstera deliciosa* and *Senna pendula var. glabrata.* **Area C – 25-50% weed cover** Dense area of Blackberry, Lantana, Ochna serrulata, Wild Tobacco (*Solanum mauritianum)* and herbaceous weeds. Evidence of Blackberry and Pampas Grass being treated. Appears to have been the focus area of Bush Regeneration efforts. **Area D – 5-25% weed cover** Mostly ornamental exotic plant species in front of houses. **Area E – 5-25% weed cover** Dense patch of *Monstera deliciosa*. **Area F – 5-25% weed cover** Patch of Camphor Laurel (*Cinnamomum camphora*) and Coral trees (*Erythrina x sykesii*) including several saplings. **Area G – 5-25% weed cover** Bushland strip between powerline easements containing scattered small outbreaks of weeds including *Senna pendula var. glabrata* and Lantana. **Area H – 5-25% weed cover** Powerline easement with scattered Fireweed and Purple Top (*Verbena bonariensis*).
Priority Weeds	Lantana, Blackberry, Pampas Grass and Asparagus Fern
Priority Areas	Area A and B has the most resilience and is connected to larger tracts of bushland. Weeds should be controlled to prevent further spread.
Key Management Issues	• Follow up treatment of Lantana, Blackberry, *Senna pendula var. glabrata* in Areas A and C. • Primary treatment of Asparagus Fern particularly along edges in Area B. • Primary treatment of *Senna pendula var. glabrata* and *Monstera deliciosa,* and untreated areas of Lantana and Pampas Grass.
Notes	Access to this zone via dirt road from near CVC site entry. Key required. Caution to be taken driving around cottages due to rubbish and debris hidden by long grass.

Title: Chain Valley Northern Zone Weed Density

Map No: 4

Site: Chain Valley Colliery

Client: Delta Coal

Date: November 2019

Project No: 11483

Author: G Barron

Road

Management Zones

Weed Density

- < 5%
- 5 - 25%
- 25 - 50%

Key Points

- Blackberry
- Blackberry & Lantana camara - treated
- Blackberry, Lantana camara & Pampas Grass - treated
- Blackberry, Lantana camara, Senna pendula var. glabrata & Wild Tobacco
- Camphor Laurel
- Coral Tree
- Coral Tree - treated
- Coral Tree, Lantana camara & Senna pendula var. glabrata
- Coral Tree, Ochna serrulata & Senna pendula var. glabrata
- Lantana camara
- Lantana camara & Senna pendula var. glabrata
- Lantana camara - treated

0 20 40 80 Meters

N

Data Source:
Total Earth Care
Nearmap

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4.1.2 Chain Valley Colliery – Western Zone

Table 2. Chain Valley Colliery – Western Zone Area Descriptions

Description	This zone is approximate 6.4 ha of highly resilient bushland with predominantly low weed densities. Evidence throughout of bush regeneration efforts. **Area A – <5% weed cover** Highly resilient bushland with a very low weed density. Scattered outbreaks of Blackberry and Lantana on the side of the road that runs along the north-west boundary. All identified scattered Lantana thickets in the south-east part of the area have been treated. Some juvenile Lantana coming up in these treated areas. **Area B – 5-25% weed cover** Damp drainage areas in some places have encourage weed growth. Lantana, Crofton Weed, Asparagus Fern, Fishbone Fern and herbaceous weed species scattered throughout this zones (see Figure 3). All identified Lantana patches have been treated. Some juvenile Lantana coming up in these treated areas. Pampas Grass and some Fishbone Fern has been treated but requiring follow up treatment.
Priority Weeds	Lantana, Blackberry, Pampas Grass, Asparagus Fern and Crofton Weed.
Priority Areas	Both Area A and B. The surrounding bushland is highly resilient and further weed outbreaks should be prevented.
Key Management Issues	• Follow up treatment of Lantana and Pampas Grass. • Primary treatment of Crofton Weed and Fishbone Fern. • Hand weeding and spraying. • Priority zone. Edges and tracks should be monitored regularly.
Notes	Access to the track along the north-west boundary of this zone via dirt road from near CVC site entry. Key required.

Title: Chain Valley Western Zone Weed Density

Map No: 5

Site: Chain Valley Colliery

Client: Delta Coal

Date: November 2019

Project No: 11483

Author: G Barron

Road

Management Zones

Weed Density

< 5%

5 - 25%

25 - 50%

Key Points

- Asparagus Fern
- Blackberry & Fireweed
- Crofton Weed
- Crofton Weed & Lantana camara
- Lantana camara
- Lantana camara - treated
- Pampas Grass & Lantana camara - treated and Asparagus Fern & Crofton Weed
- Senna pendula var. glabrata

0 20 40 80 Meters

N

Data Source:
Total Earth Care
Nearmap

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4.1.3 Chain Valley Colliery – Southern Zone

Table 3. Chain Valley Colliery – Southern Zone Area Descriptions

Description	This zone is approximate 7.2 ha of highly resilient and mostly undisturbed bushland with predominantly low weed densities. **Area A – 5-25% weed cover** Scattered small outbreaks of *Senna pendula var. glabrata*, Blackberry, Bitou Bush, Ochna and Lantana, Lantana has been treated but some small shoots are coming up. Most weeds are along the track edge to the north and the eastern boundary of the bush and powerline easement. **Area B – <5% weed cover** Highly resilient bushland. Some *Pinus radiata* saplings coming up adjacent to the track that runs along the southern part of the area. **Area C – 5-25% weed cover** Powerline easement containing scattered *Pinus radiata* saplings, herbaceous weeds and Oleander. **Area D – <5% weed cover** Resilient bushland with scattered *Pinus radiata* saplings along easement edge. **Area E – 5-25% weed cover** Mostly managed lawn along driveway. Scattered *Pinus radiata* saplings, African Lovegrass (*Eragrostis curvula*) and Oleander (*Nerium oleander*) on bushland edges. **Area F – 25-50% weed cover** Disturbed bushland edges with scattered small outbreaks of Bitou Bush, Lantana, Pampas Grass, Banana Trees and African Love Grass. Most Pampas Grass in this area has been treated.
Priority Weeds	Lantana, Pampas Grass, Bitou Bush and *Pinus radiata* saplings
Priority Areas	Area B is highly resilient and has very few weed outbreaks. All other areas of this management zone should be managed to prevent further spread of weeds into Area B.
Key Management Issues	• Follow up treatment of Pampas Grass • Follow up and primary treatment of Lantana. Small shoots can be hand pulled. • Primary treatment of Bitou Bush. Most can be hand pulled. • Primary treatment of *Pinus radiata* saplings particularly along the track in Area B. This is a highly resilient area and invasion of Pines in this area should be prevented. • High priority zone. Monitor tracks for any weed out breaks.
Notes	Access to the track within this zone is via a locked gate or through powerline easement.

Title: Chain Valley Southern Zone Weed Density

Map No: 6

Site: Chain Valley Colliery

Client: Delta Coal

Date: November 2019

Project No: 11483

Author: G Barron

Road

Management Zones

Weed Density

- < 5%
- 5 - 25%
- 25 - 50%

Key points

- African Lovegrass & Pampas Grass
- African Lovegrass & Pinus radiata
- Asparagus Fern & Lantana camara
- Asparagus Fern, Senna pendula var. glabrata & Bitou Bush
- Bitou Bush
- Bitou Bush & Lantana camara
- Bitou Bush & Senna pendula var. glabrata
- Bitou Bush - removed
- Lantana camara
- Lantana camara & Senna pendula var. glabrata
- Lantana camara (treated), African Lovegrass & Bitou Bush
- Lantana camara - treated
- Ochna serrulata
- Ochna serrulata & Senna pendula var. glabrata
- Pamas Grass (treated) & Lantana camara
- Pampas Grass (treated)
- Pinus radiata
- Senna pendula var. glabrata
- Senna pendula var. glabrata - removed

0 15 30 60 Meters

N

Data Source:
Total Earth Care
Nearmap

total earth care

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4.1.4 Chain Valley Colliery – Eastern Zone

Table 4. Chain Valley Colliery – Eastern Zone Area Descriptions

Description	This zone is approximate 11.17 ha of bushland cleared powerline easements and sediment ponds. These ponds consistently discharge across the bushland in Area H and into the lake.to the north-east. **Area A – <5% weed cover** Small occurrences of Caster Oil and Lantana on dam walls. Scattered occurrences of *Senna pendula var. glabrata* and Narrow-leafed Cotton Bush (*Gomphocarpus fruticosus*) in the easements to the north. **Area B – 5-25% weed cover** Small amounts of scattered Whiskey Grass (*Andropogon virginicus*), Pampas Grass and Bitou Bush on easement edges and damp areas. **Area C – <5% weed cover** Small amounts of scattered Whiskey Grass, Pampas Grass, Bitou Bush and other herbaceous weeds on easement edges. **Area D – 5-25% weed cover** Encroachments of weeds from the track to the south of the area and the easement edges. Scattered small outbreaks of Asparagus Fern, *Senna pendula var. glabrata*, Lantana, African Love Grass, Blackberry Nightshade and Bitou Bush. A small Lantana thicket has been treated. **Area E – 5-25% weed cover** Dense areas of Pampas Grass in this area and across property boundary. Scattered occurrences of Crofton Weed, Lantana and Bitou Bush. **Area F – 5-25% weed cover** Cleared powerline easement containing scattered Whiskey Grass, Cotton Bush, Fireweed and herbaceous weeds. Small lantana thicket and Pampas Grass under powerline pylon. **Area G – 25-50% weed cover** Dense stand of Wild Tobacco. Asparagus Fern starting to come up. Scattered small occurrences of Bitou Bush, Lantana, Ginger Lily, Ochna, Inkweed, Crofton and *Senna pendula var. glabrata*. Large stands of Lantana have been treated. Coral trees, Fishbone Fern, *Monstera deliciosa*, *Senna pendula var. glabrata* and Ginger Lily along creek line in southern corner. **Area H – <5% weed cover** Parts of this area have been recently burnt and are coming up with early successional native species such as *Dodonaea triquetra.* Track edges south-east of the dam have scattered small occurrences of Bitou Bush, Asparagus Fern, Lantana, Crofton Weed and Fireweed. Some sporadic occurrences of Lantana, Bitou Bush and *Senna pendula var. glabrata* along the edges of the easement in the north of this area.
Priority Weeds	Lantana, Asparagus Fern, Bitou Bush, Pampas Grass and *Senna pendula var. glabrata*.
Priority Areas	Area G along creek line should be targeted to prevent weed propagules travelling downstream. Area H is mostly resilient bushland that has been mapped as two EECs (see Map 1).

Key Management Issues	• Prioritise treating weeds in the southern half of this zone. • Follow up treatment of Lantana. Small shoots can be hand pulled. • Primary treatment of Bitou Bush, Asparagus Fern, *Senna pendula var. glabrata* and Pampas Grass along track and easement edges.
Notes	Vehicle access via the tracks near the sediment ponds and via the track through the south-west corner of the zone.

Title: Chain Valley Eastern Zone Weed Density

Map No: 7

Site: Chain Valley Colliery

Client: Delta Coal

Date: November 2019

Project No: 11483

Author: G Barron

Road

Creek

Management Zones

Weed Density

< 5%

5 - 25%

25 - 50%

Key Points

- Asparagus Fern
- Asparagus Fern, Crofton Weed, Lantana Camara, Ochna serrulata, Senna pendula var. glabrata & Wild Tobacco
- Bitou Bush
- Bitou Bush & Lantana camara
- Bitou Bush & Senna pendula var. glabrata
- Fireweed, Crofton Weed & Asparagus Fern
- Orchid - Microtis sp.
- Pampas Grass
- Pampas Grass, Lantana camara & Fireweed

0 25 50 100 Meters

N

Data Source:
Total Earth Care
SIX Maps

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4.2 Mannering Colliery

Mannering Colliery has more disturbed areas and fewer large tracts of undisturbed bushland then the Chain Valley Colliery. However, the site is surrounded by bushland and therefore it is imperative that weeds are prevented from spreading into neighbouring resilient areas. Most outbreaks are small and should be targeted before they progress any further. Bush regeneration efforts targeting Lantana and Pampas Grass are evident throughout the site but now require follow up treatment. This site does not contain any EECs.

The following maps and tables provide further details on each management zone including priority weeds, priority areas and management issues.



Figure 4. Resilient bushland in Eastern Zone Area D of Mannering Colliery.



Figure 5. Bamboo and Crofton Weed in Western Zone Area F of Mannering Colliery.



Figure 6. Crofton Weed and *Juncus acutus* in wetland area of Northern Zone Area B of Mannering Colliery.

4.2.1 Mannering Colliery – Northern Zone

Table 5. Mannering Colliery – Northern Zone Area Descriptions

Description	This zone is approximate 4.24 ha and consists of four (4) dams, access tracks and some patches of disturbed bushland. Water is discharged from the ponds across Area A, B and G. **Area A – 5-25% weed cover** *Pinus radiata* saplings, Whiskey Grass and Fireweed along track edges. Treated *Acacia saligna.* Dense stands of *Juncus acutus* in low lying areas. **Area B – 50-75% weed cover** Dense area of weeds including Lantana, Bitou Bush, Crofton Weed, Pampas Grass, Senna and *Juncus acutus.* Lantana and some Pampas Grass has been treated. **Area C – 25-50% weed cover** High density of herbaceous weeds. *Acacia saligna* present, most of which has been treated. *Juncus acutus* present. Pampas Grass present most of which has been treated. Whiskey Grass along track edges. **Area D – 25-50% weed cover** High density of herbaceous weeds across disturbed area. **Area E – 5-25% weed cover** Hydrocotyl is scattered along the dam edges and Typha within the dam. **Area F – 5-25% weed cover** Typha within the dam. **Area G – 5-25% weed cover** The edges of Area G contains *Pinus radiata* saplings. Within the low lying damp wetland areas Large stands of Lantana and Pampas Grass have been treated. **Area H – <5% weed cover** Limited access due to fencing. Scattered Crofton Weed, Lantana, Bitou Bush, Camphor Laurel trees and mature and sapling *Pinus radiata.* A Resource Regulator identified Coolatai Grass (*Hyparrhenia hirta*) present on the western wall of the largest dam. EMM consultants confirmed the species ID. **Area I – <5% weed cover** Mostly disturbed and cleared areas. Herbaceous weeds, Whiskey Grass and Fireweed along track edges. **Area J – 50-75% weed cover** Dense and scattered stands of Bitou Bush, Lantana, Crofton and Senna. Lantana has been treated but new young shoots are coming up. Large and sapling *Pinus radiata* present. Scattered herbaceous weeds including *Bidens pilosa*, Fleabane (*Conyza sp.*) and Purple Top.
Priority Weeds	Lantana, Bitou Bush, Pampas Grass, Crofton Weed, Fireweed, Senna, *Pinus radiata, Juncus acutus, Coolatai Grass* and Senna
Priority Areas	Area J to follow up from primary weed treatment in this area. Area B to follow up primary treatment of Lantana and Pampas Grass and prevent propagules form spreading downstream.

Key Management Issues	• Follow up treatment of Lantana. Young, small shoots can be hand pulled. • Follow up treatment for Pampas Grass and Crofton Weed using cut/paint, hand removal and spraying. • Primary treatment of *Juncus acutus* • Hand pull Fireweed opportunistically. • Prioritise areas A, E, G and J.
Notes	Easy vehicle access to most areas. No obvious access to Area H due to fence.

Title: Mannering Colliery
Northern Zone Weed Density

Map No: 8

Site: Mannering Colliery

Client: Delta Coal

Date: November 2019

Project No: 11483

Author: G Barron

Management Zones

Road

Creek

Weed Density

- < 5%
- 5 - 25%
- 25 - 50%
- 50 - 75%

Key Points

- Acacia saligna
- Acacia saligna (treated) & Juncus acutus
- Acacia saligna, Bitou Bush & Crofton Weed,
- Bitou Bush
- Bitou Bush & Crofton Weed
- Bitou Bush & Lantana camara
- Bitou Bush - removed
- Coolatai Grass
- Crofton Weed & Senna pendula var. glabrata
- Crofton Weed, Juncus acutus & Pampas Grass (treated)
- Fireweed
- Juncus acutus
- Lantana camara
- Lantana camara - treated
- Pampas Grass - treated
- Pinus radiata
- Senna pendula var. glabrata

0 15 30 60 Meters

N

Data Source:
Total Earth Care
Nearmap

total earth care

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4.2.2 Mannering Colliery – Western Zone

Table 6. Mannering Colliery – Western Zone Area Descriptions

Description	This zone is approximately 4.12 ha including cleared powerline easements, a dam, and disturbed patches of remnant bushland some of which connect to greater bushland extents. **Area A – 5-25% weed cover** Scattered herbaceous weeds and exotic grasses. Small scattered patches of Asparagus Fern. **Area B – 5-25% weed cover** Powerline easements mostly consisting of exotic grasses, some Lantana patches, *Senna pendula var. glabrata* and Fireweed, particularly closer to the dam edges. **Area C – 5-25% weed cover** Small scattered outbreaks of Crofton Weed, Pampas Grass, Bitou Bush, Whiskey Grass and African Love Grass throughout this area. **Area D – 25-50% weed cover** Scattered outbreaks of Lantana, Crofton Weed, Bitou Bush, Whiskey Grass and herbaceous weeds. Lantana thickets have been treated. New shoots are coming requiring treatment. **Area E – <5% weed cover** Isolated patch of vegetation containing a small thicket of Lantana. **Area F – 25-50% weed cover** Lantana, Crofton Weed, Bitou Bush, and a large outbreak of Bamboo are dominating this area. **Area G – 5-25% weed cover** A fence divides this area from the rest of the western zone. A large area of Lantana is located in the northern part of this area.
Priority Weeds	Asparagus Fern, Lantana, Senna, Crofton Weed, Bitou Bush and Bamboo.
Priority Areas	Areas C, F and G are a priority within this zone due to their proximity to remnant bushland and potential for WoNS and Priority Weeds under the Biosecurity Act to spread.
Key Management Issues	• Follow up and primary treatment of Lantana. • Primary treatment of Bamboo, Crofton Weed, Asparagus Fern. • Opportunistic hand pulling of Fireweed.
Notes	Easy vehicle access to most areas. Area G is separated from the rest of the zone by a fence so vehicle access is limited. On foot access is possible by following the fence from the main driveway entrance to the south.

Title: Mannering Colliery
Western Zone Weed Density

Map No: 9

Site: Mannering Colliery

Client: Delta Coal

Date: November 2019

Project No: 11483

Author: G Barron

Management Zones

Road

Creek

Weed Density

- < 5%
- 5 - 25%
- 25 - 50%
- 50 - 75%

Key Points

- African Lovegrass & Bitou Bush
- Asparagus Fern
- Bamboo
- Bamboo, Lantana camara & Pampas Grass
- Bitou Bush
- Bitou Bush & Lantana camara
- Crofton Weed
- Crofton Weed & Pampas Grass
- Crofton Weed, Fireweed, Lantana camara & Senna pendula var. glabrata
- Crofton Weed, Lantana camara & Senna pendula var. glabrata
- Lantana camara
- Lantana camara - treated
- Pinus radiata
- Senna pendula var. glabrata

0 12.5 25 50 Meters

N

Data Source:
Total Earth Care
Nearmap

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4.2.3 Mannering Colliery – Southern Zone

Table 7. Mannering Colliery – Southern Zone Area Descriptions

Description	This zone is approximately 2.02 ha. It is mostly dominated by mature *Pinus radiata* and Bamboo. This zone is a low priority due to the lack of remnant bushland and the extent of the pine forest. **Area A – 50-75% weed cover** Mature and sapling *Pinus radiata* lining the driveways. **Area B – 25-50% weed cover** High densities of mature *Pinus radiata* and Bamboo on western side of fence. Other exotic ornamental species including Oleander and Agave. Camphor Laurel trees on western side of fence. Whiskey Grass and Fireweed across managed lawn. Low priority area as dominated by *Pinus radiata.* **Area C – 5-25% weed cover** Mostly herbaceous weeds and exotic grasses.
Priority Weeds	Bamboo, Fireweed, Camphor Laurel trees.
Priority Areas	All areas within this zone are low priority. Other zones of the Mannering Colliery are to be prioritised over this one.
Key Management Issues	• Primary treatment of Fireweed and *Pinus radiata* saplings in Area C
Notes	Fence divides Area B. Western side of Area B can be accessed from southern end near driveway.

Title: Mannering Colliery
Southern Zone Weed Density

Map No: 10

Site: Mannering Colliery

Client: Delta Coal

Date: November 2019

Project No: 11483

Author: G Barron

Management Zones

Road

Creek

Weed Density

< 5%

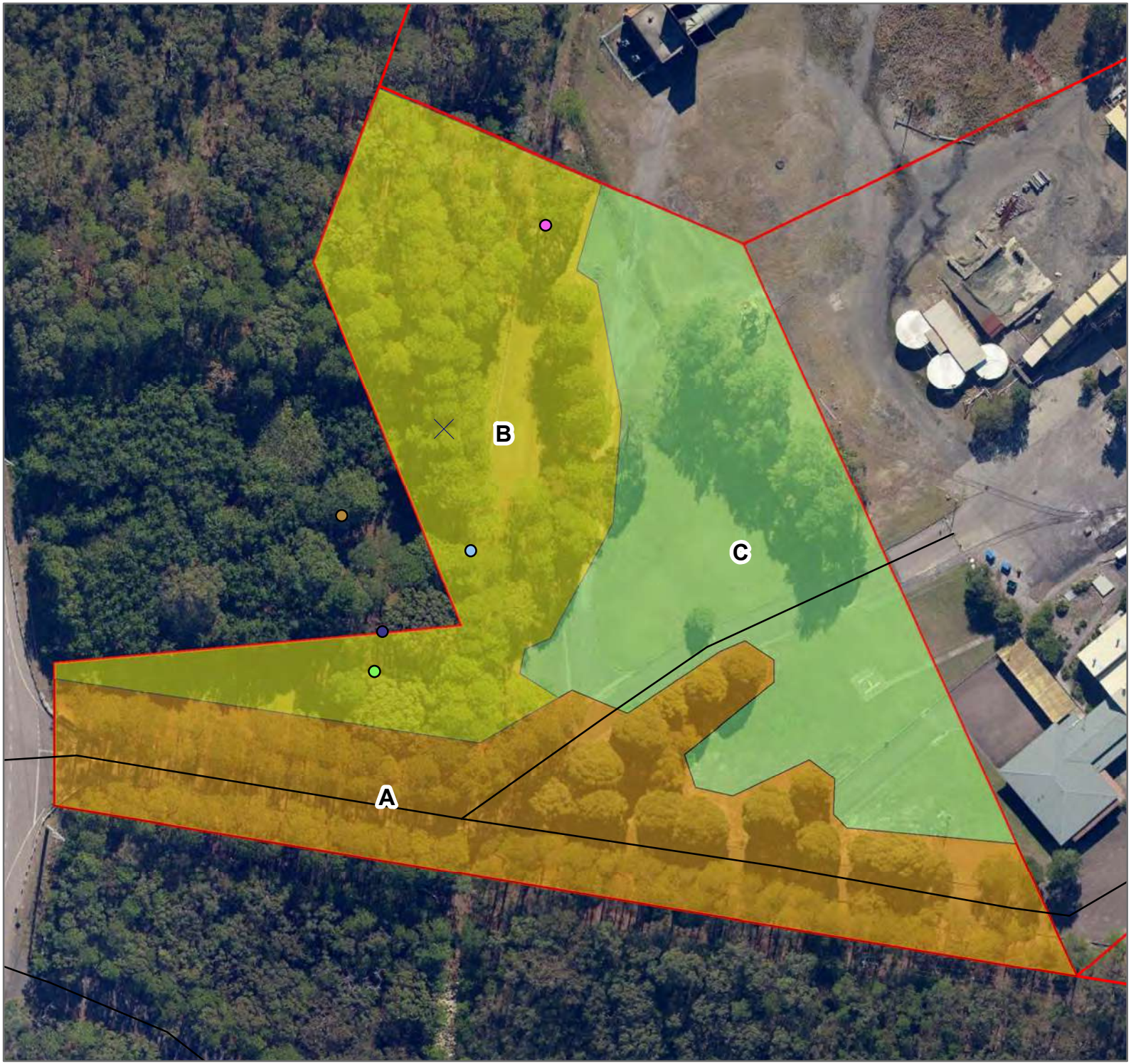
5 - 25%

25 - 50%

50 - 75%

Key points

- African Lovegrass
- Bamboo
- Bamboo & Coral Tree
- Fireweed
- Senna pendula var. glabrata



0 10 20 40 Meters

N

Data Source:
Total Earth Care
Nearmap

total earth care

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4.2.4 Mannering Colliery – Eastern Zone

Table 8. Mannering Colliery – Eastern Zone Area Descriptions

Description	This zone is approximately 3.29 ha. This zone contains a carpark, cleared stockpile areas and dam, all bordered by bushland. The bushland is contiguous with adjacent bushland beyond the property boundary to the south. Weeds are generally confined to the bushland edges and disturbed areas. **Area A – 5-25% weed cover** Mostly planted ornamental exotics and some natives. Herbaceous weeds, exotic grasses and Fireweed across lawn. **Area B – 25-50% weed cover** Scattered herbaceous weeds, exotic and weedy grasses around edges of disturbed area. **Area C – 5-25% weed cover** Small area of weed encroachment including Crofton Weed. Evidence of treated Pampas Grass. Small outbreaks of Crofton Weed and Lantana present. **Area D – <5% weed cover** Mostly weed free bushland with some *Pinus radiata* saplings and African Lovegrass in the south-west corner of the area. **Area E – 25-50% weed cover** Dominated by mature and sapling *Pinus radiata.*
Priority Weeds	Crofton Weed, Lantana, Pampas Grass, *Pinus radiata* and Fireweed.
Priority Areas	Area C and D. These areas are highly resilient and connected to bushland to the south.
Key Management Issues	• Follow up treatment of Pampas Grass. • Primary treatment of Lantana and Crofton Weed.
Notes	Site easily accessible.

Title: Mannering Colliery
Eastern Zone Weed Density

Map No: 11

Site: Mannering Colliery

Client: Delta Coal

Date: November 2019

Project No: 11483

Author: G Barron

Management Zones

Road

Creek

Weed Density

- < 5%
- 5 - 25%
- 25 - 50%
- 50 - 75%

Key Points

- Acacia saligna
- African Lovegrass
- African Lovegrass & Senna pendula var. glabrata
- Bitou Bush
- Crofton Weed
- Fireweed
- Lantana camara
- Orchid - Microtis sp.
- Pampas Grass
- Pinus radiata
- Senna pendula var. glabrata



0 15 30 60 Meters

N

Data Source:
Total Earth Care
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4.3 Summerland Point Ventilation Shaft

The Summerland Point Ventilation Shaft site is made up of the following EECs:

- *Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions;* and
- *Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregions.*

See Map 3 for EEC locations.

The site contains an unsealed road that provides access to a cleared area where the ventilation shaft infrastructure sits. The areas surrounding the ventilation shaft have been cleared and contain most of the weed species identified on the site. The site is surrounded by highly resilient bushland. Areas along the unsealed road have also been subject to some weed invasion.



Figure 7. Giant Reed within bushland at the Summerland Ventilation Shaft site. .



Figure 8. Unsealed road and easement within the Summerland Ventilation Shaft site.



Figure 9. Vegetation adjacent to road on the Summerland Ventilation Shaft site.

Table 9. Summerland Point Ventilation Shaft – Area Descriptions

Description	This zone is approximately 3.73 ha. This zone contains an unsealed road, a cleared area for the ventilation shaft infrastructure and remnant adjacent bushland. Weeds are generally confined to the bushland edges and disturbed areas. **Area A – 5-25% weed cover** Mostly bushland and road edges effected by weeds. Lantana thickets have been treated but required follow up treatment. Scattered small shoots of Lantana and Bitou Bush andherbaceous weeds.
Priority Weeds	Lantana, Giant Reed, Bitou Bush
Priority areas	Entire site – small weeds outbreaks on edges of highly resilient bushland must be targeted to prevent further spread.
Key Management Issues	• Follow up treatment of Lantana and Bitou Bush. Small shoots can be hand pulled. • Primary treatment of a small area of Giant Reed. • Monitor bushland edges and road edges for new outbreaks.
Notes	Easy vehicle access. Key required. Red-bellied black snake observed on site.

Title: Summerland Point Ventilation Shaft Weed Density

Map No: 12

Site: Summerland Point Ventilation Shaft

Client: Delta Coal

Date: November 2019

Project No: 11483
Author: G Barron

Summerland Point

Road

Creek

Weed Density

5 - 25%

Key Points

- Arundo donax & Lantana camara
- Bitou Bush
- Bitou Bush - removed
- Crofton Weed
- Fireweed
- Lantana camara
- Lantana camara & Senna pendula var. glabrata
- Lantana camara (treated) & Senna pendula var. glabrata
- Lantana camara - treated
- Senna pendula var. glabrata

0 25 50 100 Meters

N

Data Source:
Total Earth Care
SIX Maps

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5 WEED MANAGEMENT

Species specific recommended weeding techniques including recommended herbicides and ratios are included Appendix B.

Weed recruitment and outbreaks are often triggered by disturbance or clearing. Weed management is a form of disturbance that can trigger additional recruitment of weeds as areas are cleared. Therefore secondary treatment is essential to successful weeding and bush regeneration methods.

All weeding management actions on these sites must be carried out by trained bush regenerators. Bush Regeneration contractors must comply with the *Pesticides Act 1999 and the Pesticides Regulation 2017.*

7 MONITORING GUIDELINES

Monitoring is required to assess the outcomes of the weed management work and help determine if management strategies should be amended. Monitoring should be completed every six (6) months by a qualified ecologist or bush regeneration supervisor using the following methods:

- Assessment of weed control works, native regeneration and revegetation success via permanent repeatable photographic monitoring points; and
- Mapping of weed density per zone to assess the progress of the work. The mapping included in this report can assist in the development of baseline data.

Monitoring reports must include:

- Details of the work carried out including weed management techniques and herbicide used;
- Photo monitoring points – baseline and follow up photos; and
- Recommendations for corrective measures and/or specific vegetation management required.

8 BIBLIOGRAPHY

ELA (2016) Eco Logical Australia, *Wyong ELA V2 2016 Vegetation Mapping*

Harden GJ (Ed) (1992) Flora of New South Wales. Volume 3. New South Wales University Press, Kensington.

Harden GJ (Ed) (1993) Flora of New South Wales. Volume 4. New South Wales University Press, Kensington.

Harden GJ (Ed) (2000) Flora of New South Wales. Volume 1. Revised Edition. University of New South Wales Press, Sydney.

Harden GJ (Ed) (2002) Flora of New South Wales. Volume 2. Revised Edition. University of New South Wales Press, Sydney.

Kleinfelder (2016) *Weed Action Plan – Lake Coal* December 2016.

Richardson, F.J., Richardson, R.G. and Shepherd, R.C.H., 2016. *Weeds of the south-east: an identification guide for Australia* (No. Ed. 3). CSIRO.

Robinson L (2003). Field Guide to the Native Plants of Sydney. Kangaroo Press, Sydney.

PlantNET (The NSW Plant Information Network System).. http://plantnet.rbgsyd.nsw.gov.au October 2019

Appendix A. Weed Species listed as a Biosecurity Risk

Table 10. Categories of Management under the Greater Sydney Regional Strategic Weed Management Plan 2017-2022 under the NSW Biosecurity Act 2015

Category	Management Action
Prevention (Prevent)	To prevent the weed species arriving and establishing in the Region.
Eradication (Eliminate)	To permanently remove the species and its propagules from the Region, OR to destroy infestations to reduce the extent of the weed in the region with the aim of local eradication.
Containment (Minimise)	To prevent the ongoing spread of the species in all or part of the Region.
Asset Protection (Manage)	To prevent the spread of weeds to key sites/ assets of high economic, environmental and social value, or to reduce their impact on these sites if spread.
GBD (General Biosecurity Duty)	All plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable."
RRM (Regional Recommended Measure)	Specific details for each species included in table.
PoD (Prohibition on Dealings)	Must not be imported into the State or sold.
B Zone (Biosecurity Zone)	Specific details for each species included in table.
PM (Prohibited Matter)	A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries.

Table 11. Weeds under the Biosecurity Act recorded within the subject site listed as State or Regional Priority Weeds in the Greater Sydney Regional Strategic Weed Management Plan 2017-2022

Common Name	Botanical Name	WONS	State Priority Weed-Mgmt. Actions	Regional Priority Weeds-Mgmt. Actions	Other Regional Weeds-Asset/value at risk	Duties for Priority Weeds of Greater Sydney
Golden Wreath Wattle	*Acacia saligna*				Environment	
Crofton Weed	*Ageratina adenophora*				Environment, Agriculture	
Scarlet Pimpernel	*Anagallis arvensis*					
Whisky Grass	*Andropogon virginicus*				Environment	
Giant Reed	*Arundo donax*			Asset Protection		RRM; Land managers should mitigate the risk of new weeds being introduced to their land. The plant should not be bought, sold, grown, carried or released into the environment.
Asparagus Fern	*Asparagus aethiopicus*	Yes				PoD
Cobblers Pegs	*Bidens pilosa*					
Buffalo Grass	*Bouteloua dactyloides*					
Bitou Bush	*Chrysanthemoides monilifera subsp rotundata*	Yes	Containment			PoD, B Zone; The Bitou Bush Biosecurity Zone is established for all land within the State except land within 10 kilometres of the mean high water mark of the Pacific Ocean between Cape Byron in the north and Point Perpendicular in the south.
Camphor Laurel	*Cinnamomum camphora*				Environment, Agriculture, Human health	

Common Name	Botanical Name	WONS	State Priority Weed-Mgmt. Actions	Regional Priority Weeds-Mgmt. Actions	Other Regional Weeds-Asset/value at risk	Duties for Priority Weeds of Greater Sydney
Spear Thistle	*Cirsium vulgare*					
Fleabane	*Conyza bonariensis*					
Pampas Grass	*Cortaderia jubata*			Asset Protection		RRM: Land managers mitigate the risk of the plant being introduced to their land. Land managers prevent spread from their land where feasible. Land managers reduce the impact on priority assets. The plant should not be bought, sold, grown, carried or released into the environment. This Regional Recommended Measure applies to Cortaderia jubata (pink pampas grass)
Panic Veldgrass	*Ehrharta erecta*					
African Lovegrass	*Eragrostis curvula*				Environment	
Coral Tree, Common Coral Tree	*Erythrina x sykesii*				Environment	
Fennel	*Foeniculum vulgare*					
Narrow-Leaf Cotton Bush / Swan Plant	*Gomphocarpus fruticosus*					
Ginger Lily	*Hedychium gardnerianum*				Environment	
Pennywort	*Hydrocotyle bonariensis*					
Coolatai Grass	*Hyparrhenia hirta*				Environment, Agriculture	
Spiny Rush, Spike Rush, Sharp Rush	*Juncus acutus*				Environment	

Common Name	Botanical Name	WONS	State Priority Weed-Mgmt. Actions	Regional Priority Weeds-Mgmt. Actions	Other Regional Weeds-Asset/value at risk	Duties for Priority Weeds of Greater Sydney
Lantana	*Lantana camara*	Yes	Asset Protection			PoD
Fishbone Fern	*Nephrolepis cordifolia*				Environment	
Ochna	*Ochna serrulata*				Environment	
Bamboo, Black Bamboo, Rhizomatous Bamboo,	*Phyllostachys nigra*				Environment	
Inkweed	*Phytolacca octandra*					
Radiata Pine, Pine Wildings	*Pinus radiata*				Environment	
Plantain	*Plantago lanceolata*					
Castor Oil Plant	*Ricinus communis*					
Blackberry	*Rubus fruticosus aggregate*	Yes				PoD; All species in the Rubus fruiticosus species aggregate have this requirement, except for the varietals Black Satin, Chehalem, Chester Thornless, Dirksen Thornless, Loch Ness, Murrindindi, Silvan, Smooth Stem, and Thornfree
Fireweed	*Senecio madagascariensis*	Yes	Asset Protection			PoD
Senna / Cassia	*Senna pendula*				Environment	
Paddy's Lucerne	*Sida rhombifolia*					
Tobacco Bush/ Wild Tobacco	*Solanum mauritianum*				Environment, Agriculture	

Common Name	Botanical Name	WONS	State Priority Weed-Mgmt. Actions	Regional Priority Weeds-Mgmt. Actions	Other Regional Weeds-Asset/value at risk	Duties for Priority Weeds of Greater Sydney
Blackberry Night Shade	*Solanum nigrum*					
Purpletop	*Verbena bonarensis*					

Appendix B. Species Specific Weeding Techniques

Common Name	Botanical Name	Weeding Technique	Recommended Timing for Treatment	Herbicide Application	Herbicide Group	Ratio
Golden Wreath Wattle	*Acacia saligna*	Chainsaw and paint with neat Glyphosate.	All year round	Glyphosate 360g/L	M	Neat
Crofton Weed	*Ageratina adenophora*	Hand removal, brush cut and foliar sprayed with Glyphosate	All year round	Glyphosate 360g/L	M	1/100
Scarlet Pimpernel	*Anagallis arvensis*	Hand removal, spot spraying with Glyphosate.	All year round	Glyphosate 360g/L	M	1/100
Whisky Grass	*Andropogon virginicus*	Remove seed and crown out with knife or spot spray	Prior to flowering in March to May	Glyphosate 360g/L	M	1/100
Giant Reed	*Arundo donax*	Cut and paint with neat Glyphosate.	All year round	Glyphosate 360g/L	M	Neat
Asparagus Fern	*Asparagus aethiopicus*	Small single specimens to be crowned or Sprayed with Glyphosate/metsulfuron methyl	All year round	Glyphosate 360g/L & Metsulfuron-Methyl 600 g/kg	M & B	1/100 & 1g/10L
Cobblers Pegs	*Bidens pilosa*	Foliar spraying using Glyphosate, hand pulled and brush cut	All year round	Glyphosate 360g/L	M	1/100
Buffalo Grass	*Bouteloua dactyloides*	Hand removal, brush cut and foliar sprayed with Glyphosate	All year round	Glyphosate 360g/L	M	1/100
Bitou Bush	*Chrysanthemoides monilifera subsp rotundata*	Small single specimens hand pulled or larger shrubs cut and painted with neat Glyphosate	All year round	Glyphosate 360g/L	M	Neat
Camphor Laurel	*Cinnamomum camphora*	Scrape and paint or drill and fill with neat Glyphosate	All year round	Glyphosate 360g/L	M	Neat
Spear Thistle	*Cirsium vulgare*	Foliar spraying with Glyphosate, hand pulled and brush cut	All year round	Glyphosate 360g/L	M	1/100
Fleabane	*Conyza bonariensis*	Foliar spraying with Glyphosate, hand pulled and brush cut	All year round	Glyphosate 360g/L	M	1/100
Pampas Grass	*Cortaderia jubata*	Foliar spraying or cut/paint with Glyphosate or hand removed.	Prior to flowering in March to May	Glyphosate 360g/L	M	1/100 & Neat
Panic Veldgrass	*Ehrharta erecta*	Foliar spraying with Glyphosate	All year round	Glyphosate 360g/L	M	1/100

Common Name	Botanical Name	Weeding Technique	Recommended Timing for Treatment	Herbicide Application	Herbicide Group	Ratio
African Lovegrass	*Eragrostis curvula*	Hand pulled or brush cut and foliar sprayed with Glyphosate	All year round	Glyphosate 360g/L	M	1/100
Coral Tree, Common Coral Tree	*Erythrina x sykesii*	<80mm cut & painted; >80mm will be drilled/frilled with neat Glyphosate	All year round	Glyphosate 360g/L	M	Neat
Fennel	*Foeniculum vulgare*	Foliar spraying with Glyphosate, hand pulled and brush cut	All year round	Glyphosate 360g/L	M	1/100
Narrow-Leaf Cotton Bush / Swan Plant	*Gomphocarpus fruticosus*	Foliar spraying with Glyphosate, hand pulled and brush cut	All year round	Glyphosate 360g/L	M	1/100 & Neat
Ginger Lily	*Hedychium gardnerianum*	Physical removal. Large stands cut and painted with Glyphosate/Metsulfuron-Methyl.	All year round	Glyphosate 360g/L & Metsulfuron-Methyl 600 g/kg	M & B	Neat
Pennywort	*Hydrocotyle bonariensis*	Hand pulled or spot sprayed with Dicamba	All year round			
Coolatai Grass	*Hyparrhenia hirta*	Hand pulled or brush cut and foliar sprayed with Glyphosate. Up to three applications of Glyphosate in the same growing season will be required.	All year round	Glyphosate 360g/L	M	200ml/10l
Spiny Rush, Spike Rush, Sharp Rush	*Juncus acutus*	Juvenile single specimens to be dug out. Large infestations foliar spraying with Glyphosate.	All year round	Glyphosate 360g/L	M	1/100
Lantana	*Lantana camara*	Cut and paint, sprayed or splattered with Glyphosate. Hand pull small shoots.	All year round	Glyphosate 360g/L	M	Neat
Fishbone Fern	*Nephrolepis cordifolia*	Hand removal. Brush cut then sprayed with Glyphosate.	All year round	Glyphosate 360g/L	M	1/100
Ochna	*Ochna serrulata*	Double side scrape and paint all stems to 75% coverage.	All year round	Glyphosate 360g/L	M	Neat
Bamboo, Black Bamboo, Rhizomatous Bamboo,	*Phyllostachys nigra*	Chainsaw/cut close to base. Allow new shoots to return. Cut and paint new shoots with neat Glyphosate.	All year round	Glyphosate 360g/L	M	Neat
Inkweed	*Phytolacca octandra*	Foliar spraying with Glyphosate, hand pulled and brush cut	All year round	Glyphosate 360g/L	M	1/100
Radiata Pine, Pine Wildings	*Pinus radiata*	<80mm cut & painted; >80mm will be drilled/frilled with neat Glyphosate	All year round	Glyphosate 360g/L	M	Neat

Common Name	Botanical Name	Weeding Technique	Recommended Timing for Treatment	Herbicide Application	Herbicide Group	Ratio
Plantain	*Plantago lanceolata*	Foliar spraying with Glyphosate	All year round	Glyphosate 360g/L	M	1/100
Castor Oil Plant	*Ricinus communis*	Hand pulled and cut & painted with neat Glyphosate	All year round	Glyphosate 360g/L	M	Neat
Blackberry	*Rubus fruticosus aggregate*	Brush cut, crowned and scraped & painted with neat Glyphosate	Between flowering and fruiting from November to January	Glyphosate 360g/L	M	Neat
Fireweed	*Senecio madagascariensis*	Foliar spraying with Glyphosate, hand pulled and brush cut	All year round	Glyphosate 360g/L	M	1/100
Senna / Cassia	*Senna pendula*	Small individuals hand removed, larger plants cut and painted with neat Glyphosate	All year round	Glyphosate 360g/L	M	Neat
Paddy's Lucerne	*Sida rhombifolia*	Foliar spraying with Glyphosate, hand pulled and brush cut	All year round	Glyphosate 360g/L	M	1/100
Tobacco Bush/ Wild Tobacco	*Solanum mauritianum*	Cut & paint with Glyphosate	All year round	Glyphosate 360g/L	M	Neat
Blackberry Night Shade	*Solanum nigrum*	Foliar spraying with Glyphosate, hand pulled and brush cut	All year round	Glyphosate 360g/L	M	1/100
Purpletop	*Verbena bonarensis*	Foliar spraying with Glyphosate, hand pulled and brush cut	All year round	Glyphosate 360g/L	M	1/100

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Weed Action Plan – Addendum

Chain Valley Colliery, Mannering Colliery and Summerland Point Ventilation Shaft

Total Earth Care Pty Ltd

August 2020

Weed Action Plan - Addendum

Chain Valley Colliery, Mannering Colliery and Summerland Point Ventilation Shaft

August 2020

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1 INTRODUCTION

1.1 Background

Total Earth Care (TEC) previously prepared the Weed Action Plan (WAP) in January 2020 for the three (3) Delta Coal sites: Chain Valley Colliery, Mannering Colliery and Summerland Point Ventilation Shaft. This Addendum is developed to incorporate an additional area on the Lake Macquarie foreshore at the Chain Valley Colliery in the WAP. Delta Coal was granted a licence by the Minister for Water, Property & Housing on 11th June 2020 under Section 2.20 of the Crown Land Management Act 2016 for the use of the licensed area for *Environmental Rehabilitation – Vegetation Management.*

This Addendum provides guidance for managing the weeds within the license's foreshore area. Current weed densities of the licence's area are provided as well as the relevant management actions.

1.2 Subject Sites and Study Area

The "Study Area" for this Addendum includes the licensed area of Crown Land (Lot 2, DP1198253) that abuts the Chain Valley Colliery site managed by Delta Coal. This will be referred to as the "Foreshore Zone". The area included in the license extends along the foreshore of the neighbouring Delta Electricity site to the north-west, but this area was not part of the scope of this project. Please see the Map 1 below which indicates the boundaries of the Study Area. The site falls within the Local Land Services Greater Sydney Region, bordering on the Hunter Region.

2 METHODS

2.1 Desktop Research

A preliminary desktop study was conducted to assess the previously mapped weed locations (Kleinfelder 2016) and existing plant community types using the Wyong ELA 2016 PCT (ELA, 2016) mapping.

2.2 Site Survey

A site survey was conducted over one (1) day on the 4th August 2020. Weather conditions were clear with maximum temperatures of approximately 18˚C. See Map 1 for survey effort. Survey methodology followed that outlined in the WAP 2020.

3 RESULTS

The weed survey identified twenty-five (25) weed species under the *Biosecurity Act 2015.* These are listed in Appendix A along with the landholder's obligations under the Act. Of these, four (4) are listed as Weeds of National Significance (WoNS). These are:

- Asparagus Fern (*Asparagus aethiopicus*);
- Bitou Bush (*Chrysanthemoides monilifera subsp rotundata*);
- Lantana (*Lantana camara*); and
- Fireweed (*Senecio madagascariensis*).

Bitou Bush, Lantana and Fireweed are also listed as State Priority Weeds. The above listed weeds are also listed as Priority Weeds under the Greater Sydney Regional Strategic Weed Management Plan.

Weeds are mostly encroaching from the lot boundaries of the land, which is managed by Delta Coal. There are some small outbreaks within large resilient bushland areas which have been prioritised within this Plan.

Approximately six (6) *Dendrobium teretifolium,* an epiphytic orchid, were recorded at the southern end of this zone attached to the trunks of Casuarinas. These have been mapped in Map 2 of this Addendum.

The current condition, locations of weed infestations and weed densities have been discussed in detail within Section 4 - Management Zones.

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Title: Chain Valley Colliery:
Subject Site & Survey Effort

Map No: Addendum Map 1

Site: Chain Valley Colliery

Client: Delta Coal

Date: August 2020

Project No: J4925

Author: G Teear

Legend

- Management Zones
- Survey Track
- Road
- Creek

EEC under BC Act 2016

- Swamp Oak Floodplain Forest
- Swamp Sclerophyll Forest on Coastal Floodplains EEC



Data Source:
Total Earth Care
Nearmap
Wyong ELA 2016 v2

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4 MANAGEMENT ZONE

The Foreshore Area is the Crown Land foreshore of the southern end of Lake Macquarie. The Foreshore area forms an additional management zone to those outlined in the WAP 2020. A detailed description of the zone and the weed presence is included in Table 1.

4.1.1 Chain Valley Colliery – Foreshore Area

Table 1. Chain Valley Colliery – Foreshore Area Description

Description	This zone is approximately 2.7 ha and runs along the foreshore of Lake Macquarie abutting the north-east boundary of the Chain Valley Colliery. **Area A – <5% weed cover** The most resilient area of this zone with low weed densities. Scattered occurrences of Bitou Bush (*Chrysanthemoides monilifera*) and Asparagus Fern (*Asparagus aethiopicus*), mostly along the lake edge. Approximately six (6) *Dendrobium teretifolium,* an epiphytic orchid, were recorded at the southern end of this zone attached to the trunks of Casuarinas. **Area B – 50 – 75% weed cover** Area with the highest weed density within this zone, which this mostly within the ground and shrub layer. Weed occurrences in this area mostly consist of *Lantana camara, Ochna serrulata*, Wild Tobacco (*Solanum mauritianum),* Bitou Bush (*Chrysanthemoides monilifera*), *Tradescantia fluminensis* and Asparagus Fern (*Asparagus aethiopicus*). The areas of densest weeds are along the western boundary of Area B. **Area C – 50 – 75% weed cover** Weeds are mostly within the ground layer which consists of exotic grasses, Watsonia (*Watsonia meriana var. bulbillifera*), Fireweed (*Senecio madagascariensis*), Asparagus Fern (*Asparagus aethiopicus*) and herbaceous weeds. Scattered occurrences and small patches of *Senna pendula var. glabrata,* Fishbone Fern (*Nephrolepis cordifolia*), *Ochna serrulata*, Coolatai Grass (*Hyparrhenia hirta*), *Lantana camara,* Rhodes Grass (*Chloris gayana*) and Crofton Weed (*Ageratina adenophora*) occur along the front of the cottages. Other ornamental exotic plant species are present here, most likely as plantings installed by previous residents of the cottages. **Area D – 5-25% weed cover** Scattered occurrences of *Lantana camara, Ochna serrulata*, and Asparagus Fern (*Asparagus aethiopicus*).
Priority Weeds	*Lantana camara*, Bitou Bush (*Chrysanthemoides monilifera*), Fireweed (*Senecio madagascariensis*) and Asparagus Fern (*Asparagus aethiopicus).*
Priority Areas	Area A and B has the most resilience. Weeds should be controlled to prevent further spread. Working from the lake edge towards the Chain Valley Colliery lot boundaries will help in containing weeds within the Delta Coal's land and follow best practice of working from areas of highest resilience to lowest.
Key Management Issues	• Targeted treatment of Bitou Bush (*Chrysanthemoides monilifera)* and Asparagus Fern (*Asparagus aethiopicus)* particularly along lake edges in Areas A and B. • Primary and targeted treatment of *Senna pendula var. glabrata,* Fishbone Fern **(***Nephrolepis cordifolia***)**, *Ochna serrulata*, Coolatai Grass (*Hyparrhenia hirta*), *Lantana camara,* Rhodes Grass (*Chloris gayana*) and Crofton Weed (*Ageratina adenophora*).
Notes	Access to this zone via dirt road from near the Chain Valley Colliery site entry. Key required. Caution to be taken driving around cottages due to rubbish and debris hidden by long grass.



Figure 1. Area C showing the small patch of Coolatai Grass present.

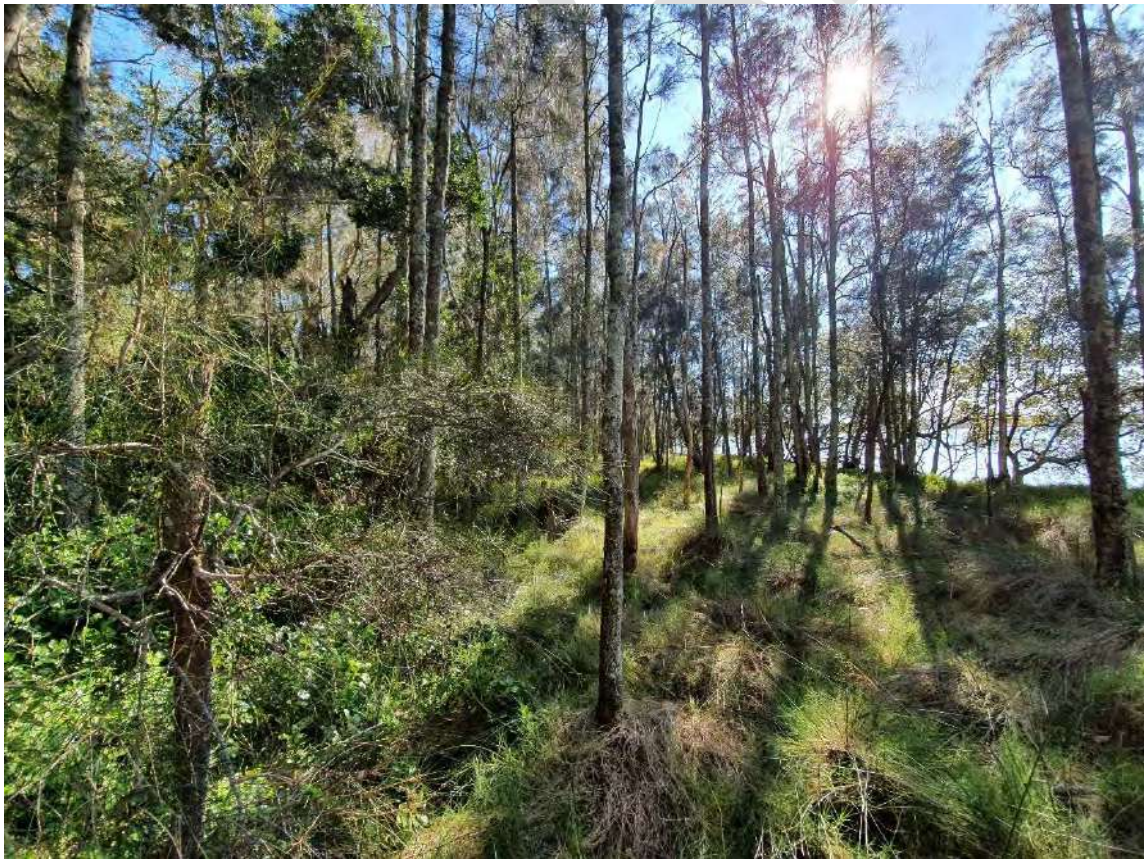


Figure 2. Boundary of Area B and D.

Title: Chain Valley Colliery: Foreshore Zone Weeds

Map No: Addendum Map 2

Site: Chain Valley Colliery

Client: Delta Coal

Date: August 2020

Project No: J4925

Author: G Teear

Legend

Management Zones

Road

Creek

Key Points

- Asparagus Fern
- Asparagus Fern, Senna, Coral Trees
- Asparagus fern
- Bitou Bush
- Bitou Bush, Asparagus Fern, Senna
- Coolatai Grass
- Dendrobium teretifolium
- Easter Daisy, Bitou Bush, Asparagus Fern
- Fishbone Fern, Buffalo, Couch
- Grevellia robusta
- Lantana Thicket
- Lantana camara, Asparagus Fern, Senna, Buffalo
- Lantana, Crofton Weed, Bidens, Watsonia, Senna
- Narrow-leaved Cotton Bush
- Ochna
- Ochna, Lantana, Asparagus Fern
- Ochna, Roads Grass
- Spear Thistle, Lantana
- Treated Bitou Bush
- Wild Tobacco, Senna

Weed Density

- < 5%
- 5 - 25%
- 25 - 50%
- 50 - 75%

0 30 60 120 Meters

N

Data Source:
Total Earth Care
Nearmap

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5 MONITORING GUIDELINES

Monitoring is required to assess the outcomes of the weed management work and help determine if management strategies should be amended. Monitoring should be completed every six (6) months by a qualified ecologist or bush regeneration supervisor using the following methods:

- Assessment of weed control works, native regeneration and revegetation success via permanent repeatable photographic monitoring points; and
- Mapping of weed density per zone to assess the progress of the work. The mapping included in this report can assist in the development of baseline data.

Monitoring reports must include:

- Details of the work carried out including weed management techniques and herbicide used;
- Photo monitoring points – baseline and follow up photos; and
- Recommendations for corrective measures and/or specific vegetation management required.

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Appendix A. Weed Species listed as a Biosecurity Risk

Table 2. Categories of Management under the Greater Sydney Regional Strategic Weed Management Plan 2017-2022 under the NSW Biosecurity Act 2015

Category	Management Action
Prevention (Prevent)	To prevent the weed species arriving and establishing in the Region.
Eradication (Eliminate)	To permanently remove the species and its propagules from the Region, OR to destroy infestations to reduce the extent of the weed in the region with the aim of local eradication.
Containment (Minimise)	To prevent the ongoing spread of the species in all or part of the Region.
Asset Protection (Manage)	To prevent the spread of weeds to key sites/ assets of high economic, environmental and social value, or to reduce their impact on these sites if spread.
GBD (General Biosecurity Duty)	All plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable."
RRM (Regional Recommended Measure)	Specific details for each species included in table.
PoD (Prohibition on Dealings)	Must not be imported into the State or sold.
B Zone (Biosecurity Zone)	Specific details for each species included in table.
PM (Prohibited Matter)	A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries.

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Table 3. Weeds recorded within the subject site with respective categories listed in the Greater Sydney Regional Strategic Weed Management Plan 2017-2022

Common Name	Botanical Name	WONS	State Priority Weed-Mgmt. Actions	Regional Priority Weeds-Mgmt. Actions	Other Regional Weeds-Asset/value at risk	Duties for Priority Weeds of Greater Sydney
Crofton Weed	*Ageratina adenophora*				Environment, Agriculture	
Whisky Grass	*Andropogon virginicus*				Environment	
Asparagus Fern	*Asparagus aethiopicus*	Yes				PoD
Cobblers Pegs	*Bidens pilosa*					
Buffalo Grass	*Bouteloua dactyloides*					
Bitou Bush	*Chrysanthemoides monilifera subsp rotundata*	Yes	Containment			PoD, B Zone; The Bitou Bush Biosecurity Zone is established for all land within the State except land within 10 kilometres of the mean high water mark of the Pacific Ocean between Cape Byron in the north and Point Perpendicular in the south.
Spear Thistle	*Cirsium vulgare*					
Fleabane	*Conyza bonariensis*					
Panic Veldgrass	*Ehrharta erecta*					
African Lovegrass	*Eragrostis curvula*				Environment	
Coral Tree, Common Coral Tree	*Erythrina x sykesii*				Environment	
Narrow-Leaf Cotton Bush / Swan Plant	*Gomphocarpus fruticosus*					
Pennywort	*Hydrocotyle bonariensis*					

Common Name	Botanical Name	WONS	State Priority Weed-Mgmt. Actions	Regional Priority Weeds-Mgmt. Actions	Other Regional Weeds-Asset/value at risk	Duties for Priority Weeds of Greater Sydney
Coolatai Grass	*Hyparrhenia hirta*				Environment, Agriculture	
Lantana	*Lantana camara*	Yes	Asset Protection			PoD
Fishbone Fern	*Nephrolepis cordifolia*				Environment	
Ochna	*Ochna serrulata*				Environment	
Fireweed	*Senecio madagascariensis*	Yes	Asset Protection			PoD
Senna / Cassia	*Senna pendula*				Environment	
Paddy's Lucerne	*Sida rhombifolia*					
Tobacco Bush/ Wild Tobacco	*Solanum mauritianum*				Environment, Agriculture	
Blackberry Night Shade	*Solanum nigrum*					
Purpletop	*Verbena bonarensis*					

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Appendix B. Species Specific Weeding Techniques

Common Name	Botanical Name	Weeding Technique	Recommended Timing for Treatment	Herbicide Application	Herbicide Group	Ratio
Crofton Weed	*Ageratina adenophora*	Hand removal, brush cut and foliar sprayed with Glyphosate	All year round	Glyphosate 360g/L	M	1/100
Whisky Grass	*Andropogon virginicus*	Remove seed and crown out with knife or spot spray	Prior to flowering in March to May	Glyphosate 360g/L	M	1/100
Asparagus Fern	*Asparagus aethiopicus*	Small single specimens to be crowned or Sprayed with Glyphosate/metsulfuron methyl	All year round	Glyphosate 360g/L & Metsulfuron-Methyl 600 g/kg	M & B	1/100 & 1g/10L
Cobblers Pegs	*Bidens pilosa*	Foliar spraying using Glyphosate, hand pulled and brush cut	All year round	Glyphosate 360g/L	M	1/100
Buffalo Grass	*Bouteloua dactyloides*	Hand removal, brush cut and foliar sprayed with Glyphosate	All year round	Glyphosate 360g/L	M	1/100
Bitou Bush	*Chrysanthemoides monilifera subsp rotundata*	Small single specimens hand pulled or larger shrubs cut and painted with neat Glyphosate	All year round	Glyphosate 360g/L	M	Neat
Spear Thistle	*Cirsium vulgare*	Foliar spraying with Glyphosate, hand pulled and brush cut	All year round	Glyphosate 360g/L	M	1/100
Fleabane	*Conyza bonariensis*	Foliar spraying with Glyphosate, hand pulled and brush cut	All year round	Glyphosate 360g/L	M	1/100
Panic Veldgrass	*Ehrharta erecta*	Foliar spraying with Glyphosate	All year round	Glyphosate 360g/L	M	1/100
African Lovegrass	*Eragrostis curvula*	Hand pulled or brush cut and foliar sprayed with Glyphosate	All year round	Glyphosate 360g/L	M	1/100
Coral Tree, Common Coral Tree	*Erythrina x sykesii*	<80mm cut & painted; >80mm will be drilled/frilled with neat Glyphosate	All year round	Glyphosate 360g/L	M	Neat
Narrow-Leaf Cotton Bush / Swan Plant	*Gomphocarpus fruticosus*	Foliar spraying with Glyphosate, hand pulled and brush cut	All year round	Glyphosate 360g/L	M	1/100 & Neat
Pennywort	*Hydrocotyle bonariensis*	Hand pulled or spot sprayed with Dicamba	All year round			
Coolatai Grass	*Hyparrhenia hirta*	Hand pulled or brush cut and foliar sprayed with Glyphosate. Up to three applications of Glyphosate in the same growing season will be required.	All year round	Glyphosate 360g/L	M	200ml/10l

Common Name	Botanical Name	Weeding Technique	Recommended Timing for Treatment	Herbicide Application	Herbicide Group	Ratio
Lantana	*Lantana camara*	Cut and paint, sprayed or splattered with Glyphosate. Hand pull small shoots.	All year round	Glyphosate 360g/L	M	Neat
Fishbone Fern	*Nephrolepis cordifolia*	Hand removal. Brush cut then sprayed with Glyphosate.	All year round	Glyphosate 360g/L	M	1/100
Ochna	*Ochna serrulata*	Double side scrape and paint all stems to 75% coverage.	All year round	Glyphosate 360g/L	M	Neat
Fireweed	*Senecio madagascariensis*	Foliar spraying with Glyphosate, hand pulled and brush cut	All year round	Glyphosate 360g/L	M	1/100
Senna / Cassia	*Senna pendula*	Small individuals hand removed, larger plants cut and painted with neat Glyphosate	All year round	Glyphosate 360g/L	M	Neat
Paddy's Lucerne	*Sida rhombifolia*	Foliar spraying with Glyphosate, hand pulled and brush cut	All year round	Glyphosate 360g/L	M	1/100
Tobacco Bush/ Wild Tobacco	*Solanum mauritianum*	Cut & paint with Glyphosate	All year round	Glyphosate 360g/L	M	Neat
Blackberry Night Shade	*Solanum nigrum*	Foliar spraying with Glyphosate, hand pulled and brush cut	All year round	Glyphosate 360g/L	M	1/100
Purpletop	*Verbena bonarensis*	Foliar spraying with Glyphosate, hand pulled and brush cut	All year round	Glyphosate 360g/L	M	1/100

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Weed Action Plan – Addendum

Chain Valley Colliery, Mannering Colliery and Summerland Point Ventilation Shaft

Total Earth Care Pty Ltd

August 2020

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1 INTRODUCTION

1.1 Background

Total Earth Care (TEC) previously prepared the Weed Action Plan (WAP) in January 2020 for the three (3) Delta Coal sites: Chain Valley Colliery, Mannering Colliery and Summerland Point Ventilation Shaft. This Addendum is developed to incorporate an additional area on the Lake Macquarie foreshore at the Chain Valley Colliery in the WAP. Delta Coal was granted a licence by the Minister for Water, Property & Housing on 11th June 2020 under Section 2.20 of the Crown Land Management Act 2016 for the use of the licensed area for *Environmental Rehabilitation – Vegetation Management.*

This Addendum provides guidance for managing the weeds within the license's foreshore area. Current weed densities of the licence's area are provided as well as the relevant management actions.

1.2 Subject Sites and Study Area

The "Study Area" for this Addendum includes the licensed area of Crown Land (Lot 2, DP1198253) that abuts the Chain Valley Colliery site managed by Delta Coal. This will be referred to as the "Foreshore Zone". The area included in the license extends along the foreshore of the neighbouring Delta Electricity site to the north-west, but this area was not part of the scope of this project. Please see the Map 1 below which indicates the boundaries of the Study Area. The site falls within the Local Land Services Greater Sydney Region, bordering on the Hunter Region.

2 METHODS

2.1 Desktop Research

A preliminary desktop study was conducted to assess the previously mapped weed locations (Kleinfelder 2016) and existing plant community types using the Wyong ELA 2016 PCT (ELA, 2016) mapping.

2.2 Site Survey

A site survey was conducted over one (1) day on the 4th August 2020. Weather conditions were clear with maximum temperatures of approximately 18˚C. See Map 1 for survey effort. Survey methodology followed that outlined in the WAP 2020.

3 RESULTS

The weed survey identified twenty-five (25) weed species under the *Biosecurity Act 2015.* These are listed in Appendix A along with the landholder's obligations under the Act. Of these, four (4) are listed as Weeds of National Significance (WoNS). These are:

- Asparagus Fern (*Asparagus aethiopicus*);
- Bitou Bush (*Chrysanthemoides monilifera subsp rotundata*);
- Lantana (*Lantana camara*); and
- Fireweed (*Senecio madagascariensis*).

Bitou Bush, Lantana and Fireweed are also listed as State Priority Weeds. The above listed weeds are also listed as Priority Weeds under the Greater Sydney Regional Strategic Weed Management Plan.

Weeds are mostly encroaching from the lot boundaries of the land, which is managed by Delta Coal. There are some small outbreaks within large resilient bushland areas which have been prioritised within this Plan.

Approximately six (6) *Dendrobium teretifolium,* an epiphytic orchid, were recorded at the southern end of this zone attached to the trunks of Casuarinas. These have been mapped in Map 2 of this Addendum.

The current condition, locations of weed infestations and weed densities have been discussed in detail within Section 4 - Management Zones.

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Title: Chain Valley Colliery:
Subject Site & Survey Effort

Map No: Addendum Map 1

Site: Chain Valley Colliery

Client: Delta Coal

Date: August 2020

Project No: J4925

Author: G Teear

Legend

- Management Zones
- Survey Track
- Road
- Creek

EEC under BC Act 2016

- Swamp Oak Floodplain Forest
- Swamp Sclerophyll Forest on Coastal Floodplains EEC



Data Source:
Total Earth Care
Nearmap
Wyong ELA 2016 v2

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4 MANAGEMENT ZONE

The Foreshore Area is the Crown Land foreshore of the southern end of Lake Macquarie. The Foreshore area forms an additional management zone to those outlined in the WAP 2020. A detailed description of the zone and the weed presence is included in Table 1.

4.1.1 Chain Valley Colliery – Foreshore Area

Table 1. Chain Valley Colliery – Foreshore Area Description

Description	This zone is approximately 2.7 ha and runs along the foreshore of Lake Macquarie abutting the north-east boundary of the Chain Valley Colliery. **Area A – <5% weed cover** The most resilient area of this zone with low weed densities. Scattered occurrences of Bitou Bush (*Chrysanthemoides monilifera*) and Asparagus Fern (*Asparagus aethiopicus*), mostly along the lake edge. Approximately six (6) *Dendrobium teretifolium,* an epiphytic orchid, were recorded at the southern end of this zone attached to the trunks of Casuarinas. **Area B – 50 – 75% weed cover** Area with the highest weed density within this zone, which this mostly within the ground and shrub layer. Weed occurrences in this area mostly consist of *Lantana camara, Ochna serrulata*, Wild Tobacco (*Solanum mauritianum),* Bitou Bush (*Chrysanthemoides monilifera*), *Tradescantia fluminensis* and Asparagus Fern (*Asparagus aethiopicus*). The areas of densest weeds are along the western boundary of Area B. **Area C – 50 – 75% weed cover** Weeds are mostly within the ground layer which consists of exotic grasses, Watsonia (*Watsonia meriana var. bulbillifera*), Fireweed (*Senecio madagascariensis*), Asparagus Fern (*Asparagus aethiopicus*) and herbaceous weeds. Scattered occurrences and small patches of *Senna pendula var. glabrata,* Fishbone Fern (*Nephrolepis cordifolia*), *Ochna serrulata*, Coolatai Grass (*Hyparrhenia hirta*), *Lantana camara,* Rhodes Grass (*Chloris gayana*) and Crofton Weed (*Ageratina adenophora*) occur along the front of the cottages. Other ornamental exotic plant species are present here, most likely as plantings installed by previous residents of the cottages. **Area D – 5-25% weed cover** Scattered occurrences of *Lantana camara, Ochna serrulata*, and Asparagus Fern (*Asparagus aethiopicus*).
Priority Weeds	*Lantana camara*, Bitou Bush (*Chrysanthemoides monilifera*), Fireweed (*Senecio madagascariensis*) and Asparagus Fern (*Asparagus aethiopicus).*
Priority Areas	Area A and B has the most resilience. Weeds should be controlled to prevent further spread. Working from the lake edge towards the Chain Valley Colliery lot boundaries will help in containing weeds within the Delta Coal's land and follow best practice of working from areas of highest resilience to lowest.
Key Management Issues	• Targeted treatment of Bitou Bush (*Chrysanthemoides monilifera)* and Asparagus Fern (*Asparagus aethiopicus)* particularly along lake edges in Areas A and B. • Primary and targeted treatment of *Senna pendula var. glabrata,* Fishbone Fern **(***Nephrolepis cordifolia***)**, *Ochna serrulata*, Coolatai Grass (*Hyparrhenia hirta*), *Lantana camara,* Rhodes Grass (*Chloris gayana*) and Crofton Weed (*Ageratina adenophora*).
Notes	Access to this zone via dirt road from near the Chain Valley Colliery site entry. Key required. Caution to be taken driving around cottages due to rubbish and debris hidden by long grass.



Figure 1. Area C showing the small patch of Coolatai Grass present.

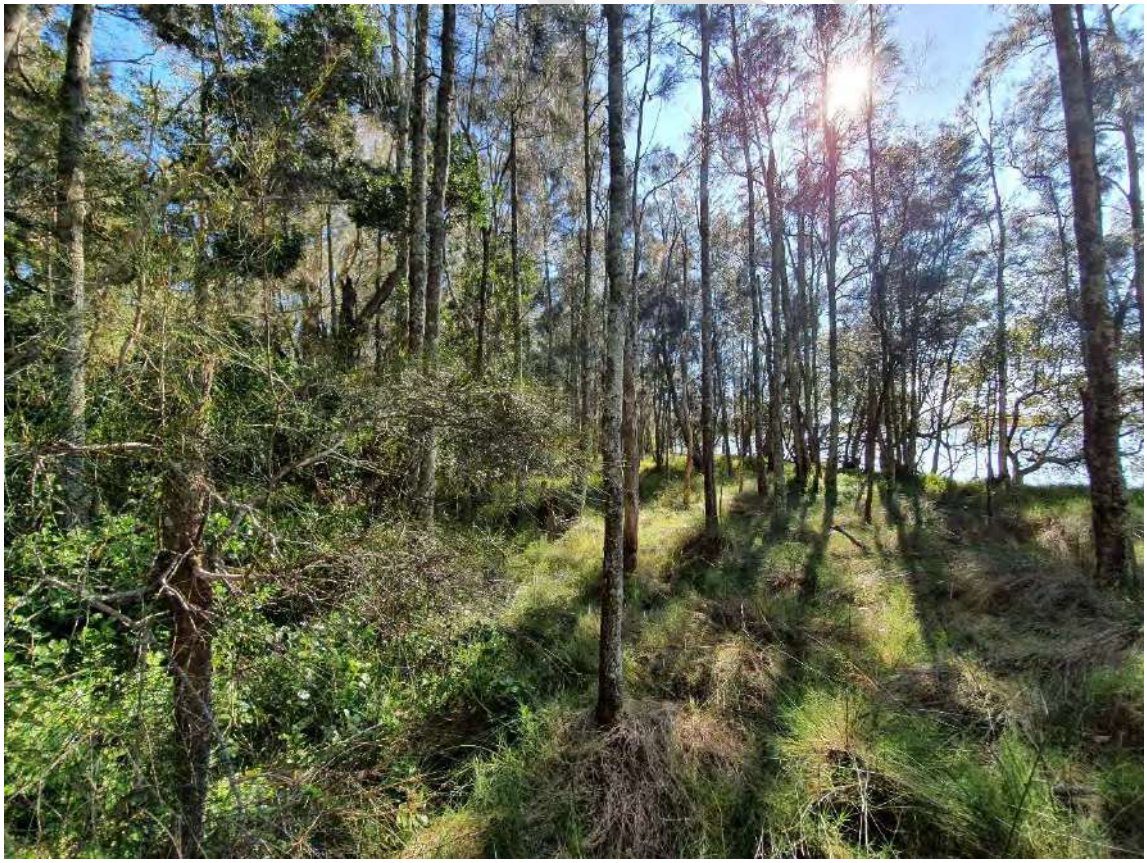


Figure 2. Boundary of Area B and D.

Title: Chain Valley Colliery: Foreshore Zone Weeds

Map No: Addendum Map 2

Site: Chain Valley Colliery

Client: Delta Coal

Date: August 2020

Project No: J4925

Author: G Teear

Legend

Management Zones

Road

Creek

Key Points

- Asparagus Fern
- Asparagus Fern, Senna, Coral Trees
- Asparagus fern
- Bitou Bush
- Bitou Bush, Asparagus Fern, Senna
- Coolatai Grass
- Dendrobium teretifolium
- Easter Daisy, Bitou Bush, Asparagus Fern
- Fishbone Fern, Buffalo, Couch
- Grevellia robusta
- Lantana Thicket
- Lantana camara, Asparagus Fern, Senna, Buffalo
- Lantana, Crofton Weed, Bidens, Watsonia, Senna
- Narrow-leaved Cotton Bush
- Ochna
- Ochna, Lantana, Asparagus Fern
- Ochna, Roads Grass
- Spear Thistle, Lantana
- Treated Bitou Bush
- Wild Tobacco, Senna

Weed Density

- < 5%
- 5 - 25%
- 25 - 50%
- 50 - 75%

0 30 60 120 Meters

N

Data Source:
Total Earth Care
Nearmap

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5 MONITORING GUIDELINES

Monitoring is required to assess the outcomes of the weed management work and help determine if management strategies should be amended. Monitoring should be completed every six (6) months by a qualified ecologist or bush regeneration supervisor using the following methods:

- Assessment of weed control works, native regeneration and revegetation success via permanent repeatable photographic monitoring points; and
- Mapping of weed density per zone to assess the progress of the work. The mapping included in this report can assist in the development of baseline data.

Monitoring reports must include:

- Details of the work carried out including weed management techniques and herbicide used;
- Photo monitoring points – baseline and follow up photos; and
- Recommendations for corrective measures and/or specific vegetation management required.

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Appendix A. Weed Species listed as a Biosecurity Risk

Table 2. Categories of Management under the Greater Sydney Regional Strategic Weed Management Plan 2017-2022 under the NSW Biosecurity Act 2015

Category	Management Action
Prevention (Prevent)	To prevent the weed species arriving and establishing in the Region.
Eradication (Eliminate)	To permanently remove the species and its propagules from the Region, OR to destroy infestations to reduce the extent of the weed in the region with the aim of local eradication.
Containment (Minimise)	To prevent the ongoing spread of the species in all or part of the Region.
Asset Protection (Manage)	To prevent the spread of weeds to key sites/ assets of high economic, environmental and social value, or to reduce their impact on these sites if spread.
GBD (General Biosecurity Duty)	All plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable."
RRM (Regional Recommended Measure)	Specific details for each species included in table.
PoD (Prohibition on Dealings)	Must not be imported into the State or sold.
B Zone (Biosecurity Zone)	Specific details for each species included in table.
PM (Prohibited Matter)	A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries.

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Table 3. Weeds recorded within the subject site with respective categories listed in the Greater Sydney Regional Strategic Weed Management Plan 2017-2022

Common Name	Botanical Name	WONS	State Priority Weed-Mgmt. Actions	Regional Priority Weeds-Mgmt. Actions	Other Regional Weeds-Asset/value at risk	Duties for Priority Weeds of Greater Sydney
Crofton Weed	*Ageratina adenophora*				Environment, Agriculture	
Whisky Grass	*Andropogon virginicus*				Environment	
Asparagus Fern	*Asparagus aethiopicus*	Yes				PoD
Cobblers Pegs	*Bidens pilosa*					
Buffalo Grass	*Bouteloua dactyloides*					
Bitou Bush	*Chrysanthemoides monilifera subsp rotundata*	Yes	Containment			PoD, B Zone; The Bitou Bush Biosecurity Zone is established for all land within the State except land within 10 kilometres of the mean high water mark of the Pacific Ocean between Cape Byron in the north and Point Perpendicular in the south.
Spear Thistle	*Cirsium vulgare*					
Fleabane	*Conyza bonariensis*					
Panic Veldgrass	*Ehrharta erecta*					
African Lovegrass	*Eragrostis curvula*				Environment	
Coral Tree, Common Coral Tree	*Erythrina x sykesii*				Environment	
Narrow-Leaf Cotton Bush / Swan Plant	*Gomphocarpus fruticosus*					
Pennywort	*Hydrocotyle bonariensis*					

Common Name	Botanical Name	WONS	State Priority Weed-Mgmt. Actions	Regional Priority Weeds-Mgmt. Actions	Other Regional Weeds-Asset/value at risk	Duties for Priority Weeds of Greater Sydney
Coolatai Grass	*Hyparrhenia hirta*				Environment, Agriculture	
Lantana	*Lantana camara*	Yes	Asset Protection			PoD
Fishbone Fern	*Nephrolepis cordifolia*				Environment	
Ochna	*Ochna serrulata*				Environment	
Fireweed	*Senecio madagascariensis*	Yes	Asset Protection			PoD
Senna / Cassia	*Senna pendula*				Environment	
Paddy's Lucerne	*Sida rhombifolia*					
Tobacco Bush/ Wild Tobacco	*Solanum mauritianum*				Environment, Agriculture	
Blackberry Night Shade	*Solanum nigrum*					
Purpletop	*Verbena bonarensis*					

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Appendix B. Species Specific Weeding Techniques

Common Name	Botanical Name	Weeding Technique	Recommended Timing for Treatment	Herbicide Application	Herbicide Group	Ratio
Crofton Weed	*Ageratina adenophora*	Hand removal, brush cut and foliar sprayed with Glyphosate	All year round	Glyphosate 360g/L	M	1/100
Whisky Grass	*Andropogon virginicus*	Remove seed and crown out with knife or spot spray	Prior to flowering in March to May	Glyphosate 360g/L	M	1/100
Asparagus Fern	*Asparagus aethiopicus*	Small single specimens to be crowned or Sprayed with Glyphosate/metsulfuron methyl	All year round	Glyphosate 360g/L & Metsulfuron-Methyl 600 g/kg	M & B	1/100 & 1g/10L
Cobblers Pegs	*Bidens pilosa*	Foliar spraying using Glyphosate, hand pulled and brush cut	All year round	Glyphosate 360g/L	M	1/100
Buffalo Grass	*Bouteloua dactyloides*	Hand removal, brush cut and foliar sprayed with Glyphosate	All year round	Glyphosate 360g/L	M	1/100
Bitou Bush	*Chrysanthemoides monilifera subsp rotundata*	Small single specimens hand pulled or larger shrubs cut and painted with neat Glyphosate	All year round	Glyphosate 360g/L	M	Neat
Spear Thistle	*Cirsium vulgare*	Foliar spraying with Glyphosate, hand pulled and brush cut	All year round	Glyphosate 360g/L	M	1/100
Fleabane	*Conyza bonariensis*	Foliar spraying with Glyphosate, hand pulled and brush cut	All year round	Glyphosate 360g/L	M	1/100
Panic Veldgrass	*Ehrharta erecta*	Foliar spraying with Glyphosate	All year round	Glyphosate 360g/L	M	1/100
African Lovegrass	*Eragrostis curvula*	Hand pulled or brush cut and foliar sprayed with Glyphosate	All year round	Glyphosate 360g/L	M	1/100
Coral Tree, Common Coral Tree	*Erythrina x sykesii*	<80mm cut & painted; >80mm will be drilled/frilled with neat Glyphosate	All year round	Glyphosate 360g/L	M	Neat
Narrow-Leaf Cotton Bush / Swan Plant	*Gomphocarpus fruticosus*	Foliar spraying with Glyphosate, hand pulled and brush cut	All year round	Glyphosate 360g/L	M	1/100 & Neat
Pennywort	*Hydrocotyle bonariensis*	Hand pulled or spot sprayed with Dicamba	All year round			
Coolatai Grass	*Hyparrhenia hirta*	Hand pulled or brush cut and foliar sprayed with Glyphosate. Up to three applications of Glyphosate in the same growing season will be required.	All year round	Glyphosate 360g/L	M	200ml/10l

Common Name	Botanical Name	Weeding Technique	Recommended Timing for Treatment	Herbicide Application	Herbicide Group	Ratio
Lantana	*Lantana camara*	Cut and paint, sprayed or splattered with Glyphosate. Hand pull small shoots.	All year round	Glyphosate 360g/L	M	Neat
Fishbone Fern	*Nephrolepis cordifolia*	Hand removal. Brush cut then sprayed with Glyphosate.	All year round	Glyphosate 360g/L	M	1/100
Ochna	*Ochna serrulata*	Double side scrape and paint all stems to 75% coverage.	All year round	Glyphosate 360g/L	M	Neat
Fireweed	*Senecio madagascariensis*	Foliar spraying with Glyphosate, hand pulled and brush cut	All year round	Glyphosate 360g/L	M	1/100
Senna / Cassia	*Senna pendula*	Small individuals hand removed, larger plants cut and painted with neat Glyphosate	All year round	Glyphosate 360g/L	M	Neat
Paddy's Lucerne	*Sida rhombifolia*	Foliar spraying with Glyphosate, hand pulled and brush cut	All year round	Glyphosate 360g/L	M	1/100
Tobacco Bush/ Wild Tobacco	*Solanum mauritianum*	Cut & paint with Glyphosate	All year round	Glyphosate 360g/L	M	Neat
Blackberry Night Shade	*Solanum nigrum*	Foliar spraying with Glyphosate, hand pulled and brush cut	All year round	Glyphosate 360g/L	M	1/100
Purpletop	*Verbena bonarensis*	Foliar spraying with Glyphosate, hand pulled and brush cut	All year round	Glyphosate 360g/L	M	1/100

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Appendix 4: Noise Monitoring Results

Mannering Colliery

Monthly attended noise monitoring - January 2024

Prepared for Great Southern Energy Pty Ltd (trading as Delta Coal)

February 2024

Mannering Colliery

Monthly attended noise monitoring - January 2024

Great Southern Energy Pty Ltd (trading as Delta Coal)

E230753 RP1

February 2024

Version	Date	Prepared by	Reviewed by	Comments
1	2 February 2024	Teanuanua Villierme	Najah Ishac	Draft
2	12 February 2024	Teanuanua Villierme	Najah Ishac	Final

Approved by



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12 February 2024
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1 Introduction

1.1 Background

EMM Consulting Pty Ltd (EMM) was engaged by Great Southern Energy Pty Ltd (trading as Delta Coal) to conduct a monthly noise survey of operations at Mannering Colliery (MC, the site) located at Ruttleys Road, Doyalson North NSW. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

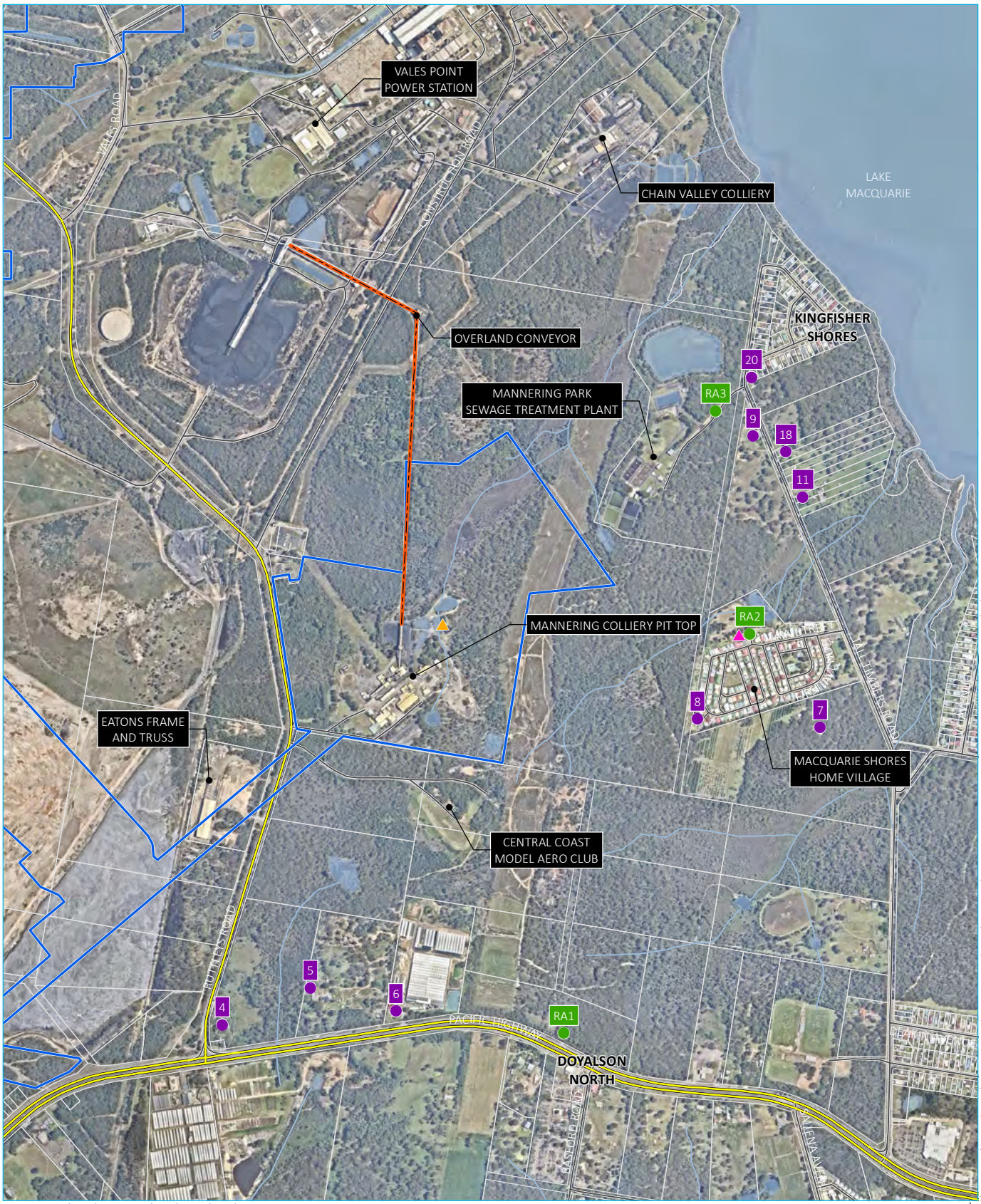
Attended environmental noise monitoring described in this report was done during the evening and night periods on 23 January 2024 at three monitoring locations.

1.2 Attended monitoring locations

Site monitoring locations are detailed in Table 1.1 and shown on Figure 1.1. It should be noted that Figure 1.1 shows actual monitoring positions, not necessarily the location of residences.

Table 1.1 Attended noise monitoring locations

Location descriptor/ID	Description/address	Coordinates (MGA56)	
		Easting	Northing
RA1	Pacific Highway, Doyalson North	364646	6327221
RA2	Macquarie Shores Home Village, Doyalson North	365164	6328332
RA3	Tall Timbers Road (northern end), Kingfisher Shores	365069	6328953



Source: EMM (2021); NearMap (2019); DFSI (2017)

0 250 500 m

GDA 1994 MGA Zone 56

N

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KEY

- Mannering Colliery project approval boundary
- Alignment of overland conveyor to VPPS
- Main road
- Local road
- Watercourse/drainage line
- Waterbody
- Cadastral boundary
- Assessment location
- Attended monitoring location
- Continuous monitoring location
- Meteorological station

Attended noise monitoring and assessment locations

Mannering Colliery
Figure 1.1

EMM creating opportunities

1.3 Terminology and abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

Table 1.2 Terminology and abbreviations

Term/descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The "A" weighting scale is used to approximate how humans hear noise.
L_{Amax}	The maximum root mean squared A-weighted noise level over a time period.
L_{A1}	The A-weighted noise level which is exceeded for 1 per cent of the time.
$L_{A1,1minute}$	The A-weighted noise level which is exceeded for 1 per cent of the specified time period of 1 minute.
L_{A10}	The A-weighted noise level which is exceeded for 10 percent of the time.
L_{Aeq}	The energy average A-weighted noise level.
$L_{Aeq,15minute}$	The energy average A-weighted noise level over the specified time period of 15 minutes.
L_{A50}	The A-weighted noise level which is exceeded for 50 per cent of the time, also the median noise level during a measurement period.
L_{A90}	The A-weighted noise level exceeded for 90 percent of the time, also referred to as the "background" noise level and commonly used to derive noise limits.
L_{Amin}	The minimum A-weighted noise level over a time period.
L_{Ceq}	The energy 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.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	Monday – Saturday: 7 am to 6 pm, on Sundays and Public Holidays: 8 am to 6 pm.
Evening	Monday – Saturday: 6 pm to 10 pm, on Sundays and Public Holidays: 6 pm to 10 pm.
Night	Monday – Saturday: 10 pm to 7 am, on Sundays and Public Holidays: 10 pm to 8 am.
NPfI	NSW EPA Noise Policy for Industry (2017)
Temperature inversion	A meteorological condition where the atmospheric temperature increases with altitude.

Appendix A provides further information that gives an indication as to how an average person perceives changes in noise level, and examples of common noise levels.

2 Noise limits

2.1 Project approval

Mannering Colliery noise limits are provided in Table 1, Condition 2 of Schedule 3 of the current project approval (PA) PA MP06_0311 dated 5 June 2020. Relevant sections of the PA are reproduced in Appendix B.1.

2.2 Environment protection licence

The current Environment Protection Licence 191 (EPL) dated 16 June 2023 references the PA with respect to noise limits. Relevant sections of the EPL are reproduced in Appendix B.2.

2.3 Noise management plan

The approved Noise Management Plan (NMP) was prepared in line with the Mod 5 approval and in accordance with the NSW EPA 'Noise Policy for Industry' (NPfI) issued in October 2017. Three attended noise monitoring locations representative of the PA noise assessment locations have been adopted in the NMP for the purpose of determining compliance with relevant noise limits. Relevant sections of the NMP are reproduced in Appendix B.3.

2.4 Noise limits

Noise limits based on the PA, EPL and approved NMP are as shown in Table 2.1.

Table 2.1 Noise limits, dB

Location	Day $L_{Aeq,15minute}$	Evening $L_{Aeq,15minute}$	Night $L_{Aeq,15minute}$	Night $L_{A1,1minute}$
RA1	40	36	36	46
RA2	40	40	40	45
RA3	40	39	39	49

2.5 Meteorological conditions

The PA (Mod 5) states the following:

> Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Noise Policy for Industry (EPA, 2017).

Section 5.2 of the NPfI states that noise limits applicable under 'very noise-enhancing' conditions should be the limits that apply under 'standard' or 'noise-enhancing' conditions plus 5 dB. This implies that there will be no periods when noise limits do not apply due to meteorological conditions.

As per the PA (Mod 5) and in accordance with the NPfI, limits are adjusted when monitoring is undertaken during the following 'very noise-enhancing' conditions:

- wind speeds greater than 3 m/s at 10 m above ground level;

- stability category F temperature inversion conditions with wind speeds greater than 2 m/s at 10 m above ground level; or
- stability category G temperature inversion conditions.

Therefore, if monthly noise monitoring occurs during 'very noise-enhancing' conditions, this assessment adopts a +5 dB adjustment to the limits shown in Table 2.1. This is indicated in Table 4.3 where relevant. It is noted that monthly noise monitoring for the site is always scheduled to occur during appropriate forecasted meteorological conditions in accordance with the 'Approved methods for the measurement and analysis of environmental noise in NSW' (EPA 2022) (the approved methods).

2.6 Additional considerations

Monitoring and reporting have been done in accordance with the NPfI and the approved methods.

3 Methodology

3.1 Overview

Attended environmental noise monitoring was done in general accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise' and relevant EPA requirements. Meteorological data was obtained from the Mannering Colliery on-site automatic weather station (AWS) which allowed correlation of atmospheric parameters with measured noise levels.

3.2 Attended noise monitoring

During this survey, attended noise monitoring was done during the evening and night periods at each location in accordance with the NMP. The duration of each measurement was 15 minutes. Atmospheric conditions were measured at each monitoring location.

Measured sound levels from various sources were noted during each measurement, and particular attention was paid to the extent of site contribution (if any) to measured levels. At each monitoring location, the site-only $L_{Aeq,15minute}$ and L_{Amax} were measured directly or determined by other methods detailed in Section 7.1 of the NPfI.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may be used in this report. When site noise is noted as IA, it was inaudible at the monitoring location. When site noise is noted as NM, this means it was audible but could not be quantified. All results noted as NM in this report were due to one or more of the following:

- Site noise levels were very low, typically more than 10 dB below the measured background (L_{A90}), and unlikely to be noticed.
- Site noise levels were masked by other more dominant noise sources that are characteristic of the environment (such as breeze in foliage or continuous road traffic noise) that cannot be eliminated by monitoring at an alternate or intermediate location.
- It was not feasible or reasonable to employ methods such as move closer and back calculate. Cases may include rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

If exact noise levels from site could not be established due to masking by other noise sources in a similar frequency range but were determined to be at least 5 dB lower than relevant limits, then a maximum estimate of site noise may be provided. These are expressed as a 'less than' quantity, such as <20 dB or <30 dB.

For this assessment, the measured L_{Amax} has been used as a conservative estimate of $L_{A1,1minute}$. The EPA accepts sleep disturbance analysis based on either the $L_{A1,1minute}$ or L_{Amax} metrics, with the L_{Amax} representing a more conservative assessment of site noise emissions.

3.3 Meteorological data

This assessment determined stability categories throughout attended monitoring periods using the sigma-theta method as per Fact Sheet D of the NPfI. This data was sourced from the site AWS, in accordance with PA requirements.

3.4 Modifying factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. If applicable, modifying factor adjustments have been reported and added to measured site-only L_{Aeq}.

Low-frequency modifying factor penalties have only been applied if site was the only contributing low-frequency noise source. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

3.5 Instrumentation and personnel

Attended noise monitoring was conducted by Acoustical Consultant Teanuanua Villierme. Qualifications, experience and/or demonstration of competence in accordance with the Approved methods is available upon request.

Equipment used to measure environmental noise levels is detailed in Table 3.1. Calibration certificates are provided in Appendix C.

Table 3.1 Attended noise monitoring equipment

Item	Serial number	Calibration due date	Relevant standard
Brüel & Kjær 2250 sound level meter	3029363	3/11/2024	IEC 61672-1:2013
Svantek SV-36 calibrator	79952	27/9/2025	IEC 60942:2017

4 Results

4.1 Total measured noise levels and atmospheric conditions

Overall noise levels measured at each location during attended measurements are provided in Table 4.1.

Table 4.1 Total measured noise levels[1], dB – 23 January 2024

Location	Start date and time	L_{Amax}	L_{A1}	L_{A10}	L_{Aeq}	L_{A50}	L_{A90}	L_{Amin}
RA1	23/01/2024 20:56	71	65	60	57	53	42	37
RA3	23/01/2024 21:19	53	44	42	41	40	37	35
RA2	23/01/2024 21:45	62	46	39	39	37	36	34
RA2	23/01/2024 22:00	44	41	39	37	37	35	34
RA3	23/01/2024 22:22	56	46	45	42	41	37	35
RA1	23/01/2024 22:47	70	62	56	51	42	35	31

Notes: 1. Levels in this table are not necessarily the result of activity at site.

Atmospheric conditions data measured by the operator during each measurement using a hand-held weather meter is shown in Table 4.2. The wind speed, direction and temperature were measured at approximately 1.5 m above ground. Attended noise monitoring is not done during rain, hail, or wind speeds above 5 m/s at microphone height.

Table 4.2 Measured atmospheric conditions – 23 January 2024

Location	Start date and time	Temperature °C	Wind speed m/s	Wind direction °Magnetic north[1]	Cloud cover 1/8s
RA1	23/01/2024 20:56	22	<0.5	-	0
RA3	23/01/2024 21:19	22	<0.5	-	0
RA2	23/01/2024 21:45	20	<0.5	-	0
RA2	23/01/2024 22:00	20	<0.5	-	0
RA3	23/01/2024 22:22	22	<0.5	-	0
RA1	23/01/2024 22:47	20	<0.5	-	0

Notes: 1. "-" indicates calm conditions (wind speed <0.5 m/s) at monitoring location.

4.2 Site only noise levels

4.2.1 Modifying factors

There were no modifying factors, as defined in the NPfI, applicable during the survey.

4.2.2 Monitoring results

Table 4.3 provides site noise levels in the absence of other sources, where possible, and includes weather data from the site AWS. Noise limits are applicable under all weather conditions but where applicable are adjusted during very noise-enhancing weather conditions as defined by the NPfI (refer to Section 2.5).

Table 4.3 Site noise levels and limits – 23 January 2024

Location	Start date and time	Wind		Stability class	Standard limits apply?[1]	Limit, dB		Site level, dB[2]		Exceedance, dB	
		Speed (m/s)	Direction[3]			$L_{Aeq,15minute}$	$L_{A1,1minute}$	$L_{Aeq,15minute}$	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}
RA1	23/01/2024 20:56	1.4	62	F	Yes	36	N/A	IA	N/A	Nil	N/A
RA3	23/01/2024 21:19	1.3	67	F	Yes	39	N/A	IA	N/A	Nil	N/A
RA2	23/01/2024 21:45	1.0	58	F	Yes	40	N/A	IA	N/A	Nil	N/A
RA2	23/01/2024 22:00	0.9	50	F	Yes	40	45	IA	IA	Nil	Nil
RA3	23/01/2024 22:22	1.5	44	F	Yes	39	49	IA	IA	Nil	Nil
RA1	23/01/2024 22:47	1.1	44	F	Yes	36	46	IA	IA	Nil	Nil

Notes: 1. If "No", adjusted noise limits (standard limit + 5 dB) apply during 'very noise-enhancing' meteorological conditions as stated in Section 2.5.

2. Site-only $L_{Aeq,15minute}$ include modifying factor adjustments if applicable.

3. Degrees magnetic north, "-" indicates calm conditions.

5 Discussion

5.1 Noted noise sources

During attended monitoring, the time variations (temporal characteristics) of noise sources are considered in each measurement via statistical descriptors. From these observations, summaries have been derived for the location and provided in this chapter. Statistical 1/3 octave-band analysis of environmental noise was undertaken and the following figures display frequency ranges of various noise sources at each location for L_{A1}, L_{A10}, L_{Aeq}, L_{A50}, and L_{A90} descriptors. These figures also provide, graphically, statistical information for these noise levels.

An example (non-site related) is provided as Figure 5.1, where frogs and insects are seen to be generating noise at frequencies above 1000 Hz, while industrial noise is generally observed at frequencies less than 1000 Hz.

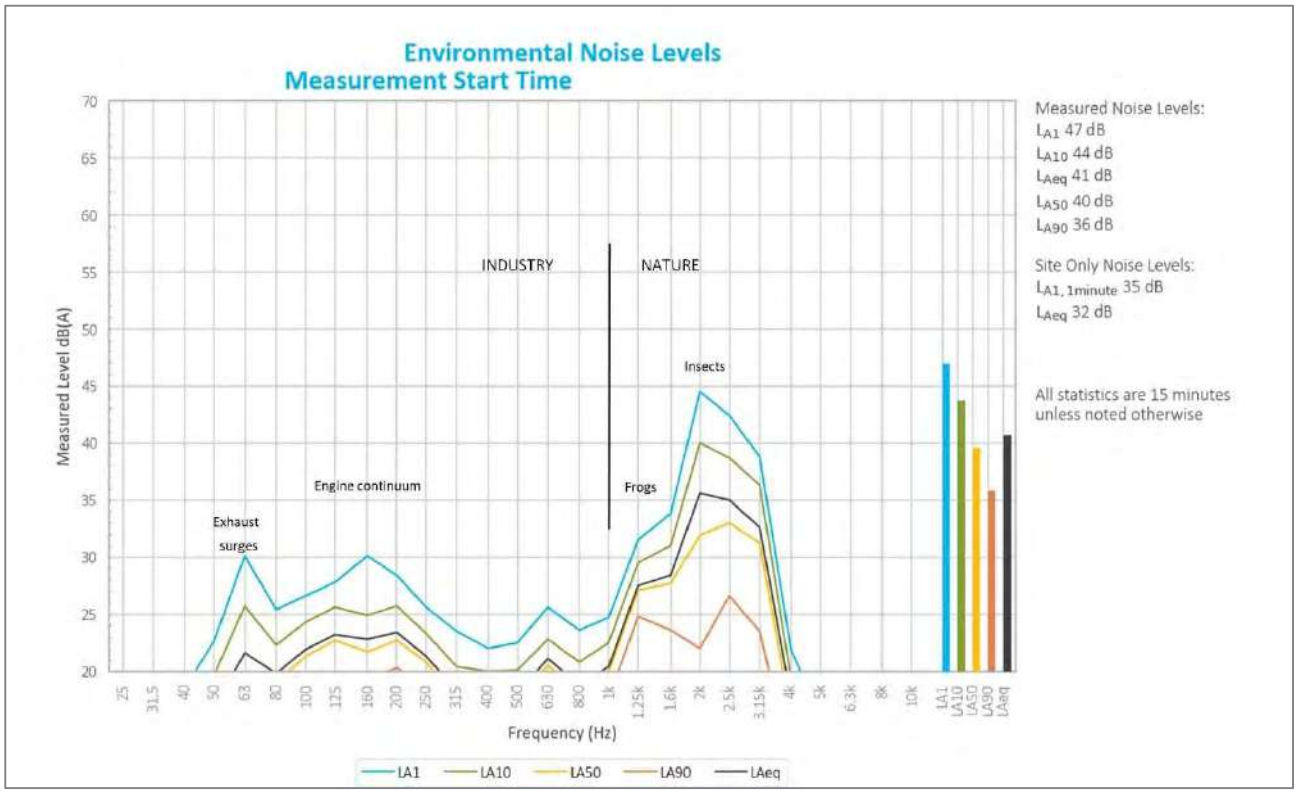


Figure 5.1 Example graph (refer to Section 5.1 for explanatory note)

5.2 RA1 – Evening

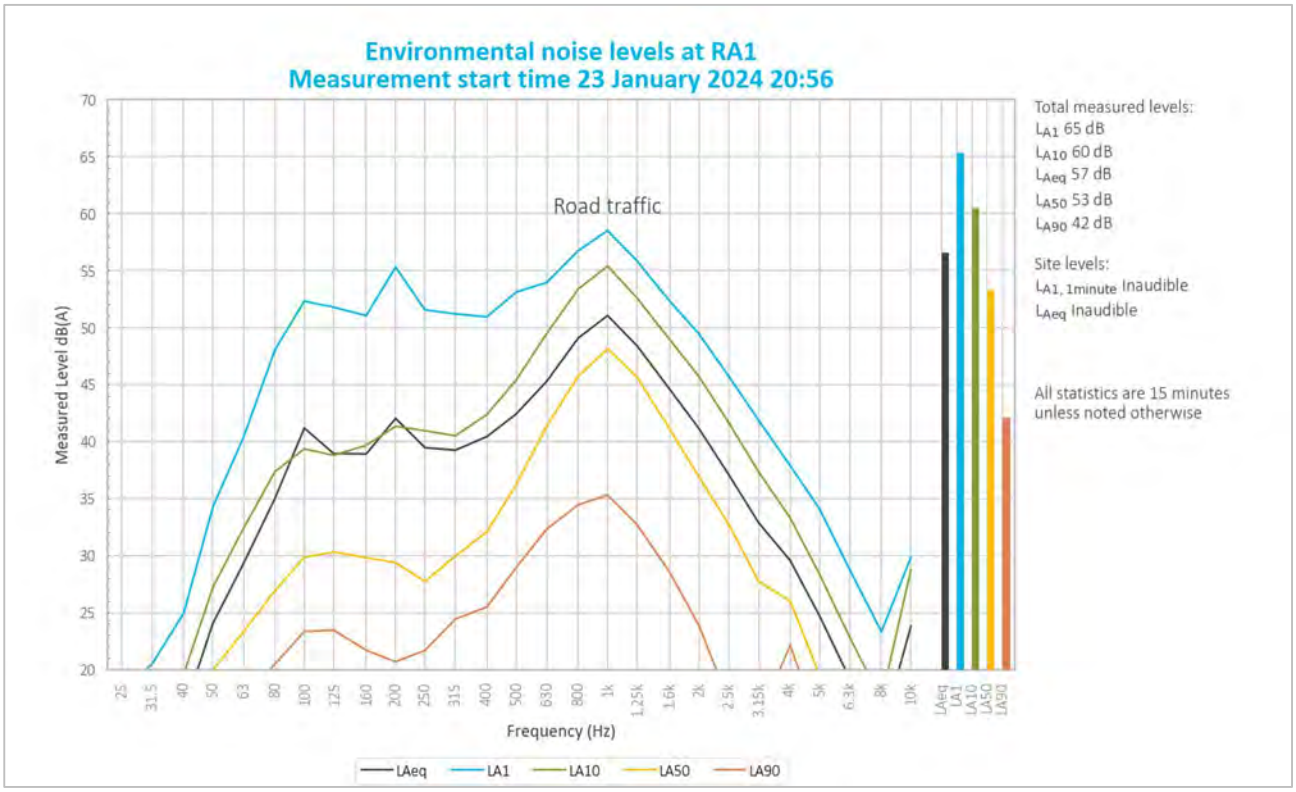


Figure 5.2 Environmental noise levels – RA1 (Pacific Highway) – Evening

MC operations were inaudible during the entire measurement.

Road traffic dominated measured noise levels.

5.3 RA3 – Evening

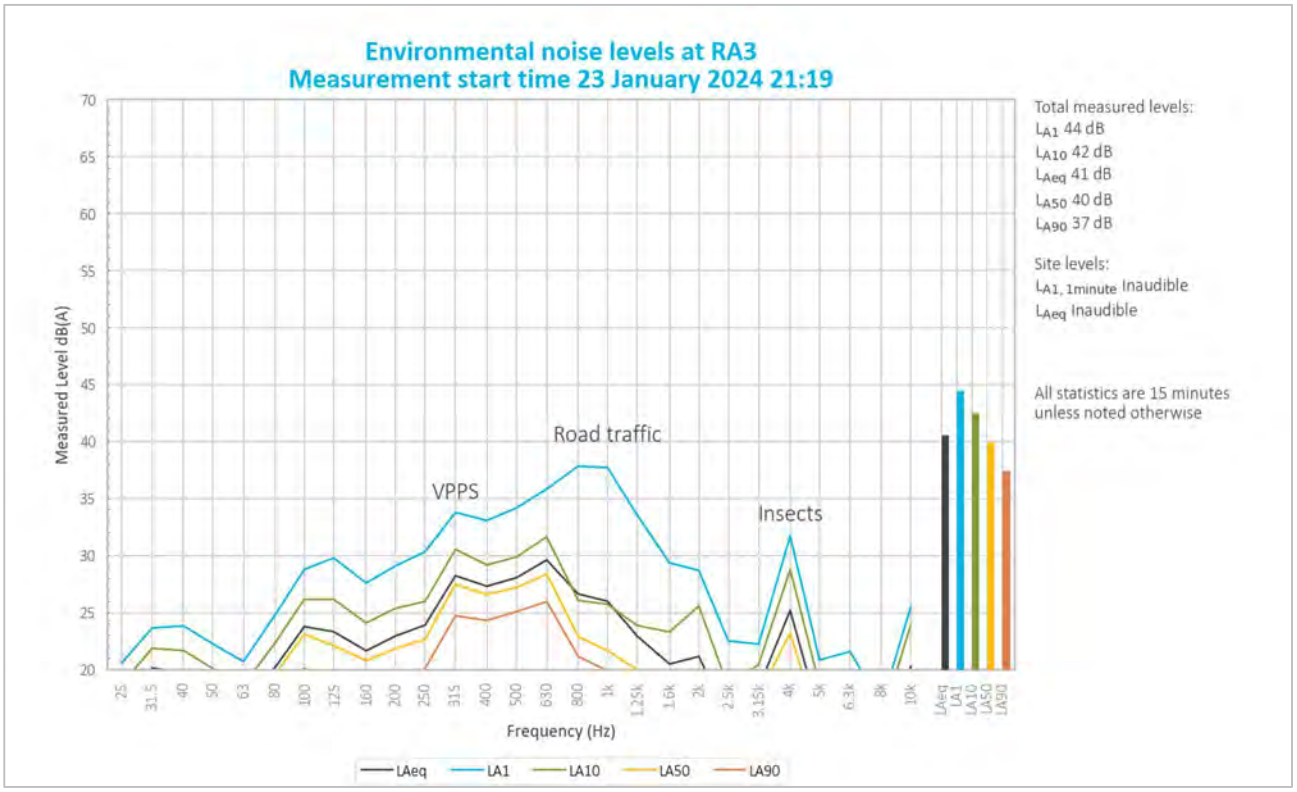


Figure 5.3 Environmental noise levels – RA3 (Kingfisher Shores) – Evening

MC operations were inaudible during the entire measurement.

Vales Point Power Station (VPPS) dominated measured levels. Road traffic also contributed to the measured L_{A1}.

5.4 RA2 – Evening

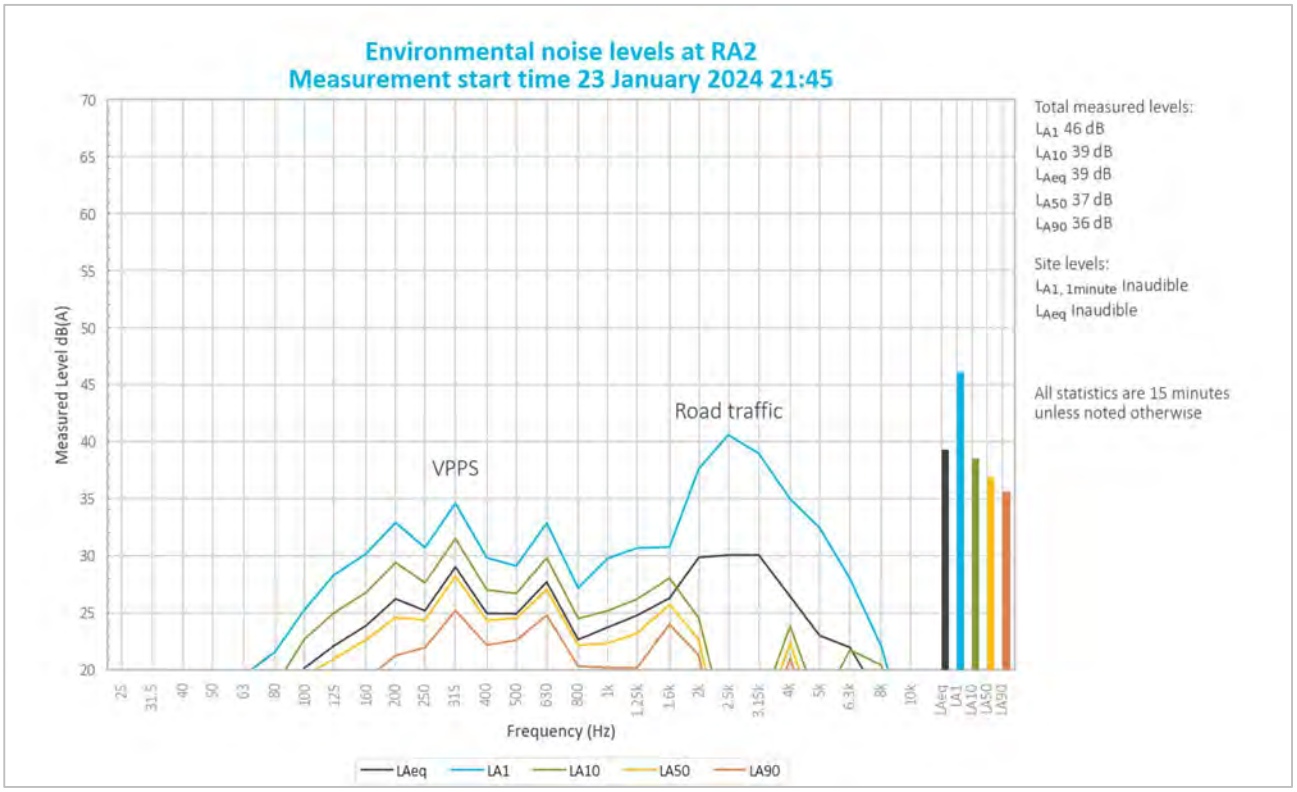


Figure 5.4 Environmental noise levels – RA2 (Macquarie Shores) – Evening

MC operations were inaudible during the entire measurement.

VPPS dominated the measured L_{A90}, L_{A50}, L_{Aeq} and L_{A10}. Road traffic dominated the measured L_{A1}.

5.5 RA2 – Night

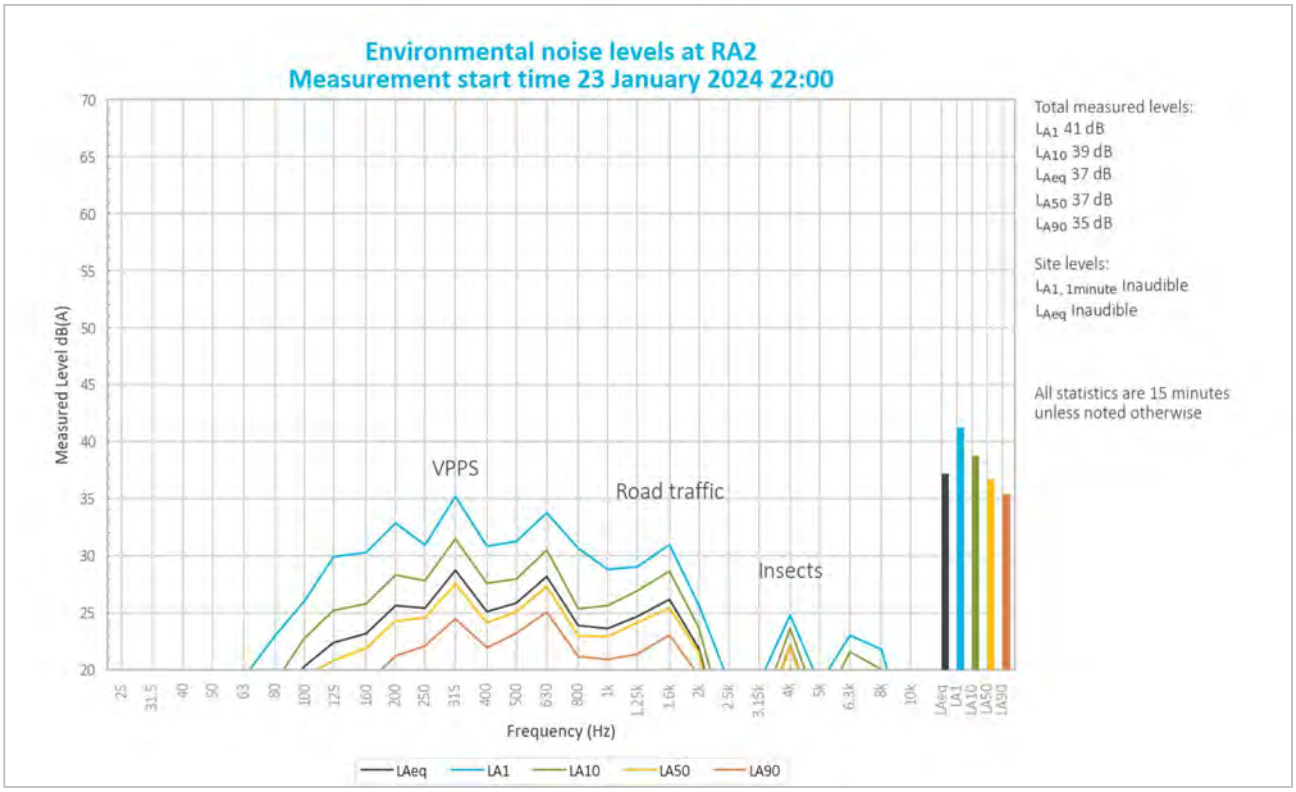


Figure 5.5 Environmental noise levels – RA2 (Macquarie Shores) – Night

MC operations were inaudible during the entire measurement.

VPPS dominated measured noise levels.

5.6 RA3 – Night

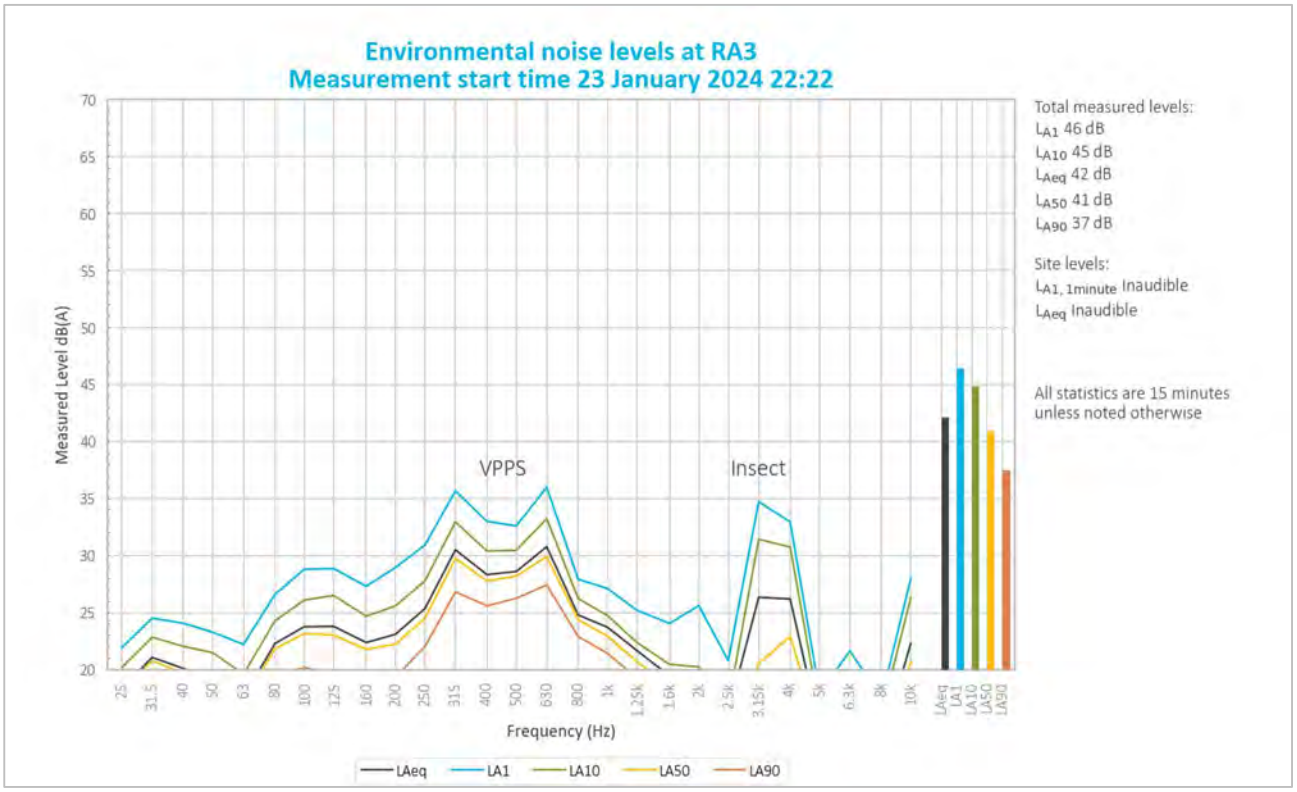


Figure 5.6 Environmental noise levels – RA3 (Kingfisher Shores) – Night

MC operations were inaudible during the entire measurement.

VPPS dominated measured noise levels.

5.7 RA1 – Night

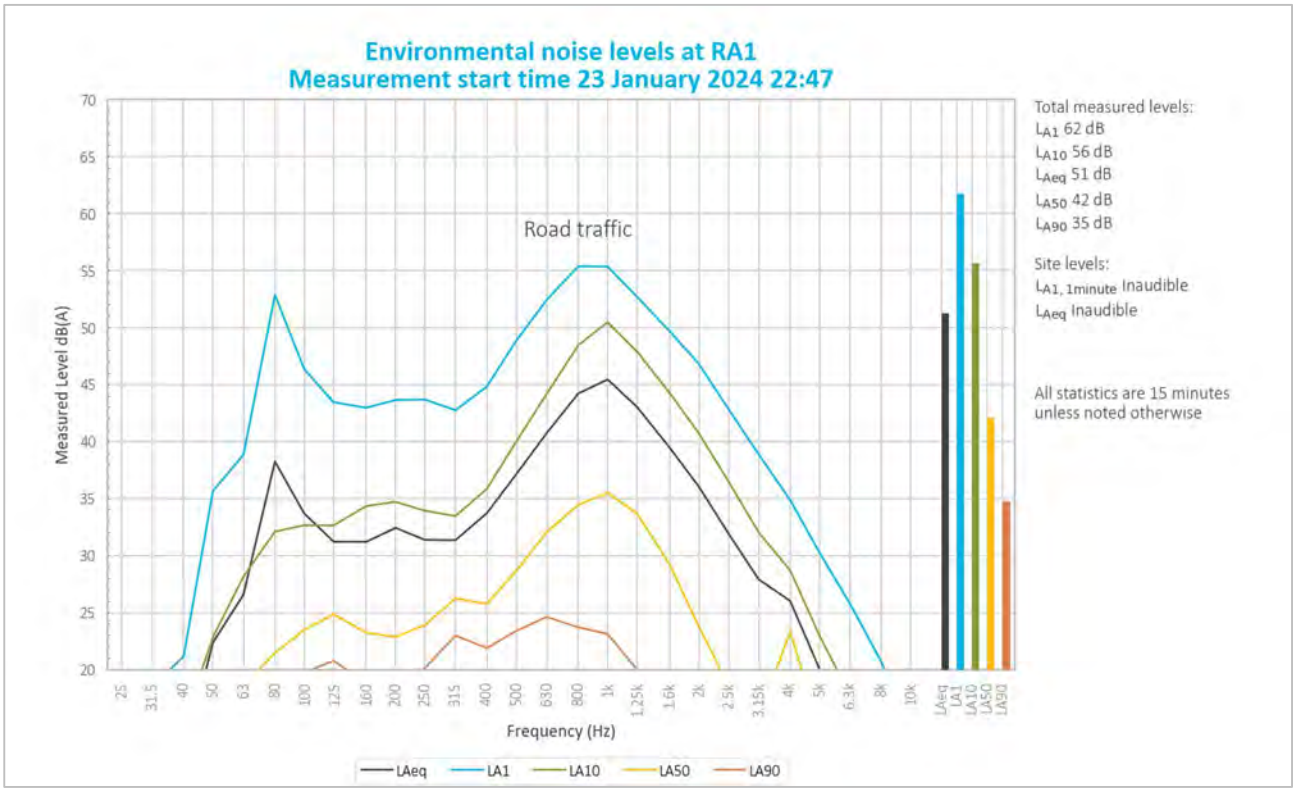


Figure 5.7 Environmental noise levels – RA1 (Pacific Highway) – Night

MC operations were inaudible during the entire measurement.

Road traffic dominated measured noise levels.

6 Summary

EMM Consulting Pty Ltd (EMM) was engaged by Great Southern Energy Pty Ltd (trading as Delta Coal) to complete a monthly noise survey of operations conducted at Mannering Colliery. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

Attended environmental noise monitoring described in this report was done during the evening and night periods on 23 January 2024 at three monitoring locations.

Noise levels from site complied with relevant limits at all monitoring locations during the January 2024 survey.

Appendix A
Noise perception and examples

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A.1 Noise levels

Table A.1 gives an indication as to how an average person perceives changes in noise level. Examples of common noise levels are provided in Figure A.1.

Table A.1 Perceived change in noise

Change in sound pressure level (dB)	Perceived change in noise
up to 2	Not perceptible
3	Just perceptible
5	Noticeable difference
10	Twice (or half) as loud
15	Large change
20	Four times (or quarter) as loud

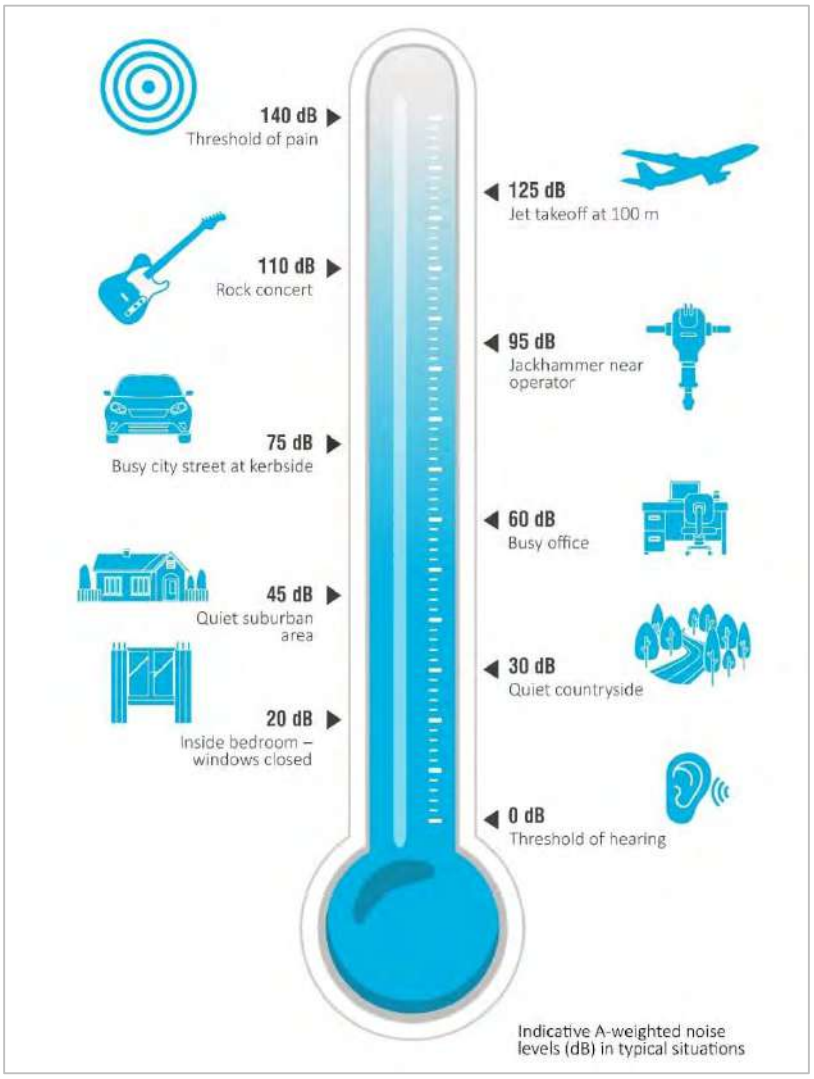


Figure A.1 Common noise levels

Appendix B
Regulator documents

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B.1 Project approval

SCHEDULE 3
SPECIFIC ENVIRONMENTAL CONDITIONS

NOISE

Construction Noise

1. The Applicant must ensure that the noise generated by any construction work is managed in accordance with the requirements outlined in the *Interim Construction Noise Guideline* (DECC, 2009).

Operational Noise Criteria

2. Except for the carrying out of construction works, the Applicant must ensure that the noise generated by the development does not exceed the criteria in Table 1 at any residence[a] on privately-owned land.

***Table 1**: Operational noise criteria dB(A)*

Noise Assessment Location	***Day*** $L_{Aeq\ (15\ min)}$	***Evening*** $L_{Aeq\ (15\ min)}$	***Night*** $L_{Aeq\ (15\ min)}$	***Night*** $L_{A1\ (1\ min)}$
4 – di Rocco	40	36	36	46
5 - Keighran	40	39	39	49
6 – Swan	40	37	37	47
7 – Druitt	40	35	35	45
8 – Macquarie Shores Home Village	42	42	42	47
9 - Jeans	40	37	37	47
11 - Jeans	40	36	36	46
18 - Jeans	40	36	36	46
20 – Knight and all other privately-owned residences	40	36	36	46

[a] *The Noise Assessment Locations referred to in Table 1 are shown in Appendix 4.*

Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the *NSW Noise Policy for Industry* (EPA, 2017).

3. The noise criteria in Table 1 do not apply if the Applicant has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Noise Operating Conditions

3A. The Applicant must:

(a) take all reasonable steps to minimise noise from construction and operational activities, including low frequency noise and other audible characteristics, associated with the development;

(b) implement reasonable and feasible noise attenuation measures on all plant and equipment that will operate in noise sensitive areas;

(c) operate a comprehensive noise management system commensurate with the risk of impact;

(d) take all reasonable steps to minimise the noise impacts of the development during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);

(e) carry out regular attended noise monitoring (at least once a month, unless otherwise agreed by the Planning Secretary) to determine whether the development is complying with the relevant conditions of this consent;

(f) regularly assess the noise monitoring data and modify or stop operations on the site to ensure compliance with the relevant conditions of this consent; and
(g) implement reasonable and feasible measures to further enclose the structure housing the coal crusher in order to further mitigate noise from operational activites.

3B. The Applicant must decommission the surface rotary breaker identified in the Statement of Commitments at Appendix 3, within 3 months of approval of Modification 5.

Noise Management Plan

3C. The Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
(a) be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;
(b) describe the measures to be implemented to ensure:
i. compliance with the noise criteria and operating conditions in this consent;
ii. best practice management is being employed; and
iii. noise impacts of the development are minimised during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);
(c) describe the noise management system in detail; and
(d) include a monitoring program that:
i. uses a combination of real-time and supplementary attended monitoring to evaluate the performance of the development;
ii. monitors noise at the nearest and/or most affected residences;
iii. includes a program to calibrate and validate the real-time noise monitoring results with the attended monitoring results over time;
iv. adequately supports the noise management system;
v. includes a protocol for distinguishing noise emissions of the development from any neighbouring developments; and
vi. includes a protocol for identifying any noise-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of any such event.

The Applicant must implement the Noise Management Plan as approved by the Planning Secretary.

SUBSIDENCE

4. The Applicant must limit its coal extraction methods on the site to first workings only, and must not undertake second workings.

5. Deleted.

SOIL AND WATER

Discharge

6. The Applicant must only discharge water from the site as expressly provided for by its EPL.

7. The Applicant must investigate, assess and report on the ecological interactions of minewater discharged from the site with the aquatic ecology of the unnamed creek and wetlands (and associated vegetation) between the minewater discharge point/s and Lake Macquarie. This report must:
(a) be prepared in consultation with EPA by suitably qualified expert/s whose appointment/s have been approved by the Planning Secretary;
(b) be submitted to the Planning Secretary by the end of March 2009; and
(c) assess the probable alterations in the local ecology attributable to previous and proposed minewater discharges and any future cessation of minewater discharge flows.

Water Management Plan

8. The Applicant must prepare a Water Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
(a) be prepared in consultation with DPIE Water by suitably qualified expert/s whose appointment/s have been approved by the Planning Secretary;
(b) be submitted the Planning Secretary by the end of March 2009; and
(c) include a:
- Site Water Balance;

B.2 Environmental protection licence

Environment Protection Licence

L4 Waste

L4.1 The licensee must not cause, permit or allow any waste to be received at the premises, except the wastes expressly referred to in the column titled “Waste” and meeting the definition, if any, in the column titled “Description” in the table below.
Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled “Activity” in the table below.
Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste contained in the column titled “Other Limits” in the table below.
This condition does not limit any other conditions in this licence.

Code	Waste	Description	Activity	Other Limits
NA	Waste	Any other waste received on the premises for storage, treatment, processing, sorting or disposal and which receipt is not a scheduled activity under Schedule 1 of the POEO Act, as in force from time to time.		
NA	General or Specific exempted waste	Waste that meets all the conditions of a resource recovery exemption under Clause 51A of the Protection of the Environment Operations (Waste) Regulation 2014	As specified in each particular resource recovery exemption	N/A

L4.2 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.

L4.3 This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if it requires an environment protection licence.

L5 Noise limits

Note: Noise limits are not specified as a condition of this licence. Noise limits are prescribed with the conditions of Project Approval 06_0311 granted under the *Environmental Planning and Assessment Act 1979.* Under the *Environmental Planning and Assessment Act 1979* the Department of Planning is the appropriate authority in respect of the administration and regulation of the Project Approval.

B.3 Approved noise management plan

The above noise monitoring locations are representative of residential receivers most likely to be affected by CVC operational noise. Adherence with the relevant noise criteria at these locations will indicate that noise criteria will be met at other surrounding noise-sensitive locations.

4.2.3 Mannering Colliery

Consistent with the Noise Impact Assessment (EMM 2019) undertaken as part of the Project Approval MP06_0311 MOD 5, rural and residential receivers have been divided into three (3) receiver areas (RA's) with similar geographical and acoustic features. The following points are considered representative of each receiver area:

- RA1, rural residential properties south of MC and fronting the Pacific Highway. The dominant noise source in this area is road traffic. Birds, insects and other industrial sources are also audible at times.
- RA2, privately-owned relocatable residences within the MSHV, east of MC. The dominant noise sources in this RA are birds, insects, traffic and other industrial sources. Activities at MC are also noted to be audible at times.
- RA3, various rural residential residences on Tall Timbers Road at Kingfisher Shores and adjacent to the Chain Valley Bay suburban area. The dominant noise sources in this RA are birds, insects, other industrial sources and traffic movements. Activities at MC are also noted to be audible at times.

The attended noise monitoring locations for MC and relevant noise criteria are identified below in **Table 6**.

Table 6: Noise Monitoring Locations and Limits for Mannering Colliery

Location	Receivers Represented MP06_0311 ID	Coordinates	Day $L_{Aeq(15\ min)}$ dB (A)	Evening $L_{Aeq(15\ min)}$ dB (A)	Night $L_{Aeq(15\ min)}$ dB (A)	Night $L_{A1(1\ min)}$ dB (A)
RA1	4, 5, 6	364646E 6327221N	40	36	36	46
RA2	7, 8	365164E 6328332N	40	40	40	45
RA3	9, 11, 18, 20	365069E 6328953N	40	39	39	49

The above noise monitoring locations are representative of residential receivers most likely to be affected by MC operational noise. Adherence with the relevant noise criteria at these locations will indicate that noise criteria will be met at other surrounding noise-sensitive locations.

Appendix C
Calibration certificates

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CERTIFICATE OF CALIBRATION

CERTIFICATE NO: SLM34169

EQUIPMENT TESTED: Sound Level Meter

Manufacturer:	B & K		
Type No:	2250	**Serial No:**	3029363
Mic. Type:	4189	**Serial No:**	3260501
Pre-Amp. Type:	ZC0032	**Serial No:**	30109
Filter Type:	1/3 Octave	**Test No:**	F034175

Owner: EMM Consulting
Suite 01, 20 Chandos St
St Leonards NSW 2065

Tests Performed: IEC 61672-3:2013 & IEC 61260-3:2016

Comments: All Test passed for Class 1. (See overleaf for details)

CONDITIONS OF TEST:

Ambient Pressure	1002	hPa ±1 hPa	**Date of Receipt :**	02/11/2022
Temperature	24	°C ±1° C	**Date of Calibration :**	03/11/2022
Relative Humidity	35	% ±5%	**Date of Issue :**	04/11/2022

Acu-Vib Test Procedure: AVP10 (SLM) & AVP06 (Filters)

CHECKED BY: ..... **AUTHORISED SIGNATURE:** .....

Jack Kielt

Accredited for compliance with ISO/IEC 17025 - Calibration
Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

This report applies only to the item identified in the report and may not be reproduced in part.

The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.

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Acoustic and Vibration Measurements

Acu-Vib Electronics
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Head Office & Calibration Laboratory
Unit 14, 22 Hudson Ave. Castle Hill NSW 2154
(02) 9680 8133
www.acu-vib.com.au

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: C37508

EQUIPMENT TESTED : Sound Level Calibrator

Manufacturer: Svantek
Type No: SV 36 **Serial No:** 79952
Class: 1
Owner: EMM Consulting Pty Ltd
L3, 175 Scott Street
Newcastle, NSW 2300
Tests Performed: Measured Output Pressure level, Frequency & Distortion
Comments: See Details and Class Tolerance overleaf.

CONDITION OF TEST:

Ambient Pressure	1005	hPa ±1 hPa	**Date of Receipt :**	26/09/2023
Temperature	23	°C ±1° C	**Date of Calibration :**	27/09/2023
Relative Humidity	47	% ±5%	**Date of Issue :**	28/09/2023

Acu-Vib Test Procedure: AVP02 (Calibrators)
Test Method: AS IEC 60942 - 2017

CHECKED BY: .....

AUTHORISED SIGNATURE: .....
Hein Soe

Accredited for compliance with ISO/IEC 17025 - Calibration
Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

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emmconsulting.com.au

Mannering Colliery

Monthly attended noise monitoring - February 2024

Prepared for Great Southern Energy Pty Ltd (trading as Delta Coal)

March 2024

Mannering Colliery

Monthly attended noise monitoring - February 2024

Great Southern Energy Pty Ltd (trading as Delta Coal)

E230753 RP1

March 2024

Version	Date	Prepared by	Reviewed by	Comments
1	13 March 2024	Teanuanua Villierme	Najah Ishac	Draft
2	14 March 2024	Teanuanua Villierme	Najah Ishac	Final

Approved by



Najah Ishac
Director – Acoustics Technical Leader
14 March 2024
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1 Introduction

1.1 Background

EMM Consulting Pty Ltd (EMM) was engaged by Great Southern Energy Pty Ltd (trading as Delta Coal) to conduct a monthly noise survey of operations at Mannering Colliery (MC, the site) located at Ruttleys Road, Doyalson North NSW. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

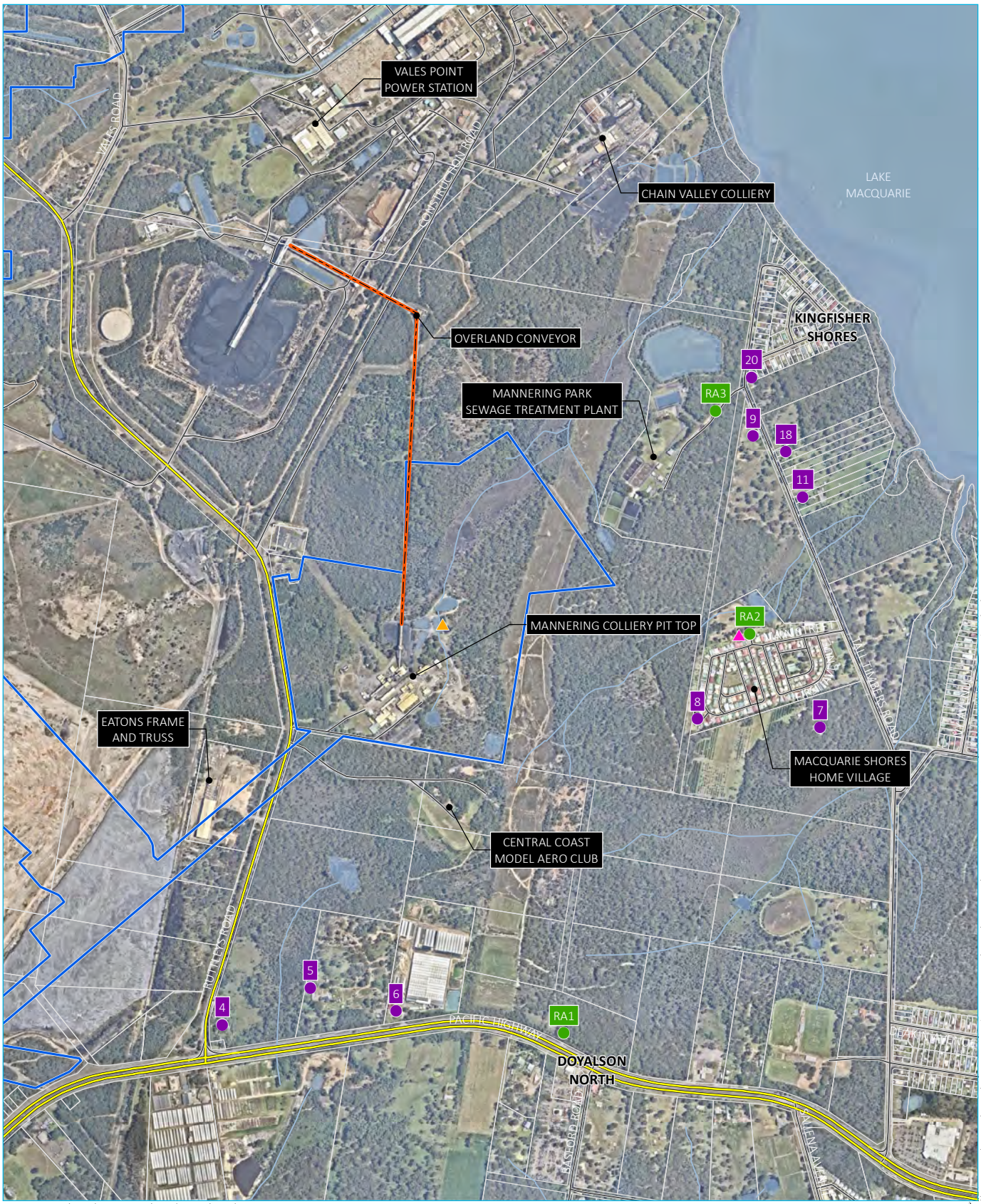
Attended environmental noise monitoring described in this report was done during the evening and night periods on 21 February 2024 at three monitoring locations.

1.2 Attended monitoring locations

Site monitoring locations are detailed in Table 1.1 and shown on Figure 1.1. It should be noted that Figure 1.1 shows actual monitoring positions, not necessarily the location of residences.

Table 1.1 Attended noise monitoring locations

Location descriptor/ID	Description/address	Coordinates (MGA56)	
		Easting	Northing
RA1	Pacific Highway, Doyalson North	364646	6327221
RA2	Macquarie Shores Home Village, Doyalson North	365164	6328332
RA3	Tall Timbers Road (northern end), Kingfisher Shores	365069	6328953



Source: EMM (2021); NearMap (2019); DFSI (2017)

0 250 500 m

GDA 1994 MGA Zone 56

N

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KEY

- Mannering Colliery project approval boundary
- Alignment of overland conveyor to VPPS
- Main road
- Local road
- Watercourse/drainage line
- Waterbody
- Cadastral boundary
- Assessment location
- Attended monitoring location
- Continuous monitoring location
- Meteorological station

Attended noise monitoring and assessment locations

Mannering Colliery
Figure 1.1

EMM creating opportunities

1.3 Terminology and abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

Table 1.2 Terminology and abbreviations

Term/descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The "A" weighting scale is used to approximate how humans hear noise.
L_{Amax}	The maximum root mean squared A-weighted noise level over a time period.
L_{A1}	The A-weighted noise level which is exceeded for 1 per cent of the time.
$L_{A1,1minute}$	The A-weighted noise level which is exceeded for 1 per cent of the specified time period of 1 minute.
L_{A10}	The A-weighted noise level which is exceeded for 10 percent of the time.
L_{Aeq}	The energy average A-weighted noise level.
$L_{Aeq,15minute}$	The energy average A-weighted noise level over the specified time period of 15 minutes.
L_{A50}	The A-weighted noise level which is exceeded for 50 per cent of the time, also the median noise level during a measurement period.
L_{A90}	The A-weighted noise level exceeded for 90 percent of the time, also referred to as the "background" noise level and commonly used to derive noise limits.
L_{Amin}	The minimum A-weighted noise level over a time period.
L_{Ceq}	The energy 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.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	Monday – Saturday: 7 am to 6 pm, on Sundays and Public Holidays: 8 am to 6 pm.
Evening	Monday – Saturday: 6 pm to 10 pm, on Sundays and Public Holidays: 6 pm to 10 pm.
Night	Monday – Saturday: 10 pm to 7 am, on Sundays and Public Holidays: 10 pm to 8 am.
NPfI	NSW EPA Noise Policy for Industry (2017)
Temperature inversion	A meteorological condition where the atmospheric temperature increases with altitude.

Appendix A provides further information that gives an indication as to how an average person perceives changes in noise level, and examples of common noise levels.

2 Noise limits

2.1 Project approval

Mannering Colliery noise limits are provided in Table 1, Condition 2 of Schedule 3 of the current project approval (PA) PA MP06_0311 dated 5 June 2020. Relevant sections of the PA are reproduced in Appendix B.1.

2.2 Environment protection licence

The current Environment Protection Licence (EPL) 191 dated 16 June 2023 references the PA with respect to noise limits. Relevant sections of the EPL are reproduced in Appendix B.2.

2.3 Noise management plan

The approved Noise Management Plan (NMP) was prepared in line with the Mod 5 approval and in accordance with the NSW EPA 'Noise Policy for Industry' (NPfI) issued in October 2017. Three attended noise monitoring locations representative of the PA noise assessment locations have been adopted in the NMP for the purpose of determining compliance with relevant noise limits. Relevant sections of the NMP are reproduced in Appendix B.3.

2.4 Noise limits

Noise limits based on the PA, EPL and approved NMP are as shown in Table 2.1.

Table 2.1 Noise limits, dB

Location	Day $L_{Aeq,15minute}$	Evening $L_{Aeq,15minute}$	Night $L_{Aeq,15minute}$	Night $L_{A1,1minute}$
RA1	40	36	36	46
RA2	40	40	40	45
RA3	40	39	39	49

2.5 Meteorological conditions

The PA (Mod 5) states the following:

> Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Noise Policy for Industry (EPA, 2017).

Section 5.2 of the NPfI states that noise limits applicable under 'very noise-enhancing' conditions should be the limits that apply under 'standard' or 'noise-enhancing' conditions plus 5 dB. This implies that there will be no periods when noise limits do not apply due to meteorological conditions.

As per the PA (Mod 5) and in accordance with the NPfI, limits are adjusted when monitoring is undertaken during the following 'very noise-enhancing' conditions:

- wind speeds greater than 3 m/s at 10 m above ground level;

- stability category F temperature inversion conditions with wind speeds greater than 2 m/s at 10 m above ground level; or
- stability category G temperature inversion conditions.

Therefore, if monthly noise monitoring occurs during 'very noise-enhancing' conditions, this assessment adopts a +5 dB adjustment to the limits shown in Table 2.1. This is indicated in Table 4.3 where relevant. It is noted that monthly noise monitoring for the site is always scheduled to occur during appropriate forecasted meteorological conditions in accordance with the 'Approved methods for the measurement and analysis of environmental noise in NSW' (EPA 2022) (the approved methods).

2.6 Additional considerations

Monitoring and reporting have been done in accordance with the NPfI and the approved methods.

3 Methodology

3.1 Overview

Attended environmental noise monitoring was done in general accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise' and relevant EPA requirements. Meteorological data was obtained from the Mannering Colliery on-site automatic weather station (AWS) which allowed correlation of atmospheric parameters with measured noise levels.

3.2 Attended noise monitoring

During this survey, attended noise monitoring was done during the evening and night periods at each location in accordance with the NMP. The duration of each measurement was 15 minutes. Atmospheric conditions were measured at each monitoring location.

Measured sound levels from various sources were noted during each measurement, and particular attention was paid to the extent of site contribution (if any) to measured levels. At each monitoring location, the site-only $L_{Aeq,15minute}$ and L_{Amax} were measured directly or determined by other methods detailed in Section 7.1 of the NPfI.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may be used in this report. When site noise is noted as IA, it was inaudible at the monitoring location. When site noise is noted as NM, this means it was audible but could not be quantified. All results noted as NM in this report were due to one or more of the following:

- Site noise levels were very low, typically more than 10 dB below the measured background (L_{A90}), and unlikely to be noticed.
- Site noise levels were masked by other more dominant noise sources that are characteristic of the environment (such as breeze in foliage or continuous road traffic noise) that cannot be eliminated by monitoring at an alternate or intermediate location.
- It was not feasible or reasonable to employ methods such as move closer and back calculate. Cases may include rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

If exact noise levels from site could not be established due to masking by other noise sources in a similar frequency range but were determined to be at least 5 dB lower than relevant limits, then a maximum estimate of site noise may be provided. These are expressed as a 'less than' quantity, such as <20 dB or <30 dB.

For this assessment, the measured L_{Amax} has been used as a conservative estimate of $L_{A1,1minute}$. The EPA accepts sleep disturbance analysis based on either the $L_{A1,1minute}$ or L_{Amax} metrics, with the L_{Amax} representing a more conservative assessment of site noise emissions.

3.3 Meteorological data

This assessment determined stability categories throughout attended monitoring periods using the sigma-theta method as per Fact Sheet D of the NPfI. This data was sourced from the site AWS, in accordance with PA requirements.

3.4 Modifying factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. If applicable, modifying factor adjustments have been reported and added to measured site-only L_{Aeq}.

Low-frequency modifying factor penalties have only been applied if site was the only contributing low-frequency noise source. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

3.5 Instrumentation and personnel

Attended noise monitoring was conducted by Acoustical Consultant Teanuanua Villierme. Qualifications, experience and competent is in accordance with the Approved methods and demonstration is available upon request.

Equipment used to measure environmental noise levels is detailed in Table 3.1. Calibration certificates are provided in Appendix C.

Table 3.1 Attended noise monitoring equipment

Item	Serial number	Calibration due date	Relevant standard
Brüel & Kjær 2250 sound level meter	2759405	20/12/2025	IEC 61672-1:2013
Svantek SV-36 calibrator	86311	13/10/2025	IEC 60942:2017

4 Results

4.1 Total measured noise levels and atmospheric conditions

Overall noise levels measured at each location during attended measurements are provided in Table 4.1.

Table 4.1 Total measured noise levels, dB – 21 February 2024

Location	Start date and time	L_{Amax}	L_{A1}	L_{A10}	L_{Aeq}	L_{A50}	L_{A90}	L_{Amin}
RA1	21/02/2024 20:04	80	71	64	61	57	47	43
RA2	21/02/2024 20:30	54	53	52	50	50	47	44
RA3	21/02/2024 20:50	46	42	41	40	39	38	37
RA3	21/02/2024 22:21	46	41	40	39	39	38	37
RA2	21/02/2024 22:45	41	39	39	38	38	37	36
RA1	21/02/2024 23:09	76	66	57	54	43	36	33

Notes: 1. Levels in this table are not necessarily the result of activity at site.

Atmospheric conditions data measured by the operator during each measurement using a hand-held weather meter is shown in Table 4.2. The wind speed, direction and temperature were measured at approximately 1.5 m above ground. Attended noise monitoring is not done during rain, hail, or wind speeds above 5 m/s at microphone height.

Table 4.2 Measured atmospheric conditions – 21 February 2024

Location	Start date and time	Temperature °C	Wind speed m/s	Wind direction °Magnetic north[1]	Cloud cover 1/8s
RA1	21/02/2024 20:04	23	<0.5	-	0
RA2	21/02/2024 20:30	22	<0.5	-	0
RA3	21/02/2024 20:50	22	<0.5	-	0
RA3	21/02/2024 22:21	22	<0.5	-	0
RA2	21/02/2024 22:45	21	<0.5	-	0
RA1	21/02/2024 23:09	21	<0.5	-	0

Notes: 1. "-" indicates calm conditions (wind speed <0.5 m/s) at monitoring location.

4.2 Site only noise levels

4.2.1 Modifying factors

There were no modifying factors, as defined in the NPfI, applicable during the survey.

4.2.2 Monitoring results

Table 4.3 provides site noise levels in the absence of other sources, where possible, and includes weather data from the site AWS. Noise limits are applicable under all weather conditions but where applicable are adjusted during very noise-enhancing weather conditions as defined by the NPfI (refer to Section 2.5).

Table 4.3 Site noise levels and limits – 21 February 2024

Location	Start date and time	Wind		Stability class	Standard limits apply?[1]	Limit, dB		Site level, dB[2]		Exceedance, dB	
		Speed (m/s)	Direction[3]			$L_{Aeq,15minute}$	$L_{A1,1minute}$	$L_{Aeq,15minute}$	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}
RA1	21/02/2024 20:04	0.3	143	F	Yes	36	N/A	IA	N/A	Nil	N/A
RA2	21/02/2024 20:30	0.3	230	F	Yes	40	N/A	IA	N/A	Nil	N/A
RA3	21/02/2024 20:50	0.3	275	F	Yes	39	N/A	IA	N/A	Nil	N/A
RA3	21/02/2024 22:21	0.6	219	F	Yes	39	49	<35	<38	Nil	Nil
RA2	21/02/2024 22:45	0.2	219	F	Yes	40	45	<33	<35	Nil	Nil
RA1	21/02/2024 23:09	0.4	223	F	Yes	36	46	IA	IA	Nil	Nil

Notes: 1. If "No", adjusted noise limits (standard limit + 5 dB) apply during 'very noise-enhancing' meteorological conditions as stated in Section 2.5.

2. Site-only $L_{Aeq,15minute}$ include modifying factor adjustments if applicable.

3. Degrees magnetic north, "-" indicates calm conditions.

5 Discussion

5.1 Noted noise sources

During attended monitoring, the time variations (temporal characteristics) of noise sources are considered in each measurement via statistical descriptors. From these observations, summaries have been derived for the location and provided in this chapter. Statistical 1/3 octave-band analysis of environmental noise was undertaken and the following figures display frequency ranges of various noise sources at each location for L_{A1}, L_{A10}, L_{Aeq}, L_{A50}, and L_{A90} descriptors. These figures also provide, graphically, statistical information for these noise levels.

An example (non-site related) is provided as Figure 5.1, where frogs and insects are seen to be generating noise at frequencies above 1000 Hz, while industrial noise is generally observed at frequencies less than 1000 Hz.

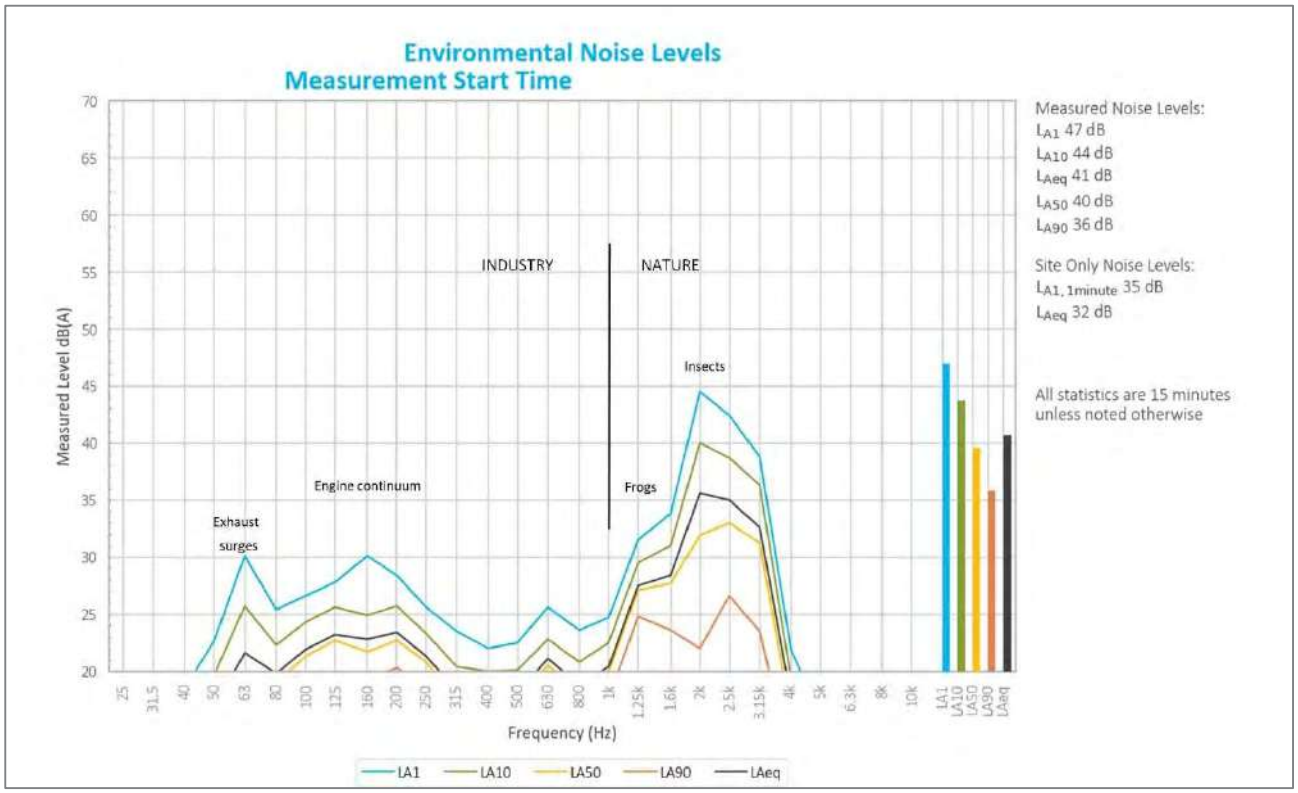


Figure 5.1 Example graph (refer to Section 5.1 for explanatory note)

5.2 RA1 – Evening

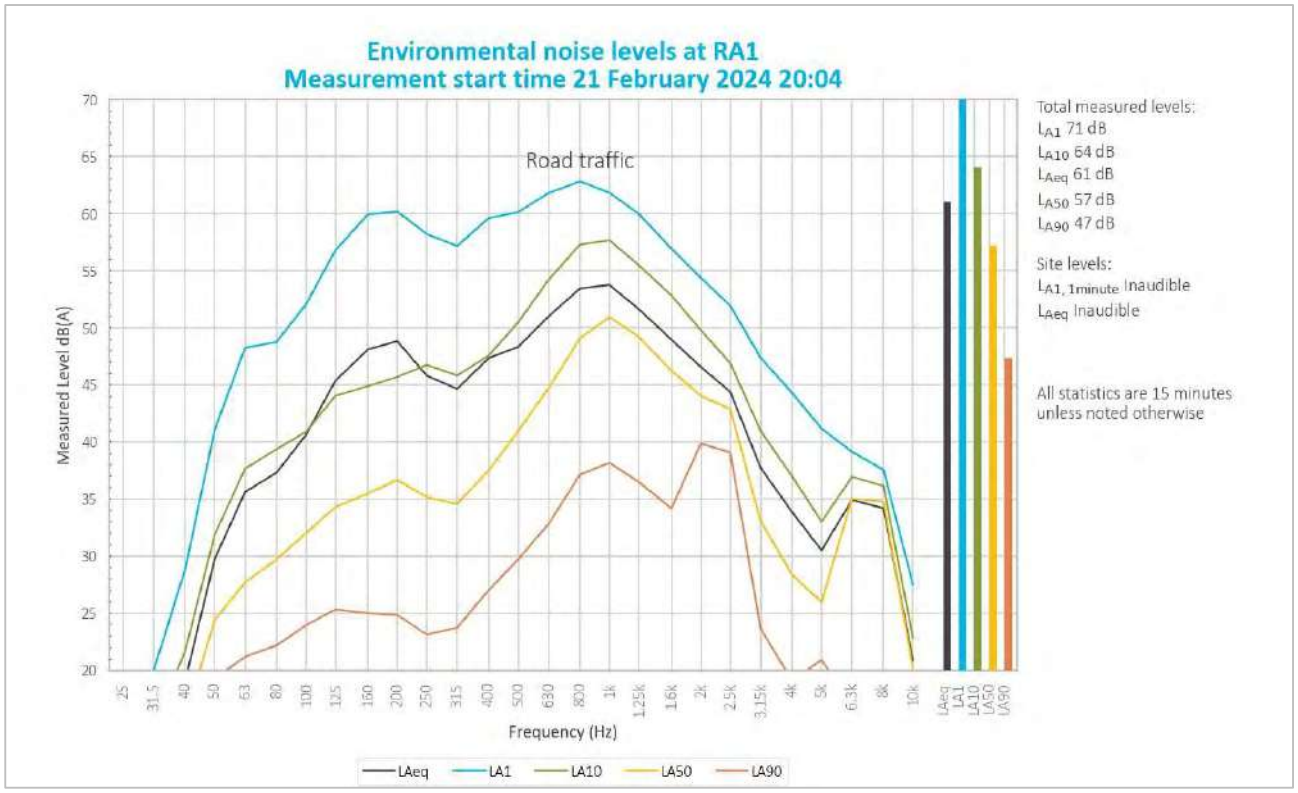


Figure 5.2 Environmental noise levels – RA1 (Pacific Highway) – Evening

MC operations were inaudible during the entire measurement.

Road traffic dominated measured noise levels.

5.3 RA2 – Evening

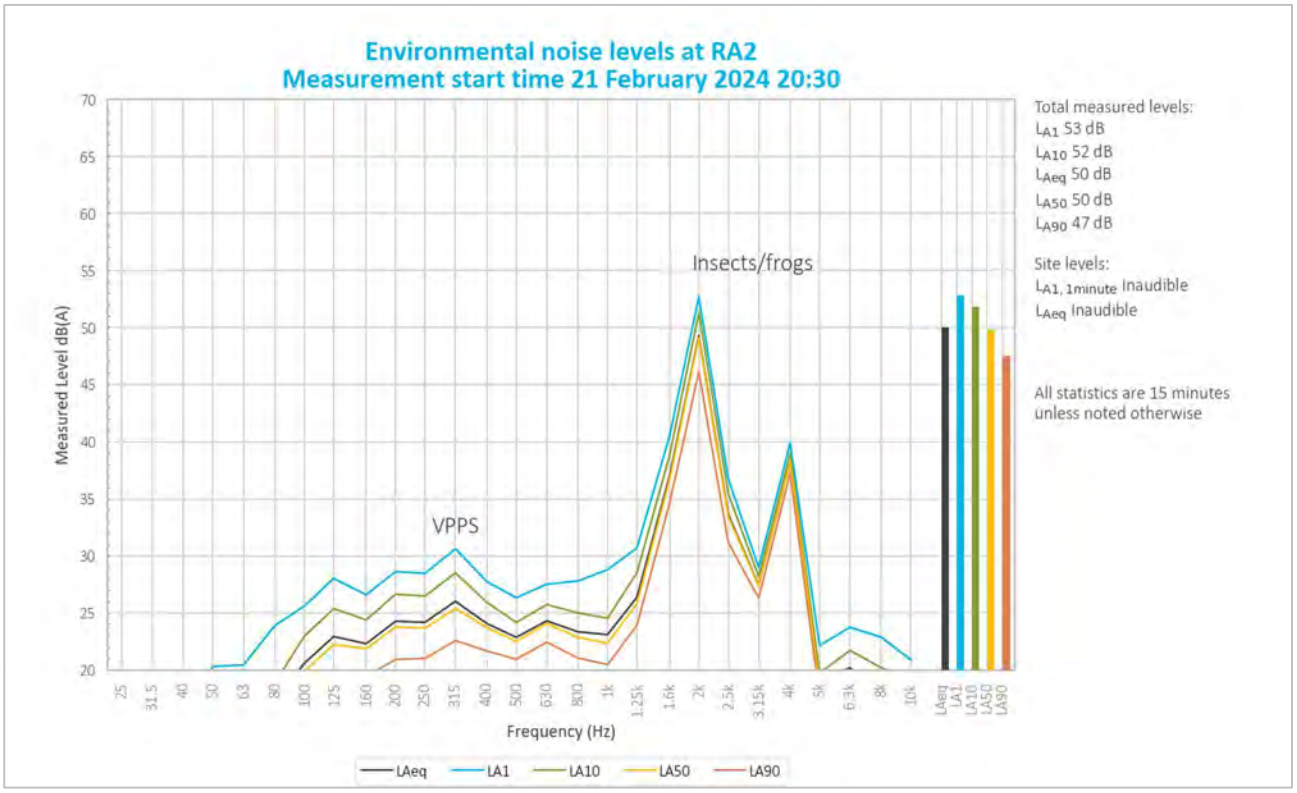


Figure 5.3 Environmental noise levels – RA2 (Macquarie Shores) – Evening

MC operations were inaudible during the entire measurement.

Insects and frogs dominated measured noise levels.

5.4 RA3 – Evening

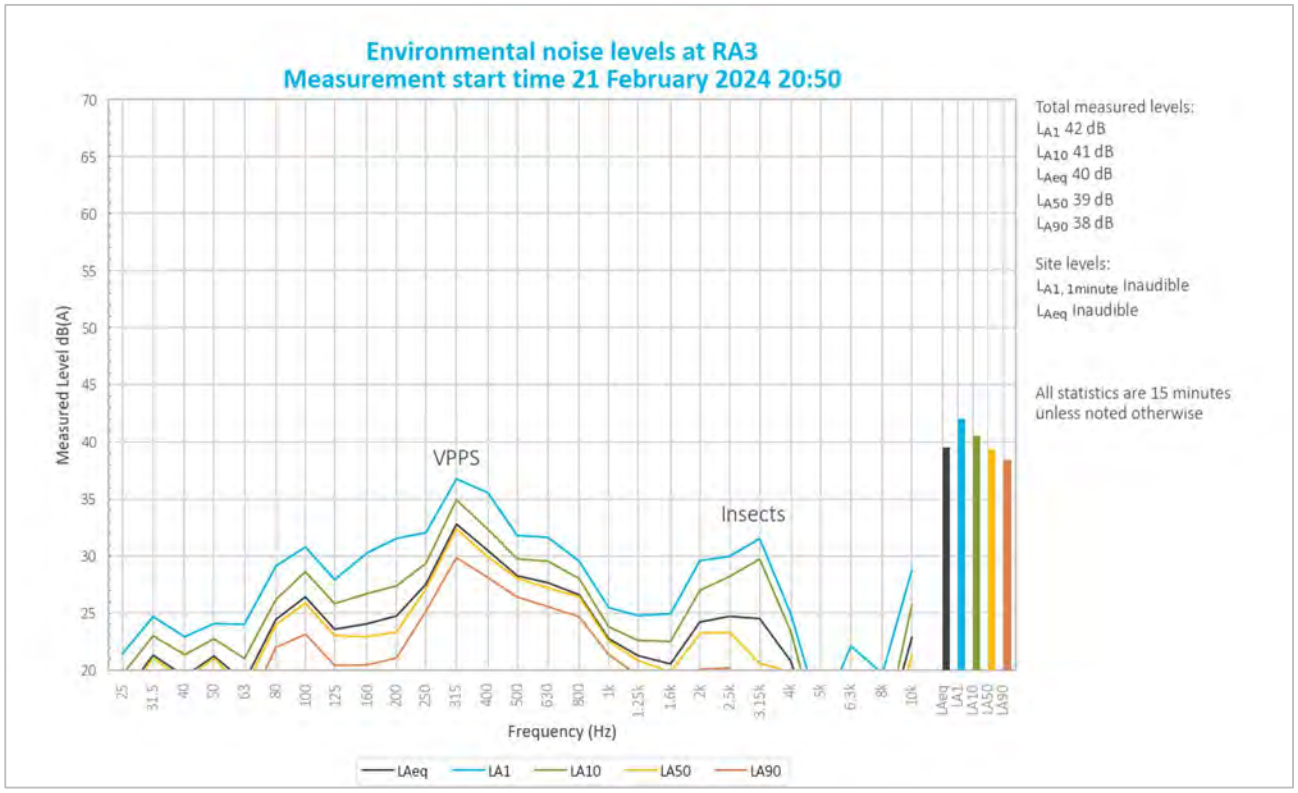


Figure 5.4 Environmental noise levels – RA3 (Kingfisher Shores) – Evening

MC operations were inaudible during the entire measurement.

Vales Point Power Station (VPPS) dominated measured levels. Road traffic also contributed to the measured L_{A1} and L_{A10}.

5.5 RA3 – Night

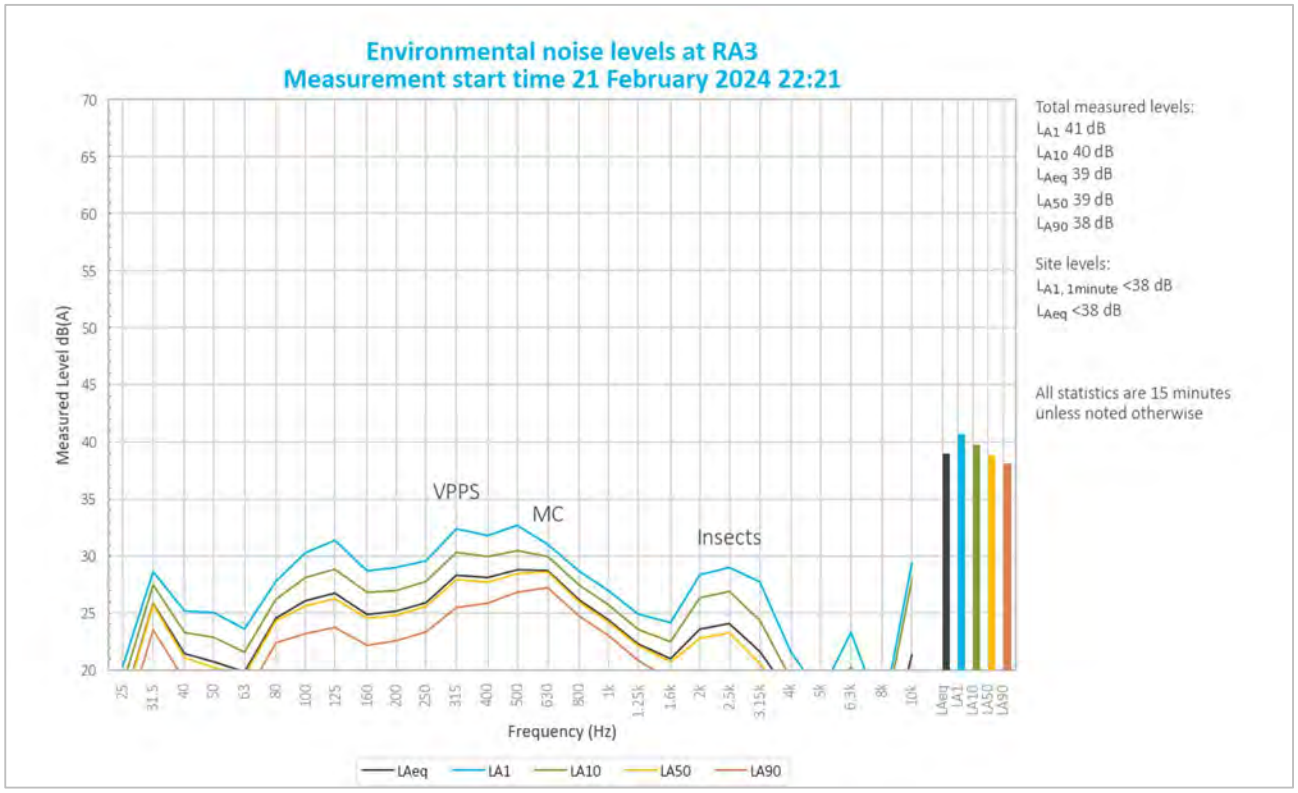


Figure 5.5 Environmental noise levels – RA3 (Kingfisher Shores) – Night

MC operations were occasionally audible.

VPPS dominated measured noise levels.

5.6 RA2 – Night

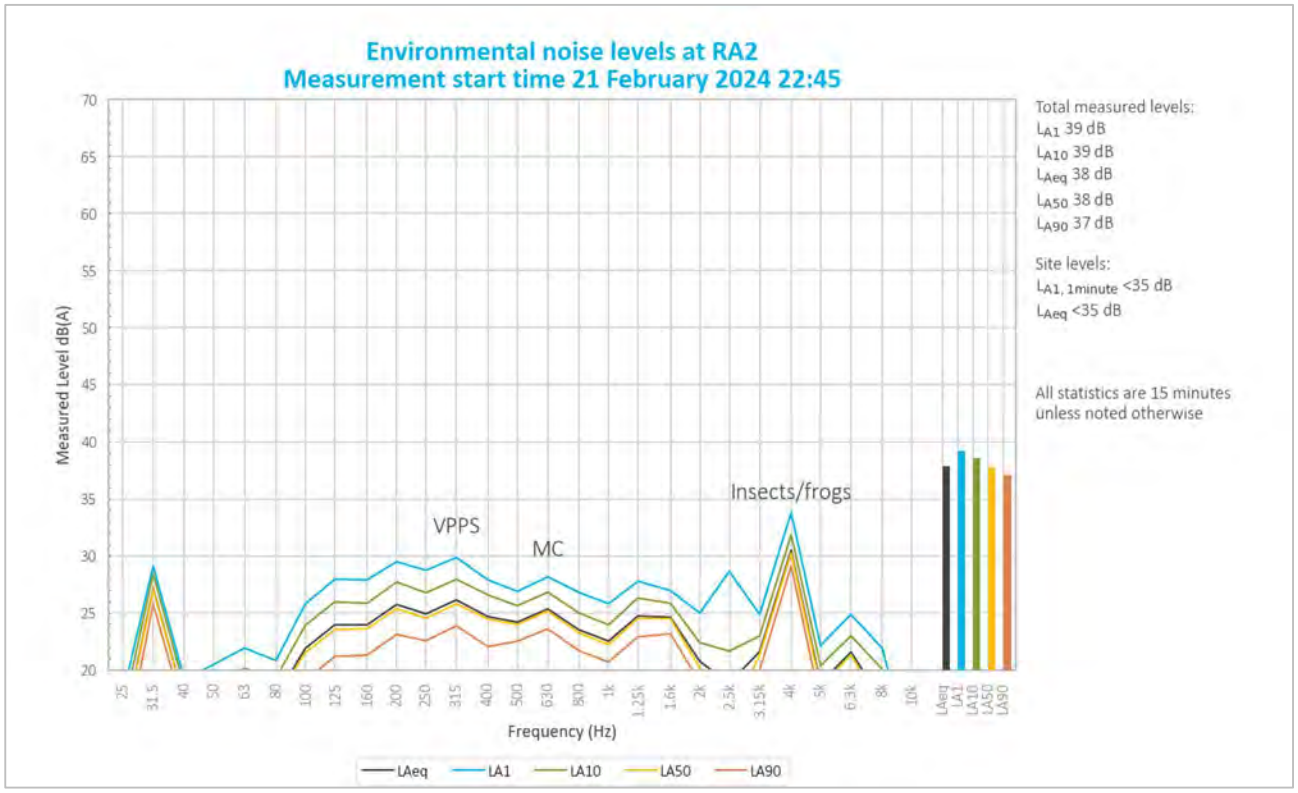


Figure 5.6 Environmental noise levels – RA2 (Macquarie Shores) – Night

MC operations were occasionally audible.

VPPS dominated measured noise levels. Insects also contributed to measured noise levels.

5.7 RA1 – Night

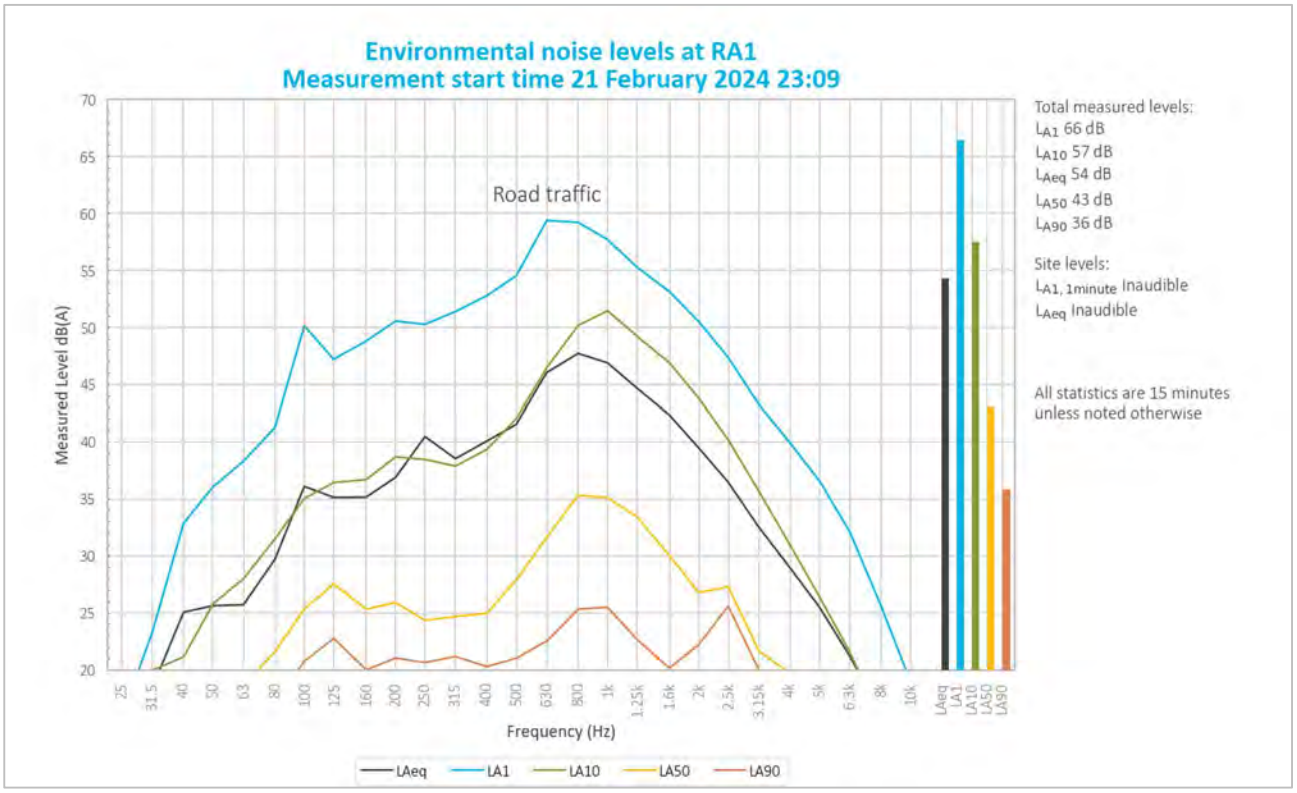


Figure 5.7 Environmental noise levels – RA1 (Pacific Highway) – Night

MC operations were inaudible during the entire measurement.

Road traffic dominated measured noise levels.

6 Summary

EMM Consulting Pty Ltd (EMM) was engaged by Great Southern Energy Pty Ltd (trading as Delta Coal) to complete a monthly noise survey of operations conducted at Mannering Colliery. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

Attended environmental noise monitoring described in this report was done during the evening and night periods on 21 February 2024 at three monitoring locations.

Noise levels from site complied with relevant limits at all monitoring locations during the February 2024 survey.

Appendix A
Noise perception and examples

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A.1 Noise levels

Table A.1 gives an indication as to how an average person perceives changes in noise level. Examples of common noise levels are provided in Figure A.1.

Table A.1 Perceived change in noise

Change in sound pressure level (dB)	Perceived change in noise
up to 2	Not perceptible
3	Just perceptible
5	Noticeable difference
10	Twice (or half) as loud
15	Large change
20	Four times (or quarter) as loud

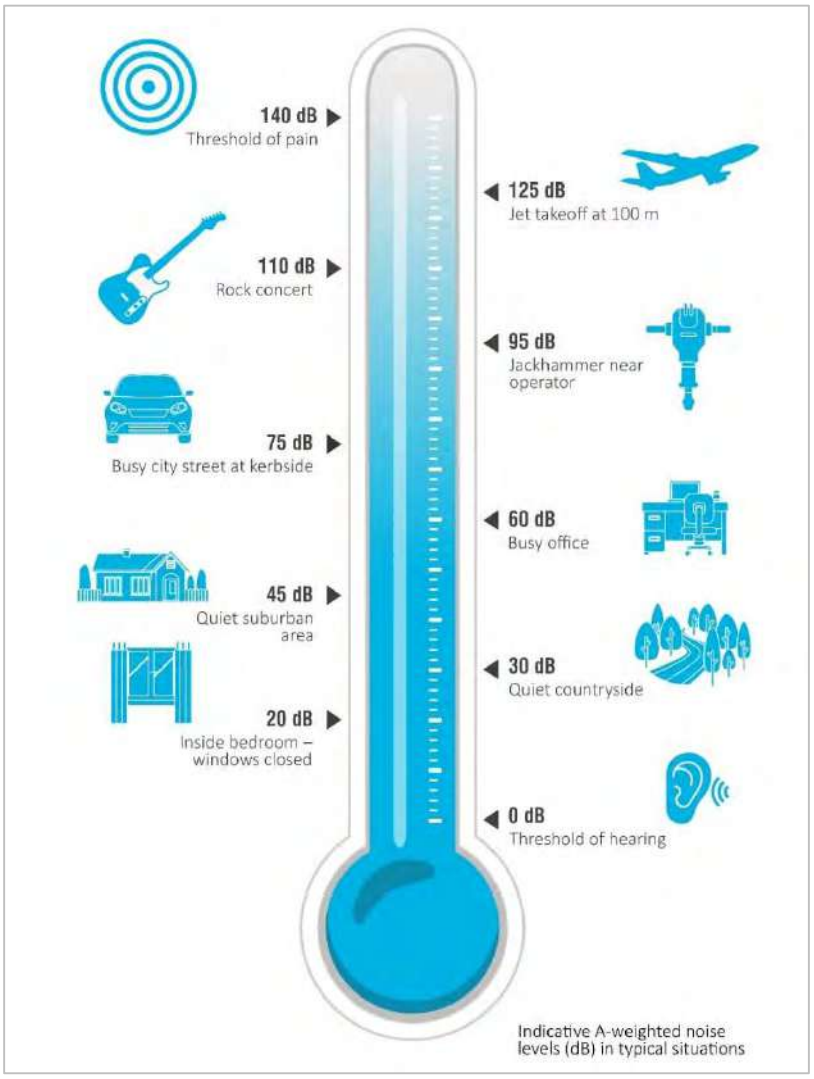


Figure A.1 Common noise levels

Appendix B
Regulator documents

EMM
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B.1 Project approval

SCHEDULE 3
SPECIFIC ENVIRONMENTAL CONDITIONS

NOISE

Construction Noise

1. The Applicant must ensure that the noise generated by any construction work is managed in accordance with the requirements outlined in the *Interim Construction Noise Guideline* (DECC, 2009).

Operational Noise Criteria

2. Except for the carrying out of construction works, the Applicant must ensure that the noise generated by the development does not exceed the criteria in Table 1 at any residence[a] on privately-owned land.

***Table 1**: Operational noise criteria dB(A)*

Noise Assessment Location	***Day*** $L_{Aeq\ (15\ min)}$	***Evening*** $L_{Aeq\ (15\ min)}$	***Night*** $L_{Aeq\ (15\ min)}$	***Night*** $L_{A1\ (1\ min)}$
4 – di Rocco	40	36	36	46
5 - Keighran	40	39	39	49
6 – Swan	40	37	37	47
7 – Druitt	40	35	35	45
8 – Macquarie Shores Home Village	42	42	42	47
9 - Jeans	40	37	37	47
11 - Jeans	40	36	36	46
18 - Jeans	40	36	36	46
20 – Knight and all other privately-owned residences	40	36	36	46

[a] *The Noise Assessment Locations referred to in Table 1 are shown in Appendix 4.*

Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the *NSW Noise Policy for Industry* (EPA, 2017).

3. The noise criteria in Table 1 do not apply if the Applicant has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Noise Operating Conditions

3A. The Applicant must:

(a) take all reasonable steps to minimise noise from construction and operational activities, including low frequency noise and other audible characteristics, associated with the development;

(b) implement reasonable and feasible noise attenuation measures on all plant and equipment that will operate in noise sensitive areas;

(c) operate a comprehensive noise management system commensurate with the risk of impact;

(d) take all reasonable steps to minimise the noise impacts of the development during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);

(e) carry out regular attended noise monitoring (at least once a month, unless otherwise agreed by the Planning Secretary) to determine whether the development is complying with the relevant conditions of this consent;

(f) regularly assess the noise monitoring data and modify or stop operations on the site to ensure compliance with the relevant conditions of this consent; and
(g) implement reasonable and feasible measures to further enclose the structure housing the coal crusher in order to further mitigate noise from operational activites.

3B. The Applicant must decommission the surface rotary breaker identified in the Statement of Commitments at Appendix 3, within 3 months of approval of Modification 5.

Noise Management Plan

3C. The Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
(a) be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;
(b) describe the measures to be implemented to ensure:
i. compliance with the noise criteria and operating conditions in this consent;
ii. best practice management is being employed; and
iii. noise impacts of the development are minimised during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);
(c) describe the noise management system in detail; and
(d) include a monitoring program that:
i. uses a combination of real-time and supplementary attended monitoring to evaluate the performance of the development;
ii. monitors noise at the nearest and/or most affected residences;
iii. includes a program to calibrate and validate the real-time noise monitoring results with the attended monitoring results over time;
iv. adequately supports the noise management system;
v. includes a protocol for distinguishing noise emissions of the development from any neighbouring developments; and
vi. includes a protocol for identifying any noise-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of any such event.

The Applicant must implement the Noise Management Plan as approved by the Planning Secretary.

SUBSIDENCE

4. The Applicant must limit its coal extraction methods on the site to first workings only, and must not undertake second workings.

5. Deleted.

SOIL AND WATER

Discharge

6. The Applicant must only discharge water from the site as expressly provided for by its EPL.

7. The Applicant must investigate, assess and report on the ecological interactions of minewater discharged from the site with the aquatic ecology of the unnamed creek and wetlands (and associated vegetation) between the minewater discharge point/s and Lake Macquarie. This report must:
(a) be prepared in consultation with EPA by suitably qualified expert/s whose appointment/s have been approved by the Planning Secretary;
(b) be submitted to the Planning Secretary by the end of March 2009; and
(c) assess the probable alterations in the local ecology attributable to previous and proposed minewater discharges and any future cessation of minewater discharge flows.

Water Management Plan

8. The Applicant must prepare a Water Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
(a) be prepared in consultation with DPIE Water by suitably qualified expert/s whose appointment/s have been approved by the Planning Secretary;
(b) be submitted the Planning Secretary by the end of March 2009; and
(c) include a:
- Site Water Balance;

B.2 Environmental protection licence

Environment Protection Licence

L4 Waste

L4.1 The licensee must not cause, permit or allow any waste to be received at the premises, except the wastes expressly referred to in the column titled “Waste” and meeting the definition, if any, in the column titled “Description” in the table below.
Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled “Activity” in the table below.
Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste contained in the column titled “Other Limits” in the table below.
This condition does not limit any other conditions in this licence.

Code	Waste	Description	Activity	Other Limits
NA	Waste	Any other waste received on the premises for storage, treatment, processing, sorting or disposal and which receipt is not a scheduled activity under Schedule 1 of the POEO Act, as in force from time to time.		
NA	General or Specific exempted waste	Waste that meets all the conditions of a resource recovery exemption under Clause 51A of the Protection of the Environment Operations (Waste) Regulation 2014	As specified in each particular resource recovery exemption	N/A

L4.2 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.

L4.3 This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if it requires an environment protection licence.

L5 Noise limits

Note: Noise limits are not specified as a condition of this licence. Noise limits are prescribed with the conditions of Project Approval 06_0311 granted under the *Environmental Planning and Assessment Act 1979.* Under the *Environmental Planning and Assessment Act 1979* the Department of Planning is the appropriate authority in respect of the administration and regulation of the Project Approval.

B.3 Approved noise management plan

The above noise monitoring locations are representative of residential receivers most likely to be affected by CVC operational noise. Adherence with the relevant noise criteria at these locations will indicate that noise criteria will be met at other surrounding noise-sensitive locations.

4.2.3 Mannering Colliery

Consistent with the Noise Impact Assessment (EMM 2019) undertaken as part of the Project Approval MP06_0311 MOD 5, rural and residential receivers have been divided into three (3) receiver areas (RA's) with similar geographical and acoustic features. The following points are considered representative of each receiver area:

- RA1, rural residential properties south of MC and fronting the Pacific Highway. The dominant noise source in this area is road traffic. Birds, insects and other industrial sources are also audible at times.
- RA2, privately-owned relocatable residences within the MSHV, east of MC. The dominant noise sources in this RA are birds, insects, traffic and other industrial sources. Activities at MC are also noted to be audible at times.
- RA3, various rural residential residences on Tall Timbers Road at Kingfisher Shores and adjacent to the Chain Valley Bay suburban area. The dominant noise sources in this RA are birds, insects, other industrial sources and traffic movements. Activities at MC are also noted to be audible at times.

The attended noise monitoring locations for MC and relevant noise criteria are identified below in **Table 6**.

Table 6: Noise Monitoring Locations and Limits for Mannering Colliery

Location	Receivers Represented MP06_0311 ID	Coordinates	Day $L_{Aeq(15\ min)}$ dB (A)	Evening $L_{Aeq(15\ min)}$ dB (A)	Night $L_{Aeq(15\ min)}$ dB (A)	Night $L_{A1(1\ min)}$ dB (A)
RA1	4, 5, 6	364646E 6327221N	40	36	36	46
RA2	7, 8	365164E 6328332N	40	40	40	45
RA3	9, 11, 18, 20	365069E 6328953N	40	39	39	49

The above noise monitoring locations are representative of residential receivers most likely to be affected by MC operational noise. Adherence with the relevant noise criteria at these locations will indicate that noise criteria will be met at other surrounding noise-sensitive locations.

Appendix C
Calibration certificates

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creating opportunities

Sydney Calibration Laboratory
Suite 4.03, Level 4, 3 Thomas Holt Drive, Macquarie Park NSW 2113, Australia
Accredited for compliance with ISO/IEC 17025 - Calibration. Laboratory No. 1301

CERTIFICATE OF CALIBRATION

Certificate No: CAU2300941

CALIBRATION OF:

Sound Level Meter:	Brüel & Kjær	2250	No: 2759405
Microphone:	Brüel & Kjær	4189	No: 2983733
Preamplifier:	Brüel & Kjær	ZC-0032	No: 22666
Supplied Calibrator:	None		
Software version:	BZ7224 Version 4.7.4	Pattern Approval:	-
Instruction manual:	BE1712-22	Identification:	N/A

CUSTOMER:

EMM Consulting Pty Limited
20 Chandos Street
St Leonards NSW 2065

CALIBRATION CONDITIONS:

Preconditioning:	4 hours at 23 °C
Environment conditions:	*see actual values in **Environmental conditions** sections*

SPECIFICATIONS:

The Sound Level Meter has been calibrated in accordance with the requirements as specified in IEC61672-1:2013 class 1.
Procedures from IEC 61672-3:2013 were used to perform the periodic tests.
The measurements included in this document are traceable to Australian/National standards.

PROCEDURE:

The measurements have been performed with the assistance of Brüel & Kjær Sound Level Meter Calibration System B&K 3630 with application software type 7763 (version 8.6 - DB: 8.60) and test procedure 2250-4189.

RESULTS:

	Initial calibration		Calibration prior to repair/adjustment
X	Calibration without repair/adjustment		Calibration after repair/adjustment

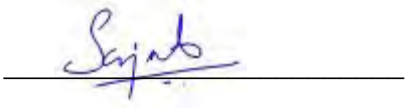
The reported expanded uncertainty is based on the standard uncertainty multiplied by a coverage factor $k = 2$ providing a level of confidence of approximately 95 %. The uncertainty evaluation has been carried out in accordance with EA-4/02 from elements originating from the standards, calibration method, effect of environmental conditions and any short time contribution from the device under calibration.

Date of Calibration:20/12/2023

Certificate issued:21/12/2023

Calibration Technician: Sajeeb Tharayil

Approved signatory: Sajeeb Tharayil



Reproduction of the complete certificate is allowed. Part of the certificate may only be reproduced after written permission.

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: C37642

EQUIPMENT TESTED : Sound Level Calibrator

Manufacturer: Svantek
Type No: SV 36 **Serial No:** 86311
Class: 1
Owner: EMM Consulting
Suite 01, 20 Chandos St
St Leonards NSW 2065
Tests Performed: Measured Output Pressure level, Frequency & Distortion
Comments: See Details and Class Tolerance overleaf.

CONDITION OF TEST:

Ambient Pressure	1003	hPa ±1 hPa	**Date of Receipt :**	11/10/2023
Temperature	23	°C ±1° C	**Date of Calibration :**	13/10/2023
Relative Humidity	38	% ±5%	**Date of Issue :**	13/10/2023

Acu-Vib Test Procedure: AVP02 (Calibrators)
Test Method: AS IEC 60942 - 2017

CHECKED BY: .....

AUTHORISED SIGNATURE: .....

Hein Soe

Accredited for compliance with ISO/IEC 17025 - Calibration

Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

This report applies only to the item identified in the report and may not be reproduced in part.

The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.

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Mannering Colliery

Monthly attended noise monitoring - March 2024

Prepared for Great Southern Energy Pty Ltd (trading as Delta Coal)

April 2024

Mannering Colliery

Monthly attended noise monitoring - March 2024

Great Southern Energy Pty Ltd (trading as Delta Coal)

E230753 RP1

April 2024

Version	Date	Prepared by	Reviewed by	Comments
1	3 April 2024	Teanuanua Villierme	Tony Welbourne	Draft
2	10 April 2024	Teanuanua Villierme	Tony Welbourne	Final

Approved by



Tony Welbourne
Associate Director
10 April 2024
Level 3 175 Scott Street
Newcastle NSW 2300

This report has been prepared in accordance with the brief provided by Great Southern Energy Pty Ltd (trading as Delta Coal) and, in its preparation, EMM has relied upon the information collected at the times and under the conditions specified in this report. All findings, conclusions or recommendations contained in this report are based on those aforementioned circumstances. The contents of this report are private and confidential. This report is only for Great Southern Energy Pty Ltd (trading as Delta Coal)'s use in accordance with its agreement with EMM and is not to be relied on by or made available to any other party without EMM's prior written consent. Except as permitted by the *Copyright Act 1968* (Cth) and only to the extent incapable of exclusion, any other use (including use or reproduction of this report for resale or other commercial purposes) is prohibited without EMM's prior written consent. Except where expressly agreed to by EMM in writing, and to the extent permitted by law, EMM will have no liability (and assumes no duty of care) to any person in relation to this document, other than to Great Southern Energy Pty Ltd (trading as Delta Coal) (and subject to the terms of EMM's agreement with Great Southern Energy Pty Ltd (trading as Delta Coal)).

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1 Introduction

1.1 Background

EMM Consulting Pty Ltd (EMM) was engaged by Great Southern Energy Pty Ltd (trading as Delta Coal) to conduct a monthly noise survey of operations at Mannering Colliery (MC, the site) located at Ruttleys Road, Mannering Park NSW. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

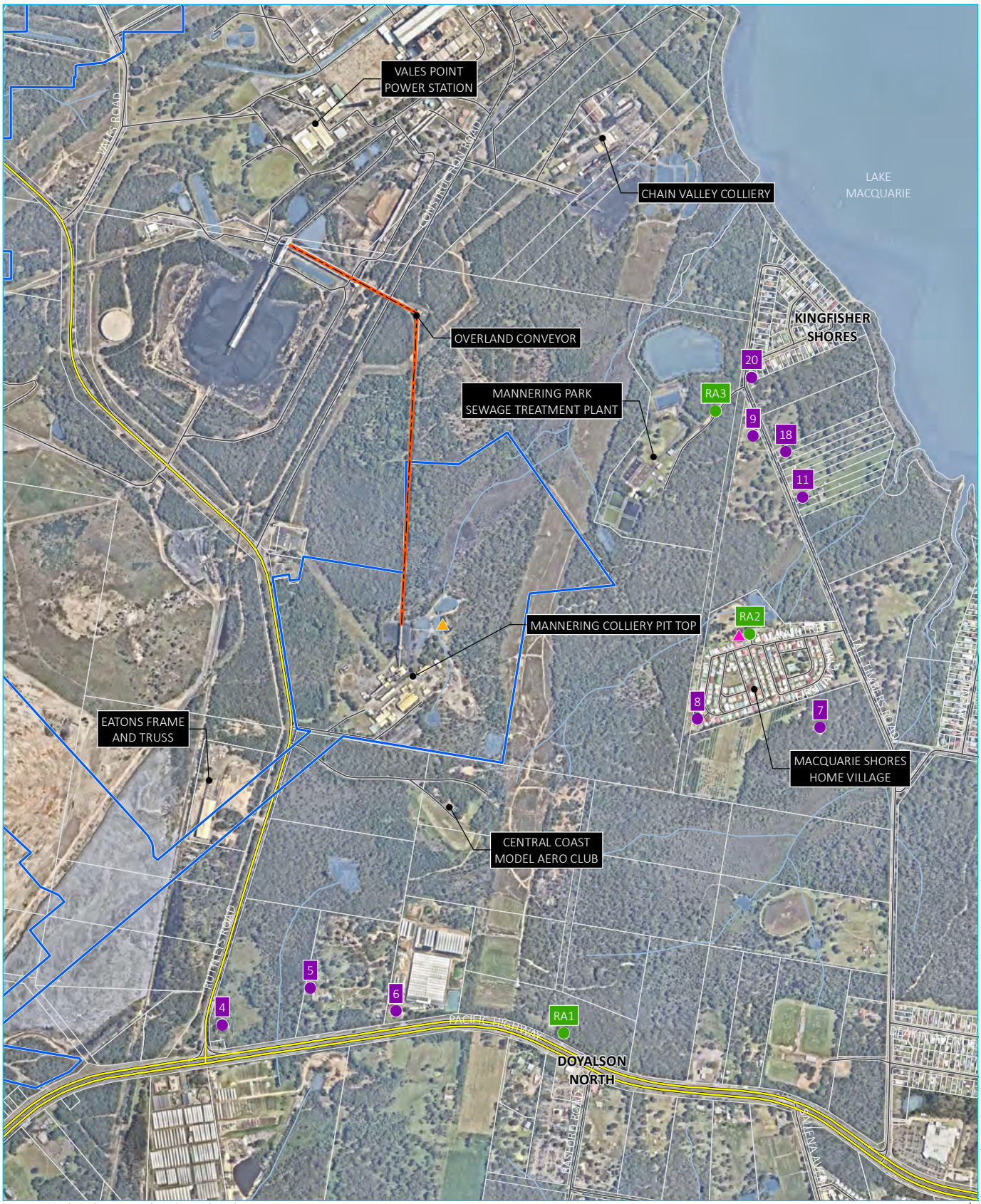
Attended environmental noise monitoring described in this report was done during the evening and night periods on 19 March 2024 at three monitoring locations.

1.2 Attended monitoring locations

Site monitoring locations are detailed in Table 1.1 and shown on Figure 1.1. It should be noted that Figure 1.1 shows actual monitoring positions, not necessarily the location of residences.

Table 1.1 Attended noise monitoring locations

Location descriptor/ID	Description/address	Coordinates (MGA56)	
		Easting	Northing
RA1	Pacific Highway, Doyalson North	364646	6327221
RA2	Macquarie Shores Home Village, Doyalson North	365164	6328332
RA3	Tall Timbers Road (northern end), Kingfisher Shores	365069	6328953



Source: EMM (2021); NearMap (2019); DFSI (2017)

0 250 500 m

GDA 1994 MGA Zone 56

N

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KEY

- Mannering Colliery project approval boundary
- Alignment of overland conveyor to VPPS
- Main road
- Local road
- Watercourse/drainage line
- Waterbody
- Cadastral boundary
- Assessment location
- Attended monitoring location
- Continuous monitoring location
- Meteorological station

Attended noise monitoring and assessment locations

Mannering Colliery
Figure 1.1

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1.3 Terminology and abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

Table 1.2 Terminology and abbreviations

Term/descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The "A" weighting scale is used to approximate how humans hear noise.
L_{Amax}	The maximum root mean squared A-weighted noise level over a time period.
L_{A1}	The A-weighted noise level which is exceeded for 1 per cent of the time.
$L_{A1,1minute}$	The A-weighted noise level which is exceeded for 1 per cent of the specified time period of 1 minute.
L_{A10}	The A-weighted noise level which is exceeded for 10 percent of the time.
L_{Aeq}	The energy average A-weighted noise level.
$L_{Aeq,15minute}$	The energy average A-weighted noise level over the specified time period of 15 minutes.
L_{A50}	The A-weighted noise level which is exceeded for 50 per cent of the time, also the median noise level during a measurement period.
L_{A90}	The A-weighted noise level exceeded for 90 percent of the time, also referred to as the "background" noise level and commonly used to derive noise limits.
L_{Amin}	The minimum A-weighted noise level over a time period.
L_{Ceq}	The energy 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.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	Monday – Saturday: 7 am to 6 pm, on Sundays and Public Holidays: 8 am to 6 pm.
Evening	Monday – Saturday: 6 pm to 10 pm, on Sundays and Public Holidays: 6 pm to 10 pm.
Night	Monday – Saturday: 10 pm to 7 am, on Sundays and Public Holidays: 10 pm to 8 am.
NPfI	NSW EPA Noise Policy for Industry (2017)
Temperature inversion	A meteorological condition where the atmospheric temperature increases with altitude.

Appendix A provides further information that gives an indication as to how an average person perceives changes in noise level, and examples of common noise levels.

2 Noise limits

2.1 Project approval

Mannering Colliery noise limits are provided in Table 1, Condition 2 of Schedule 3 of the current project approval (PA) PA MP06_0311 dated 5 June 2020. Relevant sections of the PA are reproduced in Appendix B.1.

2.2 Environment protection licence

The current Environment Protection Licence (EPL) 191 dated 16 June 2023 references the PA with respect to noise limits. Relevant sections of the EPL are reproduced in Appendix B.2.

2.3 Noise management plan

The approved Noise Management Plan (NMP) was prepared in line with the Mod 5 approval and in accordance with the NSW EPA 'Noise Policy for Industry' (NPfI) issued in October 2017. Three attended noise monitoring locations representative of the PA noise assessment locations have been adopted in the NMP for the purpose of determining compliance with relevant noise limits. Relevant sections of the NMP are reproduced in Appendix B.3.

2.4 Noise limits

Noise limits based on the PA, EPL and approved NMP are as shown in Table 2.1.

Table 2.1 Noise limits, dB

Location	Day $L_{Aeq,15minute}$	Evening $L_{Aeq,15minute}$	Night $L_{Aeq,15minute}$	Night $L_{A1,1minute}$
RA1	40	36	36	46
RA2	40	40	40	45
RA3	40	39	39	49

2.5 Meteorological conditions

The PA (Mod 5) states the following:

> Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Noise Policy for Industry (EPA, 2017).

Section 5.2 of the NPfI states that noise limits applicable under 'very noise-enhancing' conditions should be the limits that apply under 'standard' or 'noise-enhancing' conditions plus 5 dB. This implies that there will be no periods when noise limits do not apply due to meteorological conditions.

As per the PA (Mod 5) and in accordance with the NPfI, limits are adjusted when monitoring is undertaken during the following 'very noise-enhancing' conditions:

- wind speeds greater than 3 m/s at 10 m above ground level;

- stability category F temperature inversion conditions with wind speeds greater than 2 m/s at 10 m above ground level; or
- stability category G temperature inversion conditions.

Therefore, if monthly noise monitoring occurs during 'very noise-enhancing' conditions, this assessment adopts a +5 dB adjustment to the limits shown in Table 2.1. This is indicated in Table 4.3 where relevant. It is noted that monthly noise monitoring for the site is always scheduled to occur during appropriate forecasted meteorological conditions in accordance with the 'Approved methods for the measurement and analysis of environmental noise in NSW' (EPA 2022) (the approved methods).

2.6 Additional considerations

Monitoring and reporting have been done in accordance with the NPfI and the approved methods.

3 Methodology

3.1 Overview

Attended environmental noise monitoring was done in general accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise' and relevant EPA requirements. Meteorological data was obtained from the Mannering Colliery on-site automatic weather station (AWS) which allowed correlation of atmospheric parameters with measured noise levels.

3.2 Attended noise monitoring

During this survey, attended noise monitoring was done during the evening and night periods at each location in accordance with the NMP. The duration of each measurement was 15 minutes. Atmospheric conditions were measured at each monitoring location.

Measured sound levels from various sources were noted during each measurement, and particular attention was paid to the extent of site contribution (if any) to measured levels. At each monitoring location, the site-only $L_{Aeq,15minute}$ and L_{Amax} were measured directly or determined by other methods detailed in Section 7.1 of the NPfI.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may be used in this report. When site noise is noted as IA, it was inaudible at the monitoring location. When site noise is noted as NM, this means it was audible but could not be quantified. All results noted as NM in this report were due to one or more of the following:

- Site noise levels were very low, typically more than 10 dB below the measured background (L_{A90}), and unlikely to be noticed.
- Site noise levels were masked by other more dominant noise sources that are characteristic of the environment (such as breeze in foliage or continuous road traffic noise) that cannot be eliminated by monitoring at an alternate or intermediate location.
- It was not feasible or reasonable to employ methods such as move closer and back calculate. Cases may include rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

If exact noise levels from site could not be established due to masking by other noise sources in a similar frequency range but were determined to be at least 5 dB lower than relevant limits, then a maximum estimate of site noise may be provided. These are expressed as a 'less than' quantity, such as <20 dB or <30 dB.

For this assessment, the measured L_{Amax} has been used as a conservative estimate of $L_{A1,1minute}$. The EPA accepts sleep disturbance analysis based on either the $L_{A1,1minute}$ or L_{Amax} metrics, with the L_{Amax} representing a more conservative assessment of site noise emissions.

3.3 Meteorological data

This assessment determined stability categories throughout attended monitoring periods using the sigma-theta method as per Fact Sheet D of the NPfI. This data was sourced from the site AWS, in accordance with PA requirements.

3.4 Modifying factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. If applicable, modifying factor adjustments have been reported and added to measured site-only L_{Aeq}.

Low-frequency modifying factor penalties have only been applied if site was the only contributing low-frequency noise source. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

3.5 Instrumentation and personnel

Attended noise monitoring was conducted by Acoustical Consultant Lucas Adamson. Qualifications, experience and competency are in accordance with the Approved methods and demonstration is available upon request.

Equipment used to measure environmental noise levels is detailed in Table 3.1. Calibration certificates are provided in Appendix C.

Table 3.1 Attended noise monitoring equipment

Item	Serial number	Calibration due date	Relevant standard
Brüel & Kjær 2250 sound level meter	3029363	3/11/2024	IEC 61672-1:2013
Svantek SV-36 calibrator	79952	27/09/2025	IEC 60942:2017

4 Results

4.1 Total measured noise levels and atmospheric conditions

Overall noise levels measured at each location during attended measurements are provided in Table 4.1.

Table 4.1 Total measured noise levels[1], dB – 19 March 2024

Location	Start date and time	L_{Amax}	L_{A1}	L_{A10}	L_{Aeq}	L_{A50}	L_{A90}	L_{Amin}
RA1	19/3/2024 20:48	74	67	62	58	55	43	36
RA3	19/3/2024 21:08	54	45	41	40	39	38	36
RA2	19/3/2024 21:34	53	44	42	40	40	36	33
RA2	19/3/2024 22:00	57	43	42	40	40	37	35
RA3	19/3/2024 22:19	58	44	41	40	39	38	36
RA1	19/3/2024 22:41	71	66	59	55	46	37	34

Notes: 1. Levels in this table are not necessarily the result of activity at site.

Atmospheric conditions data measured by the operator during each measurement using a hand-held weather meter is shown in Table 4.2. The wind speed, direction and temperature were measured at approximately 1.5 m above ground. Attended noise monitoring is not done during rain, hail, or wind speeds above 5 m/s at microphone height.

Table 4.2 Measured atmospheric conditions – 19 March 2024

Location	Start date and time	Temperature °C	Wind speed m/s	Wind direction ° Magnetic north[1]	Cloud cover 1/8s
RA1	19/3/2024 20:48	22	<0.5	-	0
RA3	19/3/2024 21:08	22	<0.5	-	0
RA2	19/3/2024 21:34	22	1.2	0	0
RA2	19/3/2024 22:00	21	0.9	0	0
RA3	19/3/2024 22:19	21	<0.5	-	0
RA1	19/3/2024 22:41	21	<0.5	-	0

Notes: 1. "-" indicates calm conditions (wind speed <0.5 m/s) at monitoring location.

4.2 Site only noise levels

4.2.1 Modifying factors

There were no modifying factors, as defined in the NPfI, applicable during the survey.

4.2.2 Monitoring results

Table 4.3 provides site noise levels in the absence of other sources, where possible, and includes weather data from the site AWS. Noise limits are applicable under all weather conditions but where applicable are adjusted during very noise-enhancing weather conditions as defined by the NPfI (refer to Section 2.5).

Table 4.3 Site noise levels and limits – 19 March 2024

Location	Start date and time	Wind		Stability class	Standard limits apply?[1]	Limit, dB		Site level, dB[2]		Exceedance, dB	
		Speed (m/s)	Direction[3]			$L_{Aeq,15minute}$	$L_{A1,1minute}$	$L_{Aeq,15minute}$	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}
RA1	19/3/2024 20:48	1.6	37	F	Yes	36	N/A	IA	N/A	Nil	N/A
RA3	19/3/2024 21:08	1.5	49	F	Yes	39	N/A	IA	N/A	Nil	N/A
RA2	19/3/2024 21:34	1.7	47	F	Yes	40	N/A	IA	N/A	Nil	N/A
RA2	19/3/2024 22:00	1.5	45	F	Yes	40	45	IA	IA	Nil	Nil
RA3	19/3/2024 22:19	1.7	36	F	Yes	39	49	IA	IA	Nil	Nil
RA1	19/3/2024 22:41	1.3	30	F	Yes	36	46	IA	IA	Nil	Nil

Notes: 1. If "No", adjusted noise limits (standard limit + 5 dB) apply during 'very noise-enhancing' meteorological conditions as stated in Section 2.5.

2. Site-only $L_{Aeq,15minute}$ include modifying factor adjustments if applicable.

3. Degrees magnetic north, "-" indicates calm conditions.

5 Discussion

5.1 Noted noise sources

During attended monitoring, the time variations (temporal characteristics) of noise sources are considered in each measurement via statistical descriptors. From these observations, summaries have been derived for the location and provided in this chapter. Statistical 1/3 octave-band analysis of environmental noise was undertaken and the following figures display frequency ranges of various noise sources at each location for L_{A1}, L_{A10}, L_{Aeq}, L_{A50}, and L_{A90} descriptors. These figures also provide, graphically, statistical information for these noise levels.

An example (non-site related) is provided as Figure 5.1, where frogs and insects are seen to be generating noise at frequencies above 1000 Hz, while industrial noise is generally observed at frequencies less than 1000 Hz.

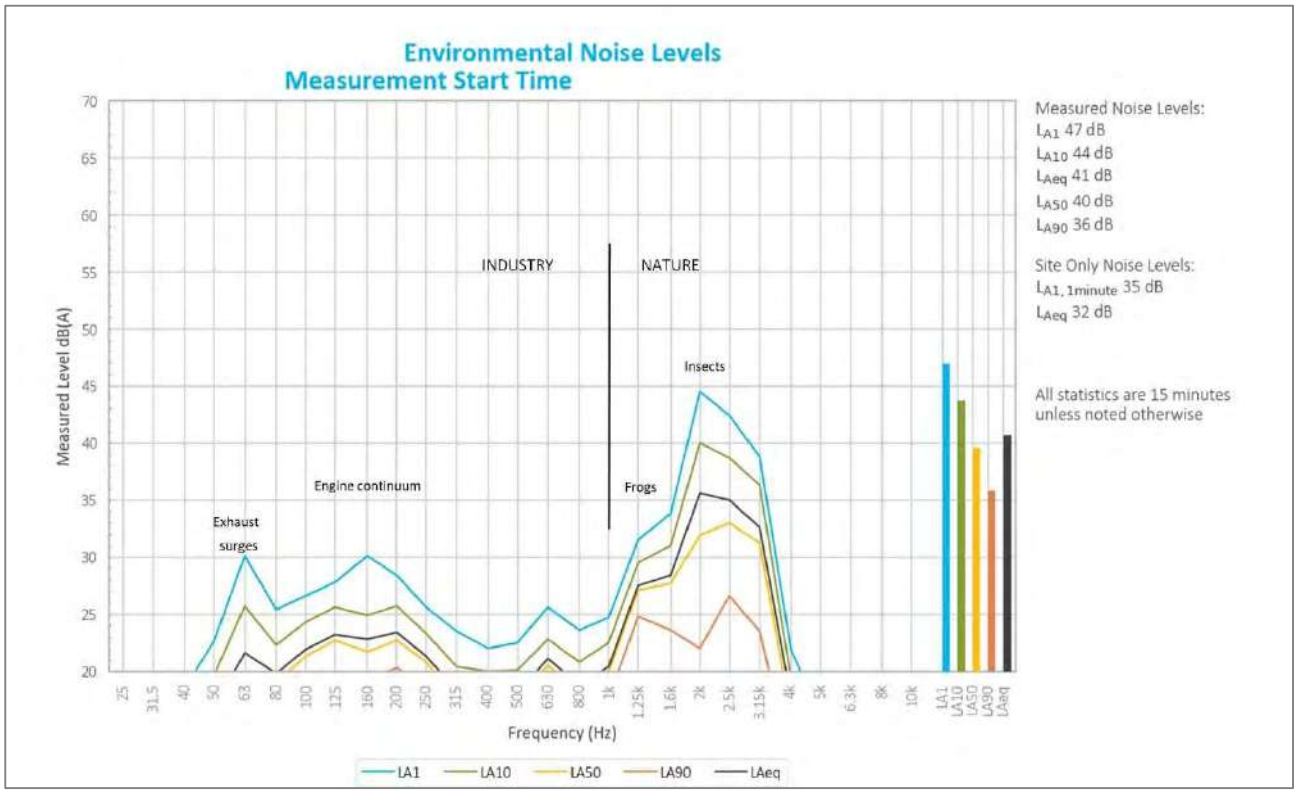


Figure 5.1 Example graph (refer to Section 5.1 for explanatory note)

5.2 RA1 – Evening

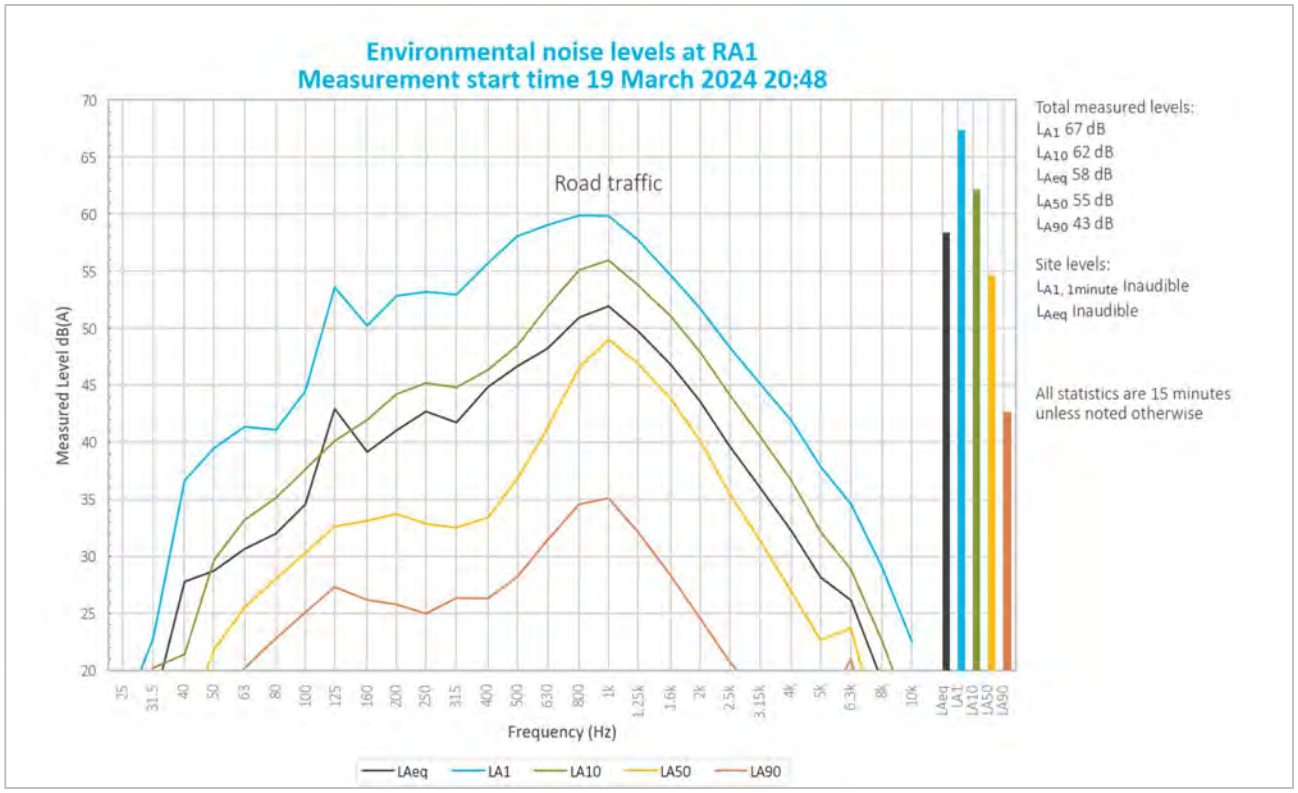


Figure 5.2 Environmental noise levels – RA1 (Pacific Highway) – Evening

MC operations were inaudible during the entire measurement.

Road traffic dominated measured noise levels.

5.3 RA3 – Evening

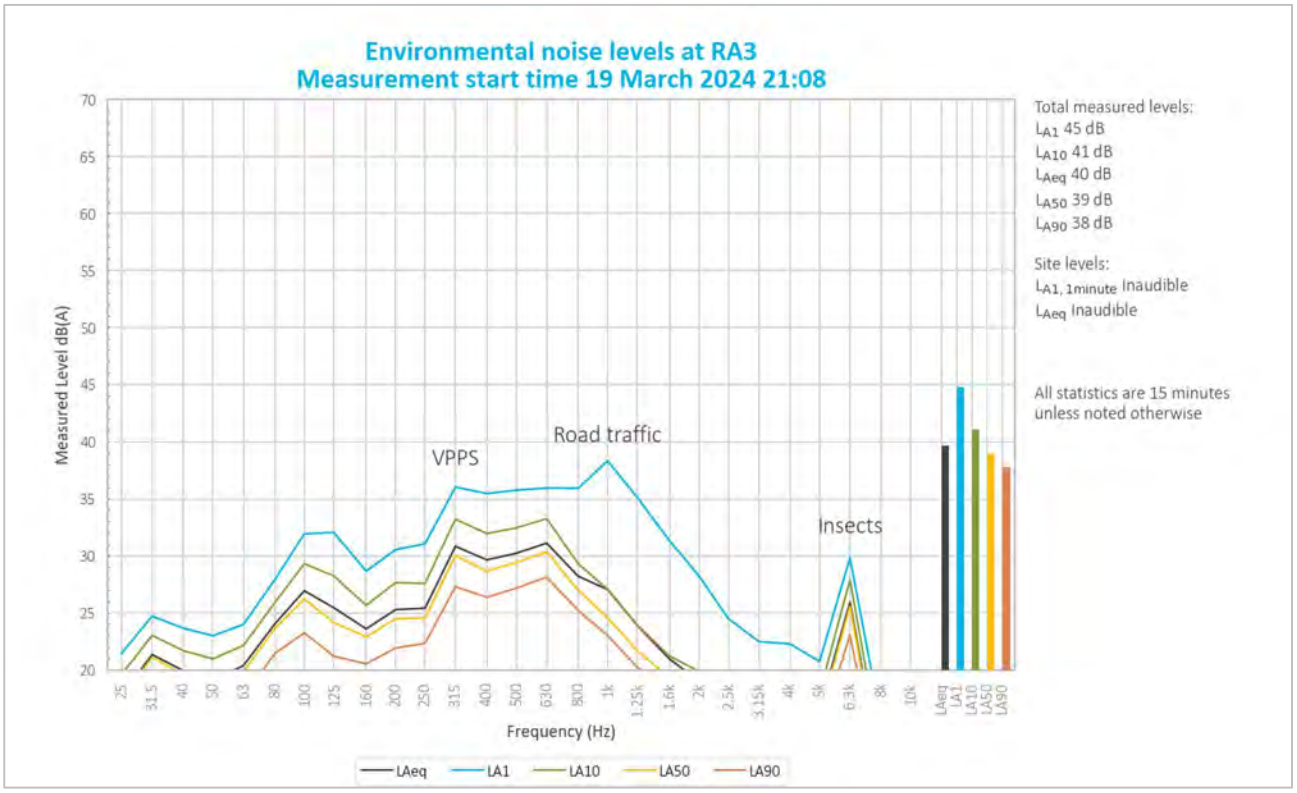


Figure 5.3 Environmental noise levels – RA3 (Kingfisher Shores) – Evening

MC operations were inaudible during the entire measurement.

Vales Point Power Station (VPPS) dominated measured levels. Road traffic also contributed to the measured L_{A1}.

5.4 RA2 – Evening

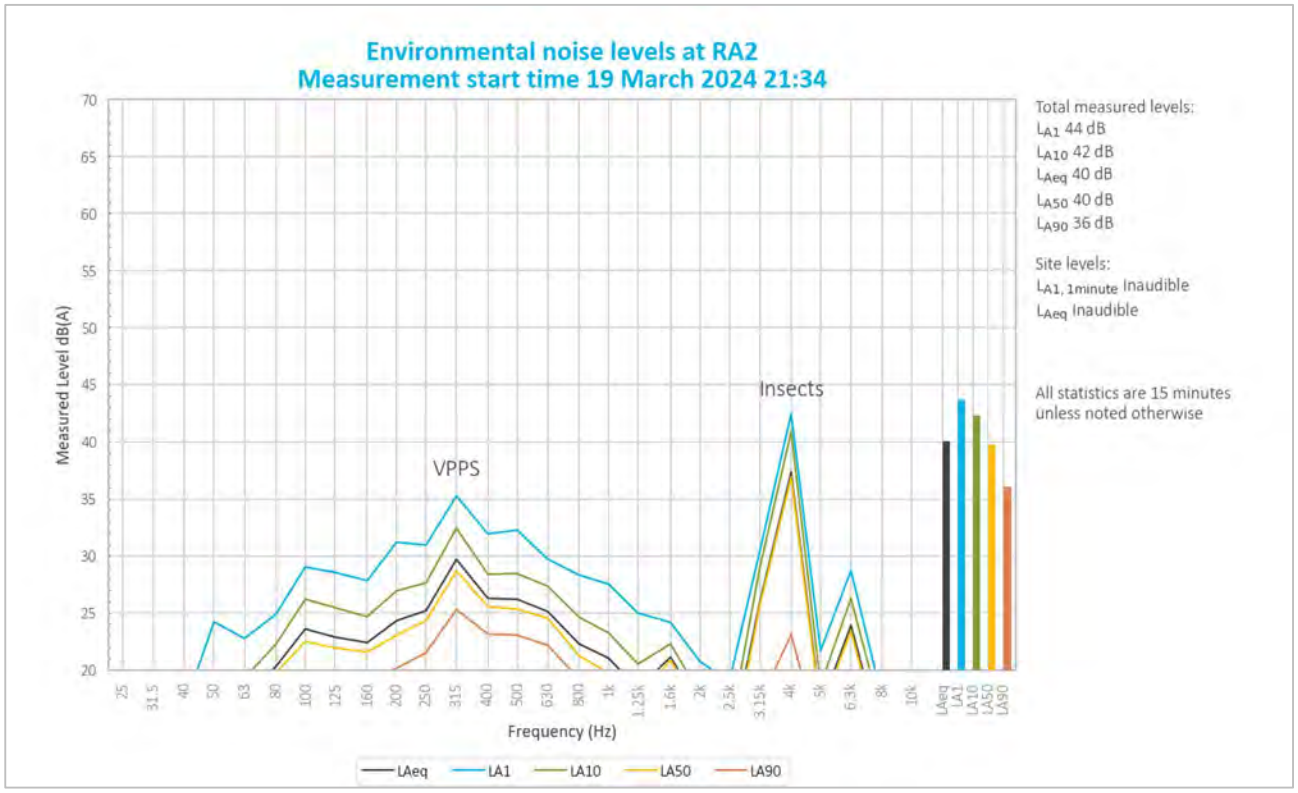


Figure 5.4 Environmental noise levels – RA2 (Macquarie Shores) – Evening

MC operations were inaudible during the entire measurement.

VPPS hum and insects both contributed to the measured L_{Aeq}, L_{A50} and L_{A90}. Insects generated the measured L_{A1} and L_{A10}.

5.5 RA2 – Night

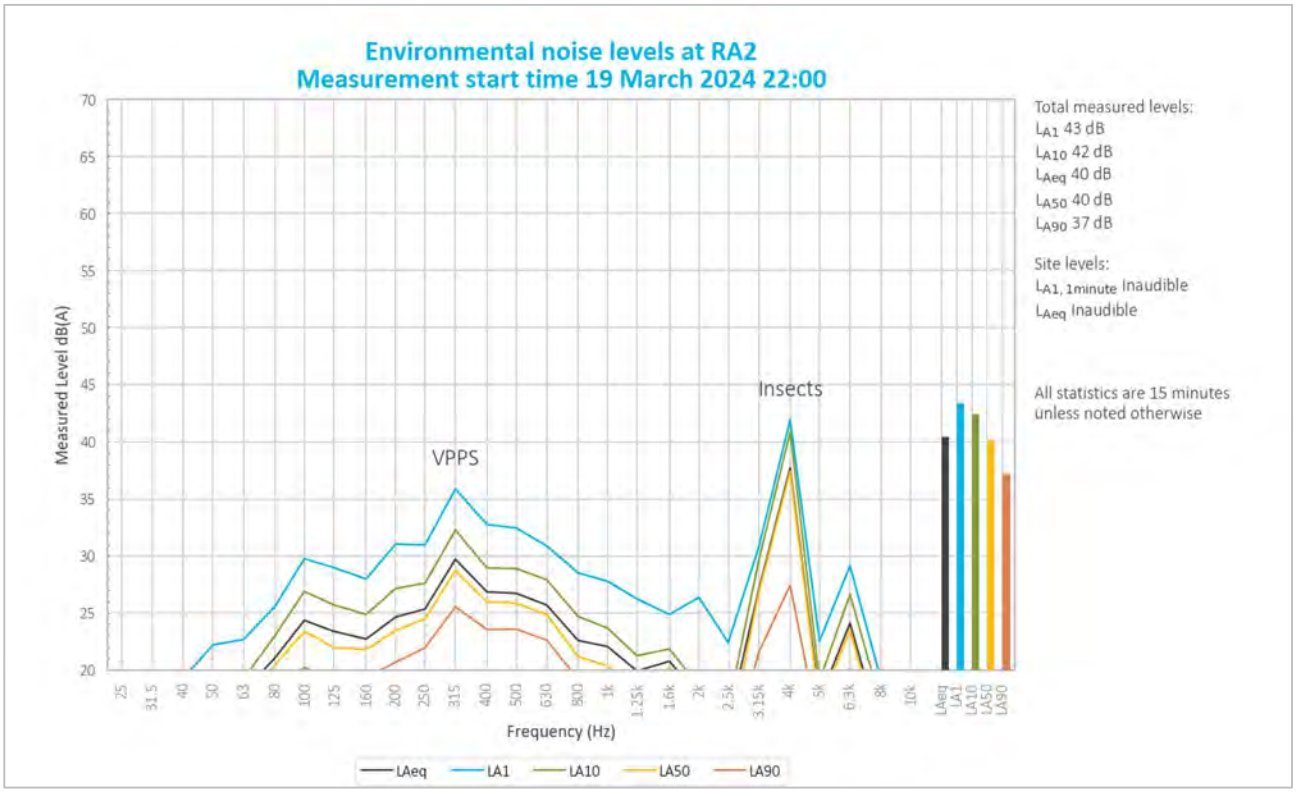


Figure 5.5 Environmental noise levels – RA2 (Macquarie Shores) – Night

MC operations were inaudible during the entire measurement.

VPPS hum and insects both contributed to the measured L_{Aeq}, L_{A50} and L_{A90}. Insects generated the measured L_{A1} and L_{A10}.

5.6 RA3 – Night

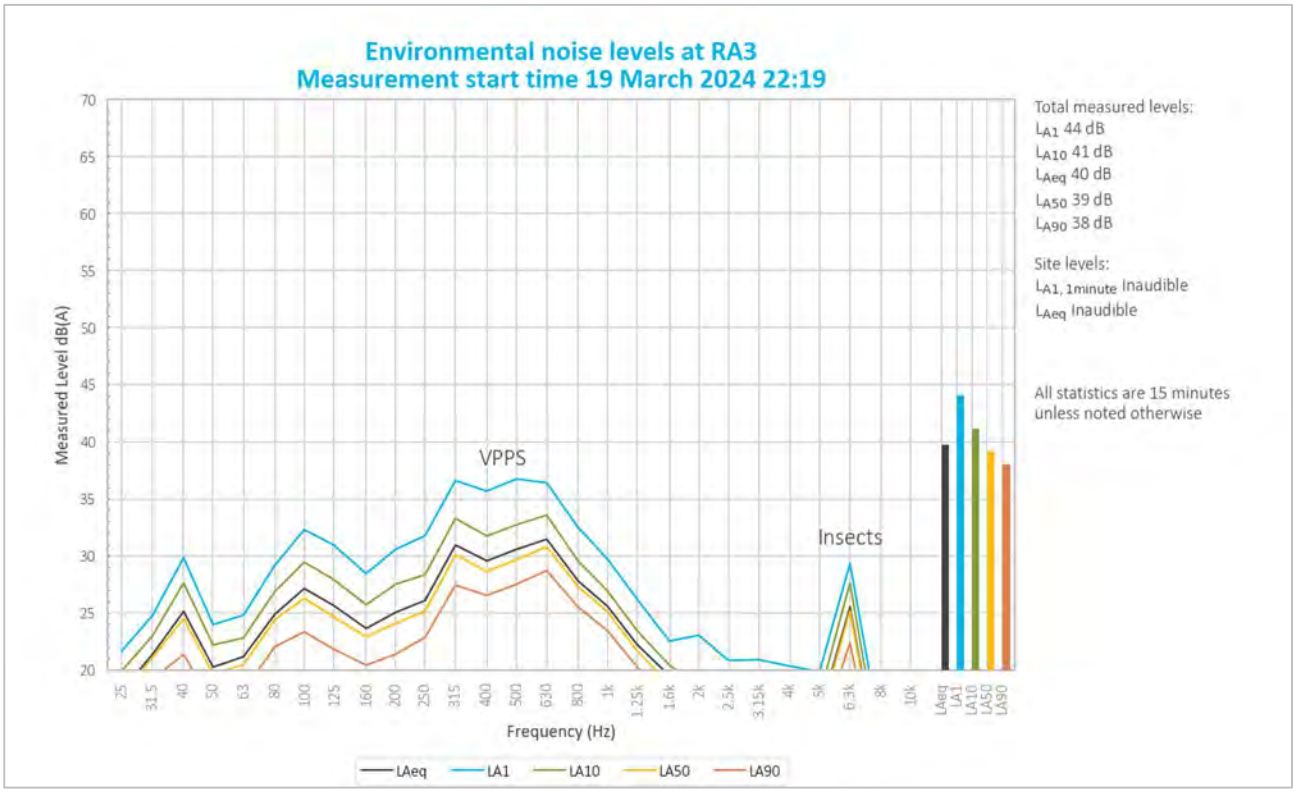


Figure 5.6 Environmental noise levels – RA3 (Kingfisher Shores) – Night

MC operations were inaudible during the entire measurement.

VPPS dominated measured noise levels.

5.7 RA1 – Night

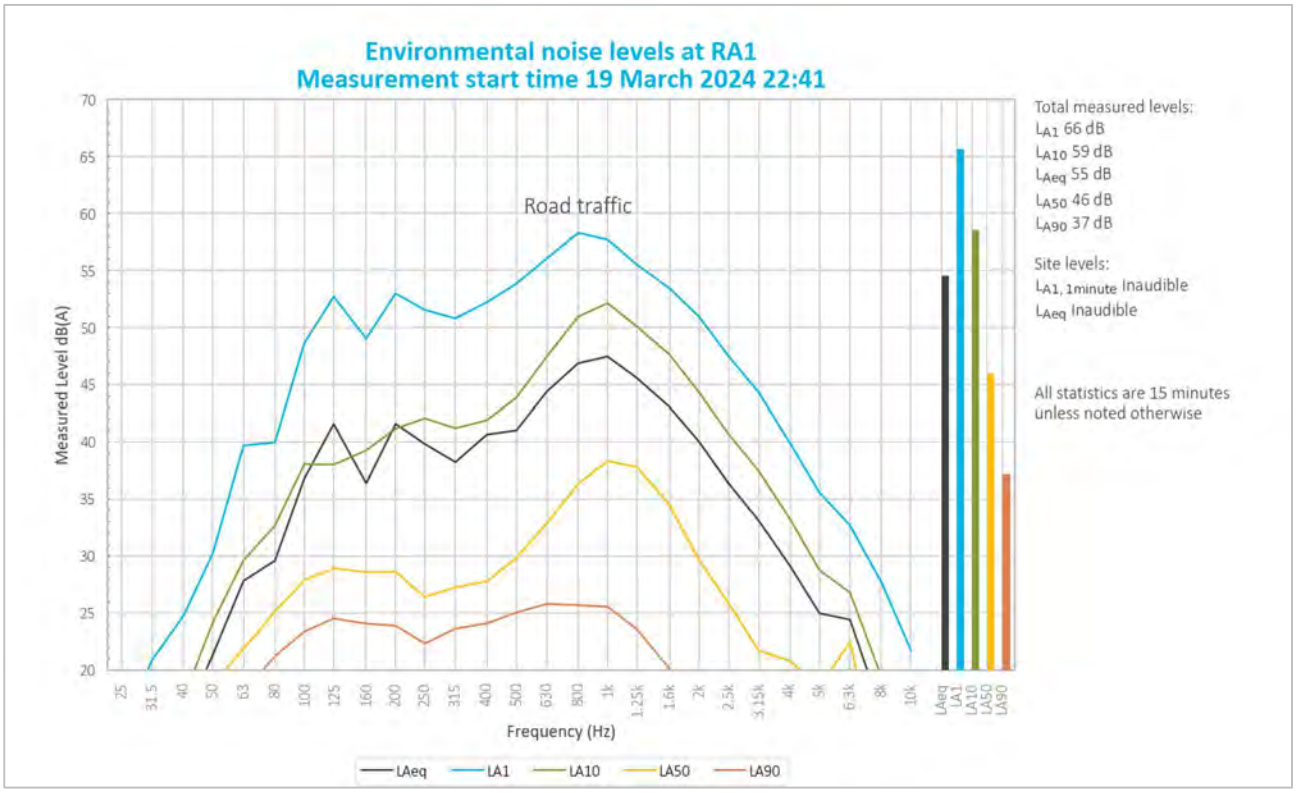


Figure 5.7 Environmental noise levels – RA1 (Pacific Highway) – Night

MC operations were inaudible during the entire measurement.

Road traffic dominated measured noise levels.

6 Summary

EMM Consulting Pty Ltd (EMM) was engaged by Great Southern Energy Pty Ltd (trading as Delta Coal) to complete a monthly noise survey of operations conducted at Mannering Colliery. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

Attended environmental noise monitoring described in this report was done during the evening and night periods on 19 March 2024 at three monitoring locations.

Noise levels from site complied with relevant limits at all monitoring locations during the March 2024 survey.

Appendix A
Noise perception and examples

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A.1 Noise levels

Table A.1 gives an indication as to how an average person perceives changes in noise level. Examples of common noise levels are provided in Figure A.1.

Table A.1 Perceived change in noise

Change in sound pressure level (dB)	Perceived change in noise
up to 2	Not perceptible
3	Just perceptible
5	Noticeable difference
10	Twice (or half) as loud
15	Large change
20	Four times (or quarter) as loud

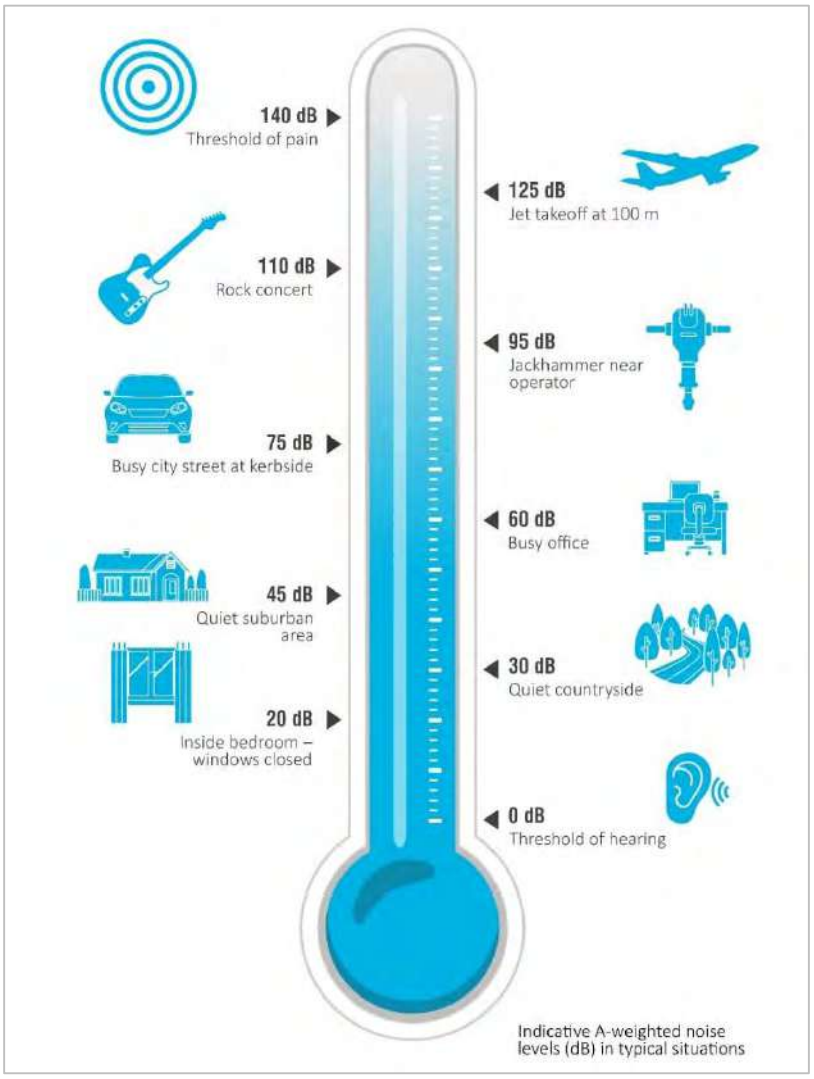


Figure A.1 Common noise levels

Appendix B
Regulator documents

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B.1 Project approval

SCHEDULE 3
SPECIFIC ENVIRONMENTAL CONDITIONS

NOISE

Construction Noise

1. The Applicant must ensure that the noise generated by any construction work is managed in accordance with the requirements outlined in the *Interim Construction Noise Guideline* (DECC, 2009).

Operational Noise Criteria

2. Except for the carrying out of construction works, the Applicant must ensure that the noise generated by the development does not exceed the criteria in Table 1 at any residence[a] on privately-owned land.

***Table 1**: Operational noise criteria dB(A)*

Noise Assessment Location	***Day*** $L_{Aeq\ (15\ min)}$	***Evening*** $L_{Aeq\ (15\ min)}$	***Night*** $L_{Aeq\ (15\ min)}$	***Night*** $L_{A1\ (1\ min)}$
4 – di Rocco	40	36	36	46
5 - Keighran	40	39	39	49
6 – Swan	40	37	37	47
7 – Druitt	40	35	35	45
8 – Macquarie Shores Home Village	42	42	42	47
9 - Jeans	40	37	37	47
11 - Jeans	40	36	36	46
18 - Jeans	40	36	36	46
20 – Knight and all other privately-owned residences	40	36	36	46

[a] *The Noise Assessment Locations referred to in Table 1 are shown in Appendix 4.*

Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the *NSW Noise Policy for Industry* (EPA, 2017).

3. The noise criteria in Table 1 do not apply if the Applicant has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Noise Operating Conditions

3A. The Applicant must:

(a) take all reasonable steps to minimise noise from construction and operational activities, including low frequency noise and other audible characteristics, associated with the development;

(b) implement reasonable and feasible noise attenuation measures on all plant and equipment that will operate in noise sensitive areas;

(c) operate a comprehensive noise management system commensurate with the risk of impact;

(d) take all reasonable steps to minimise the noise impacts of the development during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);

(e) carry out regular attended noise monitoring (at least once a month, unless otherwise agreed by the Planning Secretary) to determine whether the development is complying with the relevant conditions of this consent;

(f) regularly assess the noise monitoring data and modify or stop operations on the site to ensure compliance with the relevant conditions of this consent; and
(g) implement reasonable and feasible measures to further enclose the structure housing the coal crusher in order to further mitigate noise from operational activites.

3B. The Applicant must decommission the surface rotary breaker identified in the Statement of Commitments at Appendix 3, within 3 months of approval of Modification 5.

Noise Management Plan

3C. The Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
(a) be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;
(b) describe the measures to be implemented to ensure:
i. compliance with the noise criteria and operating conditions in this consent;
ii. best practice management is being employed; and
iii. noise impacts of the development are minimised during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);
(c) describe the noise management system in detail; and
(d) include a monitoring program that:
i. uses a combination of real-time and supplementary attended monitoring to evaluate the performance of the development;
ii. monitors noise at the nearest and/or most affected residences;
iii. includes a program to calibrate and validate the real-time noise monitoring results with the attended monitoring results over time;
iv. adequately supports the noise management system;
v. includes a protocol for distinguishing noise emissions of the development from any neighbouring developments; and
vi. includes a protocol for identifying any noise-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of any such event.

The Applicant must implement the Noise Management Plan as approved by the Planning Secretary.

SUBSIDENCE

4. The Applicant must limit its coal extraction methods on the site to first workings only, and must not undertake second workings.

5. Deleted.

SOIL AND WATER

Discharge

6. The Applicant must only discharge water from the site as expressly provided for by its EPL.

7. The Applicant must investigate, assess and report on the ecological interactions of minewater discharged from the site with the aquatic ecology of the unnamed creek and wetlands (and associated vegetation) between the minewater discharge point/s and Lake Macquarie. This report must:
(a) be prepared in consultation with EPA by suitably qualified expert/s whose appointment/s have been approved by the Planning Secretary;
(b) be submitted to the Planning Secretary by the end of March 2009; and
(c) assess the probable alterations in the local ecology attributable to previous and proposed minewater discharges and any future cessation of minewater discharge flows.

Water Management Plan

8. The Applicant must prepare a Water Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
(a) be prepared in consultation with DPIE Water by suitably qualified expert/s whose appointment/s have been approved by the Planning Secretary;
(b) be submitted the Planning Secretary by the end of March 2009; and
(c) include a:
- Site Water Balance;

B.2 Environment Protection Licence

Environment Protection Licence

L4 Waste

L4.1 The licensee must not cause, permit or allow any waste to be received at the premises, except the wastes expressly referred to in the column titled “Waste” and meeting the definition, if any, in the column titled “Description” in the table below.
Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled “Activity” in the table below.
Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste contained in the column titled “Other Limits” in the table below.
This condition does not limit any other conditions in this licence.

Code	Waste	Description	Activity	Other Limits
NA	Waste	Any other waste received on the premises for storage, treatment, processing, sorting or disposal and which receipt is not a scheduled activity under Schedule 1 of the POEO Act, as in force from time to time.		
NA	General or Specific exempted waste	Waste that meets all the conditions of a resource recovery exemption under Clause 51A of the Protection of the Environment Operations (Waste) Regulation 2014	As specified in each particular resource recovery exemption	N/A

L4.2 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.

L4.3 This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if it requires an environment protection licence.

L5 Noise limits

Note: Noise limits are not specified as a condition of this licence. Noise limits are prescribed with the conditions of Project Approval 06_0311 granted under the *Environmental Planning and Assessment Act 1979.* Under the *Environmental Planning and Assessment Act 1979* the Department of Planning is the appropriate authority in respect of the administration and regulation of the Project Approval.

B.3 Approved noise management plan

The above noise monitoring locations are representative of residential receivers most likely to be affected by CVC operational noise. Adherence with the relevant noise criteria at these locations will indicate that noise criteria will be met at other surrounding noise-sensitive locations.

4.2.3 Mannering Colliery

Consistent with the Noise Impact Assessment (EMM 2019) undertaken as part of the Project Approval MP06_0311 MOD 5, rural and residential receivers have been divided into three (3) receiver areas (RA's) with similar geographical and acoustic features. The following points are considered representative of each receiver area:

- RA1, rural residential properties south of MC and fronting the Pacific Highway. The dominant noise source in this area is road traffic. Birds, insects and other industrial sources are also audible at times.
- RA2, privately-owned relocatable residences within the MSHV, east of MC. The dominant noise sources in this RA are birds, insects, traffic and other industrial sources. Activities at MC are also noted to be audible at times.
- RA3, various rural residential residences on Tall Timbers Road at Kingfisher Shores and adjacent to the Chain Valley Bay suburban area. The dominant noise sources in this RA are birds, insects, other industrial sources and traffic movements. Activities at MC are also noted to be audible at times.

The attended noise monitoring locations for MC and relevant noise criteria are identified below in **Table 6**.

Table 6: Noise Monitoring Locations and Limits for Mannering Colliery

Location	Receivers Represented MP06_0311 ID	Coordinates	Day $L_{Aeq(15\ min)}$ dB (A)	Evening $L_{Aeq(15\ min)}$ dB (A)	Night $L_{Aeq(15\ min)}$ dB (A)	Night $L_{A1(1\ min)}$ dB (A)
RA1	4, 5, 6	364646E 6327221N	40	36	36	46
RA2	7, 8	365164E 6328332N	40	40	40	45
RA3	9, 11, 18, 20	365069E 6328953N	40	39	39	49

The above noise monitoring locations are representative of residential receivers most likely to be affected by MC operational noise. Adherence with the relevant noise criteria at these locations will indicate that noise criteria will be met at other surrounding noise-sensitive locations.

Appendix C
Calibration certificates

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CERTIFICATE OF CALIBRATION

CERTIFICATE NO: C37508

EQUIPMENT TESTED : Sound Level Calibrator

Manufacturer: Svantek
Type No: SV 36 **Serial No:** 79952
Class: 1
Owner: EMM Consulting Pty Ltd
L3, 175 Scott Street
Newcastle, NSW 2300
Tests Performed: Measured Output Pressure level, Frequency & Distortion
Comments: See Details and Class Tolerance overleaf.

CONDITION OF TEST:

Ambient Pressure	1005	hPa ±1 hPa	**Date of Receipt :**	26/09/2023
Temperature	23	°C ±1° C	**Date of Calibration :**	27/09/2023
Relative Humidity	47	% ±5%	**Date of Issue :**	28/09/2023

Acu-Vib Test Procedure: AVP02 (Calibrators)
Test Method: AS IEC 60942 - 2017

CHECKED BY: .....

AUTHORISED SIGNATURE: .....
Hein Soe

Accredited for compliance with ISO/IEC 17025 - Calibration
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Head Office & Calibration Laboratory
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(02) 9680 8133
www.acu-vib.com.au

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: SLM34169

EQUIPMENT TESTED: Sound Level Meter

Manufacturer:	B & K		
Type No:	2250	**Serial No:**	3029363
Mic. Type:	4189	**Serial No:**	3260501
Pre-Amp. Type:	ZC0032	**Serial No:**	30109
Filter Type:	1/3 Octave	**Test No:**	F034175

Owner: EMM Consulting
Suite 01, 20 Chandos St
St Leonards NSW 2065

Tests Performed: IEC 61672-3:2013 & IEC 61260-3:2016

Comments: All Test passed for Class 1. (See overleaf for details)

CONDITIONS OF TEST:

Ambient Pressure	1002	hPa ±1 hPa	**Date of Receipt :**	02/11/2022
Temperature	24	°C ±1° C	**Date of Calibration :**	03/11/2022
Relative Humidity	35	% ±5%	**Date of Issue :**	04/11/2022

Acu-Vib Test Procedure: AVP10 (SLM) & AVP06 (Filters)

CHECKED BY: ..... **AUTHORISED SIGNATURE:** .....

Jack Kielt

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Mannering Colliery

Monthly attended noise monitoring - April 2024

Prepared for Great Southern Energy Pty Ltd (trading as Delta Coal)

May 2024

Mannering Colliery

Monthly attended noise monitoring - April 2024

Great Southern Energy Pty Ltd (trading as Delta Coal)

E230753 RP1

May 2024

Version	Date	Prepared by	Reviewed by	Comments
1	29 April 2024	Teanuanua Villierme	Najah Ishac	Draft
2	7 May 2024	Teanuanua Villierme	Najah Ishac	Final

Approved by



Najah Ishac
Director
7 May 2024
Level 3 175 Scott Street
Newcastle NSW 2300

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Figure A.1 Common noise levels A.2

1 Introduction

1.1 Background

EMM Consulting Pty Ltd (EMM) was engaged by Great Southern Energy Pty Ltd (trading as Delta Coal) to conduct a monthly noise survey of operations at Mannering Colliery (MC, the site) located at Ruttleys Road, Mannering Park NSW. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

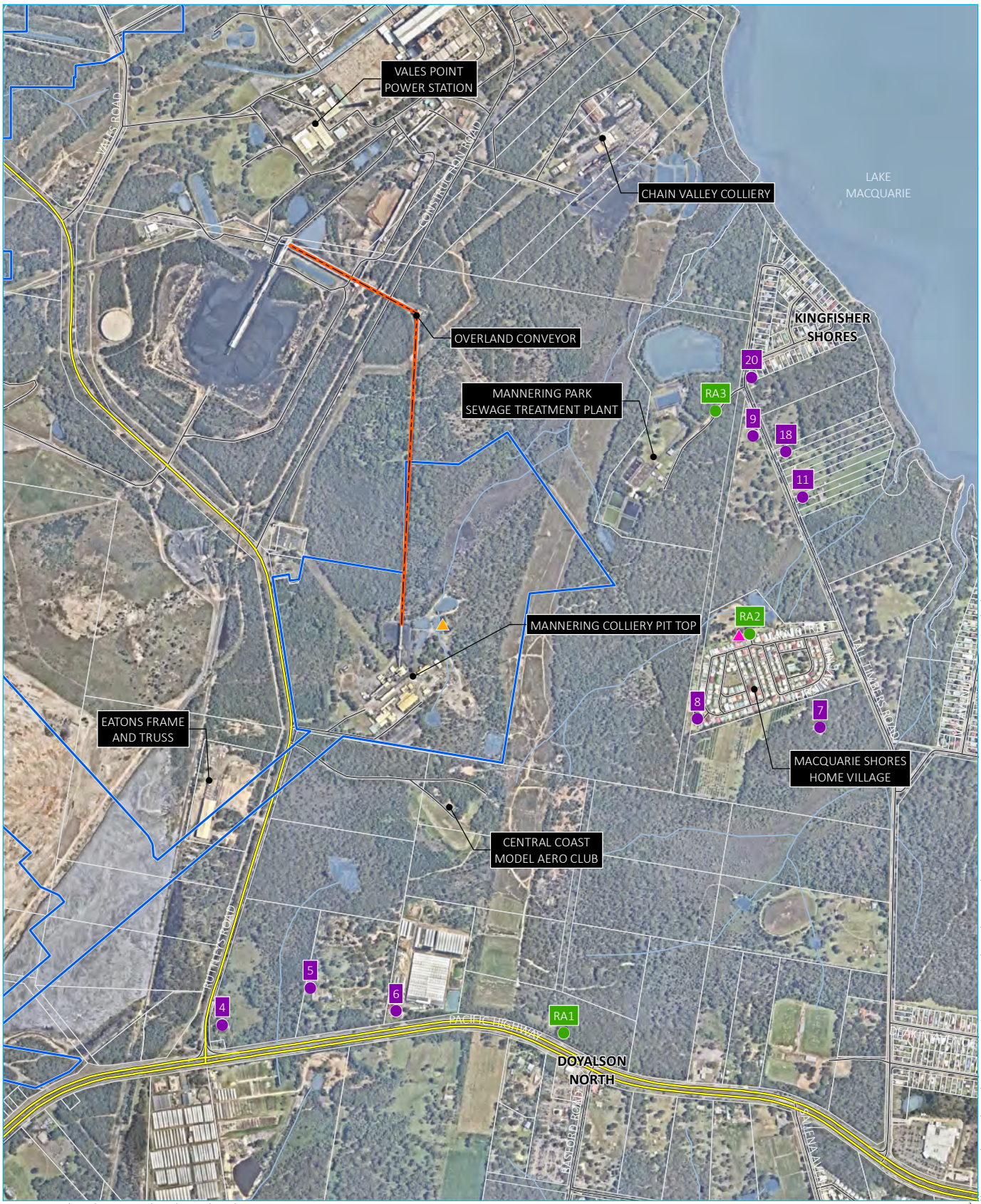
Attended environmental noise monitoring described in this report was done during the evening and night periods on 22 April 2024 at three monitoring locations.

1.2 Attended monitoring locations

Site monitoring locations are detailed in Table 1.1 and shown on Figure 1.1. It should be noted that Figure 1.1 shows actual monitoring positions, not necessarily the location of residences.

Table 1.1 Attended noise monitoring locations

Location descriptor/ID	Description/address	Coordinates (MGA56)	
		Easting	Northing
RA1	Pacific Highway, Doyalson North	364646	6327221
RA2	Macquarie Shores Home Village, Doyalson North	365164	6328332
RA3	Tall Timbers Road (northern end), Kingfisher Shores	365069	6328953



Source: EMM (2021); NearMap (2019); DFSI (2017)

0 250 500 m

GDA 1994 MGA Zone 56

N

\\Emmsvr1\emm3\2021\P210018 - Delta Noise 2021\8 GIS\02_Maps\N001_NoiseMonitoringLocations_20210225_01.mxd 26/02/2021

KEY

- Mannering Colliery project approval boundary
- Alignment of overland conveyor to VPPS
- Main road
- Local road
- Watercourse/drainage line
- Waterbody
- Cadastral boundary
- Assessment location
- Attended monitoring location
- Continuous monitoring location
- Meteorological station

Attended noise monitoring and assessment locations

Mannering Colliery
Figure 1.1

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1.3 Terminology and abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

Table 1.2 Terminology and abbreviations

Term/descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The "A" weighting scale is used to approximate how humans hear noise.
L_{Amax}	The maximum root mean squared A-weighted noise level over a time period.
L_{A1}	The A-weighted noise level which is exceeded for 1 per cent of the time.
$L_{A1,1minute}$	The A-weighted noise level which is exceeded for 1 per cent of the specified time period of 1 minute.
L_{A10}	The A-weighted noise level which is exceeded for 10 percent of the time.
L_{Aeq}	The energy average A-weighted noise level.
$L_{Aeq,15minute}$	The energy average A-weighted noise level over the specified time period of 15 minutes.
L_{A50}	The A-weighted noise level which is exceeded for 50 per cent of the time, also the median noise level during a measurement period.
L_{A90}	The A-weighted noise level exceeded for 90 percent of the time, also referred to as the "background" noise level and commonly used to derive noise limits.
L_{Amin}	The minimum A-weighted noise level over a time period.
L_{Ceq}	The energy 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.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	Monday – Saturday: 7 am to 6 pm, on Sundays and Public Holidays: 8 am to 6 pm.
Evening	Monday – Saturday: 6 pm to 10 pm, on Sundays and Public Holidays: 6 pm to 10 pm.
Night	Monday – Saturday: 10 pm to 7 am, on Sundays and Public Holidays: 10 pm to 8 am.
NPfI	NSW EPA Noise Policy for Industry (2017)
Temperature inversion	A meteorological condition where the atmospheric temperature increases with altitude.

Appendix A provides further information that gives an indication as to how an average person perceives changes in noise level, and examples of common noise levels.

2 Noise limits

2.1 Project approval

Mannering Colliery noise limits are provided in Table 1, Condition 2 of Schedule 3 of the current project approval (PA) PA MP06_0311 dated 5 June 2020. Relevant sections of the PA are reproduced in Appendix B.1.

2.2 Environment protection licence

The current Environment Protection Licence (EPL) 191 dated 16 June 2023 references the PA with respect to noise limits. Relevant sections of the EPL are reproduced in Appendix B.2.

2.3 Noise management plan

The approved Noise Management Plan (NMP) (dated 20 April 2022) was prepared in line with the Mod 5 approval and in accordance with the NSW EPA 'Noise Policy for Industry' (NPfI) issued in October 2017. Three attended noise monitoring locations representative of the PA noise assessment locations have been adopted in the NMP for the purpose of determining compliance with relevant noise limits. Relevant sections of the NMP are reproduced in Appendix B.3.

2.4 Noise limits

Noise limits based on the PA, EPL and approved NMP are as shown in Table 2.1.

Table 2.1 Noise limits, dB

Location	Day $L_{Aeq,15minute}$	Evening $L_{Aeq,15minute}$	Night $L_{Aeq,15minute}$	Night $L_{A1,1minute}$
RA1	40	36	36	46
RA2	40	40	40	45
RA3	40	39	39	49

2.5 Meteorological conditions

The PA (Mod 5) states the following:

> Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Noise Policy for Industry (EPA, 2017).

Section 5.2 of the NPfI states that noise limits applicable under 'very noise-enhancing' conditions should be the limits that apply under 'standard' or 'noise-enhancing' conditions plus 5 dB. This implies that there will be no periods when noise limits do not apply due to meteorological conditions.

As per the PA (Mod 5) and in accordance with the NPfI, limits are adjusted when monitoring is undertaken during the following 'very noise-enhancing' conditions:

- wind speeds greater than 3 m/s at 10 m above ground level;

- stability category F temperature inversion conditions with wind speeds greater than 2 m/s at 10 m above ground level; or
- stability category G temperature inversion conditions.

Therefore, if monthly noise monitoring occurs during 'very noise-enhancing' conditions, this assessment adopts a +5 dB adjustment to the limits shown in Table 2.1. This is indicated in Table 4.3 where relevant. It is noted that monthly noise monitoring for the site is always scheduled to occur during appropriate forecasted meteorological conditions in accordance with the 'Approved methods for the measurement and analysis of environmental noise in NSW' (EPA 2022) (the approved methods).

2.6 Additional considerations

Monitoring and reporting have been done in accordance with the NPfI and the approved methods.

3 Methodology

3.1 Overview

Attended environmental noise monitoring was done in general accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise' and relevant EPA requirements. Meteorological data was obtained from the Mannering Colliery on-site automatic weather station (AWS) which allowed correlation of atmospheric parameters with measured noise levels.

3.2 Attended noise monitoring

During this survey, attended noise monitoring was done during the evening and night periods at each location in accordance with the NMP. The duration of each measurement was 15 minutes. Atmospheric conditions were measured at each monitoring location.

Measured sound levels from various sources were noted during each measurement, and particular attention was paid to the extent of site contribution (if any) to measured levels. At each monitoring location, the site-only $L_{Aeq,15minute}$ and L_{Amax} were measured directly or determined by other methods detailed in Section 7.1 of the NPfI.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may be used in this report. When site noise is noted as IA, it was inaudible at the monitoring location. When site noise is noted as NM, this means it was audible but could not be quantified. All results noted as NM in this report were due to one or more of the following:

- Site noise levels were very low, typically more than 10 dB below the measured background (L_{A90}), and unlikely to be noticed.
- Site noise levels were masked by other more dominant noise sources that are characteristic of the environment (such as breeze in foliage or continuous road traffic noise) that cannot be eliminated by monitoring at an alternate or intermediate location.
- It was not feasible or reasonable to employ methods such as move closer and back calculate. Cases may include rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

If exact noise levels from site could not be established due to masking by other noise sources in a similar frequency range but were determined to be at least 5 dB lower than relevant limits, then a maximum estimate of site noise may be provided. These are expressed as a 'less than' quantity, such as <20 dB or <30 dB.

For this assessment, the measured L_{Amax} has been used as a conservative estimate of $L_{A1,1minute}$. The EPA accepts sleep disturbance analysis based on either the $L_{A1,1minute}$ or L_{Amax} metrics, with the L_{Amax} representing a more conservative assessment of site noise emissions.

3.3 Meteorological data

This assessment determined stability categories throughout attended monitoring periods using the sigma-theta method as per Fact Sheet D of the NPfI. This data was sourced from the site AWS, in accordance with PA requirements.

3.4 Modifying factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. If applicable, modifying factor adjustments have been reported and added to measured site-only L_{Aeq}.

Low-frequency modifying factor penalties have only been applied if site was the only contributing low-frequency noise source. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

3.5 Instrumentation and personnel

Attended noise monitoring was conducted by Acoustical Consultant Lucas Adamson. Qualifications, experience and competency are in accordance with the Approved methods and demonstration of this is available upon request.

Equipment used to measure environmental noise levels is detailed in Table 3.1. Calibration certificates are provided in Appendix C.

Table 3.1 Attended noise monitoring equipment

Item	Serial number	Calibration due date	Relevant standard
Brüel & Kjær 2250 sound level meter	3029363	3/11/2024	IEC 61672-1:2013
Svantek SV-36 calibrator	79952	27/09/2025	IEC 60942:2017

4 Results

4.1 Total measured noise levels and atmospheric conditions

Overall noise levels measured at each location during attended measurements are provided in Table 4.1.

Table 4.1 Total measured noise levels[1], dB – 22 April 2024

Location	Start date and time	L_{Amax}	L_{A1}	L_{A10}	L_{Aeq}	L_{A50}	L_{A90}	L_{Amin}
RA1	22/04/2024 20:48	73	68	62	58	54	46	41
RA3	22/04/2024 21:10	50	44	43	42	42	39	37
RA2	22/04/2024 21:30	48	43	41	40	39	38	37
RA2	22/04/2024 22:00	61	52	39	41	38	37	36
RA3	22/04/2024 22:21	51	44	42	41	41	39	38
RA1	22/04/2024 22:47	79	66	58	55	45	38	35

Notes: 1. Levels in this table are not necessarily the result of activity at site.

Atmospheric conditions data measured by the operator during each measurement using a hand-held weather meter is shown in Table 4.2. The wind speed, direction and temperature were measured at approximately 1.5 m above ground. Attended noise monitoring is not done during rain, hail, or wind speeds above 5 m/s at microphone height.

Table 4.2 Measured atmospheric conditions – 22 April 2024

Location	Start date and time	Temperature °C	Wind speed m/s	Wind direction ° Magnetic north[1]	Cloud cover 1/8s
RA1	22/04/2024 20:48	15	<0.5	-	0
RA3	22/04/2024 21:10	15	<0.5	-	0
RA2	22/04/2024 21:30	15	<0.5	-	0
RA2	22/04/2024 22:00	14	<0.5	-	0
RA3	22/04/2024 22:21	14	<0.5	-	0
RA1	22/04/2024 22:47	14	<0.5	-	0

Notes: 1. "-" indicates calm conditions (wind speed <0.5 m/s) at monitoring location.

4.2 Site only noise levels

4.2.1 Modifying factors

There were no modifying factors, as defined in the NPfI, applicable during the survey.

4.2.2 Monitoring results

Table 4.3 provides site noise levels in the absence of other sources, where possible, and includes weather data from the site AWS. Noise limits are applicable under all weather conditions but where applicable are adjusted during very noise-enhancing weather conditions as defined by the NPfI (refer to Section 2.5).

Table 4.3 Site noise levels and limits – 22 April 2024

Location	Start date and time	Wind		Stability class	Standard limits apply?[1]	Limit, dB		Site level, dB[2]		Exceedance, dB	
		Speed (m/s)	Direction[3]			$L_{Aeq,15minute}$	$L_{A1,1minute}$	$L_{Aeq,15minute}$	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}
RA1	22/04/2024 20:48	0.3	137	F	Yes	36	N/A	IA	N/A	Nil	N/A
RA3	22/04/2024 21:10	0.3	333	F	Yes	39	N/A	38	N/A	Nil	N/A
RA2	22/04/2024 21:30	0.4	193	F	Yes	40	N/A	IA	N/A	Nil	N/A
RA2	22/04/2024 22:00	0.4	236	F	Yes	40	45	IA	IA	Nil	Nil
RA3	22/04/2024 22:21	0.3	259	F	Yes	39	49	IA	IA	Nil	Nil
RA1	22/04/2024 22:47	0.3	208	F	Yes	36	46	IA	IA	Nil	Nil

Notes: 1. If "No", adjusted noise limits (standard limit + 5 dB) apply during 'very noise-enhancing' meteorological conditions as stated in Section 2.5.

2. Site-only $L_{Aeq,15minute}$ include modifying factor adjustments if applicable.

3. Degrees magnetic north, "-" indicates calm conditions.

5 Discussion

5.1 Noted noise sources

During attended monitoring, the time variations (temporal characteristics) of noise sources are considered in each measurement via statistical descriptors. From these observations, summaries have been derived for the location and provided in this chapter. Statistical 1/3 octave-band analysis of environmental noise was undertaken and the following figures display frequency ranges of various noise sources at each location for L_{A1}, L_{A10}, L_{Aeq}, L_{A50}, and L_{A90} descriptors. These figures also provide, graphically, statistical information for these noise levels.

An example (non-site related) is provided as Figure 5.1, where frogs and insects are seen to be generating noise at frequencies above 1000 Hz, while industrial noise is generally observed at frequencies less than 1000 Hz.

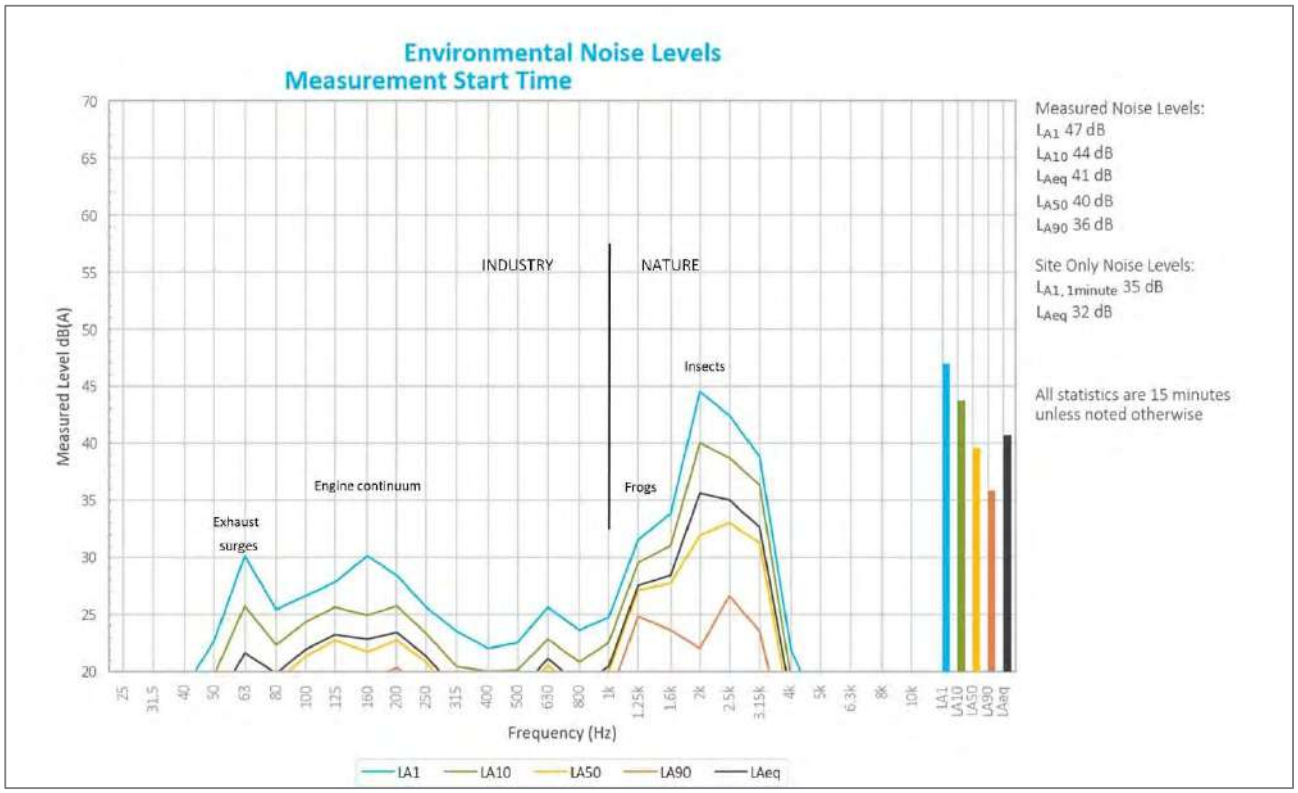


Figure 5.1 Example graph (refer to Section 5.1 for explanatory note)

5.2 RA1 – Evening

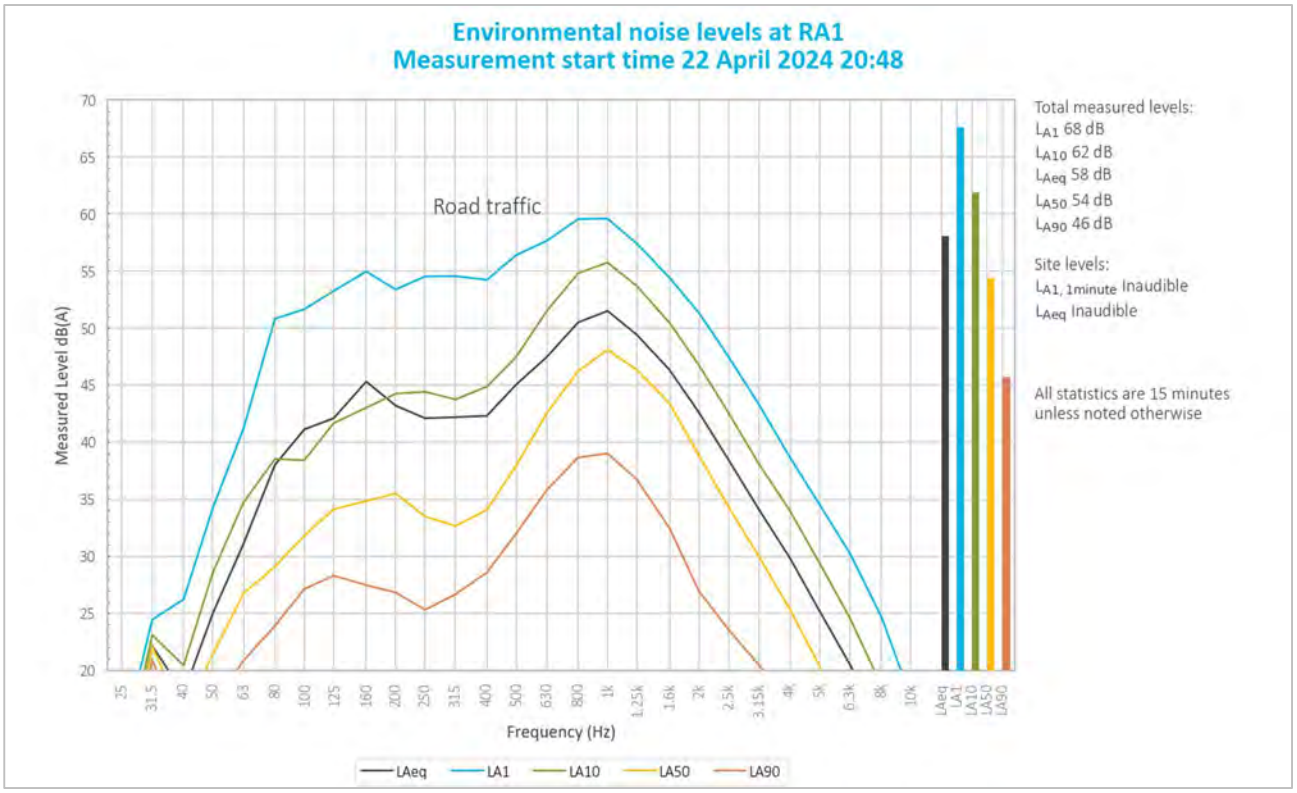


Figure 5.2 Environmental noise levels – RA1 (Pacific Highway) – Evening

MC operations were inaudible during the entire measurement.

Road traffic dominated measured noise levels.

5.3 RA3 – Evening

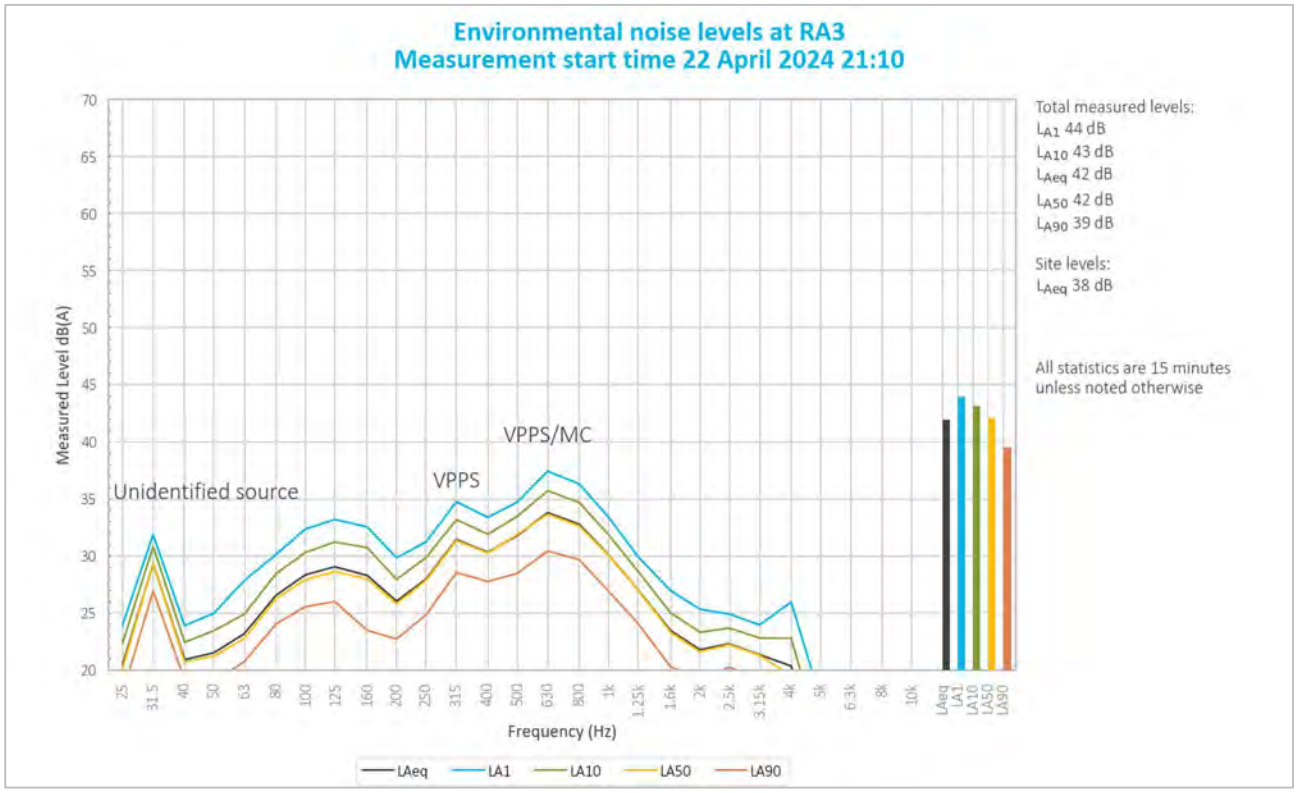


Figure 5.3 Environmental noise levels – RA3 (Kingfisher Shores) – Evening

MC operations were audible for most of the measurement.

Vales Point Power Station (VPPS) and an unidentified source (unrelated to site) also contributed to measured levels.

5.4 RA2 – Evening

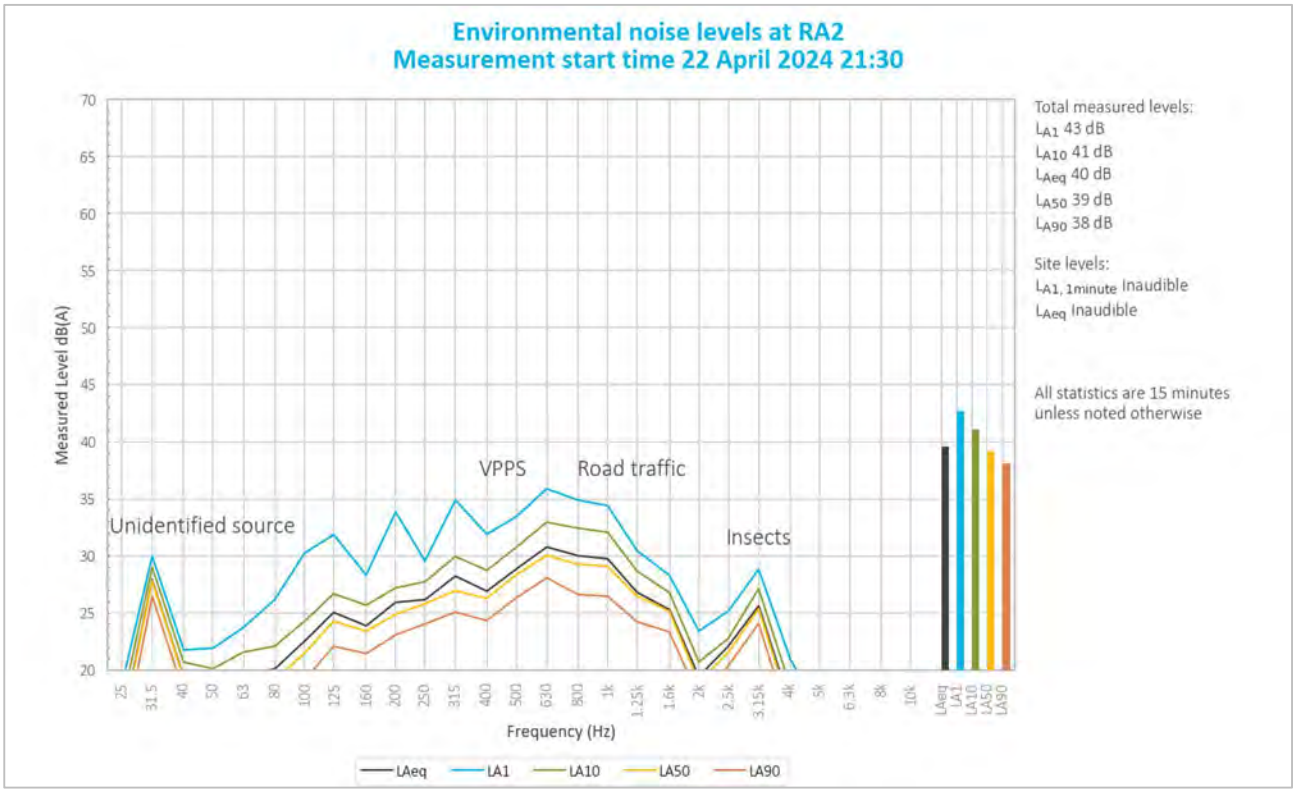


Figure 5.4 Environmental noise levels – RA2 (Macquarie Shores) – Evening

MC operations were inaudible during the entire measurement.

VPPS primarily contributed to measured levels. An unidentified source (unrelated to site), road traffic and insects also contributed to measures noise levels.

5.5 RA2 – Night

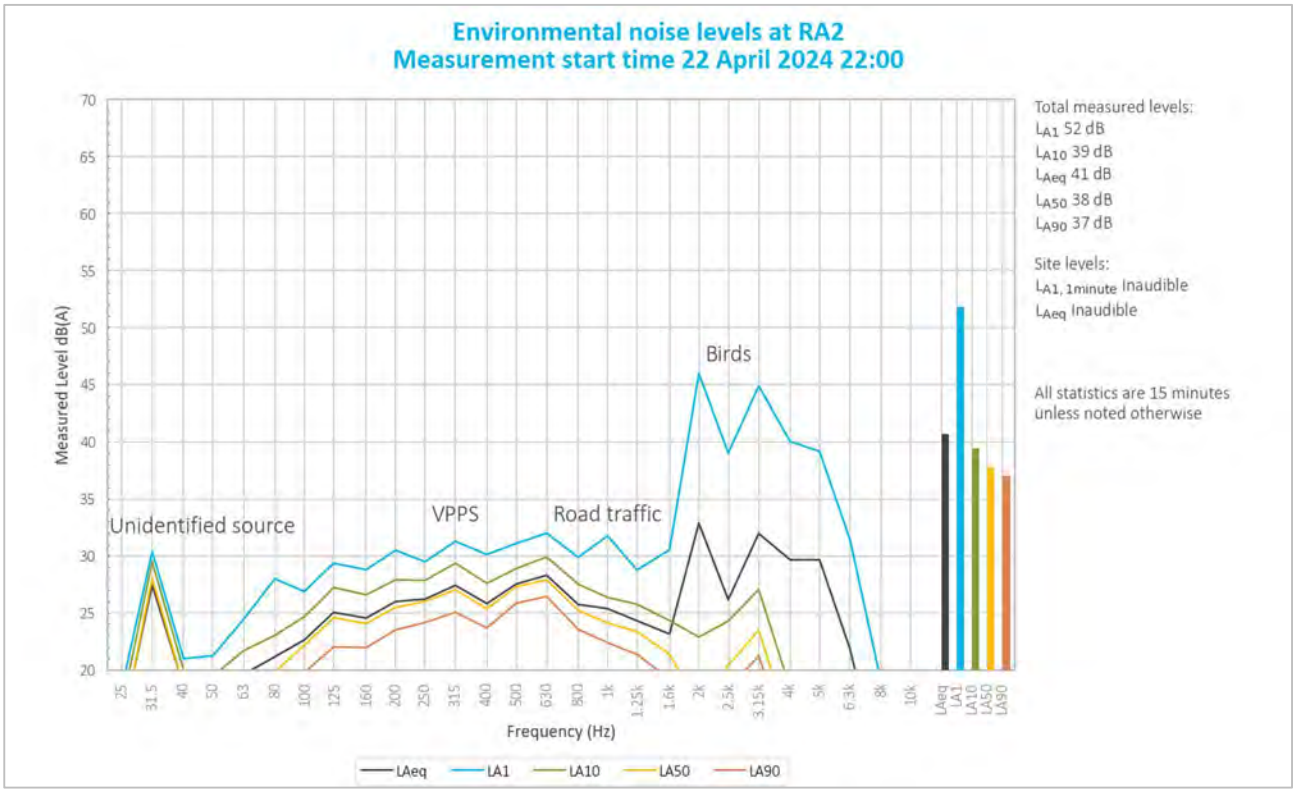


Figure 5.5 Environmental noise levels – RA2 (Macquarie Shores) – Night

MC operations were inaudible during the entire measurement.

VPPS primarily contributed to measured levels. An unidentified source (unrelated to site) and road traffic also contributed to measures noise levels. Birds generated the measured L_{A1} and contributed to the measured L_{Aeq}.

5.6 RA3 – Night

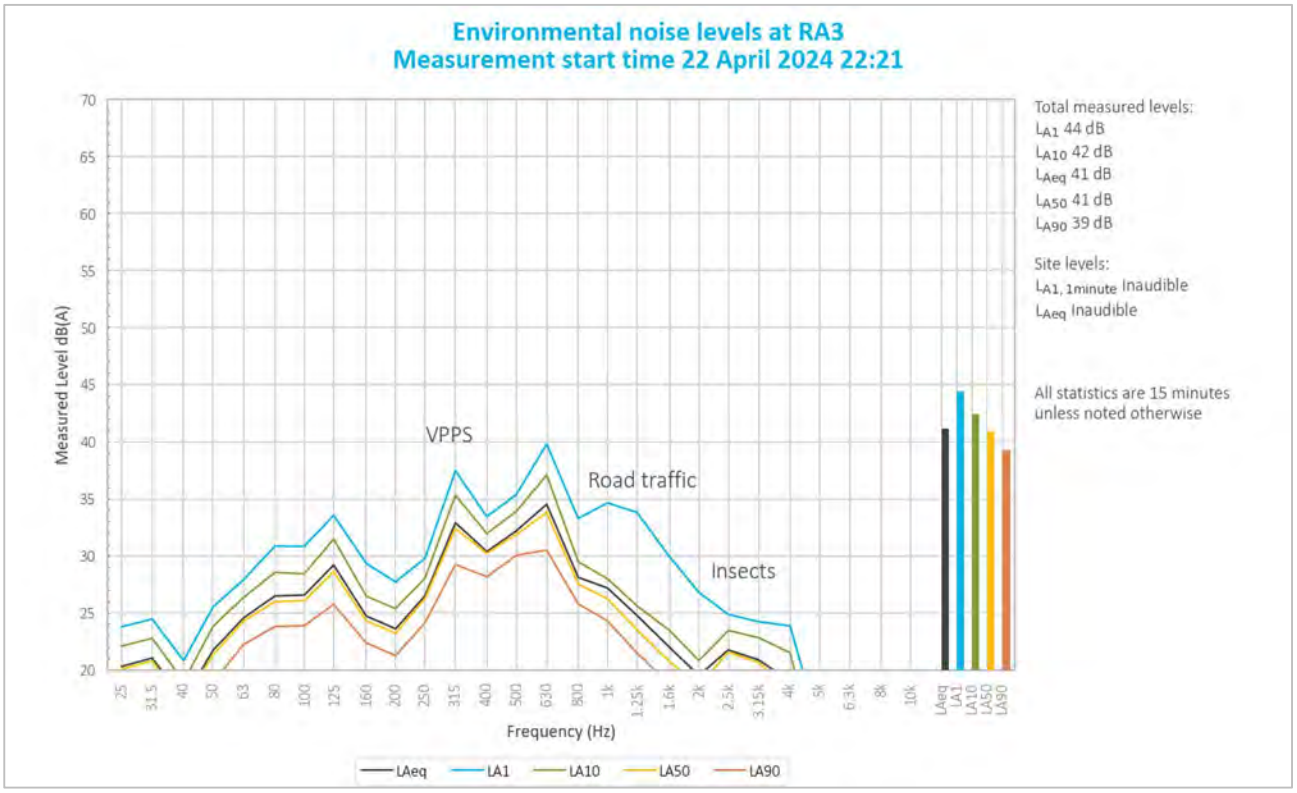


Figure 5.6 Environmental noise levels – RA3 (Kingfisher Shores) – Night

MC operations were inaudible during the entire measurement.

VPPS dominated measured noise levels.

5.7 RA1 – Night

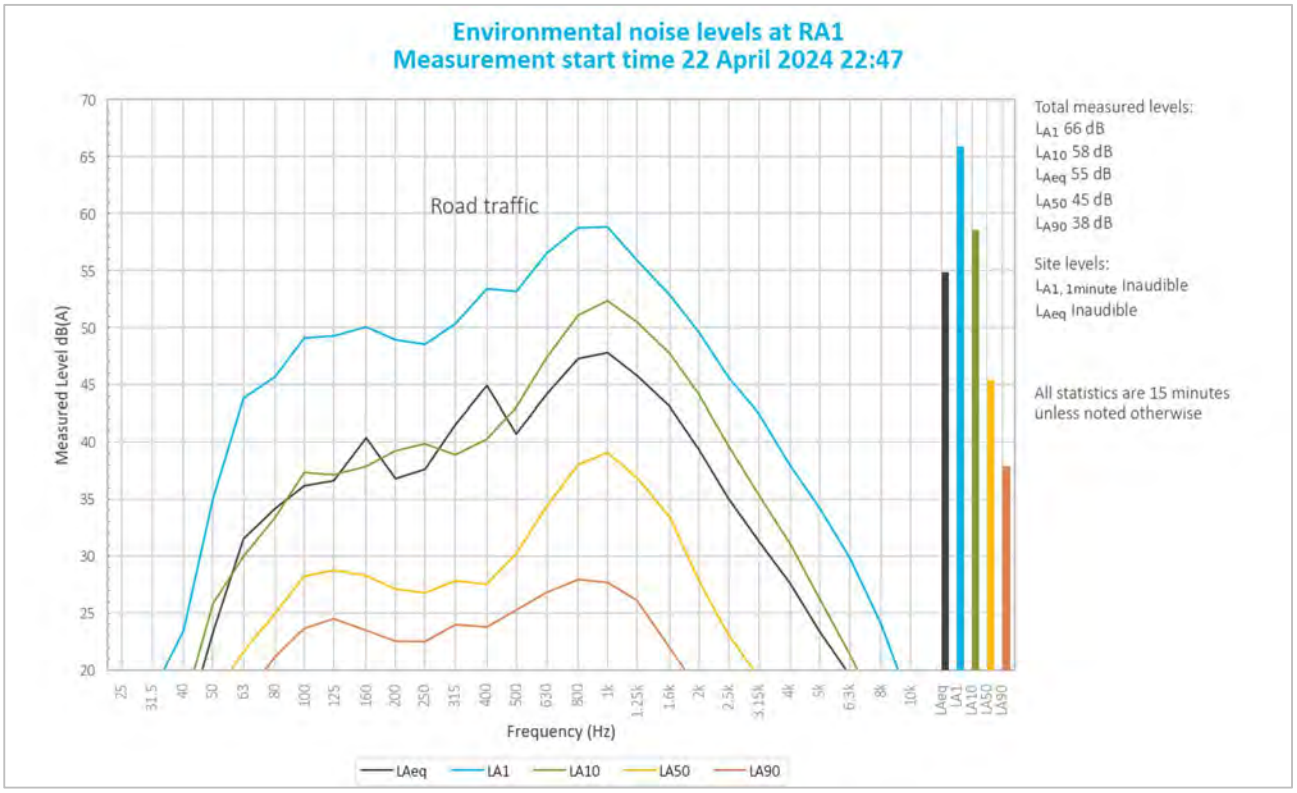


Figure 5.7 Environmental noise levels – RA1 (Pacific Highway) – Night

MC operations were inaudible during the entire measurement.

Road traffic dominated measured noise levels.

6 Summary

EMM Consulting Pty Ltd (EMM) was engaged by Great Southern Energy Pty Ltd (trading as Delta Coal) to complete a monthly noise survey of operations conducted at Mannering Colliery. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

Attended environmental noise monitoring described in this report was done during the evening and night periods on 22 April 2024 at three monitoring locations.

Noise levels from site complied with relevant limits at all monitoring locations during the April 2024 survey.

Appendix A
Noise perception and examples

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A.1 Noise levels

Table A.1 gives an indication as to how an average person perceives changes in noise level. Examples of common noise levels are provided in Figure A.1.

Table A.1 Perceived change in noise

Change in sound pressure level (dB)	Perceived change in noise
up to 2	Not perceptible
3	Just perceptible
5	Noticeable difference
10	Twice (or half) as loud
15	Large change
20	Four times (or quarter) as loud

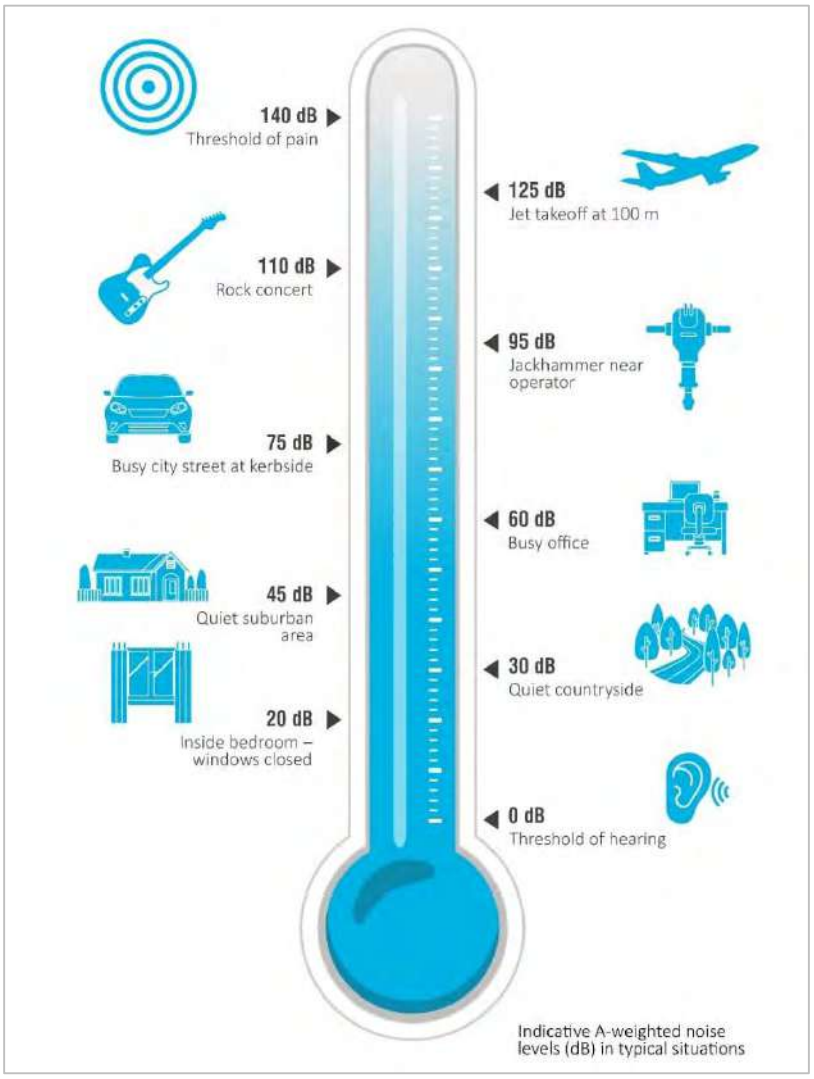


Figure A.1 Common noise levels

Appendix B
Regulator documents

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B.1 Project approval

SCHEDULE 3
SPECIFIC ENVIRONMENTAL CONDITIONS

NOISE

Construction Noise

1. The Applicant must ensure that the noise generated by any construction work is managed in accordance with the requirements outlined in the *Interim Construction Noise Guideline* (DECC, 2009).

Operational Noise Criteria

2. Except for the carrying out of construction works, the Applicant must ensure that the noise generated by the development does not exceed the criteria in Table 1 at any residence[a] on privately-owned land.

***Table 1**: Operational noise criteria dB(A)*

Noise Assessment Location	***Day*** $L_{Aeq\ (15\ min)}$	***Evening*** $L_{Aeq\ (15\ min)}$	***Night*** $L_{Aeq\ (15\ min)}$	***Night*** $L_{A1\ (1\ min)}$
4 – di Rocco	40	36	36	46
5 - Keighran	40	39	39	49
6 – Swan	40	37	37	47
7 – Druitt	40	35	35	45
8 – Macquarie Shores Home Village	42	42	42	47
9 - Jeans	40	37	37	47
11 - Jeans	40	36	36	46
18 - Jeans	40	36	36	46
20 – Knight and all other privately-owned residences	40	36	36	46

[a] *The Noise Assessment Locations referred to in Table 1 are shown in Appendix 4.*

Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the *NSW Noise Policy for Industry* (EPA, 2017).

3. The noise criteria in Table 1 do not apply if the Applicant has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Noise Operating Conditions

3A. The Applicant must:

(a) take all reasonable steps to minimise noise from construction and operational activities, including low frequency noise and other audible characteristics, associated with the development;

(b) implement reasonable and feasible noise attenuation measures on all plant and equipment that will operate in noise sensitive areas;

(c) operate a comprehensive noise management system commensurate with the risk of impact;

(d) take all reasonable steps to minimise the noise impacts of the development during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);

(e) carry out regular attended noise monitoring (at least once a month, unless otherwise agreed by the Planning Secretary) to determine whether the development is complying with the relevant conditions of this consent;

(f) regularly assess the noise monitoring data and modify or stop operations on the site to ensure compliance with the relevant conditions of this consent; and
(g) implement reasonable and feasible measures to further enclose the structure housing the coal crusher in order to further mitigate noise from operational activites.

3B. The Applicant must decommission the surface rotary breaker identified in the Statement of Commitments at Appendix 3, within 3 months of approval of Modification 5.

Noise Management Plan

3C. The Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
(a) be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;
(b) describe the measures to be implemented to ensure:
i. compliance with the noise criteria and operating conditions in this consent;
ii. best practice management is being employed; and
iii. noise impacts of the development are minimised during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);
(c) describe the noise management system in detail; and
(d) include a monitoring program that:
i. uses a combination of real-time and supplementary attended monitoring to evaluate the performance of the development;
ii. monitors noise at the nearest and/or most affected residences;
iii. includes a program to calibrate and validate the real-time noise monitoring results with the attended monitoring results over time;
iv. adequately supports the noise management system;
v. includes a protocol for distinguishing noise emissions of the development from any neighbouring developments; and
vi. includes a protocol for identifying any noise-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of any such event.

The Applicant must implement the Noise Management Plan as approved by the Planning Secretary.

SUBSIDENCE

4. The Applicant must limit its coal extraction methods on the site to first workings only, and must not undertake second workings.

5. Deleted.

SOIL AND WATER

Discharge

6. The Applicant must only discharge water from the site as expressly provided for by its EPL.

7. The Applicant must investigate, assess and report on the ecological interactions of minewater discharged from the site with the aquatic ecology of the unnamed creek and wetlands (and associated vegetation) between the minewater discharge point/s and Lake Macquarie. This report must:
(a) be prepared in consultation with EPA by suitably qualified expert/s whose appointment/s have been approved by the Planning Secretary;
(b) be submitted to the Planning Secretary by the end of March 2009; and
(c) assess the probable alterations in the local ecology attributable to previous and proposed minewater discharges and any future cessation of minewater discharge flows.

Water Management Plan

8. The Applicant must prepare a Water Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
(a) be prepared in consultation with DPIE Water by suitably qualified expert/s whose appointment/s have been approved by the Planning Secretary;
(b) be submitted the Planning Secretary by the end of March 2009; and
(c) include a:
- Site Water Balance;

B.2 Environment Protection Licence

Environment Protection Licence

L4 Waste

L4.1 The licensee must not cause, permit or allow any waste to be received at the premises, except the wastes expressly referred to in the column titled “Waste” and meeting the definition, if any, in the column titled “Description” in the table below.
Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled “Activity” in the table below.
Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste contained in the column titled “Other Limits” in the table below.
This condition does not limit any other conditions in this licence.

Code	Waste	Description	Activity	Other Limits
NA	Waste	Any other waste received on the premises for storage, treatment, processing, sorting or disposal and which receipt is not a scheduled activity under Schedule 1 of the POEO Act, as in force from time to time.		
NA	General or Specific exempted waste	Waste that meets all the conditions of a resource recovery exemption under Clause 51A of the Protection of the Environment Operations (Waste) Regulation 2014	As specified in each particular resource recovery exemption	N/A

L4.2 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.

L4.3 This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if it requires an environment protection licence.

L5 Noise limits

Note: Noise limits are not specified as a condition of this licence. Noise limits are prescribed with the conditions of Project Approval 06_0311 granted under the *Environmental Planning and Assessment Act 1979.* Under the *Environmental Planning and Assessment Act 1979* the Department of Planning is the appropriate authority in respect of the administration and regulation of the Project Approval.

B.3 Approved noise management plan

The above noise monitoring locations are representative of residential receivers most likely to be affected by CVC operational noise. Adherence with the relevant noise criteria at these locations will indicate that noise criteria will be met at other surrounding noise-sensitive locations.

4.2.3 Mannering Colliery

Consistent with the Noise Impact Assessment (EMM 2019) undertaken as part of the Project Approval MP06_0311 MOD 5, rural and residential receivers have been divided into three (3) receiver areas (RA's) with similar geographical and acoustic features. The following points are considered representative of each receiver area:

- RA1, rural residential properties south of MC and fronting the Pacific Highway. The dominant noise source in this area is road traffic. Birds, insects and other industrial sources are also audible at times.
- RA2, privately-owned relocatable residences within the MSHV, east of MC. The dominant noise sources in this RA are birds, insects, traffic and other industrial sources. Activities at MC are also noted to be audible at times.
- RA3, various rural residential residences on Tall Timbers Road at Kingfisher Shores and adjacent to the Chain Valley Bay suburban area. The dominant noise sources in this RA are birds, insects, other industrial sources and traffic movements. Activities at MC are also noted to be audible at times.

The attended noise monitoring locations for MC and relevant noise criteria are identified below in **Table 6**.

Table 6: Noise Monitoring Locations and Limits for Mannering Colliery

Location	Receivers Represented MP06_0311 ID	Coordinates	Day $L_{Aeq(15\ min)}$ dB (A)	Evening $L_{Aeq(15\ min)}$ dB (A)	Night $L_{Aeq(15\ min)}$ dB (A)	Night $L_{A1(1\ min)}$ dB (A)
RA1	4, 5, 6	364646E 6327221N	40	36	36	46
RA2	7, 8	365164E 6328332N	40	40	40	45
RA3	9, 11, 18, 20	365069E 6328953N	40	39	39	49

The above noise monitoring locations are representative of residential receivers most likely to be affected by MC operational noise. Adherence with the relevant noise criteria at these locations will indicate that noise criteria will be met at other surrounding noise-sensitive locations.

Appendix C
Calibration certificates

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CERTIFICATE OF CALIBRATION

CERTIFICATE NO: C37508

EQUIPMENT TESTED : Sound Level Calibrator

Manufacturer: Svantek
Type No: SV 36 **Serial No:** 79952
Class: 1
Owner: EMM Consulting Pty Ltd
L3, 175 Scott Street
Newcastle, NSW 2300
Tests Performed: Measured Output Pressure level, Frequency & Distortion
Comments: See Details and Class Tolerance overleaf.

CONDITION OF TEST:

Ambient Pressure	1005	hPa ±1 hPa	**Date of Receipt :**	26/09/2023
Temperature	23	°C ±1° C	**Date of Calibration :**	27/09/2023
Relative Humidity	47	% ±5%	**Date of Issue :**	28/09/2023

Acu-Vib Test Procedure: AVP02 (Calibrators)
Test Method: AS IEC 60942 - 2017

CHECKED BY: .....

AUTHORISED SIGNATURE: .....
Hein Soe

Accredited for compliance with ISO/IEC 17025 - Calibration
Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

This report applies only to the item identified in the report and may not be reproduced in part.

The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.

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Acoustic and Vibration Measurements

Acu-Vib Electronics
CALIBRATIONS SALES RENTALS REPAIRS
Head Office & Calibration Laboratory
Unit 14, 22 Hudson Ave. Castle Hill NSW 2154
(02) 9680 8133
www.acu-vib.com.au

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: SLM34169

EQUIPMENT TESTED: Sound Level Meter

Manufacturer:	B & K		
Type No:	2250	**Serial No:**	3029363
Mic. Type:	4189	**Serial No:**	3260501
Pre-Amp. Type:	ZC0032	**Serial No:**	30109
Filter Type:	1/3 Octave	**Test No:**	F034175

Owner: EMM Consulting
Suite 01, 20 Chandos St
St Leonards NSW 2065

Tests Performed: IEC 61672-3:2013 & IEC 61260-3:2016

Comments: All Test passed for Class 1. (See overleaf for details)

CONDITIONS OF TEST:

Ambient Pressure	1002	hPa ±1 hPa	**Date of Receipt :**	02/11/2022
Temperature	24	°C ±1° C	**Date of Calibration :**	03/11/2022
Relative Humidity	35	% ±5%	**Date of Issue :**	04/11/2022

Acu-Vib Test Procedure: AVP10 (SLM) & AVP06 (Filters)

CHECKED BY: ..... **AUTHORISED SIGNATURE:** .....

Jack Kielt

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Mannering Colliery

Monthly attended noise monitoring - May 2024

Prepared for Great Southern Energy Pty Ltd (trading as Delta Coal)

May 2024

Mannering Colliery

Monthly attended noise monitoring - May 2024

Great Southern Energy Pty Ltd (trading as Delta Coal)

E230753 RP1

May 2024

Version	Date	Prepared by	Reviewed by	Comments
1	29 May 2024	Teanuanua Villierme	Najah Ishac	Draft
2	31 May 2024	Teanuanua Villierme	Najah Ishac	Final

Approved by



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Director
31 May 2024
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1 Introduction

1.1 Background

EMM Consulting Pty Ltd (EMM) was engaged by Great Southern Energy Pty Ltd (trading as Delta Coal) to conduct a monthly noise survey of operations at Mannering Colliery (MC, the site) located at Ruttleys Road, Mannering Park NSW. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

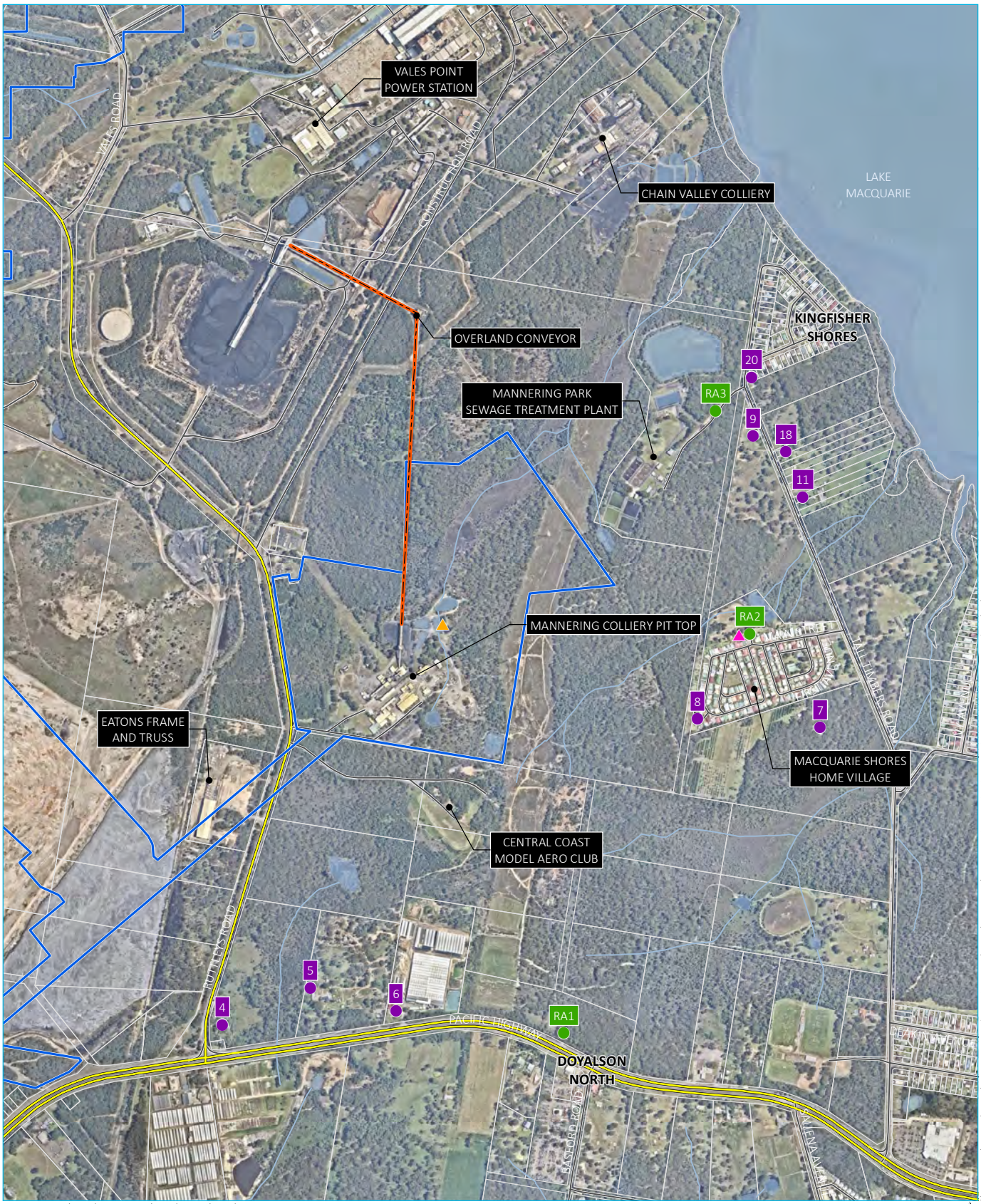
Attended environmental noise monitoring described in this report was done during the evening and night periods on 22 May 2024 at three monitoring locations.

1.2 Attended monitoring locations

Site monitoring locations are detailed in Table 1.1 and shown on Figure 1.1. It should be noted that Figure 1.1 shows actual monitoring positions, not necessarily the location of residences.

Table 1.1 Attended noise monitoring locations

Location descriptor/ID	Description/address	Coordinates (MGA56)	
		Easting	Northing
RA1	Pacific Highway, Doyalson North	364646	6327221
RA2	Macquarie Shores Home Village, Doyalson North	365164	6328332
RA3	Tall Timbers Road (northern end), Kingfisher Shores	365069	6328953



Source: EMM (2021); NearMap (2019); DFSI (2017)

0 250 500 m

GDA 1994 MGA Zone 56

N

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KEY

- Mannering Colliery project approval boundary
- Alignment of overland conveyor to VPPS
- Main road
- Local road
- Watercourse/drainage line
- Waterbody
- Cadastral boundary
- Assessment location
- Attended monitoring location
- Continuous monitoring location
- Meteorological station

Attended noise monitoring and assessment locations

Mannering Colliery
Figure 1.1

EMM creating opportunities

1.3 Terminology and abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

Table 1.2 Terminology and abbreviations

Term/descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The "A" weighting scale is used to approximate how humans hear noise.
L_{Amax}	The maximum root mean squared A-weighted noise level over a time period.
L_{A1}	The A-weighted noise level which is exceeded for 1 per cent of the time.
$L_{A1,1minute}$	The A-weighted noise level which is exceeded for 1 per cent of the specified time period of 1 minute.
L_{A10}	The A-weighted noise level which is exceeded for 10 percent of the time.
L_{Aeq}	The energy average A-weighted noise level.
$L_{Aeq,15minute}$	The energy average A-weighted noise level over the specified time period of 15 minutes.
L_{A50}	The A-weighted noise level which is exceeded for 50 per cent of the time, also the median noise level during a measurement period.
L_{A90}	The A-weighted noise level exceeded for 90 percent of the time, also referred to as the "background" noise level and commonly used to derive noise limits.
L_{Amin}	The minimum A-weighted noise level over a time period.
L_{Ceq}	The energy 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.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	Monday – Saturday: 7 am to 6 pm, on Sundays and Public Holidays: 8 am to 6 pm.
Evening	Monday – Saturday: 6 pm to 10 pm, on Sundays and Public Holidays: 6 pm to 10 pm.
Night	Monday – Saturday: 10 pm to 7 am, on Sundays and Public Holidays: 10 pm to 8 am.
NPfI	NSW EPA Noise Policy for Industry (2017)
Temperature inversion	A meteorological condition where the atmospheric temperature increases with altitude.

Appendix A provides further information that gives an indication as to how an average person perceives changes in noise level, and examples of common noise levels.

2 Noise limits

2.1 Project approval

Mannering Colliery noise limits are provided in Table 1, Condition 2 of Schedule 3 of the current project approval (PA) PA MP06_0311 dated 5 June 2020. Relevant sections of the PA are reproduced in Appendix B.1.

2.2 Environment protection licence

The current Environment Protection Licence (EPL) 191 dated 16 June 2023 references the PA with respect to noise limits. Relevant sections of the EPL are reproduced in Appendix B.2.

2.3 Noise management plan

The approved Noise Management Plan (NMP) (dated 20 April 2022) was prepared in line with the Mod 5 approval and in accordance with the NSW EPA 'Noise Policy for Industry' (NPfI) issued in October 2017. Three attended noise monitoring locations representative of the PA noise assessment locations have been adopted in the NMP for the purpose of determining compliance with relevant noise limits. Relevant sections of the NMP are reproduced in Appendix B.3.

2.4 Noise limits

Noise limits consistent with the PA, EPL and approved NMP are as shown in Table 2.1.

Table 2.1 Noise limits, dB

Location	Day $L_{Aeq,15minute}$	Evening $L_{Aeq,15minute}$	Night $L_{Aeq,15minute}$	Night $L_{A1,1minute}$
RA1	40	36	36	46
RA2	40	40	40	45
RA3	40	39	39	49

2.5 Meteorological conditions

The PA (Mod 5) states the following:

> Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Noise Policy for Industry (EPA, 2017).

Section 5.2 of the NPfI states that noise limits applicable under 'very noise-enhancing' conditions should be the limits that apply under 'standard' or 'noise-enhancing' conditions plus 5 dB. This implies that there will be no periods when noise limits do not apply due to meteorological conditions.

As per the PA (Mod 5) and in accordance with the NPfI, limits are adjusted when monitoring is undertaken during the following 'very noise-enhancing' conditions:

- wind speeds greater than 3 m/s at 10 m above ground level;

- stability category F temperature inversion conditions with wind speeds greater than 2 m/s at 10 m above ground level; or
- stability category G temperature inversion conditions.

Therefore, if monthly noise monitoring occurs during 'very noise-enhancing' conditions, this assessment adopts a +5 dB adjustment to the limits shown in Table 2.1. This is indicated in Table 4.3 where relevant. It is noted that monthly noise monitoring for the site is always scheduled to occur during appropriate forecasted meteorological conditions in accordance with the 'Approved methods for the measurement and analysis of environmental noise in NSW' (EPA 2022) (the approved methods).

2.6 Additional considerations

Monitoring and reporting have been done in accordance with the NSW EPA's NPfI and the approved methods.

3 Methodology

3.1 Overview

Attended environmental noise monitoring was done in general accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise' and relevant EPA requirements. Meteorological data was obtained from the Mannering Colliery on-site automatic weather station (AWS) which allowed correlation of atmospheric parameters with measured noise levels.

3.2 Attended noise monitoring

During this survey, attended noise monitoring was done during the evening and night periods at each location in accordance with the NMP. The duration of each measurement was 15 minutes. Atmospheric conditions were measured at each monitoring location.

Measured sound levels from various sources were noted during each measurement, and particular attention was paid to the extent of site contribution (if any) to measured levels. At each monitoring location, the site-only $L_{Aeq,15minute}$ and L_{Amax} were measured directly or determined by other methods detailed in Section 7.1 of the NPfI. For example, frequency filtering and observations when extraneous noise is low are some of the techniques used to isolate site noise contribution.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may be used in this report. When site noise is noted as IA, it was inaudible at the monitoring location. When site noise is noted as NM, this means it was audible but could not be quantified. All results noted as NM in this report were due to one or more of the following:

- Site noise levels were very low, typically more than 10 dB below the measured background (L_{A90}), and unlikely to be noticed.
- Site noise levels were masked by other more dominant noise sources that are characteristic of the environment (such as breeze in foliage or continuous road traffic noise) that cannot be eliminated by monitoring at an alternate or intermediate location.
- It was not feasible or reasonable to employ methods such as move closer and back calculate. Cases may include rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

If exact noise levels from site could not be established due to masking by other noise sources in a similar frequency range but were determined to be at least 5 dB lower than relevant limits, then a maximum estimate of site noise may be provided. These are expressed as a 'less than' quantity, such as <20 dB or <30 dB.

For this assessment, the measured L_{Amax} has been used as a conservative estimate of $L_{A1,1minute}$. The EPA accepts sleep disturbance analysis based on either the $L_{A1,1minute}$ or L_{Amax} metrics, with the L_{Amax} representing a more conservative assessment of site noise emissions.

3.3 Meteorological data

This assessment determined stability categories throughout attended monitoring periods using the sigma-theta method as per Fact Sheet D of the NPfI. This data was sourced from the site AWS, in accordance with PA requirements.

3.4 Modifying factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. If applicable, modifying factor adjustments have been reported and added to measured site-only L_{Aeq}.

Low-frequency modifying factor penalties have only been applied if site was the only contributing low-frequency noise source. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

3.5 Instrumentation and personnel

Attended noise monitoring was conducted by Acoustical Consultant Teanuanua Villierme. Qualifications, experience and competency are in accordance with the Approved methods and demonstration of this is available upon request.

Equipment used to measure environmental noise levels is detailed in Table 3.1. Calibration certificates are provided in Appendix C.

Table 3.1 Attended noise monitoring equipment

Item	Serial number	Calibration due date	Relevant standard
Brüel & Kjær 2250 sound level meter	3029363	3/11/2024	IEC 61672-1:2013
Svantek SV-36 calibrator	79952	27/09/2025	IEC 60942:2017

4 Results

4.1 Total measured noise levels and atmospheric conditions

Overall noise levels measured at each location during attended measurements are provided in Table 4.1.

Table 4.1 Total measured noise levels[1], dB – 22 May 2024

Location	Start date and time	L_{Amax}	L_{A1}	L_{A10}	L_{Aeq}	L_{A50}	L_{A90}	L_{Amin}
RA1	22/05/2024 20:50	72	68	63	59	55	48	45
RA2	22/05/2024 21:15	53	48	45	44	44	43	42
RA3	22/05/2024 21:41	52	48	47	46	46	45	44
RA3	22/05/2024 22:00	59	47	46	45	45	44	43
RA1	22/05/2024 22:23	68	65	61	56	50	43	39
RA2	22/05/2024 22:45	59	50	44	44	43	42	41

Notes: 1. Levels in this table are not necessarily the result of activity at site.

Atmospheric conditions data measured by the operator during each measurement using a hand-held weather meter is shown in Table 4.2. The wind speed, direction and temperature were measured at approximately 1.5 m above ground. Attended noise monitoring is not done during rain, hail, or wind speeds above 5 m/s at microphone height.

Table 4.2 Measured atmospheric conditions – 22 May 2024

Location	Start date and time	Temperature °C	Wind speed m/s	Wind direction ° Magnetic north[1]	Cloud cover 1/8s
RA1	22/05/2024 20:50	12	<0.5	-	0
RA2	22/05/2024 21:15	9	<0.5	-	0
RA3	22/05/2024 21:41	10	<0.5	-	0
RA3	22/05/2024 22:00	9	<0.5	-	0
RA1	22/05/2024 22:23	10	<0.5	-	0
RA2	22/05/2024 22:45	8	<0.5	-	0

Notes: 1. "-" indicates calm conditions (wind speed <0.5 m/s) at monitoring location.

4.2 Site only noise levels

4.2.1 Modifying factors

There were no modifying factors, as defined in the NPfI, applicable during the survey.

4.2.2 Monitoring results

Table 4.3 provides site noise levels in the absence of other sources, where possible, and includes weather data from the site AWS. Noise limits are applicable under all weather conditions but where applicable are adjusted during very noise-enhancing weather conditions as defined by the NPfI (refer to Section 2.5).

Table 4.3 Site noise levels and limits – 22 May 2024

Location	Start date and time	Wind		Stability class	Standard limits apply?[1]	Limit, dB		Site level, dB[2]		Exceedance, dB	
		Speed (m/s)	Direction[3]			$L_{Aeq,15minute}$	$L_{A1,1minute}$	$L_{Aeq,15minute}$	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}
RA1	22/05/2024 20:50	0.3	206	F	Yes	36	N/A	IA	N/A	Nil	N/A
RA2	22/05/2024 21:15	0.2	239	F	Yes	40	N/A	<40	N/A	Nil	N/A
RA3	22/05/2024 21:41	0.9	253	F	Yes	39	N/A	<39	N/A	Nil	N/A
RA3	22/05/2024 22:00	0.9	254	E	Yes	39	49	<39	<39	Nil	Nil
RA1	22/05/2024 22:23	0.6	250	F	Yes	36	46	IA	IA	Nil	Nil
RA2	22/05/2024 22:45	0.3	230	F	Yes	40	45	40	41	Nil	Nil

Notes: 1. If "No", adjusted noise limits (standard limit + 5 dB) apply during 'very noise-enhancing' meteorological conditions as stated in Section 2.5.

2. Site-only $L_{Aeq,15minute}$ include modifying factor adjustments if applicable.

3. Degrees magnetic north, "-" indicates calm conditions.

5 Discussion

5.1 Noted noise sources

During attended monitoring, the time variations (temporal characteristics) of noise sources are considered in each measurement via statistical descriptors. From these observations, summaries have been derived for the location and provided in this chapter. Statistical 1/3 octave-band analysis of environmental noise was undertaken and the following figures display frequency ranges of various noise sources at each location for L_{A1}, L_{A10}, L_{Aeq}, L_{A50}, and L_{A90} descriptors. These figures also provide, graphically, statistical information for these noise levels.

An example (non-site related) is provided as Figure 5.1, where frogs and insects are seen to be generating noise at frequencies above 1000 Hz, while industrial noise is generally observed at frequencies less than 1000 Hz.

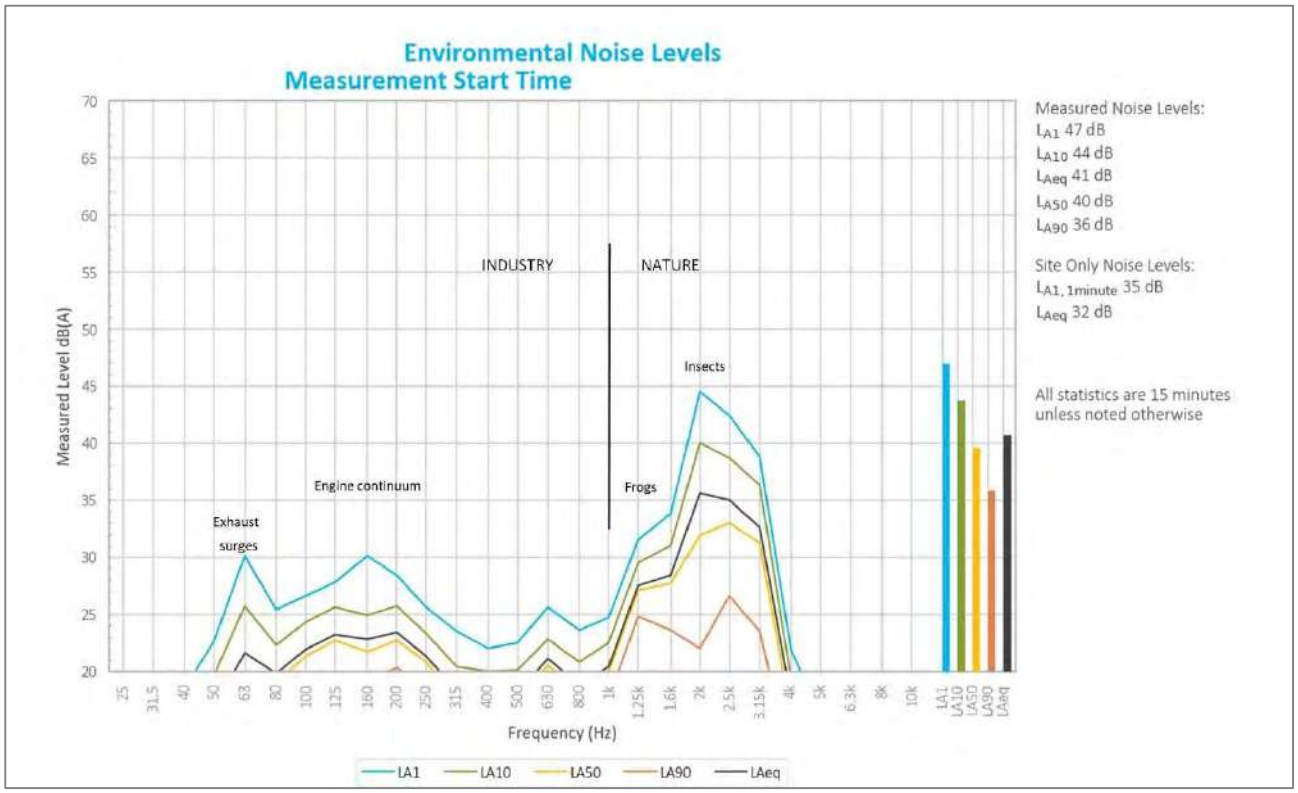


Figure 5.1 Example graph (refer to Section 5.1 for explanatory note)

5.2 RA1 – Evening

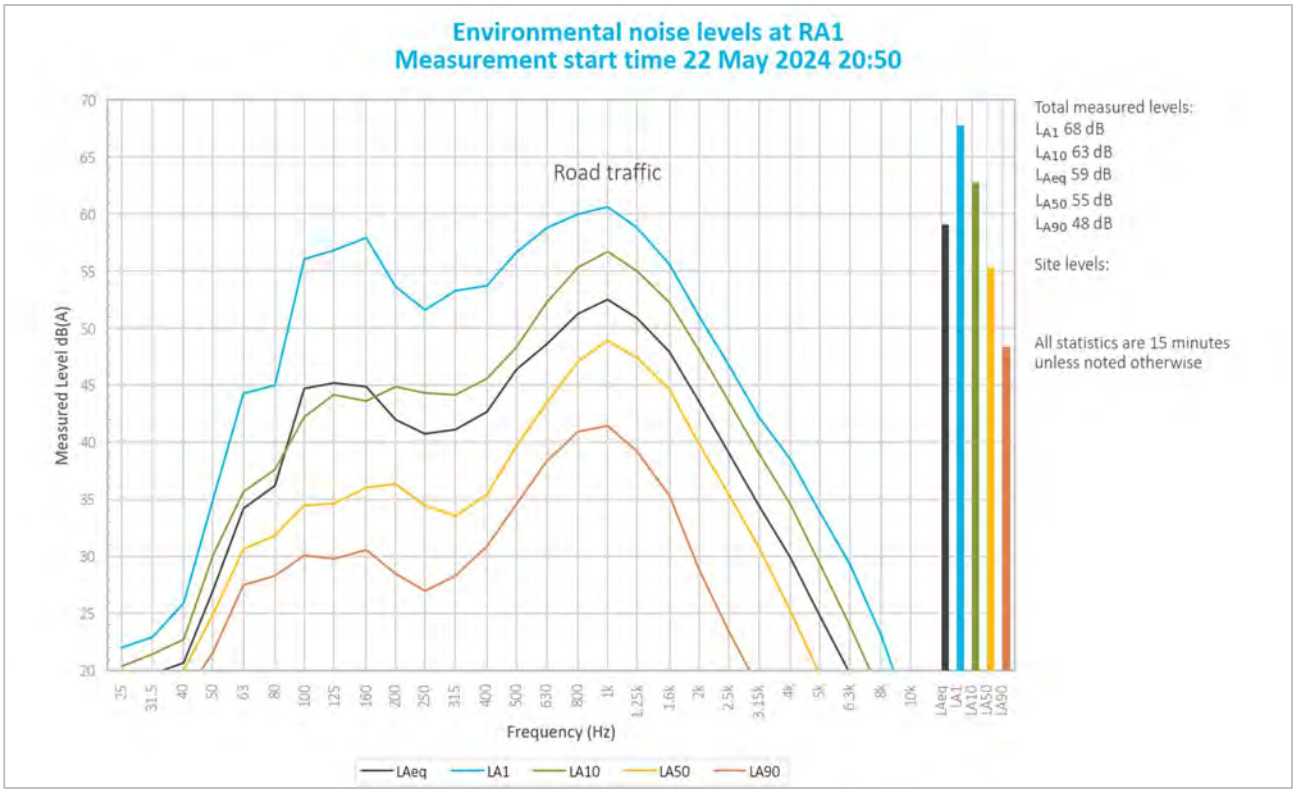


Figure 5.2 Environmental noise levels – RA1 (Pacific Highway) – Evening

MC operations were inaudible during the entire measurement.

Road traffic dominated measured noise levels.

5.3 RA2 – Evening

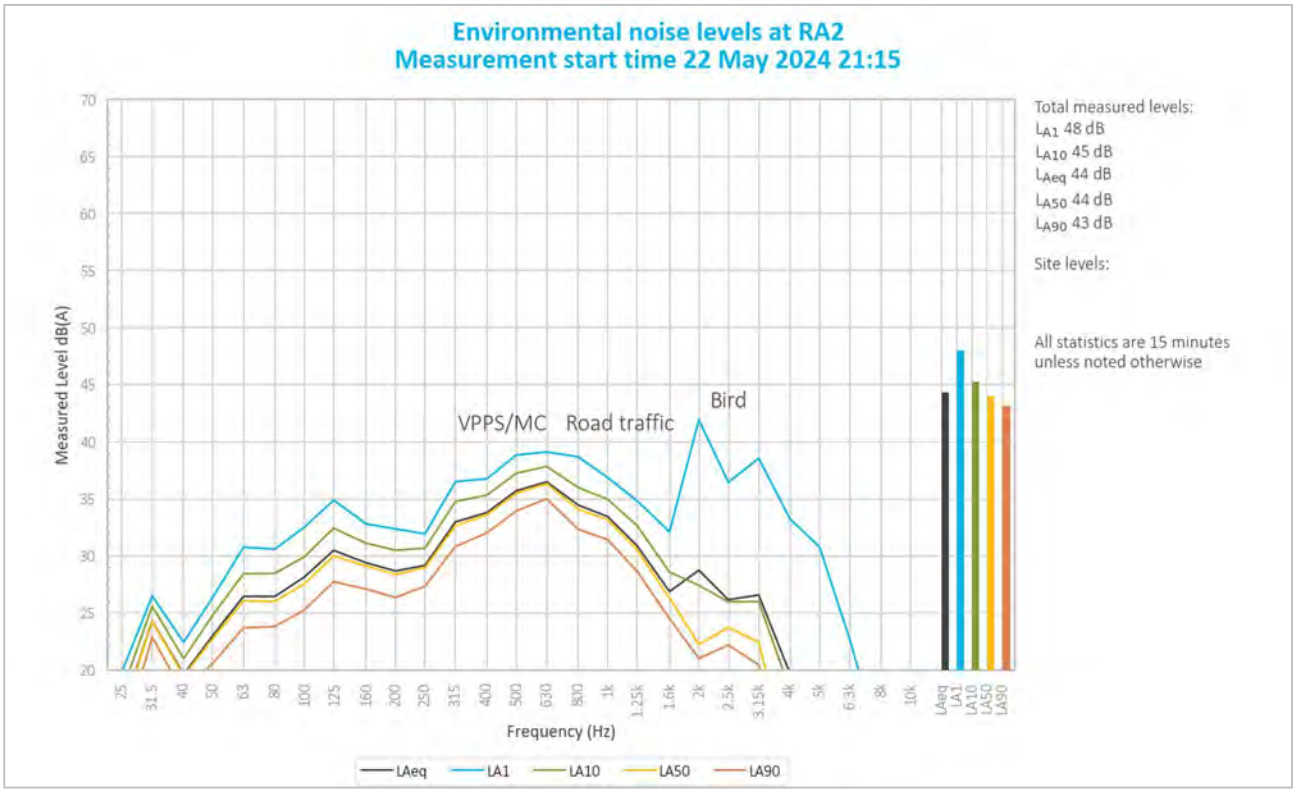


Figure 5.3 Environmental noise levels – RA2 (Macquarie Shores) – Evening

MC operations were consistently audible during the measurement.

Vales Point Power Station (VPPS) inclusive of the overland conveyor and MC contributed to the measured L_{A10}, L_{Aeq}, L_{A50} and L_{A90}. Road traffic also contributed to measured noise levels. Bird noise generated the measured L_{A1}.

5.4 RA3 – Evening

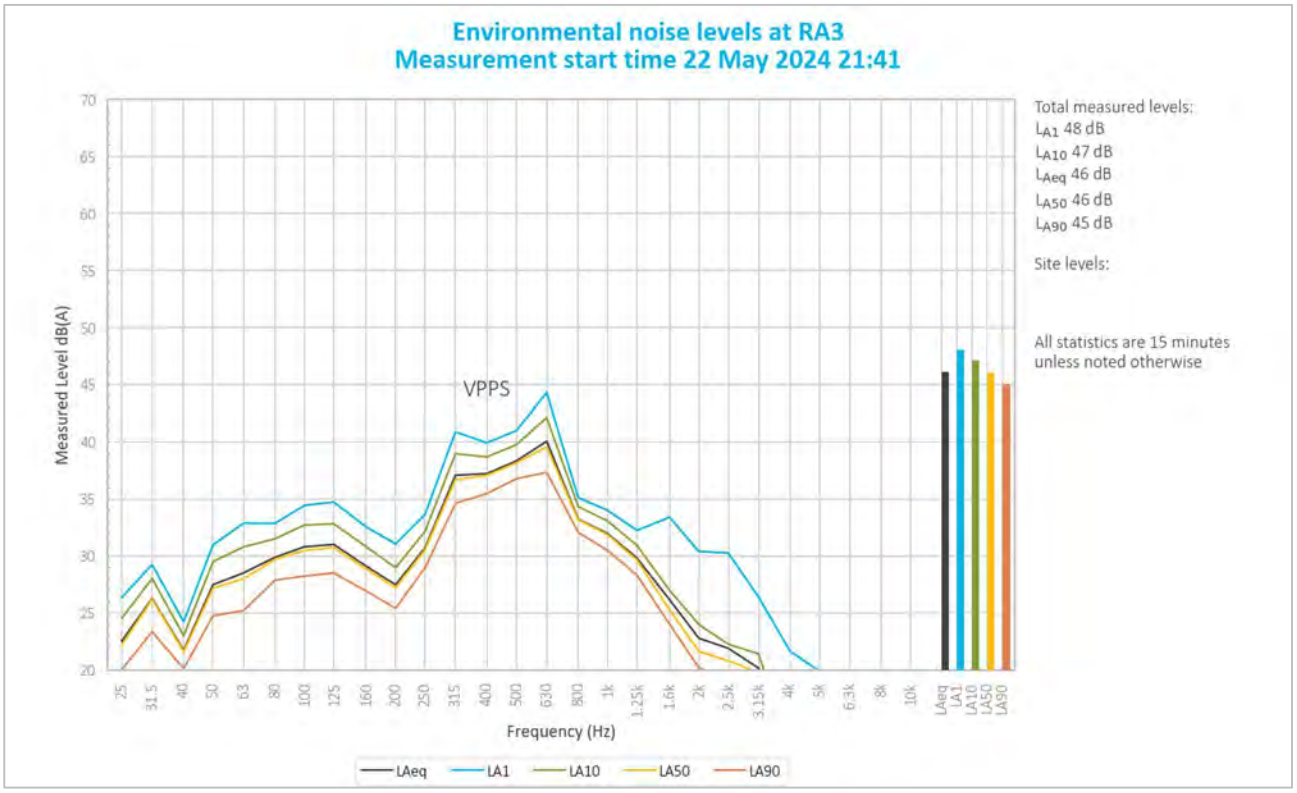


Figure 5.4 Environmental noise levels – RA3 (Kingfisher Shores) – Evening

MC operations were just audible in the background.

VPPS dominated measured noise levels.

5.5 RA3 – Night

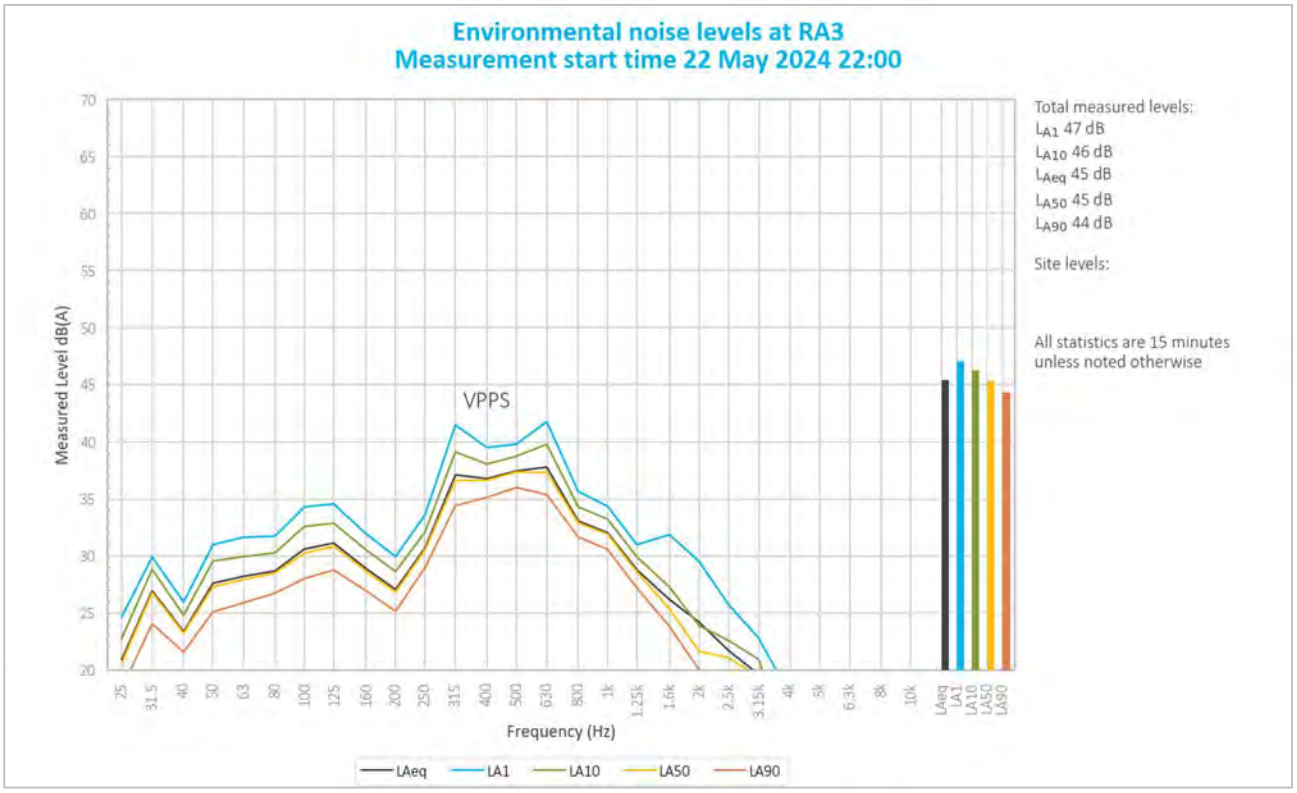


Figure 5.5 Environmental noise levels – RA3 (Kingfisher Shores) – Night

MC operations were just audible in the background.

VPPS dominated measured noise levels.

5.6 RA1 – Night

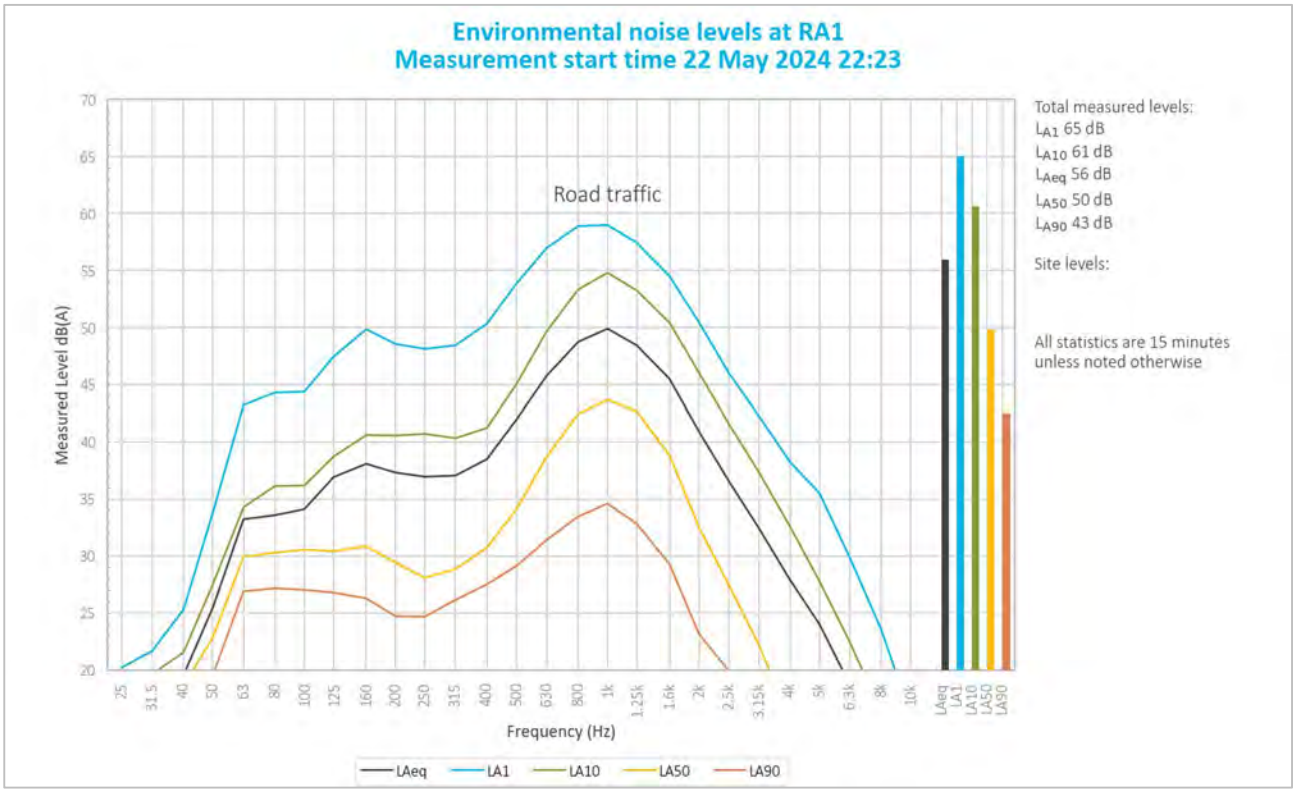


Figure 5.6 Environmental noise levels – RA1 (Pacific Highway) – Night

MC operations were inaudible during the entire measurement.

Road traffic dominated measured noise levels.

5.7 RA2 – Night

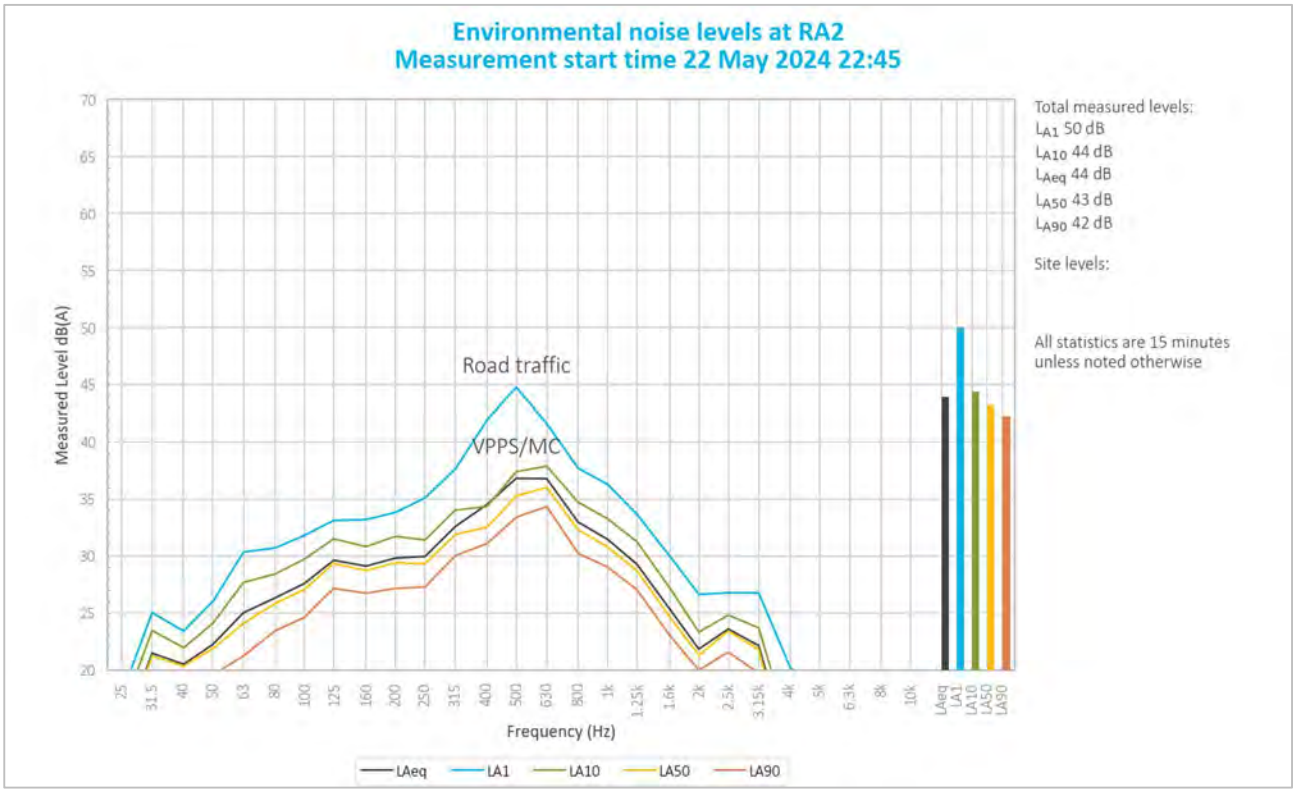


Figure 5.7 Environmental noise levels – RA2 (Macquarie Shores) – Night

MC operations were consistently audible during the measurement.

VPPS (inclusive of the overland conveyor), MC and road traffic contributed to the measured L_{A10}, L_{Aeq}, L_{A50} and L_{A90}. Road traffic noise (car revving) generated the measured L_{A1}.

6 Summary

EMM Consulting Pty Ltd (EMM) was engaged by Great Southern Energy Pty Ltd (trading as Delta Coal) to complete a monthly noise survey of operations conducted at Mannering Colliery. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

Attended environmental noise monitoring described in this report was done during the evening and night periods on 22 May 2024 at three monitoring locations.

Noise levels from site complied with relevant limits at all monitoring locations during the May 2024 survey.

Appendix A
Noise perception and examples

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A.1 Noise levels

Table A.1 gives an indication as to how an average person perceives changes in noise level. Examples of common noise levels are provided in Figure A.1.

Table A.1 Perceived change in noise

Change in sound pressure level (dB)	Perceived change in noise
up to 2	Not perceptible
3	Just perceptible
5	Noticeable difference
10	Twice (or half) as loud
15	Large change
20	Four times (or quarter) as loud

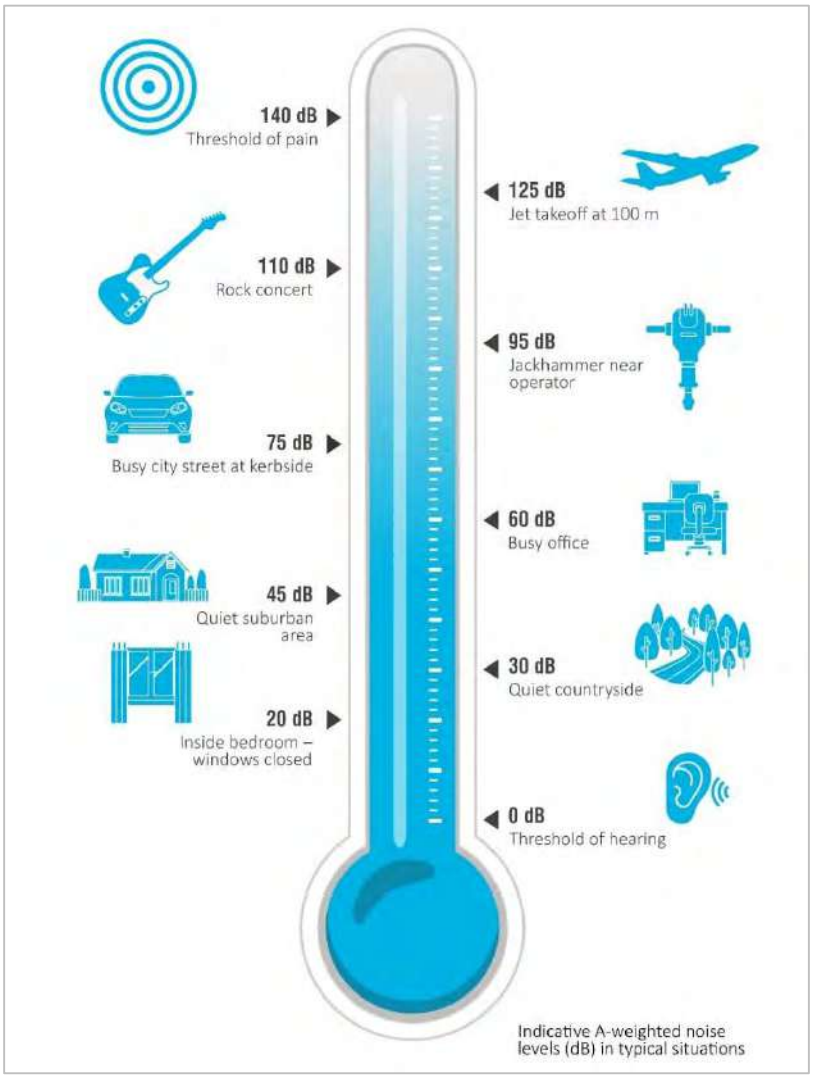


Figure A.1 Common noise levels

Appendix B
Regulator documents

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B.1 Project approval

SCHEDULE 3
SPECIFIC ENVIRONMENTAL CONDITIONS

NOISE

Construction Noise

1. The Applicant must ensure that the noise generated by any construction work is managed in accordance with the requirements outlined in the *Interim Construction Noise Guideline* (DECC, 2009).

Operational Noise Criteria

2. Except for the carrying out of construction works, the Applicant must ensure that the noise generated by the development does not exceed the criteria in Table 1 at any residence[a] on privately-owned land.

***Table 1**: Operational noise criteria dB(A)*

Noise Assessment Location	***Day*** $L_{Aeq\ (15\ min)}$	***Evening*** $L_{Aeq\ (15\ min)}$	***Night*** $L_{Aeq\ (15\ min)}$	***Night*** $L_{A1\ (1\ min)}$
4 – di Rocco	40	36	36	46
5 - Keighran	40	39	39	49
6 – Swan	40	37	37	47
7 – Druitt	40	35	35	45
8 – Macquarie Shores Home Village	42	42	42	47
9 - Jeans	40	37	37	47
11 - Jeans	40	36	36	46
18 - Jeans	40	36	36	46
20 – Knight and all other privately-owned residences	40	36	36	46

[a] *The Noise Assessment Locations referred to in Table 1 are shown in Appendix 4.*

Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the *NSW Noise Policy for Industry* (EPA, 2017).

3. The noise criteria in Table 1 do not apply if the Applicant has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Noise Operating Conditions

3A. The Applicant must:

(a) take all reasonable steps to minimise noise from construction and operational activities, including low frequency noise and other audible characteristics, associated with the development;

(b) implement reasonable and feasible noise attenuation measures on all plant and equipment that will operate in noise sensitive areas;

(c) operate a comprehensive noise management system commensurate with the risk of impact;

(d) take all reasonable steps to minimise the noise impacts of the development during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);

(e) carry out regular attended noise monitoring (at least once a month, unless otherwise agreed by the Planning Secretary) to determine whether the development is complying with the relevant conditions of this consent;

(f) regularly assess the noise monitoring data and modify or stop operations on the site to ensure compliance with the relevant conditions of this consent; and
(g) implement reasonable and feasible measures to further enclose the structure housing the coal crusher in order to further mitigate noise from operational activites.

3B. The Applicant must decommission the surface rotary breaker identified in the Statement of Commitments at Appendix 3, within 3 months of approval of Modification 5.

Noise Management Plan

3C. The Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
(a) be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;
(b) describe the measures to be implemented to ensure:
i. compliance with the noise criteria and operating conditions in this consent;
ii. best practice management is being employed; and
iii. noise impacts of the development are minimised during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);
(c) describe the noise management system in detail; and
(d) include a monitoring program that:
i. uses a combination of real-time and supplementary attended monitoring to evaluate the performance of the development;
ii. monitors noise at the nearest and/or most affected residences;
iii. includes a program to calibrate and validate the real-time noise monitoring results with the attended monitoring results over time;
iv. adequately supports the noise management system;
v. includes a protocol for distinguishing noise emissions of the development from any neighbouring developments; and
vi. includes a protocol for identifying any noise-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of any such event.

The Applicant must implement the Noise Management Plan as approved by the Planning Secretary.

SUBSIDENCE

4. The Applicant must limit its coal extraction methods on the site to first workings only, and must not undertake second workings.

5. Deleted.

SOIL AND WATER

Discharge

6. The Applicant must only discharge water from the site as expressly provided for by its EPL.

7. The Applicant must investigate, assess and report on the ecological interactions of minewater discharged from the site with the aquatic ecology of the unnamed creek and wetlands (and associated vegetation) between the minewater discharge point/s and Lake Macquarie. This report must:
(a) be prepared in consultation with EPA by suitably qualified expert/s whose appointment/s have been approved by the Planning Secretary;
(b) be submitted to the Planning Secretary by the end of March 2009; and
(c) assess the probable alterations in the local ecology attributable to previous and proposed minewater discharges and any future cessation of minewater discharge flows.

Water Management Plan

8. The Applicant must prepare a Water Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
(a) be prepared in consultation with DPIE Water by suitably qualified expert/s whose appointment/s have been approved by the Planning Secretary;
(b) be submitted the Planning Secretary by the end of March 2009; and
(c) include a:
- Site Water Balance;

B.2 Environment Protection Licence

Environment Protection Licence

L4 Waste

L4.1 The licensee must not cause, permit or allow any waste to be received at the premises, except the wastes expressly referred to in the column titled “Waste” and meeting the definition, if any, in the column titled “Description” in the table below.
Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled “Activity” in the table below.
Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste contained in the column titled “Other Limits” in the table below.
This condition does not limit any other conditions in this licence.

Code	Waste	Description	Activity	Other Limits
NA	Waste	Any other waste received on the premises for storage, treatment, processing, sorting or disposal and which receipt is not a scheduled activity under Schedule 1 of the POEO Act, as in force from time to time.		
NA	General or Specific exempted waste	Waste that meets all the conditions of a resource recovery exemption under Clause 51A of the Protection of the Environment Operations (Waste) Regulation 2014	As specified in each particular resource recovery exemption	N/A

L4.2 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.

L4.3 This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if it requires an environment protection licence.

L5 Noise limits

Note: Noise limits are not specified as a condition of this licence. Noise limits are prescribed with the conditions of Project Approval 06_0311 granted under the *Environmental Planning and Assessment Act 1979.* Under the *Environmental Planning and Assessment Act 1979* the Department of Planning is the appropriate authority in respect of the administration and regulation of the Project Approval.

B.3 Approved noise management plan

The above noise monitoring locations are representative of residential receivers most likely to be affected by CVC operational noise. Adherence with the relevant noise criteria at these locations will indicate that noise criteria will be met at other surrounding noise-sensitive locations.

4.2.3 Mannering Colliery

Consistent with the Noise Impact Assessment (EMM 2019) undertaken as part of the Project Approval MP06_0311 MOD 5, rural and residential receivers have been divided into three (3) receiver areas (RA's) with similar geographical and acoustic features. The following points are considered representative of each receiver area:

- RA1, rural residential properties south of MC and fronting the Pacific Highway. The dominant noise source in this area is road traffic. Birds, insects and other industrial sources are also audible at times.
- RA2, privately-owned relocatable residences within the MSHV, east of MC. The dominant noise sources in this RA are birds, insects, traffic and other industrial sources. Activities at MC are also noted to be audible at times.
- RA3, various rural residential residences on Tall Timbers Road at Kingfisher Shores and adjacent to the Chain Valley Bay suburban area. The dominant noise sources in this RA are birds, insects, other industrial sources and traffic movements. Activities at MC are also noted to be audible at times.

The attended noise monitoring locations for MC and relevant noise criteria are identified below in **Table 6**.

Table 6: Noise Monitoring Locations and Limits for Mannering Colliery

Location	Receivers Represented MP06_0311 ID	Coordinates	Day $L_{Aeq(15\ min)}$ dB (A)	Evening $L_{Aeq(15\ min)}$ dB (A)	Night $L_{Aeq(15\ min)}$ dB (A)	Night $L_{A1(1\ min)}$ dB (A)
RA1	4, 5, 6	364646E 6327221N	40	36	36	46
RA2	7, 8	365164E 6328332N	40	40	40	45
RA3	9, 11, 18, 20	365069E 6328953N	40	39	39	49

The above noise monitoring locations are representative of residential receivers most likely to be affected by MC operational noise. Adherence with the relevant noise criteria at these locations will indicate that noise criteria will be met at other surrounding noise-sensitive locations.

Appendix C
Calibration certificates

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CERTIFICATE OF CALIBRATION

CERTIFICATE NO: C37508

EQUIPMENT TESTED : Sound Level Calibrator

Manufacturer: Svantek
Type No: SV 36 **Serial No:** 79952
Class: 1
Owner: EMM Consulting Pty Ltd
L3, 175 Scott Street
Newcastle, NSW 2300
Tests Performed: Measured Output Pressure level, Frequency & Distortion
Comments: See Details and Class Tolerance overleaf.

CONDITION OF TEST:

Ambient Pressure	1005	hPa ±1 hPa	**Date of Receipt :**	26/09/2023
Temperature	23	°C ±1° C	**Date of Calibration :**	27/09/2023
Relative Humidity	47	% ±5%	**Date of Issue :**	28/09/2023

Acu-Vib Test Procedure: AVP02 (Calibrators)
Test Method: AS IEC 60942 - 2017

CHECKED BY: .....

AUTHORISED SIGNATURE: .....
Hein Soe

Accredited for compliance with ISO/IEC 17025 - Calibration
Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

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Head Office & Calibration Laboratory
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CERTIFICATE OF CALIBRATION

CERTIFICATE NO: SLM34169

EQUIPMENT TESTED: Sound Level Meter

Manufacturer:	B & K		
Type No:	2250	**Serial No:**	3029363
Mic. Type:	4189	**Serial No:**	3260501
Pre-Amp. Type:	ZC0032	**Serial No:**	30109
Filter Type:	1/3 Octave	**Test No:**	F034175

Owner: EMM Consulting
Suite 01, 20 Chandos St
St Leonards NSW 2065

Tests Performed: IEC 61672-3:2013 & IEC 61260-3:2016

Comments: All Test passed for Class 1. (See overleaf for details)

CONDITIONS OF TEST:

Ambient Pressure	1002	hPa ±1 hPa	**Date of Receipt :**	02/11/2022
Temperature	24	°C ±1° C	**Date of Calibration :**	03/11/2022
Relative Humidity	35	% ±5%	**Date of Issue :**	04/11/2022

Acu-Vib Test Procedure: AVP10 (SLM) & AVP06 (Filters)

CHECKED BY: ..... **AUTHORISED SIGNATURE:** .....

Jack Kielt

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Mannering Colliery

Monthly attended noise monitoring - June 2024

Prepared for Great Southern Energy Pty Ltd (trading as Delta Coal)

July 2024

Mannering Colliery

Monthly attended noise monitoring - June 2024

Great Southern Energy Pty Ltd (trading as Delta Coal)

E230753 RP1

July 2024

Version	Date	Prepared by	Reviewed by	Comments
V1	4 July 2024	Jared Blackburn	Najah Ishac	Draft
V2	12 July 2024	Teanuanua Villierme	Najah Ishac	Final

Approved by



Najah Ishac
Director – Technical Lead Acoustics
12 July 2024
Level 3 175 Scott Street
Newcastle NSW 2300
ABN: 28 141 736 558

This report has been prepared in accordance with the brief provided by Great Southern Energy Pty Ltd (trading as Delta Coal) and, in its preparation, EMM has relied upon the information collected at the times and under the conditions specified in this report. All findings, conclusions or recommendations contained in this report are based on those aforementioned circumstances. The contents of this report are private and confidential. This report is only for Great Southern Energy Pty Ltd (trading as Delta Coal)'s use in accordance with its agreement with EMM and is not to be relied on by or made available to any other party without EMM's prior written consent. Except as permitted by the *Copyright Act 1968* (Cth) and only to the extent incapable of exclusion, any other use (including use or reproduction of this report for resale or other commercial purposes) is prohibited without EMM's prior written consent. Except where expressly agreed to by EMM in writing, and to the extent permitted by law, EMM will have no liability (and assumes no duty of care) to any person in relation to this document, other than to Great Southern Energy Pty Ltd (trading as Delta Coal) (and subject to the terms of EMM's agreement with Great Southern Energy Pty Ltd (trading as Delta Coal)).

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1 Introduction

1.1 Background

EMM Consulting Pty Ltd (EMM) was engaged by Great Southern Energy Pty Ltd (trading as Delta Coal) to conduct a monthly noise survey of operations at Mannering Colliery (MC, the site) located at Ruttleys Road, Mannering Park NSW. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

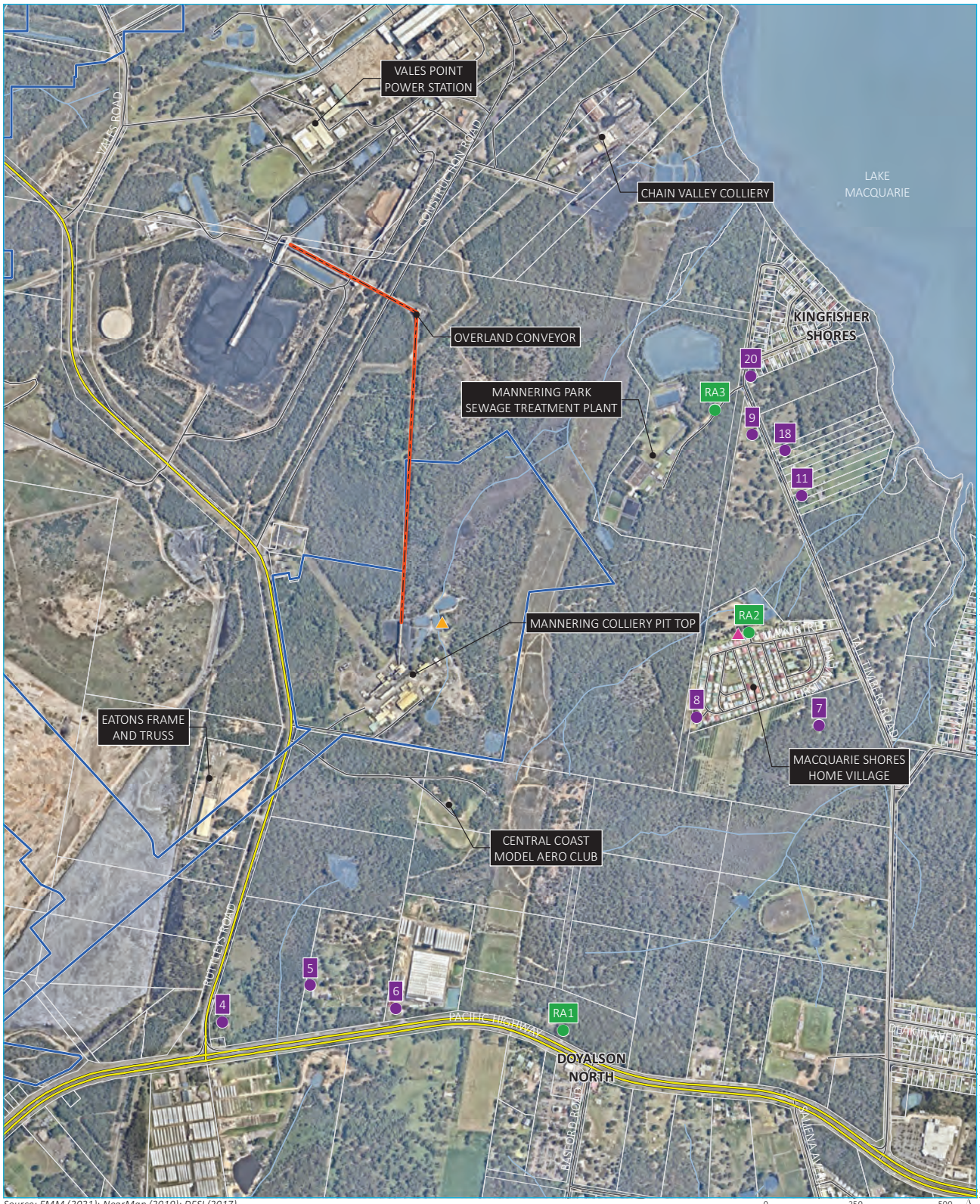
Attended environmental noise monitoring described in this report was done during the evening and night periods on 13 June 2024 at three monitoring locations.

1.2 Attended monitoring locations

Site monitoring locations are detailed in Table 1.1 and shown on Figure 1.1. It should be noted that Figure 1.1 shows actual monitoring positions, not necessarily the location of residences.

Table 1.1 Attended noise monitoring locations

Location descriptor/ID	Description/address	Coordinates (MGA56)	
		Easting	Northing
RA1	Pacific Highway, Doyalson North	364646	6327221
RA2	Macquarie Shores Home Village, Doyalson North	365164	6328332
RA3	Tall Timbers Road (northern end), Kingfisher Shores	365069	6328953



Source: EMM (2021); NearMap (2019); DFSI (2017)

0 250 500 m

GDA 1994 MGA Zone 56

N

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KEY

- Mannering Colliery project approval boundary
- Alignment of overland conveyor to VPPS
- Main road
- Local road
- Watercourse/drainage line
- Waterbody
- Cadastral boundary
- Assessment location
- Attended monitoring location
- Continuous monitoring location
- Meteorological station

Attended noise monitoring and assessment locations

Mannering Colliery
Figure 1.1

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1.3 Terminology and abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

Table 1.2 Terminology and abbreviations

Term/descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The "A" weighting scale is used to approximate how humans hear noise.
L_{Amax}	The maximum root mean squared A-weighted noise level over a time period.
L_{A1}	The A-weighted noise level which is exceeded for 1% of the time.
$L_{A1,1minute}$	The A-weighted noise level which is exceeded for 1% of the specified time period of 1 minute.
L_{A10}	The A-weighted noise level which is exceeded for 10% of the time.
L_{Aeq}	The energy average A-weighted noise level.
$L_{Aeq,15minute}$	The energy average A-weighted noise level over the specified time period of 15 minutes.
L_{A50}	The A-weighted noise level which is exceeded for 50% of the time, also the median noise level during a measurement period.
L_{A90}	The A-weighted noise level exceeded for 90% of the time, also referred to as the "background" noise level and commonly used to derive noise limits.
L_{Amin}	The minimum A-weighted noise level over a time period.
L_{Ceq}	The energy 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.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	Monday – Saturday: 7 am to 6 pm, on Sundays and Public Holidays: 8 am to 6 pm.
Evening	Monday – Saturday: 6 pm to 10 pm, on Sundays and Public Holidays: 6 pm to 10 pm.
Night	Monday – Saturday: 10 pm to 7 am, on Sundays and Public Holidays: 10 pm to 8 am.
NPfI	NSW EPA Noise Policy for Industry (2017)
Temperature inversion	A meteorological condition where the atmospheric temperature increases with altitude.

Appendix A provides further information that gives an indication as to how an average person perceives changes in noise level, and examples of common noise levels.

2 Noise limits

2.1 Project approval

Mannering Colliery noise limits are provided in Table 1, Condition 2 of Schedule 3 of the current project approval (PA) PA MP06_0311 dated 5 June 2020. Relevant sections of the PA are reproduced in Appendix B.1.

2.2 Environment protection licence

The current Environment Protection Licence (EPL) 191 dated 16 June 2023 references the PA with respect to noise limits. Relevant sections of the EPL are reproduced in Appendix B.2.

2.3 Noise management plan

The approved Noise Management Plan (NMP) (dated 20 April 2022) was prepared in line with the Mod 5 approval and in accordance with the NSW EPA 'Noise Policy for Industry' (NPfI) issued in October 2017. Three attended noise monitoring locations representative of the PA noise assessment locations have been adopted in the NMP for the purpose of determining compliance with relevant noise limits. Relevant sections of the NMP are reproduced in Appendix B.3.

2.4 Noise limits

Noise limits consistent with the PA, EPL and approved NMP are as shown in Table 2.1.

Table 2.1 Noise limits, dB

Location	Day $L_{Aeq,15minute}$	Evening $L_{Aeq,15minute}$	Night $L_{Aeq,15minute}$	Night $L_{A1,1minute}$
RA1	40	36	36	46
RA2	40	40	40	45
RA3	40	39	39	49

2.5 Meteorological conditions

The PA (Mod 5) states the following:

> Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Noise Policy for Industry (EPA, 2017).

Section 5.2 of the NPfI states that noise limits applicable under 'very noise-enhancing' conditions should be the limits that apply under 'standard' or 'noise-enhancing' conditions plus 5 dB. This implies that there will be no periods when noise limits do not apply due to meteorological conditions.

As per the PA (Mod 5) and in accordance with the NPfI, limits are adjusted when monitoring is undertaken during the following 'very noise-enhancing' conditions:

- wind speeds greater than 3 m/s at 10 m above ground level;
- stability category F temperature inversion conditions with wind speeds greater than 2 m/s at 10 m above ground level; or
- stability category G temperature inversion conditions.

Therefore, if monthly noise monitoring occurs during 'very noise-enhancing' conditions, this assessment adopts a +5 dB adjustment to the limits shown in Table 2.1. This is indicated in Table 4.3, where relevant. It is noted that monthly noise monitoring for the site is always scheduled to occur during appropriate forecasted meteorological conditions in accordance with the 'Approved methods for the measurement and analysis of environmental noise in NSW' (EPA 2022) (the approved methods).

2.6 Additional considerations

Monitoring and reporting have been done in accordance with the NSW EPA's NPfI and the approved methods.

3 Methodology

3.1 Overview

Attended environmental noise monitoring was done in general accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise' and relevant EPA requirements. Meteorological data was obtained from the Mannering Colliery on-site automatic weather station (AWS) which allowed correlation of atmospheric parameters with measured noise levels.

3.2 Attended noise monitoring

During this survey, attended noise monitoring was done during the evening and night periods at each location in accordance with the NMP. The duration of each measurement was 15 minutes. Atmospheric conditions were measured at each monitoring location.

Measured sound levels from various sources were noted during each measurement, and particular attention was paid to the extent of site contribution (if any) to measured levels. At each monitoring location, the site-only $L_{Aeq,15minute}$ and L_{Amax} were measured directly or determined by other methods detailed in Section 7.1 of the NPfI. For example, frequency filtering and observations when extraneous noise is low are some of the techniques used to isolate site noise contribution.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may be used in this report. When site noise is noted as IA, it was inaudible at the monitoring location. When site noise is noted as NM, this means it was audible but could not be quantified. All results noted as NM in this report were due to one or more of the following:

- Site noise levels were very low, typically more than 10 dB below the measured background (L_{A90}), and unlikely to be noticed.
- Site noise levels were masked by other, more dominant, noise sources that are characteristic of the environment (such as breeze in foliage or continuous road traffic noise) that cannot be eliminated by monitoring at an alternate or intermediate location.
- It was not feasible or reasonable to employ methods such as move closer and back calculate. Cases may include rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

If exact noise levels from site could not be established due to masking by other noise sources in a similar frequency range but were determined to be at least 5 dB lower than relevant limits, then a maximum estimate of site noise may be provided. These are expressed as a 'less than' quantity, such as <20 dB or <30 dB.

For this assessment, the measured L_{Amax} has been used as a conservative estimate of $L_{A1,1minute}$. The EPA accepts sleep disturbance analysis based on either the $L_{A1,1minute}$ or L_{Amax} metrics, with the L_{Amax} representing a more conservative assessment of site noise emissions.

3.3 Meteorological data

This assessment determined stability categories throughout attended monitoring periods using the sigma-theta method as per Fact Sheet D of the NPfI. This data was sourced from the site AWS, in accordance with PA requirements.

3.4 Modifying factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. If applicable, modifying factor adjustments have been reported and added to measured site-only L_{Aeq}.

Low-frequency modifying factor penalties have only been applied if site was the only contributing low-frequency noise source. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

3.5 Instrumentation and personnel

Attended noise monitoring was conducted by Acoustical Consultant Lucas Adamson. Qualifications, experience and competency are in accordance with the Approved Methods and demonstration of this is available upon request.

Equipment used to measure environmental noise levels is detailed in Table 3.1. Calibration certificates are provided in Appendix C.

Table 3.1 Attended noise monitoring equipment

Item	Serial number	Calibration due date	Relevant standard
Brüel & Kjær 2250 sound level meter	3029363	3/11/2024	IEC 61672-1:2013
Svantek SV-36 calibrator	79952	27/09/2025	IEC 60942:2017

4 Results

4.1 Total measured noise levels and atmospheric conditions

Overall noise levels measured at each location during attended measurements are provided in Table 4.1.

Table 4.1 Total measured noise levels[1], dB – 13 June 2024

Location	Start date and time	L_{Amax}	L_{A1}	L_{A10}	L_{Aeq}	L_{A50}	L_{A90}	L_{Amin}
RA3	13/06/2024 19:29	55	47	43	42	42	41	39
RA2	13/06/2024 20:30	49	45	43	41	41	40	39
RA1	13/06/2024 21:19	77	71	66	61	56	47	41
RA1	13/06/2024 22:00	72	69	64	59	52	43	39
RA3	13/06/2024 22:19	66	52	45	45	44	43	41
RA2	13/06/2024 22:41	47	42	41	40	40	39	37

Notes: 1. Levels in this table are not necessarily the result of activity at site.

Atmospheric conditions data measured by the operator during each measurement using a hand-held weather meter is shown in Table 4.2. The wind speed, direction and temperature were measured at approximately 1.5 m above ground. Attended noise monitoring is not done during rain, hail, or wind speeds above 5 m/s at microphone height.

Table 4.2 Measured atmospheric conditions – 13 June 2024

Location	Start date and time	Temperature °C	Wind speed m/s	Wind direction ° Magnetic north[1]	Cloud cover 1/8s
RA3	13/06/2024 19:29	13	<0.5	-	8
RA2	13/06/2024 20:30	13	<0.5	-	8
RA1	13/06/2024 21:19	13	<0.5	-	8
RA1	13/06/2024 22:00	12	<0.5	-	8
RA3	13/06/2024 22:19	12	<0.5	-	8
RA2	13/06/2024 22:41	12	<0.5	-	8

Notes: 1. "-" indicates calm conditions (wind speed <0.5 m/s) at monitoring location.

4.2 Site only noise levels

4.2.1 Modifying factors

There were no modifying factors, as defined in the NPfI, applicable during the survey.

4.2.2 Monitoring results

Table 4.3 provides site noise levels in the absence of other sources, where possible, and includes weather data from the site AWS. Noise limits are applicable under all weather conditions but where applicable are adjusted during very noise-enhancing weather conditions as defined by the NPfI (refer to Section 2.5).

Table 4.3 Site noise levels and limits – 13 June 2024

Location	Start date and time	Wind		Stability class	Standard limits apply?[1]	Limit, dB		Site level, dB[2]		Exceedance, dB	
		Speed (m/s)	Direction[3]			$L_{Aeq,15minute}$	$L_{A1,1minute}$	$L_{Aeq,15minute}$	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}
RA3	13/06/2024 19:29	0.8	206	E	Yes	39	N/A	35	N/A	Nil	N/A
RA2	13/06/2024 20:30	1.1	236	E	Yes	40	N/A	37	N/A	Nil	N/A
RA1	13/06/2024 21:19	1.5	235	E	Yes	36	N/A	IA	N/A	Nil	N/A
RA1	13/06/2024 22:00	0.9	266	E	Yes	36	46	IA	IA	Nil	Nil
RA3	13/06/2024 22:19	1.2	265	E	Yes	39	49	37	40	Nil	Nil
RA2	13/06/2024 22:41	0.9	256	E	Yes	40	45	36	40	Nil	Nil

Notes: 1. If "No", adjusted noise limits (standard limit + 5 dB) apply during 'very noise-enhancing' meteorological conditions as stated in Section 2.5.

2. Site-only $L_{Aeq,15minute}$ include modifying factor adjustments if applicable.

3. Degrees magnetic north, "-" indicates calm conditions.

5 Discussion

5.1 Noted noise sources

During attended monitoring, the time variations (temporal characteristics) of noise sources are considered in each measurement via statistical descriptors. From these observations, summaries have been derived for the location and provided in this chapter. Statistical 1/3 octave-band analysis of environmental noise was undertaken and the following figures display frequency ranges of various noise sources at each location for L_{A1}, L_{A10}, L_{Aeq}, L_{A50}, and L_{A90} descriptors. These figures also provide, graphically, statistical information for these noise levels.

An example (non-site related) is provided as Figure 5.1, where frogs and insects are seen to be generating noise at frequencies above 1,000 Hz, while industrial noise is generally observed at frequencies less than 1,000 Hz.

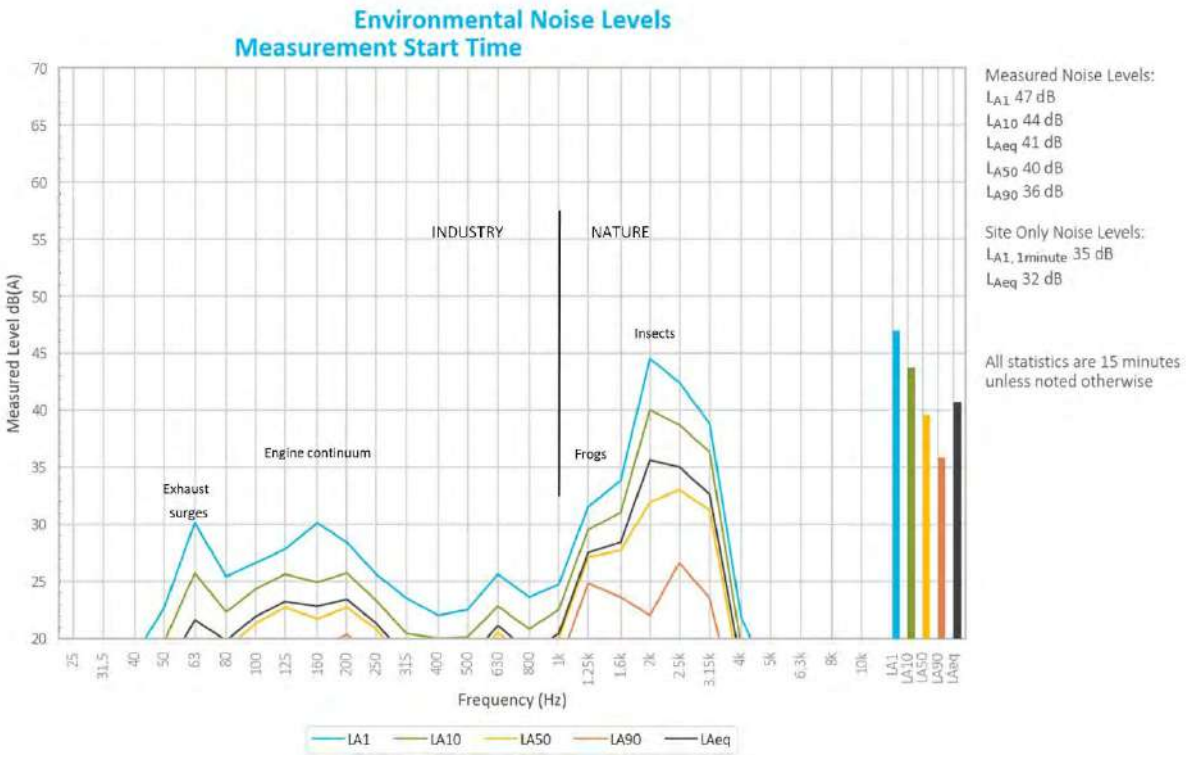


Figure 5.1 Example graph (refer to Section 5.1 for explanatory note)

5.2 RA1 – Evening

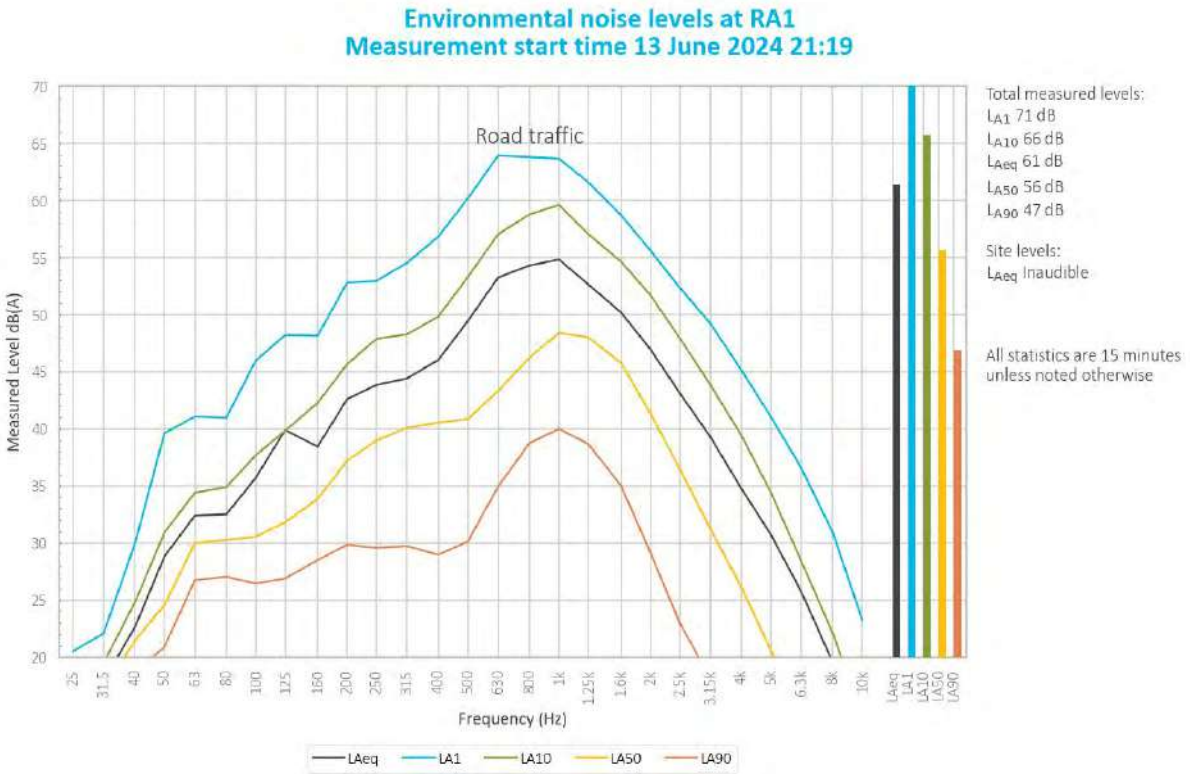


Figure 5.2 Environmental noise levels – RA1 (Pacific Highway) – Evening

MC operations were inaudible during the entire measurement.

Road traffic dominated measured noise levels.

5.3 RA2 – Evening

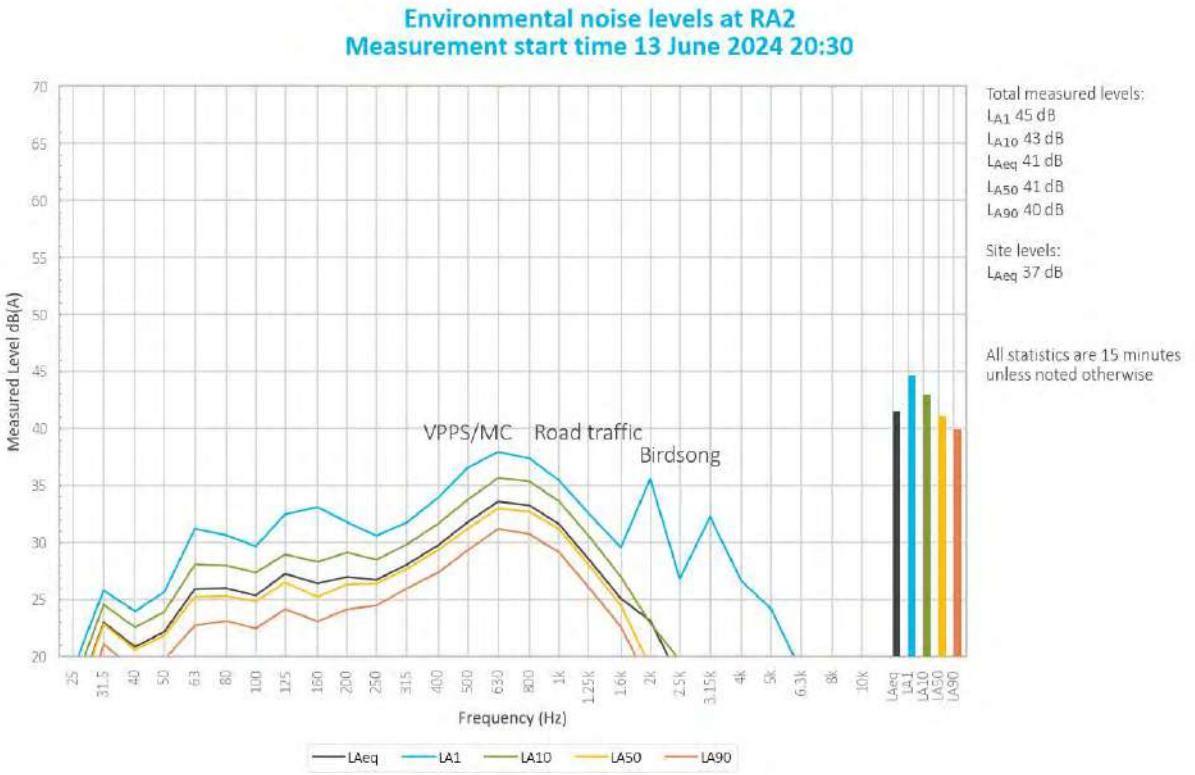


Figure 5.3 Environmental noise levels – RA2 (Macquarie Shores) – Evening

MC operations were consistently audible during the measurement.

Vales Point Power Station (VPPS) inclusive of the overland conveyor and MC contributed to the measured L_{A10}, L_{Aeq}, L_{A50} and L_{A90}. Road traffic also contributed to measured noise levels. Bird noise generated the measured L_{A1}.

5.4 RA3 – Evening

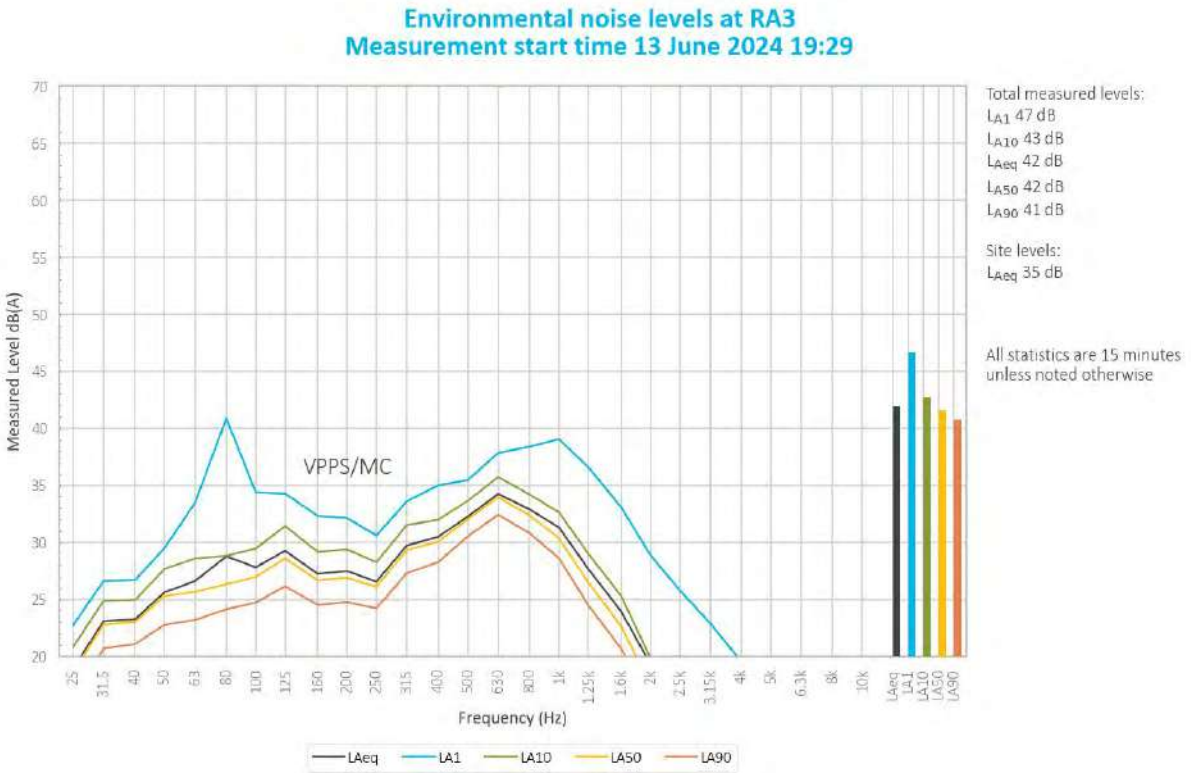


Figure 5.4 Environmental noise levels – RA3 (Kingfisher Shores) – Evening

MC operations were consistently audible during the measurement.

VPPS and MC operations contributed to the measured L_{A10}, L_{Aeq}, L_{A50} and L_{A90}.

5.5 RA1 – Night

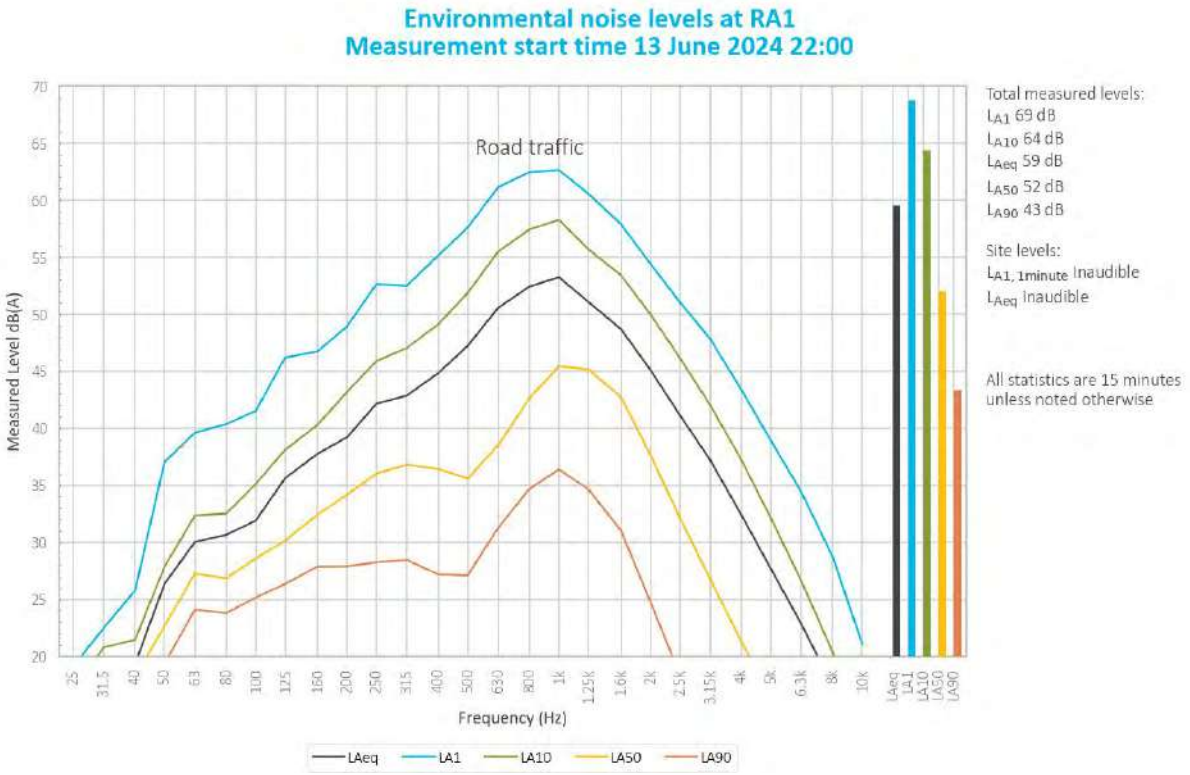


Figure 5.5 Environmental noise levels – RA1 (Pacific Highway) – Night

MC operations were inaudible during the entire measurement.

Road traffic dominated measured noise levels.

5.6 RA2 – Night

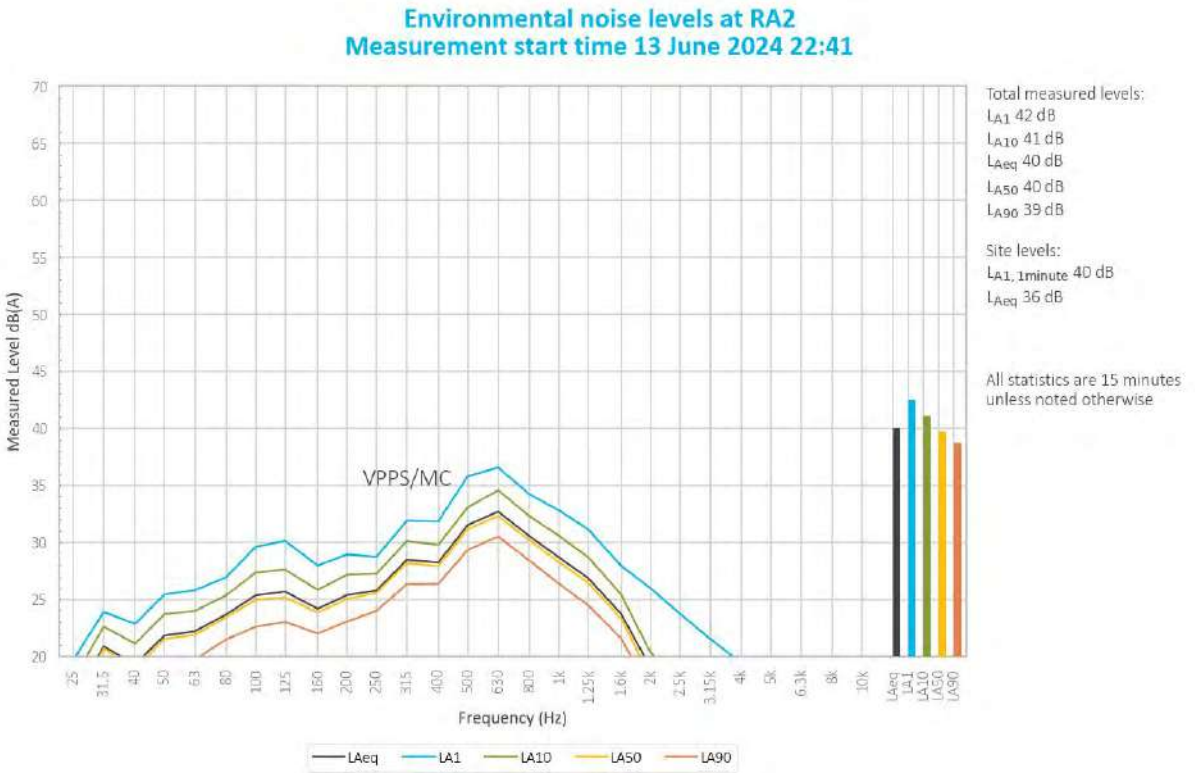


Figure 5.6 Environmental noise levels – RA2 (Macquarie Shores) – Night

MC operations were consistently audible during the measurement.

VPPS (inclusive of the overland conveyor), MC and road traffic contributed to the measured L_{A10}, L_{Aeq}, L_{A50} and L_{A90}.

5.7 RA3 – Night

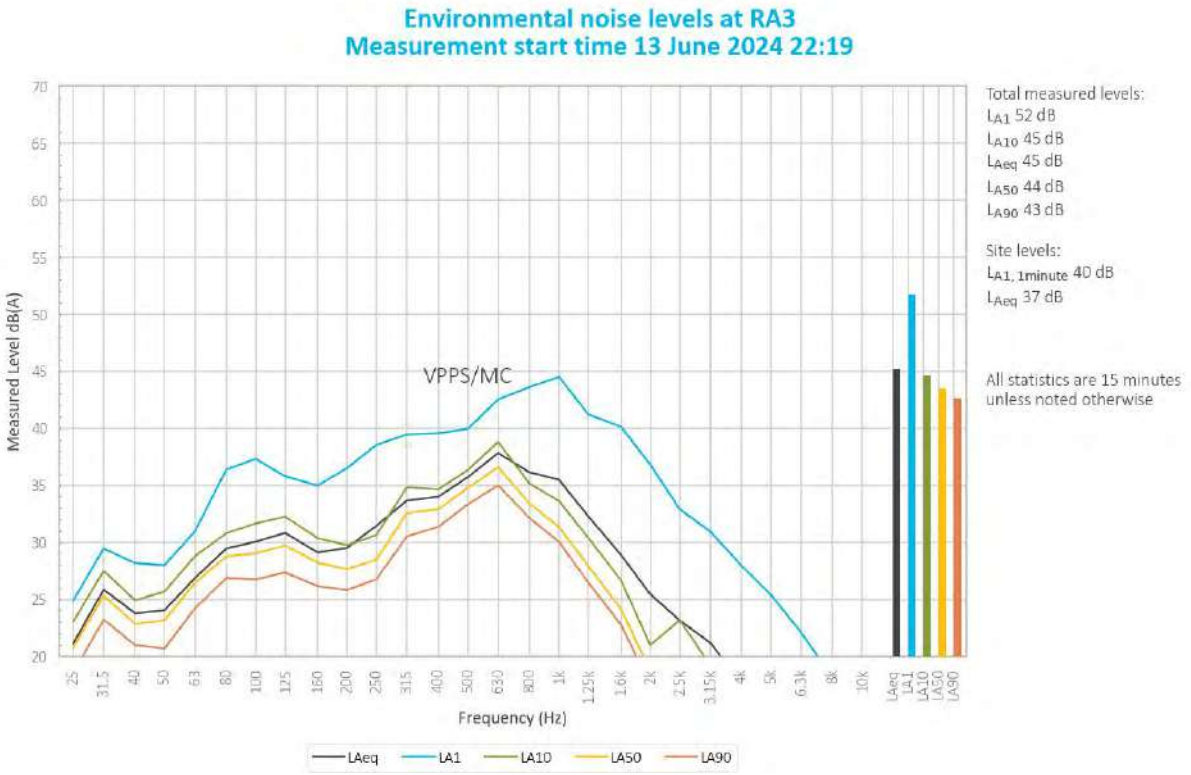


Figure 5.7 Environmental noise levels – RA3 (Kingfisher Shores) – Night

MC operations were just audible in the background.

VPPS dominated measured noise levels.

6 Summary

EMM Consulting Pty Ltd (EMM) was engaged by Great Southern Energy Pty Ltd (trading as Delta Coal) to complete a monthly noise survey of operations conducted at Mannering Colliery. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

Attended environmental noise monitoring described in this report was done during the evening and night periods on 13 June 2024 at three monitoring locations.

Noise levels from site complied with relevant limits at all monitoring locations during the June 2024 survey.

Appendix A
Noise perception and examples

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A.1 Noise levels

Table A.1 gives an indication as to how an average person perceives changes in noise level. Examples of common noise levels are provided in Figure A.1.

Table A.1 Perceived change in noise

Change in sound pressure level (dB)	Perceived change in noise
Up to 2	Not perceptible
3	Just perceptible
5	Noticeable difference
10	Twice (or half) as loud
15	Large change
20	Four times (or quarter) as loud

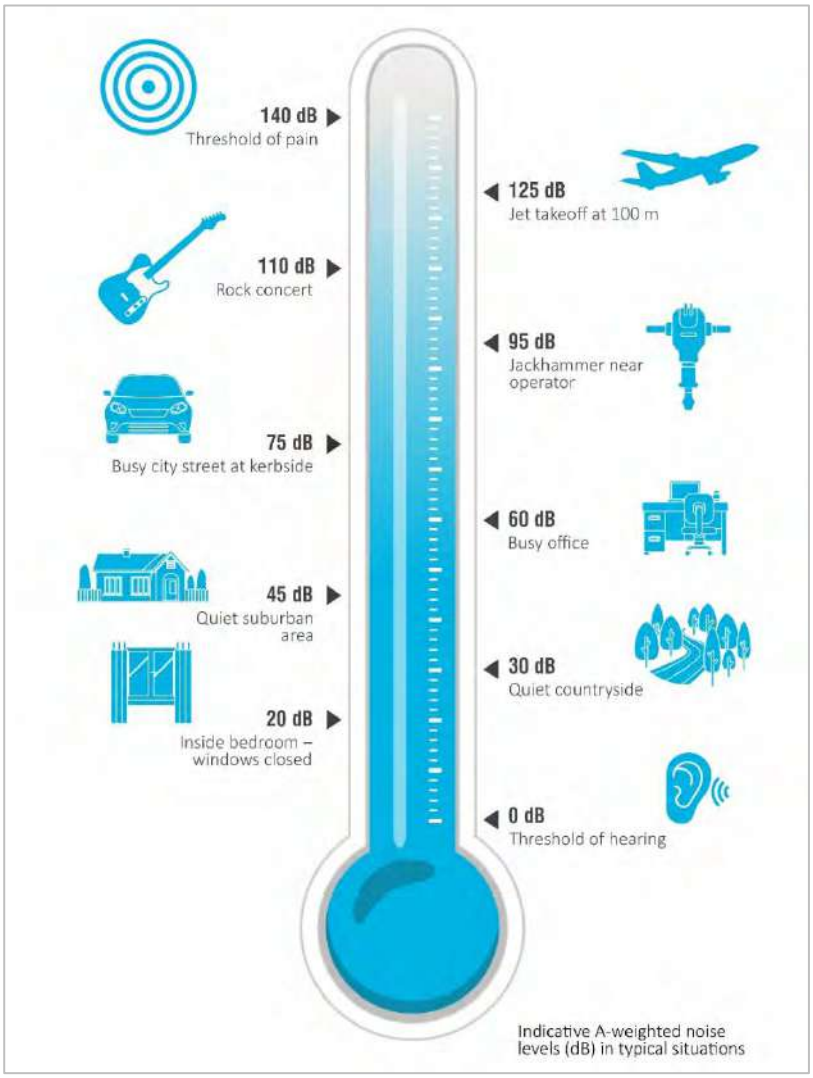


Figure A.1 Common noise levels

Appendix B
Regulator documents

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B.1 Project approval

SCHEDULE 3
SPECIFIC ENVIRONMENTAL CONDITIONS

NOISE

Construction Noise

1. The Applicant must ensure that the noise generated by any construction work is managed in accordance with the requirements outlined in the *Interim Construction Noise Guideline* (DECC, 2009).

Operational Noise Criteria

2. Except for the carrying out of construction works, the Applicant must ensure that the noise generated by the development does not exceed the criteria in Table 1 at any residence[a] on privately-owned land.

***Table 1**: Operational noise criteria dB(A)*

Noise Assessment Location	***Day*** $L_{Aeq\ (15\ min)}$	***Evening*** $L_{Aeq\ (15\ min)}$	***Night*** $L_{Aeq\ (15\ min)}$	***Night*** $L_{A1\ (1\ min)}$
4 – di Rocco	40	36	36	46
5 - Keighran	40	39	39	49
6 – Swan	40	37	37	47
7 – Druitt	40	35	35	45
8 – Macquarie Shores Home Village	42	42	42	47
9 - Jeans	40	37	37	47
11 - Jeans	40	36	36	46
18 - Jeans	40	36	36	46
20 – Knight and all other privately-owned residences	40	36	36	46

[a] *The Noise Assessment Locations referred to in Table 1 are shown in Appendix 4.*

Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the *NSW Noise Policy for Industry* (EPA, 2017).

3. The noise criteria in Table 1 do not apply if the Applicant has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Noise Operating Conditions

3A. The Applicant must:

(a) take all reasonable steps to minimise noise from construction and operational activities, including low frequency noise and other audible characteristics, associated with the development;

(b) implement reasonable and feasible noise attenuation measures on all plant and equipment that will operate in noise sensitive areas;

(c) operate a comprehensive noise management system commensurate with the risk of impact;

(d) take all reasonable steps to minimise the noise impacts of the development during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);

(e) carry out regular attended noise monitoring (at least once a month, unless otherwise agreed by the Planning Secretary) to determine whether the development is complying with the relevant conditions of this consent;

(f) regularly assess the noise monitoring data and modify or stop operations on the site to ensure compliance with the relevant conditions of this consent; and
(g) implement reasonable and feasible measures to further enclose the structure housing the coal crusher in order to further mitigate noise from operational activites.

3B. The Applicant must decommission the surface rotary breaker identified in the Statement of Commitments at Appendix 3, within 3 months of approval of Modification 5.

Noise Management Plan

3C. The Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
(a) be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;
(b) describe the measures to be implemented to ensure:
i. compliance with the noise criteria and operating conditions in this consent;
ii. best practice management is being employed; and
iii. noise impacts of the development are minimised during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);
(c) describe the noise management system in detail; and
(d) include a monitoring program that:
i. uses a combination of real-time and supplementary attended monitoring to evaluate the performance of the development;
ii. monitors noise at the nearest and/or most affected residences;
iii. includes a program to calibrate and validate the real-time noise monitoring results with the attended monitoring results over time;
iv. adequately supports the noise management system;
v. includes a protocol for distinguishing noise emissions of the development from any neighbouring developments; and
vi. includes a protocol for identifying any noise-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of any such event.

The Applicant must implement the Noise Management Plan as approved by the Planning Secretary.

SUBSIDENCE

4. The Applicant must limit its coal extraction methods on the site to first workings only, and must not undertake second workings.

5. Deleted.

SOIL AND WATER

Discharge

6. The Applicant must only discharge water from the site as expressly provided for by its EPL.

7. The Applicant must investigate, assess and report on the ecological interactions of minewater discharged from the site with the aquatic ecology of the unnamed creek and wetlands (and associated vegetation) between the minewater discharge point/s and Lake Macquarie. This report must:
(a) be prepared in consultation with EPA by suitably qualified expert/s whose appointment/s have been approved by the Planning Secretary;
(b) be submitted to the Planning Secretary by the end of March 2009; and
(c) assess the probable alterations in the local ecology attributable to previous and proposed minewater discharges and any future cessation of minewater discharge flows.

Water Management Plan

8. The Applicant must prepare a Water Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
(a) be prepared in consultation with DPIE Water by suitably qualified expert/s whose appointment/s have been approved by the Planning Secretary;
(b) be submitted the Planning Secretary by the end of March 2009; and
(c) include a:
- Site Water Balance;

B.2 Environment Protection Licence

Environment Protection Licence

L4 Waste

L4.1 The licensee must not cause, permit or allow any waste to be received at the premises, except the wastes expressly referred to in the column titled “Waste” and meeting the definition, if any, in the column titled “Description” in the table below.
Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled “Activity” in the table below.
Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste contained in the column titled “Other Limits” in the table below.
This condition does not limit any other conditions in this licence.

Code	Waste	Description	Activity	Other Limits
NA	Waste	Any other waste received on the premises for storage, treatment, processing, sorting or disposal and which receipt is not a scheduled activity under Schedule 1 of the POEO Act, as in force from time to time.		
NA	General or Specific exempted waste	Waste that meets all the conditions of a resource recovery exemption under Clause 51A of the Protection of the Environment Operations (Waste) Regulation 2014	As specified in each particular resource recovery exemption	N/A

L4.2 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.

L4.3 This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if it requires an environment protection licence.

L5 Noise limits

Note: Noise limits are not specified as a condition of this licence. Noise limits are prescribed with the conditions of Project Approval 06_0311 granted under the *Environmental Planning and Assessment Act 1979.* Under the *Environmental Planning and Assessment Act 1979* the Department of Planning is the appropriate authority in respect of the administration and regulation of the Project Approval.

B.3 Approved noise management plan

The above noise monitoring locations are representative of residential receivers most likely to be affected by CVC operational noise. Adherence with the relevant noise criteria at these locations will indicate that noise criteria will be met at other surrounding noise-sensitive locations.

4.2.3 Mannering Colliery

Consistent with the Noise Impact Assessment (EMM 2019) undertaken as part of the Project Approval MP06_0311 MOD 5, rural and residential receivers have been divided into three (3) receiver areas (RA's) with similar geographical and acoustic features. The following points are considered representative of each receiver area:

- RA1, rural residential properties south of MC and fronting the Pacific Highway. The dominant noise source in this area is road traffic. Birds, insects and other industrial sources are also audible at times.
- RA2, privately-owned relocatable residences within the MSHV, east of MC. The dominant noise sources in this RA are birds, insects, traffic and other industrial sources. Activities at MC are also noted to be audible at times.
- RA3, various rural residential residences on Tall Timbers Road at Kingfisher Shores and adjacent to the Chain Valley Bay suburban area. The dominant noise sources in this RA are birds, insects, other industrial sources and traffic movements. Activities at MC are also noted to be audible at times.

The attended noise monitoring locations for MC and relevant noise criteria are identified below in **Table 6**.

Table 6: Noise Monitoring Locations and Limits for Mannering Colliery

Location	Receivers Represented MP06_0311 ID	Coordinates	Day $L_{Aeq(15\ min)}$ dB (A)	Evening $L_{Aeq(15\ min)}$ dB (A)	Night $L_{Aeq(15\ min)}$ dB (A)	Night $L_{A1(1\ min)}$ dB (A)
RA1	4, 5, 6	364646E 6327221N	40	36	36	46
RA2	7, 8	365164E 6328332N	40	40	40	45
RA3	9, 11, 18, 20	365069E 6328953N	40	39	39	49

The above noise monitoring locations are representative of residential receivers most likely to be affected by MC operational noise. Adherence with the relevant noise criteria at these locations will indicate that noise criteria will be met at other surrounding noise-sensitive locations.

Appendix C
Calibration certificates

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CERTIFICATE OF CALIBRATION

CERTIFICATE NO: SLM34169

EQUIPMENT TESTED: Sound Level Meter

Manufacturer:	B & K		
Type No:	2250	**Serial No:**	3029363
Mic. Type:	4189	**Serial No:**	3260501
Pre-Amp. Type:	ZC0032	**Serial No:**	30109
Filter Type:	1/3 Octave	**Test No:**	F034175

Owner: EMM Consulting
Suite 01, 20 Chandos St
St Leonards NSW 2065

Tests Performed: IEC 61672-3:2013 & IEC 61260-3:2016

Comments: All Test passed for Class 1. (See overleaf for details)

CONDITIONS OF TEST:

Ambient Pressure	1002	hPa ±1 hPa	**Date of Receipt :**	02/11/2022
Temperature	24	°C ±1° C	**Date of Calibration :**	03/11/2022
Relative Humidity	35	% ±5%	**Date of Issue :**	04/11/2022

Acu-Vib Test Procedure: AVP10 (SLM) & AVP06 (Filters)

CHECKED BY: ..... **AUTHORISED SIGNATURE:** .....

Jack Kielt

Accredited for compliance with ISO/IEC 17025 - Calibration
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Head Office & Calibration Laboratory
Unit 14, 22 Hudson Ave. Castle Hill NSW 2154
(02) 9680 8133
www.acu-vib.com.au

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: C37508

EQUIPMENT TESTED : Sound Level Calibrator

Manufacturer: Svantek
Type No: SV 36 **Serial No:** 79952
Class: 1
Owner: EMM Consulting Pty Ltd
L3, 175 Scott Street
Newcastle, NSW 2300
Tests Performed: Measured Output Pressure level, Frequency & Distortion
Comments: See Details and Class Tolerance overleaf.

CONDITION OF TEST:

Ambient Pressure	1005	hPa ±1 hPa	**Date of Receipt :**	26/09/2023
Temperature	23	°C ±1° C	**Date of Calibration :**	27/09/2023
Relative Humidity	47	% ±5%	**Date of Issue :**	28/09/2023

Acu-Vib Test Procedure: AVP02 (Calibrators)
Test Method: AS IEC 60942 - 2017

CHECKED BY: .....

AUTHORISED SIGNATURE: .....
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The Calibrator described in this report has been tested to the requirements of the standard IEC 60942-[Ed 4]:2017-11.
The tests described in Annex B of the standard (Periodic tests) were carried out under the environmental conditions listed above to the following clauses:

Clause	Test description
B4.6	Sound Pressure Level (By comparison with a reference calibrator).
B4.7	Frequency (By measurement with a calibrated frequency meter).
B4.8	Total distortion and noise. (By measurement with a calibrated Noise and Distortion meter).

Notes:

1. The calibrator was calibrated with the main axis vertical and facing down.
2. No corrections have been made for atmospheric pressure, temperature, or humidity.

Parameter	Pre-Adj	Adj Y/N	Output: **(dB re 20 µPa)**	Frequency **(Hz)**	THD&N **(%)**
Level1:	NA	N	94.06 dB	999.97 Hz	0.63 %
Level2:	NA	N	114.04 dB	1000.01 Hz	0.50 %
Uncertainty			±0.11 dB	±0.05%	±0.20 %
Uncertainty (at 95% c.l.) k=2					

Parameter	Class 1		Class 2	
Nominal Frequency	250 Hz	1 kHz	250 Hz	1 kHz
Output dB SPL	0.25 dB	0.25 dB	0.40 dB	0.40 dB
Frequency Hz	0.7 % (1.75 Hz)	0.7 % (7 Hz)	1.7 % (4.25 Hz)	1.7 % (17 Hz)
THD&N	2.5 %	2.5 %	3.0 %	3.0 %

Tolerance limits from AS/IEC60942 (edition 4)

Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability

The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.

----ooooOoooo----

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Mannering Colliery

Monthly attended noise monitoring - July 2024

Prepared for Great Southern Energy Pty Ltd (trading as Delta Coal)

August 2024

Mannering Colliery

Monthly attended noise monitoring - July 2024

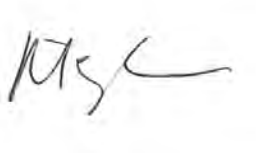
Great Southern Energy Pty Ltd (trading as Delta Coal)

E230753 RP1

August 2024

Version	Date	Prepared by	Reviewed by	Comments
V1	14 August 2024	Teanuanua Villierme	Katie Teyhan	Draft
V2	15 August 2024	Teanuanua Villierme	Katie Teyhan	Final

Approved by



Katie Teyhan
Associate Director – Acoustics Team Manager
15 August 2024
Level 3 175 Scott Street
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ABN: 28 141 736 558

This report has been prepared in accordance with the brief provided by Great Southern Energy Pty Ltd (trading as Delta Coal) and, in its preparation, EMM has relied upon the information collected at the times and under the conditions specified in this report. All findings, conclusions or recommendations contained in this report are based on those aforementioned circumstances. The contents of this report are private and confidential. This report is only for Great Southern Energy Pty Ltd (trading as Delta Coal)'s use in accordance with its agreement with EMM and is not to be relied on by or made available to any other party without EMM's prior written consent. Except as permitted by the *Copyright Act 1968* (Cth) and only to the extent incapable of exclusion, any other use (including use or reproduction of this report for resale or other commercial purposes) is prohibited without EMM's prior written consent. Except where expressly agreed to by EMM in writing, and to the extent permitted by law, EMM will have no liability (and assumes no duty of care) to any person in relation to this document, other than to Great Southern Energy Pty Ltd (trading as Delta Coal) (and subject to the terms of EMM's agreement with Great Southern Energy Pty Ltd (trading as Delta Coal)).

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1 Introduction

1.1 Background

EMM Consulting Pty Ltd (EMM) was engaged by Great Southern Energy Pty Ltd (trading as Delta Coal) to conduct a monthly noise survey of operations at Mannering Colliery (MC, the site) located at Ruttleys Road, Mannering Park NSW. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

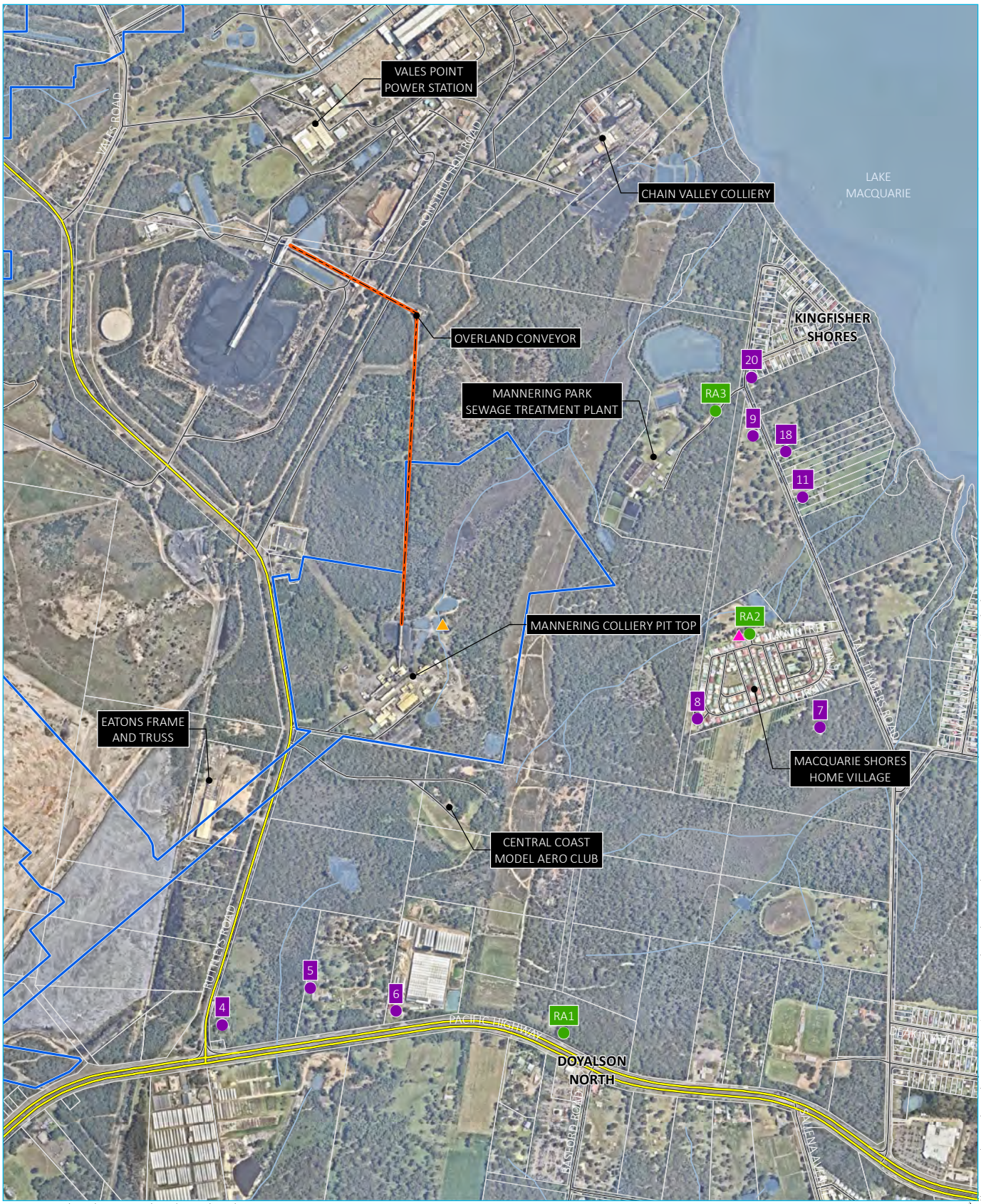
Attended environmental noise monitoring described in this report was done during the evening and night periods on 29 and 30 July 2024 at three monitoring locations.

1.2 Attended monitoring locations

Site monitoring locations are detailed in Table 1.1 and shown on Figure 1.1. It should be noted that Figure 1.1 shows actual monitoring positions, not necessarily the location of residences.

Table 1.1 Attended noise monitoring locations

Location descriptor/ID	Description/address	Coordinates (MGA56)	
		Easting	Northing
RA1	Pacific Highway, Doyalson North	364646	6327221
RA2	Macquarie Shores Home Village, Doyalson North	365164	6328332
RA3	Tall Timbers Road (northern end), Kingfisher Shores	365069	6328953



Source: EMM (2021); NearMap (2019); DFSI (2017)

0 250 500 m

GDA 1994 MGA Zone 56

N

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KEY

- Mannering Colliery project approval boundary
- Alignment of overland conveyor to VPPS
- Main road
- Local road
- Watercourse/drainage line
- Waterbody
- Cadastral boundary
- Assessment location
- Attended monitoring location
- Continuous monitoring location
- Meteorological station

Attended noise monitoring and assessment locations

Mannering Colliery
Figure 1.1

EMM creating opportunities

1.3 Terminology and abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

Table 1.2 Terminology and abbreviations

Term/descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The "A" weighting scale is used to approximate how humans hear noise.
L_{Amax}	The maximum root mean squared A-weighted noise level over a time period.
L_{A1}	The A-weighted noise level which is exceeded for 1% of the time.
$L_{A1,1minute}$	The A-weighted noise level which is exceeded for 1% of the specified time period of 1 minute.
L_{A10}	The A-weighted noise level which is exceeded for 10% of the time.
L_{Aeq}	The energy average A-weighted noise level.
$L_{Aeq,15minute}$	The energy average A-weighted noise level over the specified time period of 15 minutes.
L_{A50}	The A-weighted noise level which is exceeded for 50% of the time, also the median noise level during a measurement period.
L_{A90}	The A-weighted noise level exceeded for 90% of the time, also referred to as the "background" noise level and commonly used to derive noise limits.
L_{Amin}	The minimum A-weighted noise level over a time period.
L_{Ceq}	The energy 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.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	Monday – Saturday: 7 am to 6 pm, on Sundays and Public Holidays: 8 am to 6 pm.
Evening	Monday – Saturday: 6 pm to 10 pm, on Sundays and Public Holidays: 6 pm to 10 pm.
Night	Monday – Saturday: 10 pm to 7 am, on Sundays and Public Holidays: 10 pm to 8 am.
NPfI	NSW EPA Noise Policy for Industry (2017)
Temperature inversion	A meteorological condition where the atmospheric temperature increases with altitude.

Appendix A provides further information that gives an indication as to how an average person perceives changes in noise level, and examples of common noise levels.

2 Noise limits

2.1 Project approval

Mannering Colliery noise limits are provided in Table 1, Condition 2 of Schedule 3 of the current project approval (PA) PA MP06_0311 dated 5 June 2020. Relevant sections of the PA are reproduced in Appendix B.1.

2.2 Environment protection licence

The current Environment Protection Licence (EPL) 191 dated 16 June 2023 references the PA with respect to noise limits. Relevant sections of the EPL are reproduced in Appendix B.2.

2.3 Noise management plan

The approved Noise Management Plan (NMP) (dated 20 April 2022) was prepared in line with the Mod 5 approval and in accordance with the NSW EPA 'Noise Policy for Industry' (NPfI) issued in October 2017. Three attended noise monitoring locations representative of the PA noise assessment locations have been adopted in the NMP for the purpose of determining compliance with relevant noise limits. Relevant sections of the NMP are reproduced in Appendix B.3.

2.4 Noise limits

Noise limits consistent with the PA, EPL and approved NMP are as shown in Table 2.1.

Table 2.1 Noise limits, dB

Location	Day $L_{Aeq,15minute}$	Evening $L_{Aeq,15minute}$	Night $L_{Aeq,15minute}$	Night $L_{A1,1minute}$
RA1	40	36	36	46
RA2	40	40	40	45
RA3	40	39	39	49

2.5 Meteorological conditions

The PA (Mod 5) states the following:

> Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Noise Policy for Industry (EPA, 2017).

Section 5.2 of the NPfI states that noise limits applicable under 'very noise-enhancing' conditions should be the limits that apply under 'standard' or 'noise-enhancing' conditions plus 5 dB. This implies that there will be no periods when noise limits do not apply due to meteorological conditions.

As per the PA (Mod 5) and in accordance with the NPfI, limits are adjusted when monitoring is undertaken during the following 'very noise-enhancing' conditions:

- wind speeds greater than 3 m/s at 10 m above ground level;
- stability category F temperature inversion conditions with wind speeds greater than 2 m/s at 10 m above ground level; or
- stability category G temperature inversion conditions.

Therefore, if monthly noise monitoring occurs during 'very noise-enhancing' conditions, this assessment adopts a +5 dB adjustment to the limits shown in Table 2.1. This is indicated in Table 4.3, where relevant. It is noted that monthly noise monitoring for the site is always scheduled to occur during appropriate forecasted meteorological conditions in accordance with the 'Approved methods for the measurement and analysis of environmental noise in NSW' (EPA 2022) (the approved methods).

2.6 Additional considerations

Monitoring and reporting have been done in accordance with the NSW EPA's NPfI and the approved methods.

3 Methodology

3.1 Overview

Attended environmental noise monitoring was done in general accordance with Australian Standard AS1055:2018 'Acoustics – Description and Measurement of Environmental Noise' and relevant EPA requirements. Meteorological data was obtained from the Mannering Colliery on-site automatic weather station (AWS) which allowed correlation of atmospheric parameters with measured noise levels.

3.2 Attended noise monitoring

During this survey, attended noise monitoring was done during the evening and night periods at each location in accordance with the NMP. The duration of each measurement was 15 minutes. Atmospheric conditions were measured at each monitoring location.

Measured sound levels from various sources were noted during each measurement, and particular attention was paid to the extent of site contribution (if any) to measured levels. At each monitoring location, the site-only $L_{Aeq,15minute}$ and L_{Amax} were measured directly or determined by other methods detailed in Section 7.1 of the NPfI. For example, frequency filtering and observations when extraneous noise is low are some of the techniques used to isolate site noise contribution.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may be used in this report. When site noise is noted as IA, it was inaudible at the monitoring location. When site noise is noted as NM, this means it was audible but could not be quantified. All results noted as NM in this report were due to one or more of the following:

- Site noise levels were very low, typically more than 10 dB below the measured background (L_{A90}), and unlikely to be noticed.
- Site noise levels were masked by other, more dominant, noise sources that are characteristic of the environment (such as breeze in foliage or continuous road traffic noise) that cannot be eliminated by monitoring at an alternate or intermediate location.
- It was not feasible or reasonable to employ methods such as move closer and back calculate. Cases may include rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

If exact noise levels from site could not be established due to masking by other noise sources in a similar frequency range but were determined to be at least 5 dB lower than relevant limits, then a maximum estimate of site noise may be provided. These are expressed as a 'less than' quantity, such as <20 dB or <30 dB.

For this assessment, the measured L_{Amax} has been used as a conservative estimate of $L_{A1,1minute}$. The EPA accepts sleep disturbance analysis based on either the $L_{A1,1minute}$ or L_{Amax} metrics, with the L_{Amax} representing a more conservative assessment of site noise emissions.

3.3 Meteorological data

This assessment determined stability categories throughout attended monitoring periods using the sigma-theta method as per Fact Sheet D of the NPfI. This data was sourced from the site AWS, in accordance with PA requirements.

3.4 Modifying factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. If applicable, modifying factor adjustments have been reported and added to measured site-only L_{Aeq}.

Low-frequency modifying factor penalties have only been applied if site was the only contributing low-frequency noise source. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

3.5 Instrumentation and personnel

Attended noise monitoring was conducted by acoustical consultant Teanuanua Villierme. Qualifications, experience and competency are in accordance with the Approved Methods and demonstration of this is available upon request.

Equipment used to measure environmental noise levels is detailed in Table 3.1. Calibration certificates are provided in Appendix C.

Table 3.1 Attended noise monitoring equipment

Item	Serial number	Calibration due date	Relevant standard
Brüel & Kjær 2250 sound level meter	3029363	3/11/2024	IEC 61672-1:2013
Svantek SV-36 calibrator	79952	27/09/2025	IEC 60942:2017

4 Results

4.1 Total measured noise levels and atmospheric conditions

Overall noise levels measured at each location during attended measurements are provided in Table 4.1.

Table 4.1 Total measured noise levels[1], dB – July 2024

Location	Start date and time	L_{Amax}	L_{A1}	L_{A10}	L_{Aeq}	L_{A50}	L_{A90}	L_{Amin}
RA3	29/7/24 21:25	74	54	48	46	45	43	41
RA2	29/7/24 21:45	55	51	45	43	43	41	40
RA2	29/7/24 22:00	47	45	43	42	42	40	39
RA3	29/7/24 22:22	56	49	46	44	43	42	40
RA1	29/7/24 22:50	70	66	61	56	50	45	41
RA1	30/7/24 20:23	71	67	63	59	55	47	42

Notes: 1. Levels in this table are not necessarily the result of activity at site.

Atmospheric conditions data measured by the operator during each measurement using a hand-held weather meter is shown in Table 4.2. The wind speed, direction and temperature were measured at approximately 1.5 m above ground. Attended noise monitoring is not done during rain, hail or wind speeds above 5 m/s at microphone height.

Table 4.2 Measured atmospheric conditions – July 2024

Location	Start date and time	Temperature °C	Wind speed m/s	Wind direction ° Magnetic north[1]	Cloud cover 1/8s
RA3	29/7/24 21:25	10	1.3	205	5
RA2	29/7/24 21:45	10	1.0	200	3
RA2	29/7/24 22:00	10	1.0	205	3
RA3	29/7/24 22:22	10	0.7	205	1
RA1	29/7/24 22:50	10	0.9	205	5
RA1	30/7/24 20:23	12	0.6	205	1

Notes: 1. "-" indicates calm conditions (wind speed <0.5 m/s) at monitoring location.

4.2 Site only noise levels

4.2.1 Modifying factors

There were no modifying factors, as defined in the NPfI, applicable during the survey.

4.2.2 Monitoring results

Table 4.3 provides site noise levels in the absence of other sources, where possible, and includes weather data from the site AWS. Noise limits are applicable under all weather conditions but have been adjusted, where relevant, during very noise-enhancing weather conditions as defined by the NPfI (refer to Section 2.5).

Table 4.3 Site noise levels and limits – July 2024

Location	Start date and time	Wind		Stability class	Standard limits apply?[1]	Limit, dB		Site level, dB[2]		Exceedance, dB	
		Speed (m/s)	Direction[3]			$L_{Aeq,15minute}$	$L_{A1,1minute}$	$L_{Aeq,15minute}$	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}
RA3	29/7/2024 21:25	1.7	210	F	Yes	39	N/A	<39	N/A	Nil	N/A
RA2	29/7/2024 21:45	2.5	223	F	No	45 (40+5)	N/A	39	N/A	Nil	N/A
RA2	29/7/2024 22:00	1.8	217	F	Yes	40	45	39	42	Nil	Nil
RA3	29/7/2024 22:22	2.3	225	F	No	44 (39+5)	54 (49+5)	<39	<39	Nil	Nil
RA1	29/7/2024 22:50	2.6	210	F	No	41 (36+5)	51 (46+5)	IA	IA	Nil	Nil
RA1	30/7/2024 20:23	2.0	214	F	Yes	36	N/A	IA	N/A	Nil	N/A

Notes: 1. If "No", adjusted noise limits (standard limit + 5 dB) apply during 'very noise-enhancing' meteorological conditions as stated in Section 2.5.
2. Site-only $L_{Aeq,15minute}$ include modifying factor adjustments if applicable.
3. Degrees magnetic north, "-" indicates calm conditions.

5 Discussion

5.1 Noted noise sources

During attended monitoring, the time variations (temporal characteristics) of noise sources are considered in each measurement via statistical descriptors. From these observations, summaries have been derived for the location and provided in this chapter. Statistical 1/3 octave-band analysis of environmental noise was undertaken and the following figures display frequency ranges of various noise sources at each location for L_{A1}, L_{A10}, L_{Aeq}, L_{A50}, and L_{A90} descriptors. These figures also provide, graphically, statistical information for these noise levels.

An example (non-site related) is provided as Figure 5.1, where frogs and insects are seen to be generating noise at frequencies above 1,000 Hz, while industrial noise is generally observed at frequencies less than 1,000 Hz.

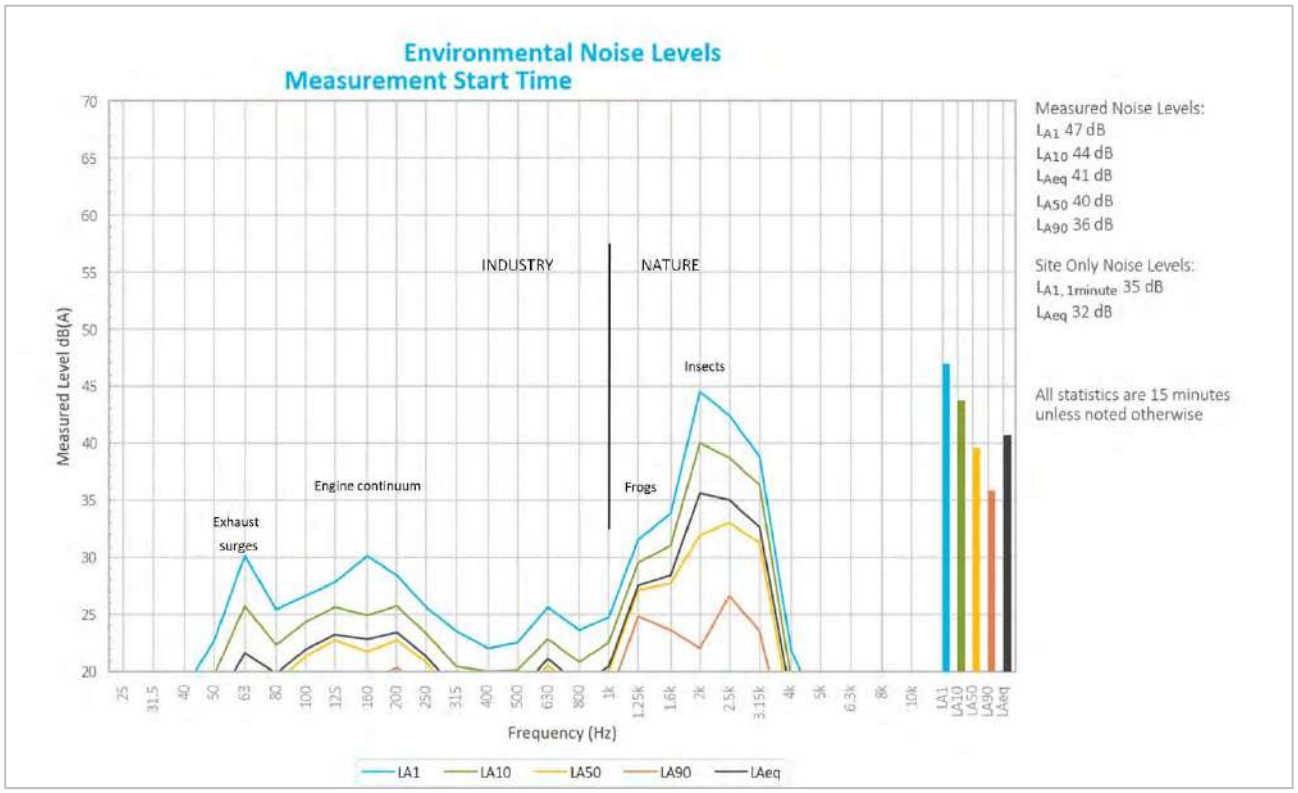


Figure 5.1 Example graph (refer to Section 5.1 for explanatory note)

5.2 RA3 – Evening

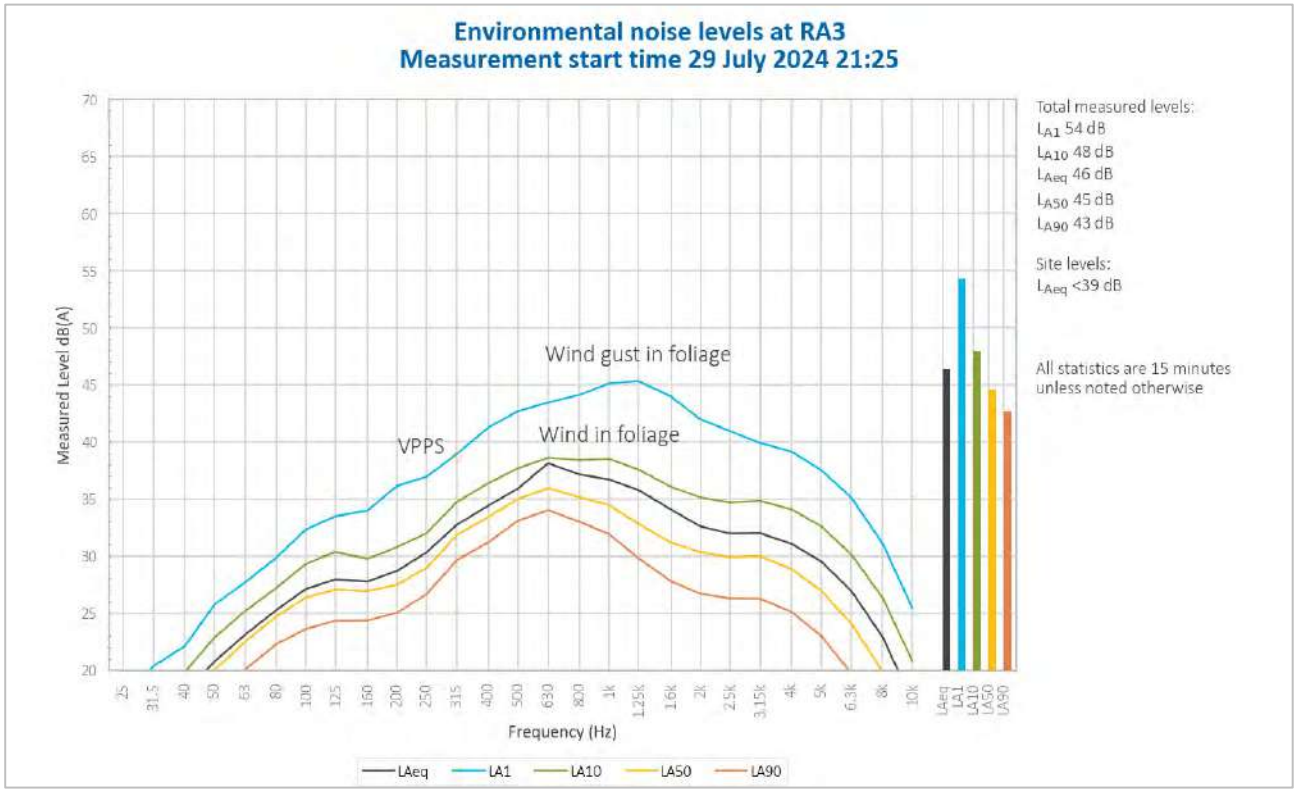


Figure 5.2 Environmental noise levels – RA3 (Kingfisher Shores) – Evening

MC operations were just audible at the end of the measurement.

Vales Point Power Station (VPPS) hum was consistently audible and contributed primarily to the measured L_{A10}, L_{Aeq}, L_{A50} and L_{A90}. Wind in foliage was also audible throughout the measurement, with a strong wind gust in tree foliage generating the measured L_{A1}.

5.3 RA2 – Evening

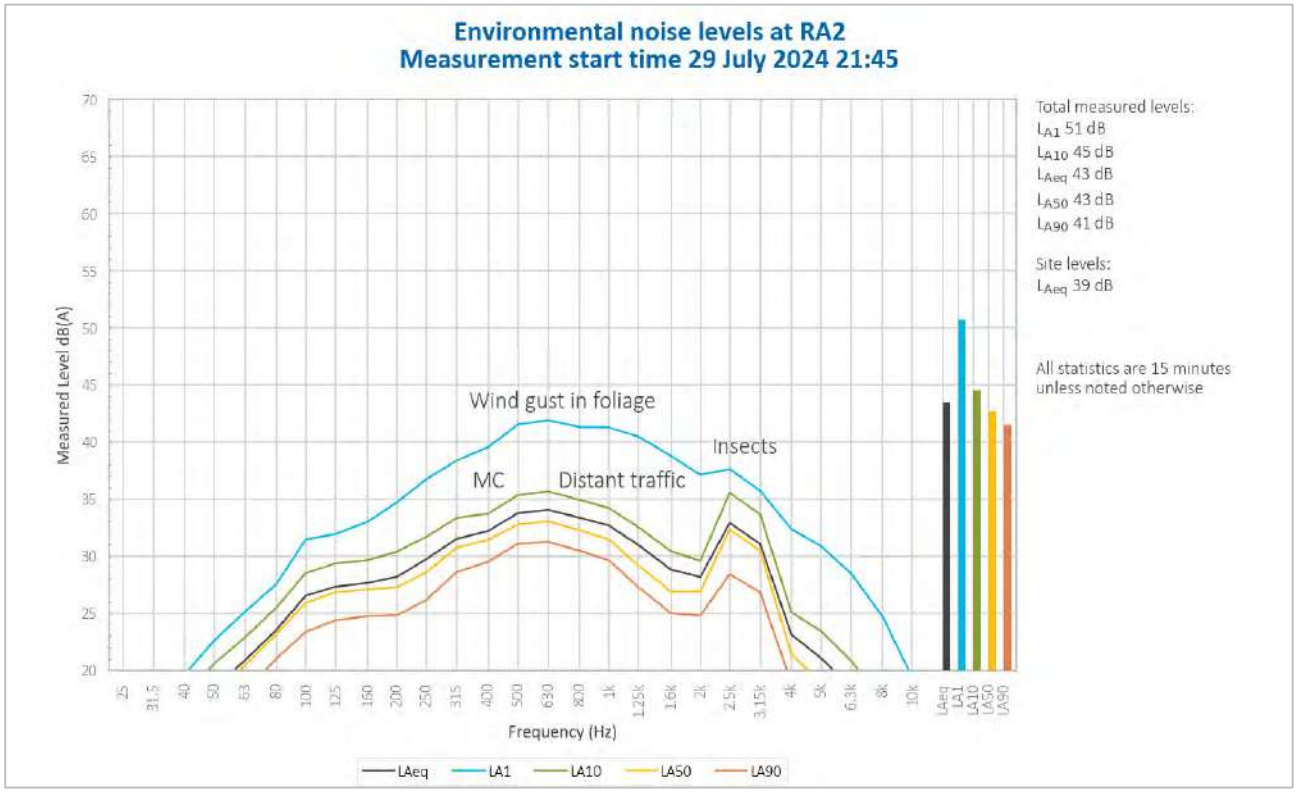


Figure 5.3 Environmental noise levels – RA2 (Macquarie Shores) – Evening

MC operations were consistently audible during the measurement.

MC operations, distant road traffic hum, insects and wind in foliage contributed to the measured L_{A10}, L_{Aeq}, L_{A50} and L_{A90}. Wind in foliage was consistently audible throughout the measurement, with a strong wind gust in tree foliage generating the measured L_{A1}.

5.4 RA2 – Night

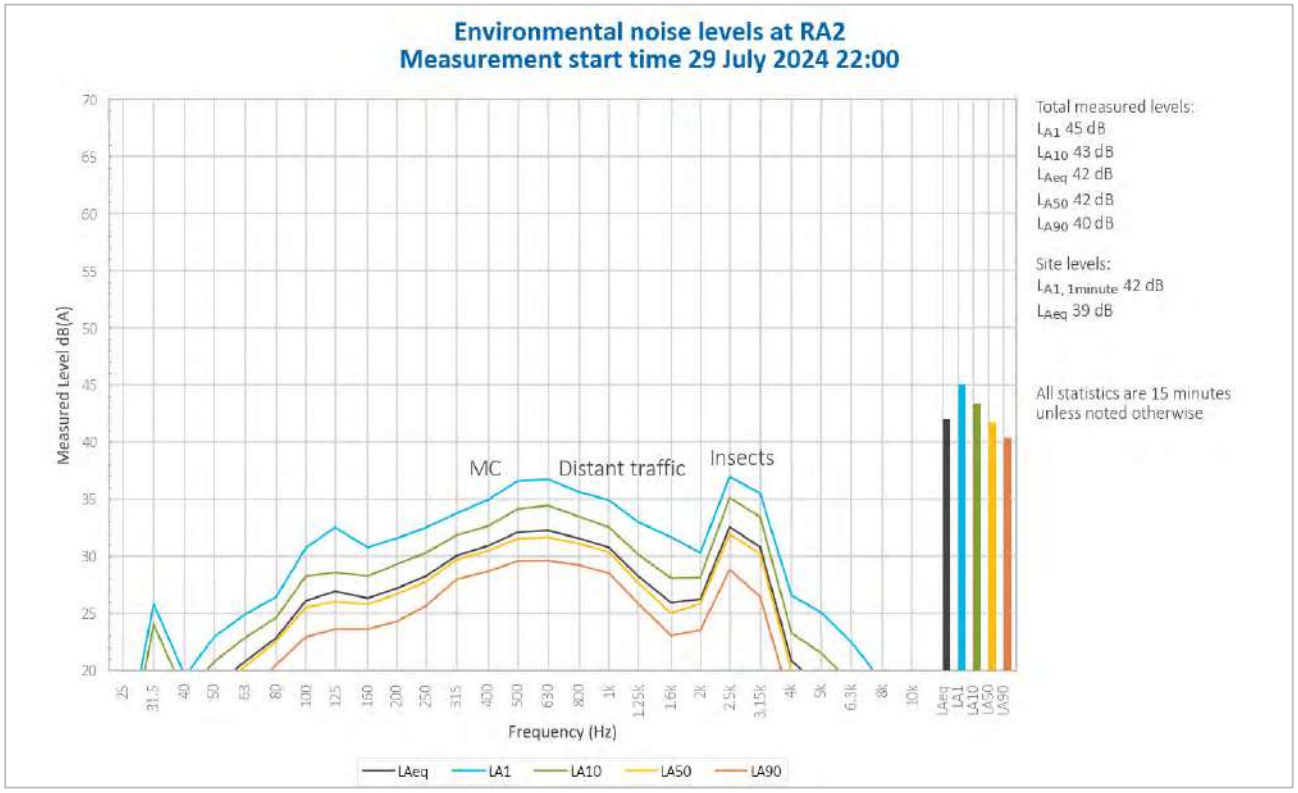


Figure 5.6 Environmental noise levels – RA2 (Macquarie Shores) – Night

MC operations were consistently audible during the measurement.

MC operations, distant road traffic hum, insects and wind in foliage generated all measured noise levels.

5.5 RA3 – Night

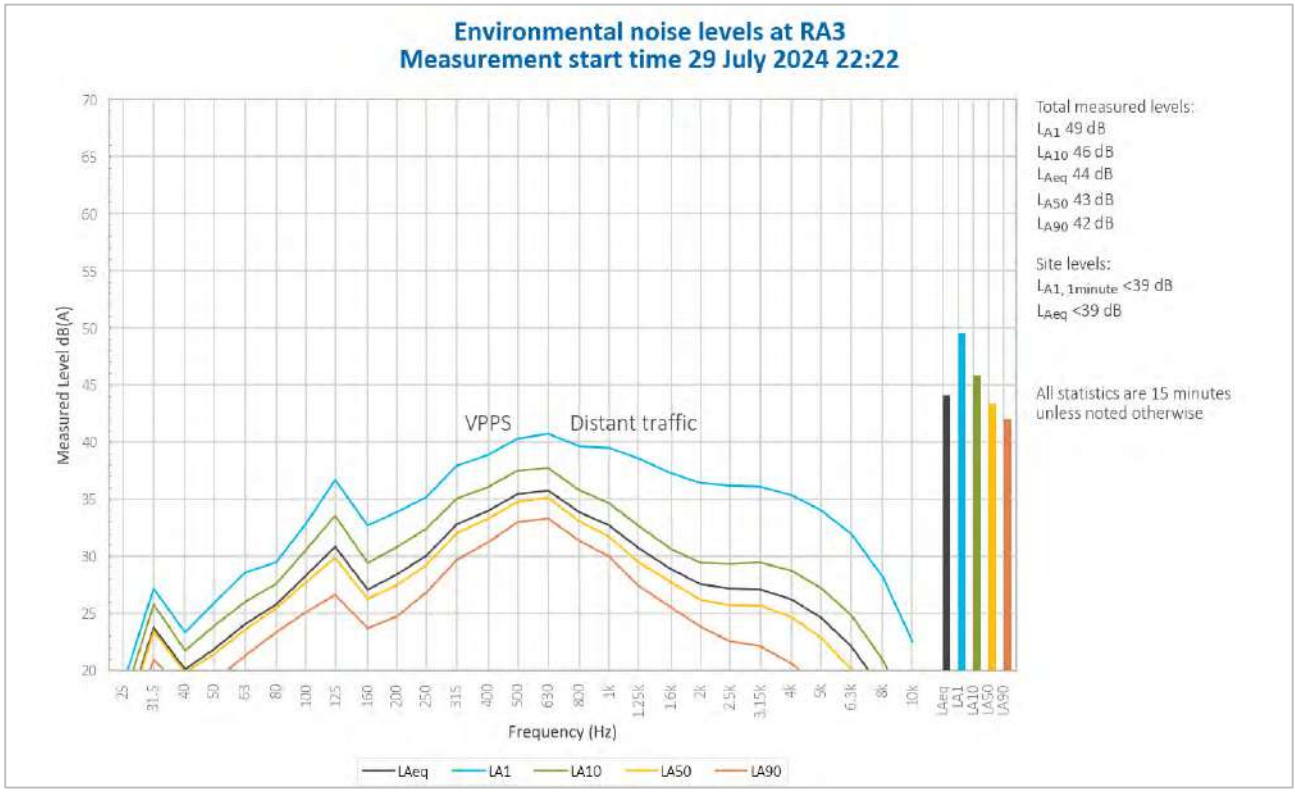


Figure 5.7 Environmental noise levels – RA3 (Kingfisher Shores) – Night

MC operations were just audible in the background during the measurement.

VPPS hum (primarily), distant road traffic hum and wind in foliage generated all measured noise levels.

5.6 RA1 – Night

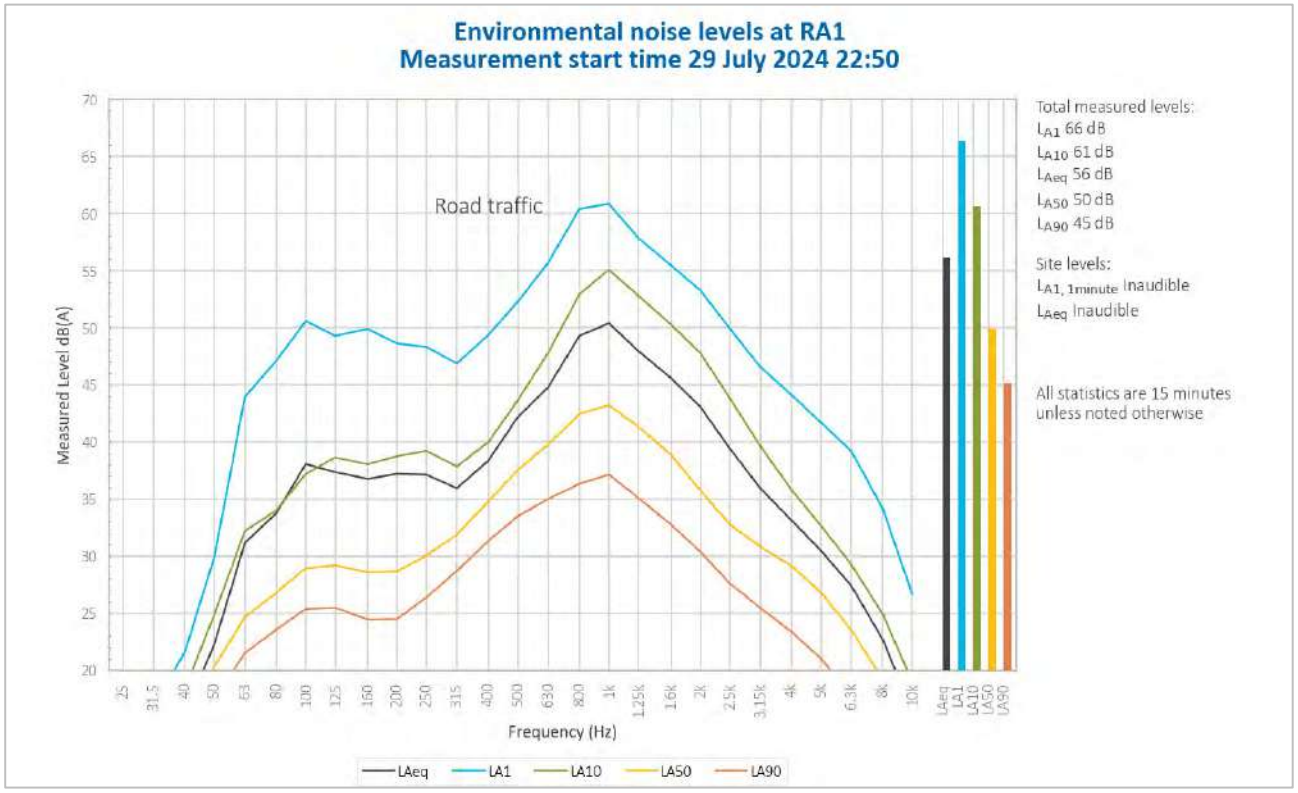


Figure 5.5 Environmental noise levels – RA1 (Pacific Highway) – Night

MC operations were inaudible during the entire measurement.

Road traffic generated all measured noise levels.

5.7 RA1 – Evening

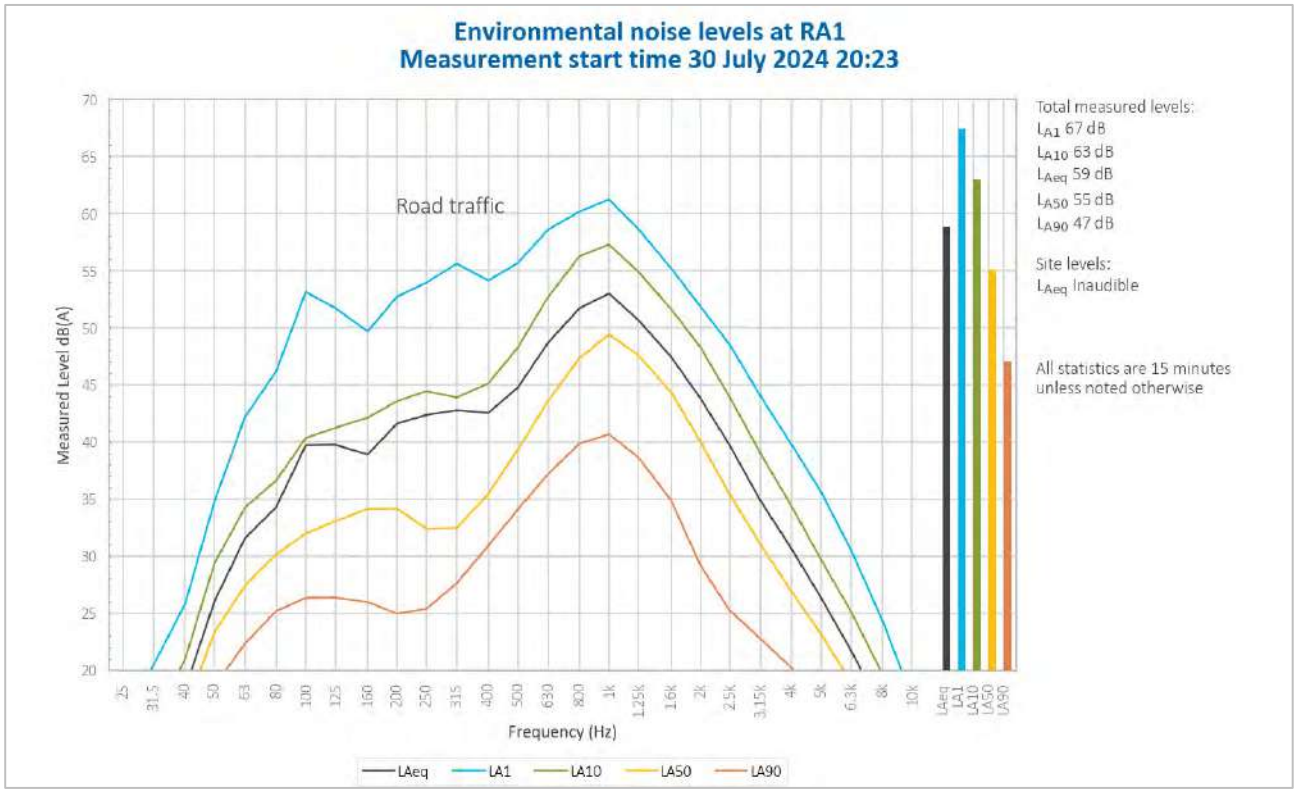


Figure 5.4 Environmental noise levels – RA1 (Pacific Highway) – Evening

MC operations were inaudible during the entire measurement.

Road traffic generated all measured noise levels.

6 Summary

EMM Consulting Pty Ltd (EMM) was engaged by Great Southern Energy Pty Ltd (trading as Delta Coal) to complete a monthly noise survey of operations conducted at Mannering Colliery. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

Attended environmental noise monitoring described in this report was done during the evening and night periods on 29 and 30 July 2024 at three monitoring locations.

Noise levels from site complied with relevant limits at all monitoring locations during the July 2024 survey.

Appendix A
Noise perception and examples

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A.1 Noise levels

Table A.1 gives an indication as to how an average person perceives changes in noise level. Examples of common noise levels are provided in Figure A.1.

Table A.1 Perceived change in noise

Change in sound pressure level (dB)	Perceived change in noise
Up to 2	Not perceptible
3	Just perceptible
5	Noticeable difference
10	Twice (or half) as loud
15	Large change
20	Four times (or quarter) as loud

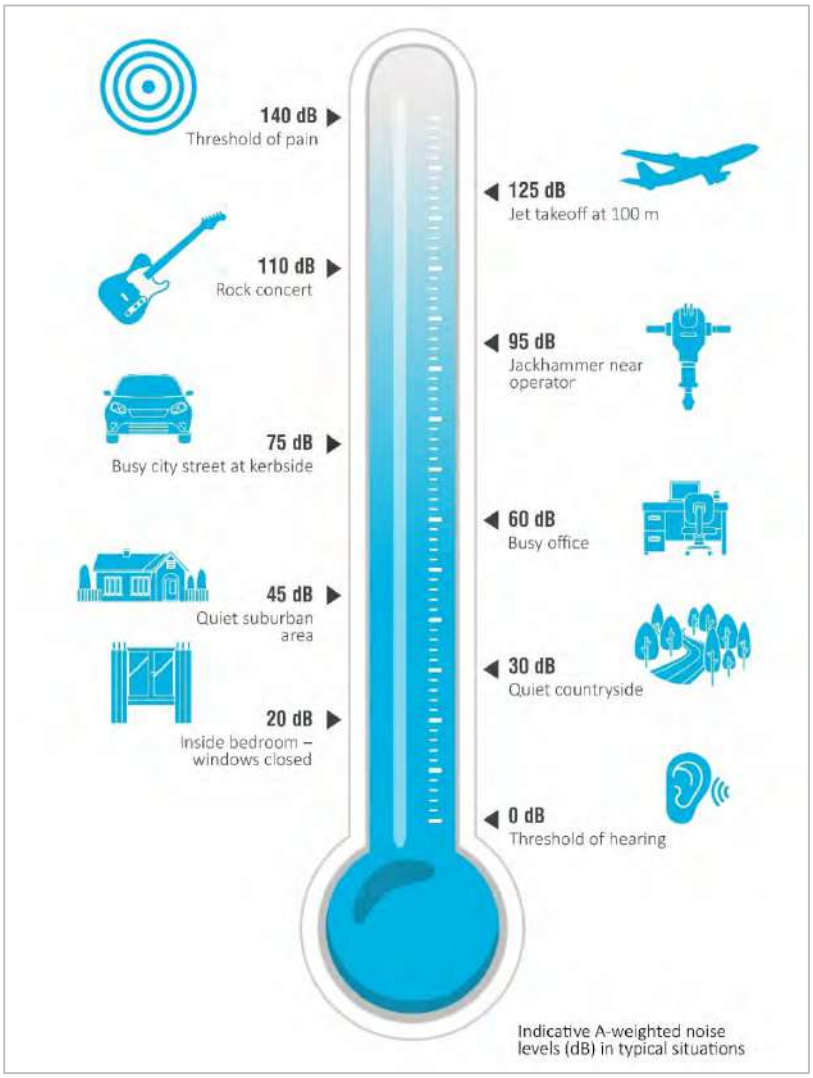


Figure A.1 Common noise levels

Appendix B
Regulator documents

EMM
creating opportunities

B.1 Project approval

SCHEDULE 3
SPECIFIC ENVIRONMENTAL CONDITIONS

NOISE

Construction Noise

1. The Applicant must ensure that the noise generated by any construction work is managed in accordance with the requirements outlined in the *Interim Construction Noise Guideline* (DECC, 2009).

Operational Noise Criteria

2. Except for the carrying out of construction works, the Applicant must ensure that the noise generated by the development does not exceed the criteria in Table 1 at any residence[a] on privately-owned land.

***Table 1**: Operational noise criteria dB(A)*

Noise Assessment Location	***Day*** $L_{Aeq\ (15\ min)}$	***Evening*** $L_{Aeq\ (15\ min)}$	***Night*** $L_{Aeq\ (15\ min)}$	***Night*** $L_{A1\ (1\ min)}$
4 – di Rocco	40	36	36	46
5 - Keighran	40	39	39	49
6 – Swan	40	37	37	47
7 – Druitt	40	35	35	45
8 – Macquarie Shores Home Village	42	42	42	47
9 - Jeans	40	37	37	47
11 - Jeans	40	36	36	46
18 - Jeans	40	36	36	46
20 – Knight and all other privately-owned residences	40	36	36	46

[a] *The Noise Assessment Locations referred to in Table 1 are shown in Appendix 4.*

Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the *NSW Noise Policy for Industry* (EPA, 2017).

3. The noise criteria in Table 1 do not apply if the Applicant has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Noise Operating Conditions

3A. The Applicant must:

(a) take all reasonable steps to minimise noise from construction and operational activities, including low frequency noise and other audible characteristics, associated with the development;

(b) implement reasonable and feasible noise attenuation measures on all plant and equipment that will operate in noise sensitive areas;

(c) operate a comprehensive noise management system commensurate with the risk of impact;

(d) take all reasonable steps to minimise the noise impacts of the development during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);

(e) carry out regular attended noise monitoring (at least once a month, unless otherwise agreed by the Planning Secretary) to determine whether the development is complying with the relevant conditions of this consent;

(f) regularly assess the noise monitoring data and modify or stop operations on the site to ensure compliance with the relevant conditions of this consent; and
(g) implement reasonable and feasible measures to further enclose the structure housing the coal crusher in order to further mitigate noise from operational activites.

3B. The Applicant must decommission the surface rotary breaker identified in the Statement of Commitments at Appendix 3, within 3 months of approval of Modification 5.

Noise Management Plan

3C. The Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
(a) be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;
(b) describe the measures to be implemented to ensure:
i. compliance with the noise criteria and operating conditions in this consent;
ii. best practice management is being employed; and
iii. noise impacts of the development are minimised during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);
(c) describe the noise management system in detail; and
(d) include a monitoring program that:
i. uses a combination of real-time and supplementary attended monitoring to evaluate the performance of the development;
ii. monitors noise at the nearest and/or most affected residences;
iii. includes a program to calibrate and validate the real-time noise monitoring results with the attended monitoring results over time;
iv. adequately supports the noise management system;
v. includes a protocol for distinguishing noise emissions of the development from any neighbouring developments; and
vi. includes a protocol for identifying any noise-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of any such event.

The Applicant must implement the Noise Management Plan as approved by the Planning Secretary.

SUBSIDENCE

4. The Applicant must limit its coal extraction methods on the site to first workings only, and must not undertake second workings.

5. Deleted.

SOIL AND WATER

Discharge

6. The Applicant must only discharge water from the site as expressly provided for by its EPL.

7. The Applicant must investigate, assess and report on the ecological interactions of minewater discharged from the site with the aquatic ecology of the unnamed creek and wetlands (and associated vegetation) between the minewater discharge point/s and Lake Macquarie. This report must:
(a) be prepared in consultation with EPA by suitably qualified expert/s whose appointment/s have been approved by the Planning Secretary;
(b) be submitted to the Planning Secretary by the end of March 2009; and
(c) assess the probable alterations in the local ecology attributable to previous and proposed minewater discharges and any future cessation of minewater discharge flows.

Water Management Plan

8. The Applicant must prepare a Water Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
(a) be prepared in consultation with DPIE Water by suitably qualified expert/s whose appointment/s have been approved by the Planning Secretary;
(b) be submitted the Planning Secretary by the end of March 2009; and
(c) include a:
- Site Water Balance;

B.2 Environment Protection Licence

Environment Protection Licence

L4 Waste

L4.1 The licensee must not cause, permit or allow any waste to be received at the premises, except the wastes expressly referred to in the column titled “Waste” and meeting the definition, if any, in the column titled “Description” in the table below.
Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled “Activity” in the table below.
Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste contained in the column titled “Other Limits” in the table below.
This condition does not limit any other conditions in this licence.

Code	Waste	Description	Activity	Other Limits
NA	Waste	Any other waste received on the premises for storage, treatment, processing, sorting or disposal and which receipt is not a scheduled activity under Schedule 1 of the POEO Act, as in force from time to time.		
NA	General or Specific exempted waste	Waste that meets all the conditions of a resource recovery exemption under Clause 51A of the Protection of the Environment Operations (Waste) Regulation 2014	As specified in each particular resource recovery exemption	N/A

L4.2 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.

L4.3 This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if it requires an environment protection licence.

L5 Noise limits

Note: Noise limits are not specified as a condition of this licence. Noise limits are prescribed with the conditions of Project Approval 06_0311 granted under the *Environmental Planning and Assessment Act 1979.* Under the *Environmental Planning and Assessment Act 1979* the Department of Planning is the appropriate authority in respect of the administration and regulation of the Project Approval.

B.3 Approved noise management plan

The above noise monitoring locations are representative of residential receivers most likely to be affected by CVC operational noise. Adherence with the relevant noise criteria at these locations will indicate that noise criteria will be met at other surrounding noise-sensitive locations.

4.2.3 Mannering Colliery

Consistent with the Noise Impact Assessment (EMM 2019) undertaken as part of the Project Approval MP06_0311 MOD 5, rural and residential receivers have been divided into three (3) receiver areas (RA's) with similar geographical and acoustic features. The following points are considered representative of each receiver area:

- RA1, rural residential properties south of MC and fronting the Pacific Highway. The dominant noise source in this area is road traffic. Birds, insects and other industrial sources are also audible at times.
- RA2, privately-owned relocatable residences within the MSHV, east of MC. The dominant noise sources in this RA are birds, insects, traffic and other industrial sources. Activities at MC are also noted to be audible at times.
- RA3, various rural residential residences on Tall Timbers Road at Kingfisher Shores and adjacent to the Chain Valley Bay suburban area. The dominant noise sources in this RA are birds, insects, other industrial sources and traffic movements. Activities at MC are also noted to be audible at times.

The attended noise monitoring locations for MC and relevant noise criteria are identified below in **Table 6**.

Table 6: Noise Monitoring Locations and Limits for Mannering Colliery

Location	Receivers Represented MP06_0311 ID	Coordinates	Day $L_{Aeq(15\ min)}$ dB (A)	Evening $L_{Aeq(15\ min)}$ dB (A)	Night $L_{Aeq(15\ min)}$ dB (A)	Night $L_{A1(1\ min)}$ dB (A)
RA1	4, 5, 6	364646E 6327221N	40	36	36	46
RA2	7, 8	365164E 6328332N	40	40	40	45
RA3	9, 11, 18, 20	365069E 6328953N	40	39	39	49

The above noise monitoring locations are representative of residential receivers most likely to be affected by MC operational noise. Adherence with the relevant noise criteria at these locations will indicate that noise criteria will be met at other surrounding noise-sensitive locations.

Appendix C
Calibration certificates

EMM
creating opportunities

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: SLM34169

EQUIPMENT TESTED: Sound Level Meter

Manufacturer:	B & K		
Type No:	2250	**Serial No:**	3029363
Mic. Type:	4189	**Serial No:**	3260501
Pre-Amp. Type:	ZC0032	**Serial No:**	30109
Filter Type:	1/3 Octave	**Test No:**	F034175

Owner: EMM Consulting
Suite 01, 20 Chandos St
St Leonards NSW 2065

Tests Performed: IEC 61672-3:2013 & IEC 61260-3:2016

Comments: All Test passed for Class 1. (See overleaf for details)

CONDITIONS OF TEST:

Ambient Pressure	1002	hPa ±1 hPa	**Date of Receipt :**	02/11/2022
Temperature	24	°C ±1° C	**Date of Calibration :**	03/11/2022
Relative Humidity	35	% ±5%	**Date of Issue :**	04/11/2022

Acu-Vib Test Procedure: AVP10 (SLM) & AVP06 (Filters)

CHECKED BY: ..... **AUTHORISED SIGNATURE:** .....

Jack Kielt

Accredited for compliance with ISO/IEC 17025 - Calibration
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Head Office & Calibration Laboratory
Unit 14, 22 Hudson Ave. Castle Hill NSW 2154
(02) 9680 8133
www.acu-vib.com.au

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: C37508

EQUIPMENT TESTED : Sound Level Calibrator

Manufacturer: Svantek
Type No: SV 36 **Serial No:** 79952
Class: 1
Owner: EMM Consulting Pty Ltd
L3, 175 Scott Street
Newcastle, NSW 2300
Tests Performed: Measured Output Pressure level, Frequency & Distortion
Comments: See Details and Class Tolerance overleaf.

CONDITION OF TEST:

Ambient Pressure	1005	hPa ±1 hPa	**Date of Receipt :**	26/09/2023
Temperature	23	°C ±1° C	**Date of Calibration :**	27/09/2023
Relative Humidity	47	% ±5%	**Date of Issue :**	28/09/2023

Acu-Vib Test Procedure: AVP02 (Calibrators)
Test Method: AS IEC 60942 - 2017

CHECKED BY: .....

AUTHORISED SIGNATURE: .....
Hein Soe

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Mannering Colliery

Monthly attended noise monitoring - August 2024

Prepared for Great Southern Energy Pty Ltd (trading as Delta Coal)

September 2024

Mannering Colliery

Monthly attended noise monitoring - August 2024

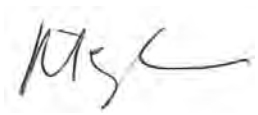
Great Southern Energy Pty Ltd (trading as Delta Coal)

E240010 RP1

September 2024

Version	Date	Prepared by	Reviewed by	Comments
V1	5 September 2024	Teanuanua Villierme	Najah Ishac	Draft
V2	9 September 2024	Teanuanua Villierme	Najah Ishac	Final

Approved by



Katie Teyhan
Acoustics – Team Manager
9 September 2024

Level 3 175 Scott Street
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ABN: 28 141 736 558

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1 Introduction

1.1 Background

EMM Consulting Pty Ltd (EMM) was engaged by Great Southern Energy Pty Ltd (trading as Delta Coal) to conduct a monthly noise survey of operations at Mannering Colliery (MC, the site) located at Ruttleys Road, Mannering Park NSW. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

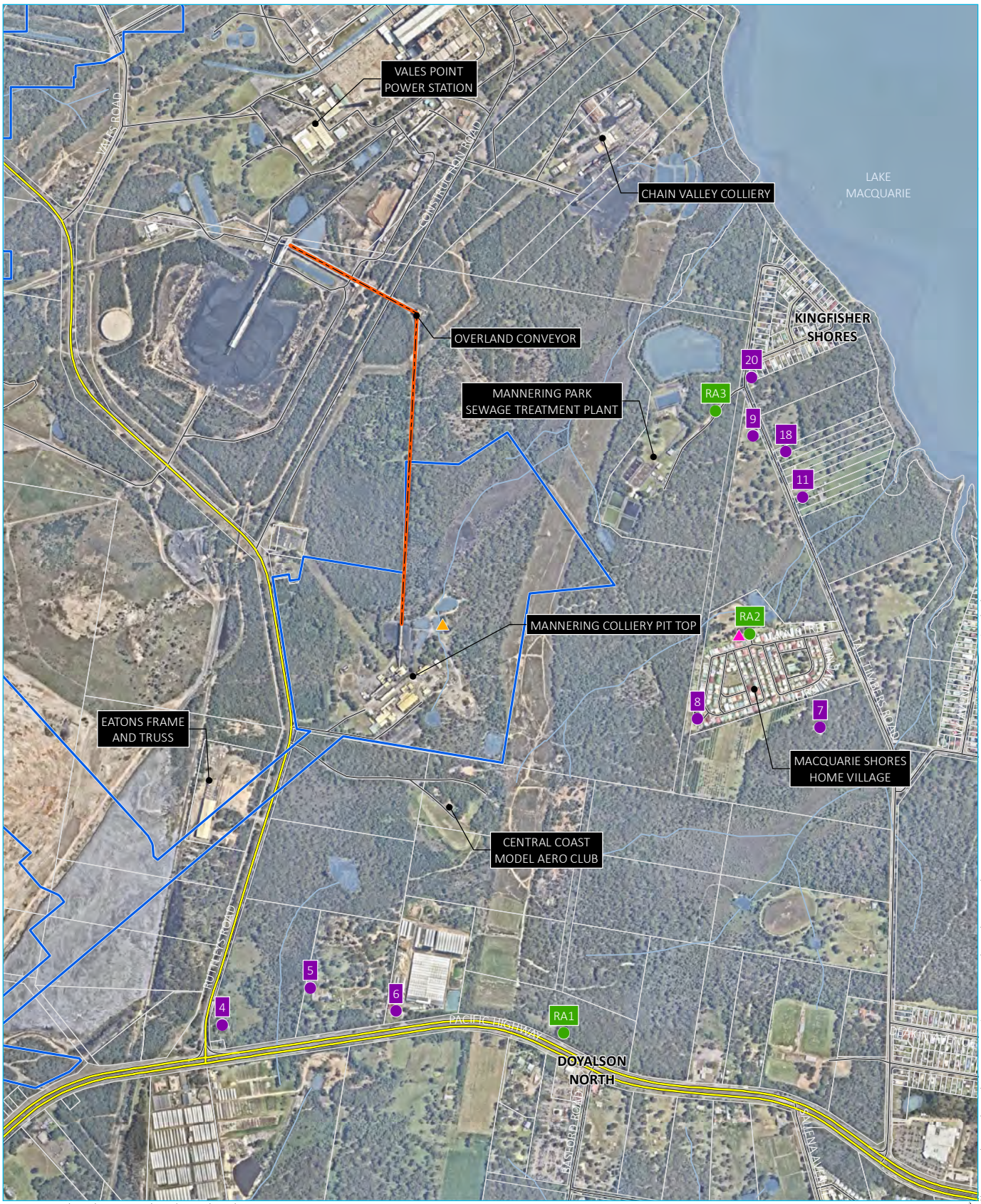
Attended environmental noise monitoring described in this report was done during the evening and night periods on 13 August 2024 at three monitoring locations.

1.2 Attended monitoring locations

Site monitoring locations are detailed in Table 1.1 and shown on Figure 1.1. It should be noted that Figure 1.1 shows actual monitoring positions, not necessarily the location of residences.

Table 1.1 Attended noise monitoring locations

Location descriptor/ID	Description/address	Coordinates (MGA56)	
		Easting	Northing
RA1	Pacific Highway, Doyalson North	364646	6327221
RA2	Macquarie Shores Home Village, Doyalson North	365164	6328332
RA3	Tall Timbers Road (northern end), Kingfisher Shores	365069	6328953



Source: EMM (2021); NearMap (2019); DFSI (2017)

0 250 500 m

GDA 1994 MGA Zone 56

N

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KEY

- Mannering Colliery project approval boundary
- Alignment of overland conveyor to VPPS
- Main road
- Local road
- Watercourse/drainage line
- Waterbody
- Cadastral boundary
- Assessment location
- Attended monitoring location
- Continuous monitoring location
- Meteorological station

Attended noise monitoring and assessment locations

Mannering Colliery
Figure 1.1

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1.3 Terminology and abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

Table 1.2 Terminology and abbreviations

Term/descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The "A" weighting scale is used to approximate how humans hear noise.
L_{Amax}	The maximum root mean squared A-weighted noise level over a time period.
L_{A1}	The A-weighted noise level which is exceeded for 1% of the time.
$L_{A1,1minute}$	The A-weighted noise level which is exceeded for 1% of the specified time period of 1 minute.
L_{A10}	The A-weighted noise level which is exceeded for 10% of the time.
L_{Aeq}	The energy average A-weighted noise level.
$L_{Aeq,15minute}$	The energy average A-weighted noise level over the specified time period of 15 minutes.
L_{A50}	The A-weighted noise level which is exceeded for 50% of the time, also the median noise level during a measurement period.
L_{A90}	The A-weighted noise level exceeded for 90% of the time, also referred to as the "background" noise level and commonly used to derive noise limits.
L_{Amin}	The minimum A-weighted noise level over a time period.
L_{Ceq}	The energy 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.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	Monday – Saturday: 7 am to 6 pm, on Sundays and Public Holidays: 8 am to 6 pm.
Evening	Monday – Saturday: 6 pm to 10 pm, on Sundays and Public Holidays: 6 pm to 10 pm.
Night	Monday – Saturday: 10 pm to 7 am, on Sundays and Public Holidays: 10 pm to 8 am.
NPfI	NSW EPA Noise Policy for Industry (2017)
Temperature inversion	A meteorological condition where the atmospheric temperature increases with altitude.

Appendix A provides further information that gives an indication as to how an average person perceives changes in noise level, and examples of common noise levels.

2 Noise limits

2.1 Project approval

Mannering Colliery noise limits are provided in Table 1, Condition 2 of Schedule 3 of the current project approval (PA) PA MP06_0311 dated 5 June 2020. Relevant sections of the PA are reproduced in Appendix B.1.

2.2 Environment protection licence

The current Environment Protection Licence (EPL) 191 dated 16 June 2023 references the PA with respect to noise limits. Relevant sections of the EPL are reproduced in Appendix B.2.

2.3 Noise management plan

The approved Noise Management Plan (NMP) (dated 20 April 2022) was prepared in line with the Mod 5 approval and in accordance with the NSW EPA 'Noise Policy for Industry' (NPfI) issued in October 2017. Three attended noise monitoring locations representative of the PA noise assessment locations have been adopted in the NMP for the purpose of determining compliance with relevant noise limits. Relevant sections of the NMP are reproduced in Appendix B.3.

2.4 Noise limits

Noise limits consistent with the PA, EPL and approved NMP are as shown in Table 2.1.

Table 2.1 Noise limits, dB

Location	Day $L_{Aeq,15minute}$	Evening $L_{Aeq,15minute}$	Night $L_{Aeq,15minute}$	Night $L_{A1,1minute}$
RA1	40	36	36	46
RA2	40	40	40	45
RA3	40	39	39	49

2.5 Meteorological conditions

The PA (Mod 5) states the following:

> Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Noise Policy for Industry (EPA, 2017).

Section 5.2 of the NPfI states that noise limits applicable under 'very noise-enhancing' conditions should be the limits that apply under 'standard' or 'noise-enhancing' conditions plus 5 dB.

As per the PA (Mod 5) and in accordance with the NPfI, limits are adjusted when monitoring is undertaken during the following 'very noise-enhancing' conditions:

- wind speeds greater than 3 m/s at 10 m above ground level;
- stability category F temperature inversion conditions with wind speeds greater than 2 m/s at 10 m above ground level; or
- stability category G temperature inversion conditions.

Therefore, if monthly noise monitoring occurs during 'very noise-enhancing' conditions, this assessment adopts a +5 dB adjustment to the limits shown in Table 2.1. This is indicated in Table 4.3, where relevant. It is noted that monthly noise monitoring for the site is always scheduled to occur during appropriate forecasted meteorological conditions in accordance with the 'Approved methods for the measurement and analysis of environmental noise in NSW' (EPA 2022) (the approved methods).

2.6 Additional considerations

Monitoring and reporting have been done in accordance with the NSW EPA's NPfI and the approved methods.

3 Methodology

3.1 Overview

Attended environmental noise monitoring was done in general accordance with Australian Standard AS1055:2018 'Acoustics – Description and Measurement of Environmental Noise' and relevant EPA requirements. Meteorological data was obtained from the Mannering Colliery on-site automatic weather station (AWS) which allowed correlation of atmospheric parameters with measured noise levels.

3.2 Attended noise monitoring

During this survey, attended noise monitoring was done during the evening and night periods at each location in accordance with the NMP. The duration of each measurement was 15 minutes. Atmospheric conditions were measured at each monitoring location.

Measured sound levels from various sources were noted during each measurement, and particular attention was paid to the extent of site contribution (if any) to measured levels. At each monitoring location, the site-only $L_{Aeq,15minute}$ and L_{Amax} were measured directly or determined by other methods detailed in Section 7.1 of the NPfI. For example, frequency filtering and observations when extraneous noise is low are some of the techniques used to isolate site noise contribution.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may be used in this report. When site noise is noted as IA, it was inaudible at the monitoring location. When site noise is noted as NM, this means it was audible but could not be quantified. All results noted as IA or NM in this report were due to one or more of the following:

- Site noise levels were very low, typically more than 10 dB below the measured background (L_{A90}), and unlikely to be noticed.
- Site noise levels were masked by other, more dominant, noise sources that are characteristic of the environment (such as breeze in foliage or continuous road traffic noise) that cannot be eliminated by monitoring at an alternate or intermediate location.
- It was not feasible or reasonable to employ methods such as move closer and back calculate. Cases may include rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

If exact noise levels from site could not be established due to masking by other noise sources in a similar frequency range but were determined to be at least 5 dB lower than relevant limits, then a maximum estimate of site noise may be provided. These are expressed as a 'less than' quantity, such as <20 dB or <30 dB.

For this assessment, the measured L_{Amax} has been used as a conservative estimate of $L_{A1,1minute}$. The EPA accepts sleep disturbance analysis based on either the $L_{A1,1minute}$ or L_{Amax} metrics, with the L_{Amax} representing a more conservative assessment of site noise emissions.

3.3 Meteorological data

This assessment determined stability categories throughout attended monitoring periods using the sigma-theta method as per Fact Sheet D of the NPfI. This data was sourced from the site AWS, in accordance with PA requirements.

3.4 Modifying factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. If applicable, modifying factor adjustments have been reported and added to measured site-only L_{Aeq}.

Low-frequency modifying factor penalties have only been applied if site was the only contributing low-frequency noise source. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

3.5 Instrumentation and personnel

Attended noise monitoring was conducted by acoustical consultant Teanuanua Villierme. Qualifications, experience and competency are in accordance with the Approved Methods and demonstration of this is available upon request.

Equipment used to measure environmental noise levels is detailed in Table 3.1. Calibration certificates are provided in Appendix C.

Table 3.1 Attended noise monitoring equipment

Item	Serial number	Calibration due date	Relevant standard
Brüel & Kjær 2250 sound level meter	3029363	3/11/2024	IEC 61672-1:2013
Svantek SV-36 calibrator	79952	27/09/2025	IEC 60942:2017

4 Results

4.1 Total measured noise levels and atmospheric conditions

Overall noise levels measured at each location during attended measurements are provided in Table 4.1.

Table 4.1 Total measured noise levels[1], dB – August 2024

Location	Start date and time	L_{Amax}	L_{A1}	L_{A10}	L_{Aeq}	L_{A50}	L_{A90}	L_{Amin}
RA1	13/08/2024 20:49	71	64	61	57	53	45	41
RA2	13/08/2024 21:15	48	47	45	44	44	43	41
RA3	13/08/2024 21:34	68	55	44	45	42	40	38
RA2	13/08/2024 22:00	50	47	45	44	43	42	40
RA3	13/08/2024 22:20	52	46	44	42	41	40	37
RA1	13/08/2024 22:44	77	65	59	55	44	39	35

Notes: 1. Levels in this table are not necessarily the result of activity at site.

Atmospheric conditions data measured by the operator during each measurement using a hand-held weather meter is shown in Table 4.2. The wind speed, direction and temperature were measured at approximately 1.5 m above ground. Attended noise monitoring is not done during rain, hail, or wind speeds above 5 m/s at microphone height.

Table 4.2 Measured atmospheric conditions – August 2024

Location	Start date and time	Temperature °C	Wind speed m/s	Wind direction ° Magnetic north[1]	Cloud cover 1/8s
RA1	13/08/2024 20:49	18	<0.5	-	8
RA2	13/08/2024 21:15	18	<0.5	-	8
RA3	13/08/2024 21:34	18	0.7	45	8
RA2	13/08/2024 22:00	18	<0.5	-	8
RA3	13/08/2024 22:20	18	<0.5	-	8
RA1	13/08/2024 22:44	18	<0.5	-	8

Notes: 1. "-" indicates calm conditions (wind speed <0.5 m/s) at monitoring location.

4.2 Site only noise levels

4.2.1 Modifying factors

There were no modifying factors, as defined in the NPfI, applicable during the survey.

4.2.2 Monitoring results

Table 4.3 provides site noise levels in the absence of other sources, where possible, and includes weather data from the site AWS. Noise limits are applicable under all weather conditions but have been adjusted, where relevant, during very noise-enhancing weather conditions as defined by the NPfI (refer to Section 2.5).

Table 4.3 Site noise levels and limits – August 2024

Location	Start date and time	Wind		Stability class	Standard limits apply?[1]	Limit, dB		Site level, dB[2]		Exceedance, dB	
		Speed (m/s)	Direction[3]			$L_{Aeq,15minute}$	$L_{A1,1minute}$	$L_{Aeq,15minute}$	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}
RA1	13/08/2024 20:49	1.7	44	F	Yes	36	N/A	IA	N/A	Nil	N/A
RA2	13/08/2024 21:15	1.9	42	F	Yes	40	N/A	IA	N/A	Nil	N/A
RA3	13/08/2024 21:34	2.1	40	F	No	44 (39+5)	N/A	IA	N/A	Nil	N/A
RA2	13/08/2024 22:00	1.6	39	F	Yes	40	45	IA	IA	Nil	Nil
RA3	13/08/2024 22:20	2.0	33	F	Yes	39	49	IA	IA	Nil	Nil
RA1	13/08/2024 22:44	2.0	43	F	Yes	36	46	IA	IA	Nil	Nil

Notes: 1. If "No", adjusted noise limits (standard limit + 5 dB) apply during 'very noise-enhancing' meteorological conditions as stated in Section 2.5.

2. Site-only $L_{Aeq,15minute}$ include modifying factor adjustments if applicable.

3. Degrees magnetic north, "-" indicates calm conditions.

5 Discussion

5.1 Noted noise sources

During attended monitoring, the time variations (temporal characteristics) of noise sources are considered in each measurement via statistical descriptors. From these observations, summaries have been derived for the location and provided in this chapter. Statistical 1/3 octave-band analysis of environmental noise was undertaken and the following figures display frequency ranges of various noise sources at each location for L_{A1}, L_{A10}, L_{Aeq}, L_{A50}, and L_{A90} descriptors. These figures also provide, graphically, statistical information for these noise levels.

An example (non-site related) is provided as Figure 5.1, where frogs and insects are seen to be generating noise at frequencies above 1,000 Hz, while industrial noise is generally observed at frequencies less than 1,000 Hz.

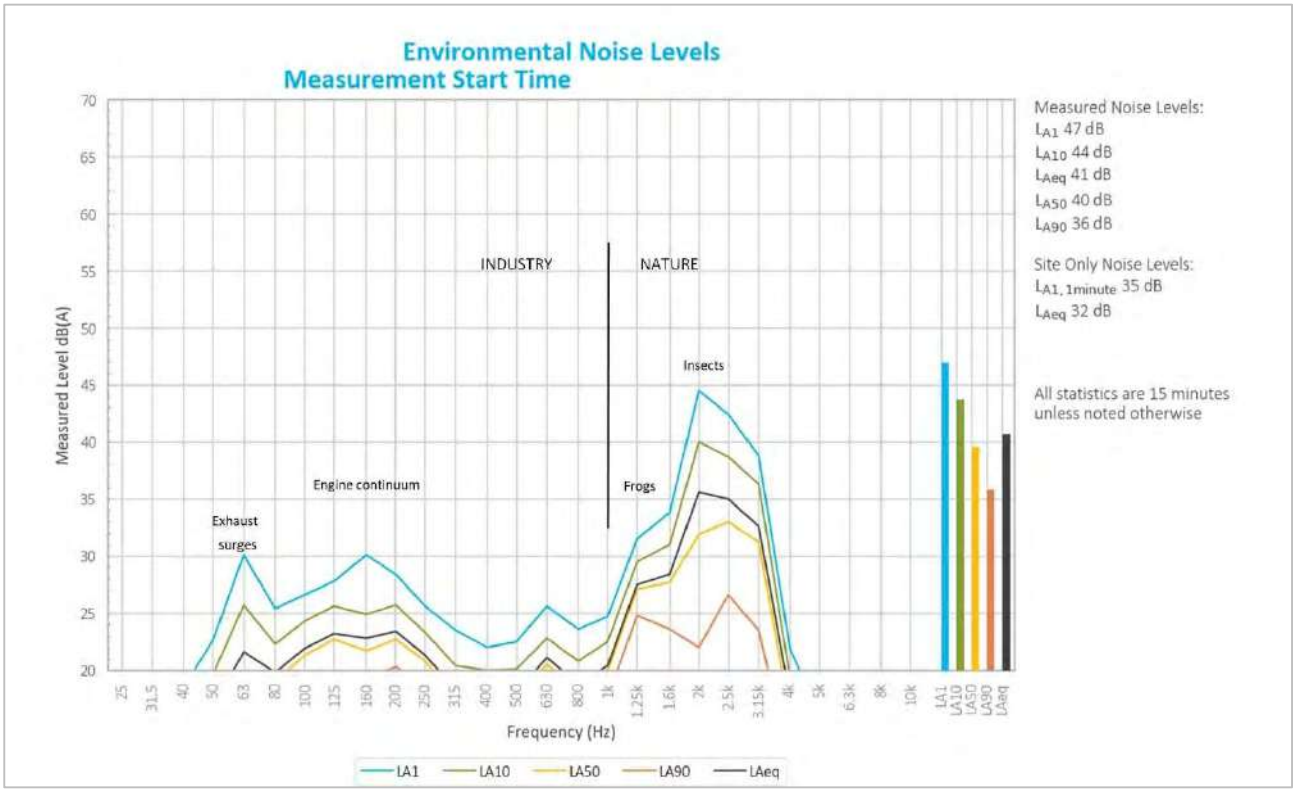


Figure 5.1 Example graph (refer to Section 5.1 for explanatory note)

5.2 RA1 – Evening

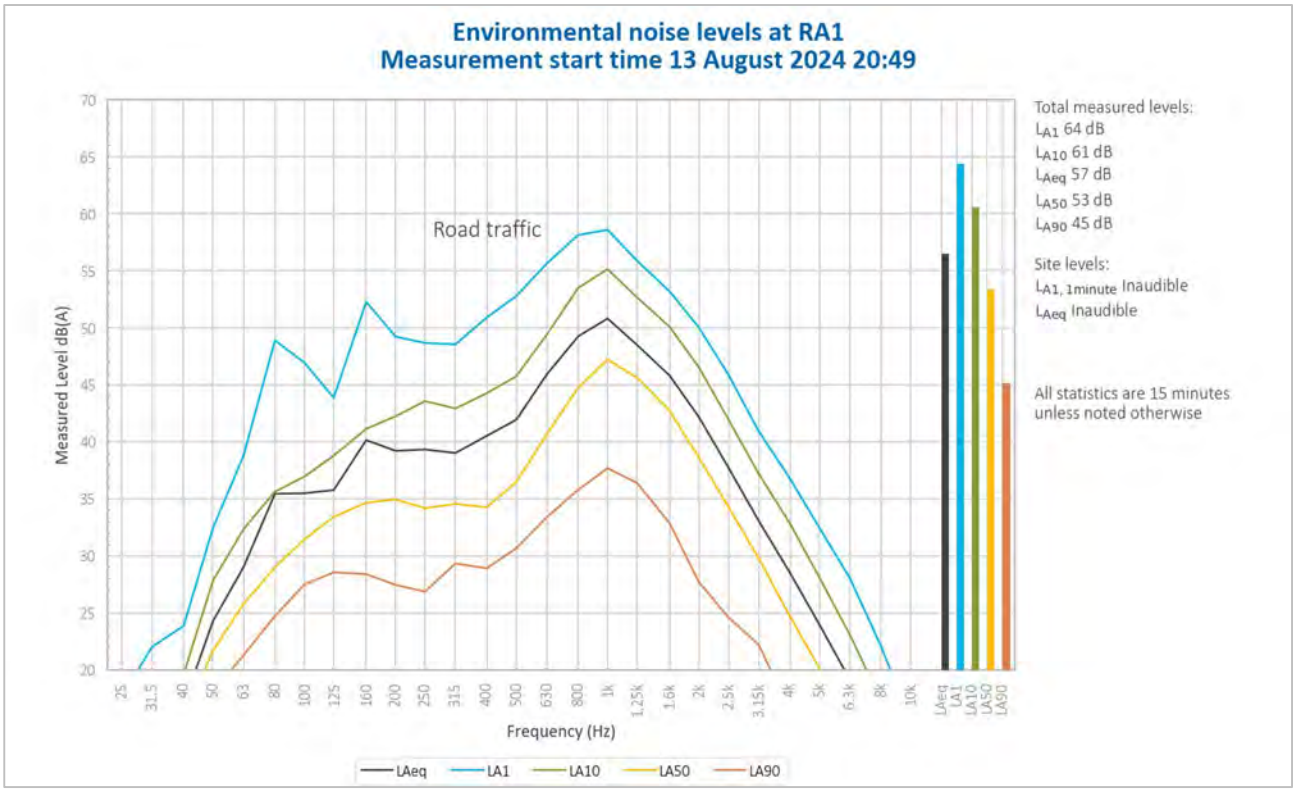


Figure 5.2 Environmental noise levels – RA1 (Pacific Highway) – Evening

MC operations were inaudible during the entire measurement.

Road traffic dominated measured noise levels.

5.3 RA2 – Evening

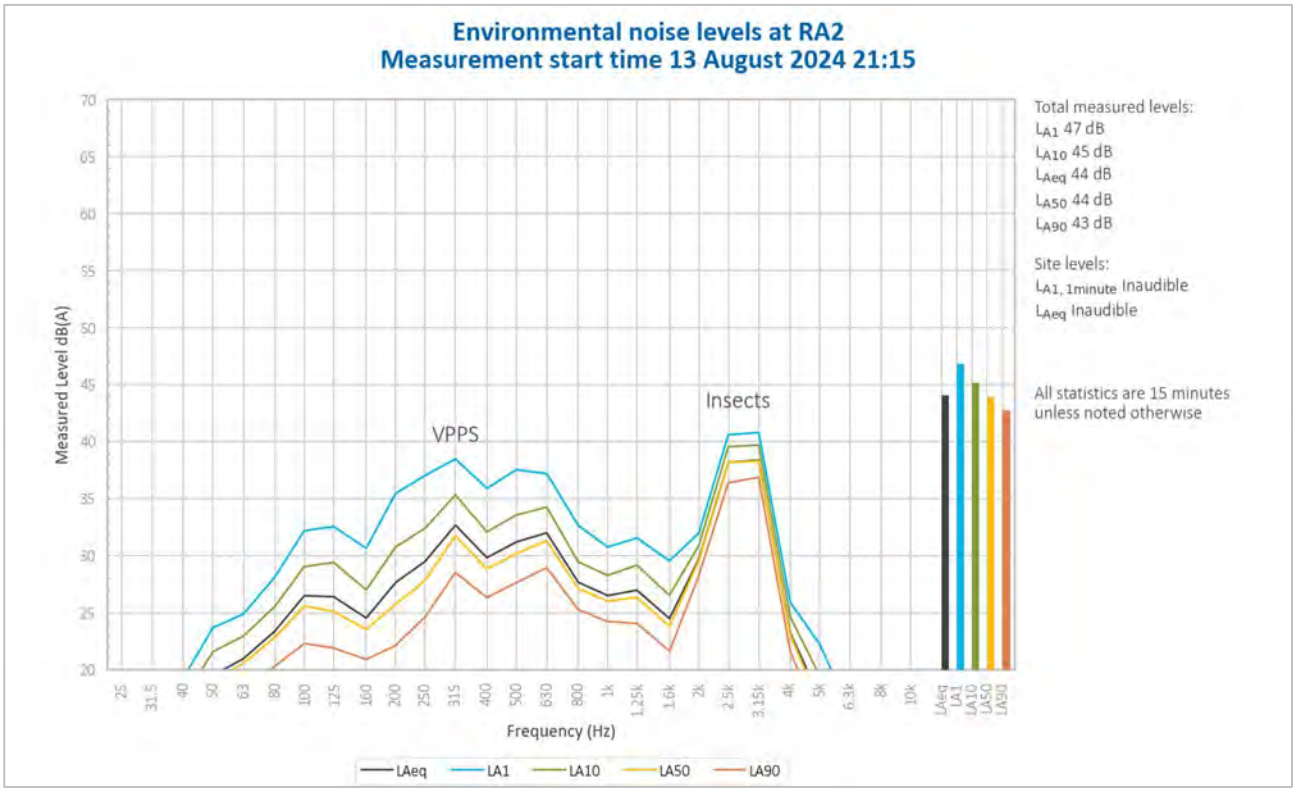


Figure 5.3 Environmental noise levels – RA2 (Macquarie Shores) – Evening

MC operations were inaudible during the entire measurement.

Vales Point Power Station (VPPS) and insects generated measured noise levels.

5.4 RA3 – Evening

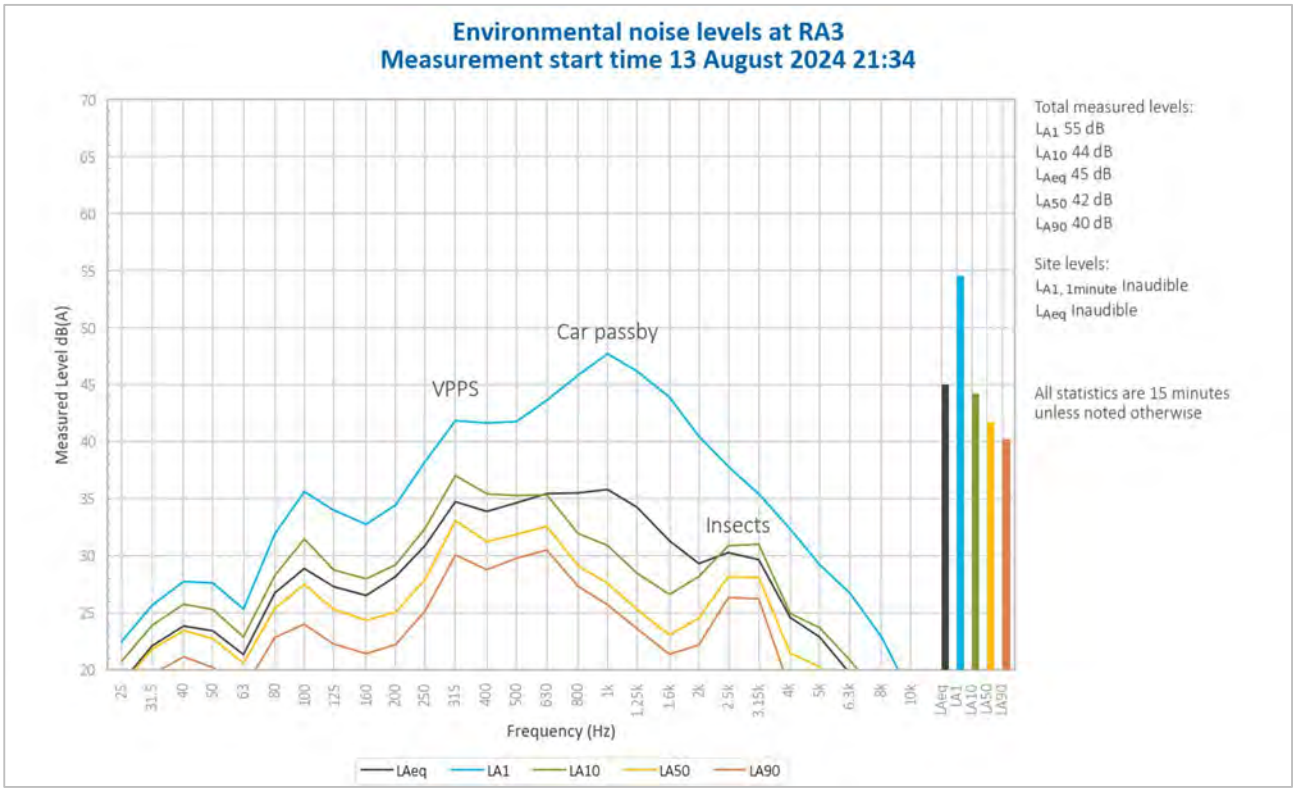


Figure 5.4 Environmental noise levels – RA3 (Kingfisher Shores) – Evening

MC operations were inaudible during the entire measurement.

VPPS (primarily), a car passby and insects contributed to measured noise levels. A car passby generated the measured L_{A1}.

5.5 RA2 – Night

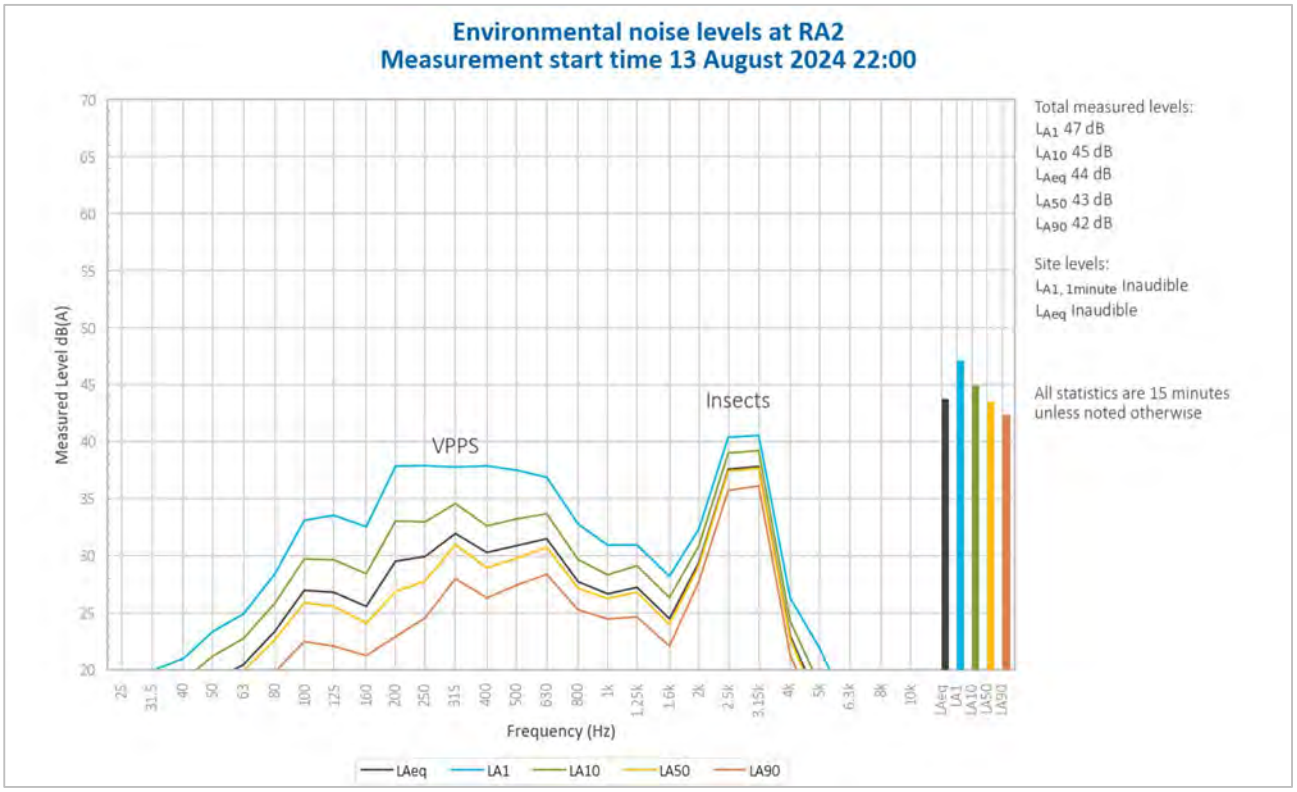


Figure 5.6 Environmental noise levels – RA2 (Macquarie Shores) – Night

MC operations were inaudible during the entire measurement.

VPPS and insects generated measured noise levels.

5.6 RA3 – Night

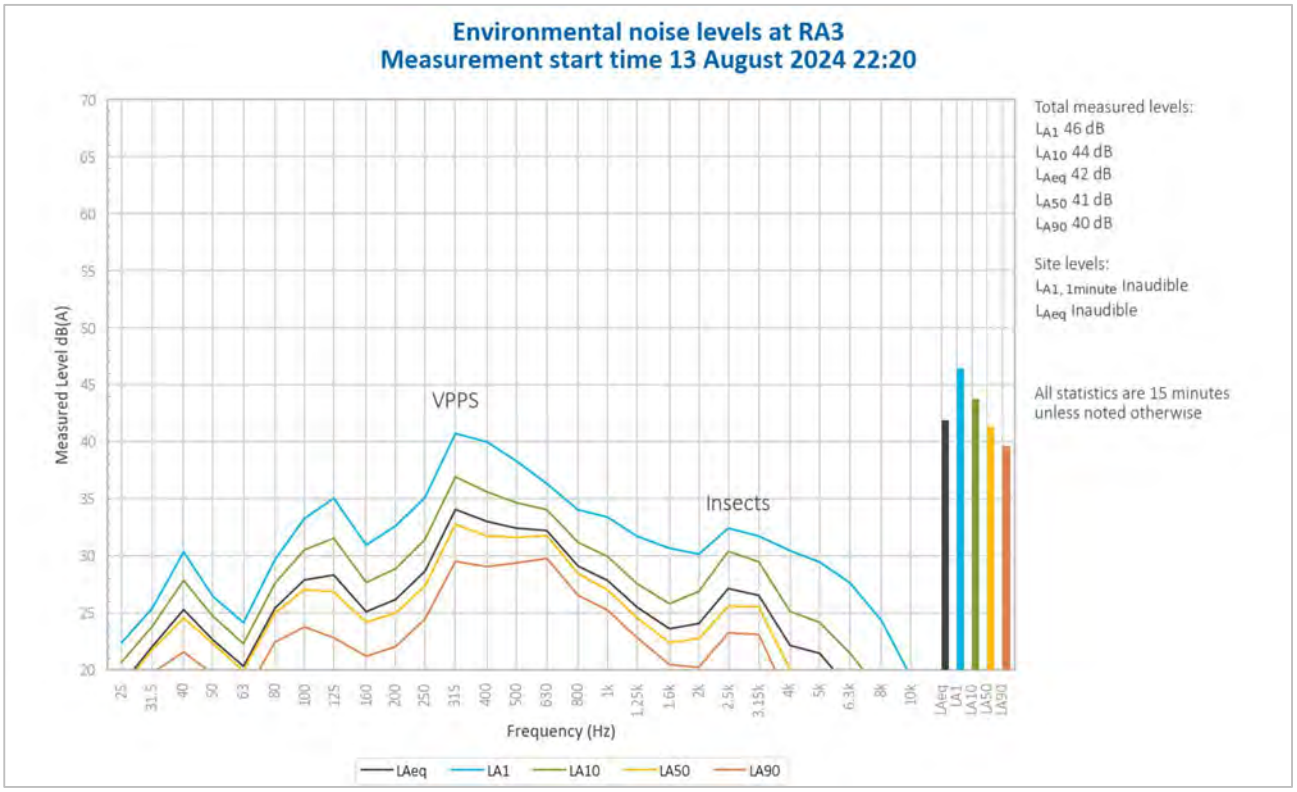


Figure 5.7 Environmental noise levels – RA3 (Kingfisher Shores) – Night

MC operations were inaudible during the entire measurement.

VPPS dominated measured noise levels.

5.7 RA1 – Night

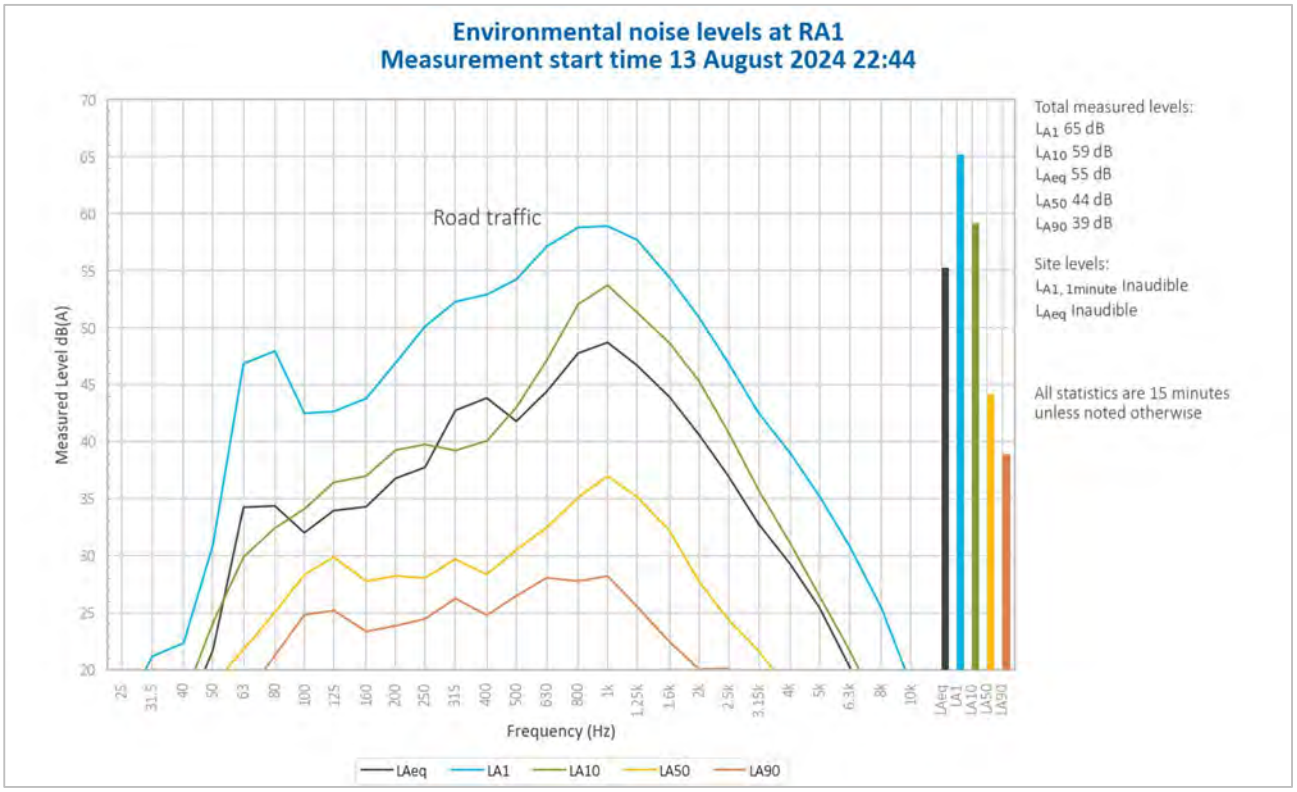


Figure 5.5 Environmental noise levels – RA1 (Pacific Highway) – Night

MC operations were inaudible during the entire measurement.

Road traffic dominated measured noise levels.

6 Summary

EMM Consulting Pty Ltd (EMM) was engaged by Great Southern Energy Pty Ltd (trading as Delta Coal) to complete a monthly noise survey of operations conducted at Mannering Colliery. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

Attended environmental noise monitoring described in this report was done during the evening and night periods on 13 August 2024 at three monitoring locations.

Noise levels from site complied with relevant limits at all monitoring locations during the August 2024 survey.

Appendix A

Noise perception and examples

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A.1 Noise levels

Table A.1 gives an indication as to how an average person perceives changes in noise level. Examples of common noise levels are provided in Figure A.1.

Table A.1 Perceived change in noise

Change in sound pressure level (dB)	Perceived change in noise
Up to 2	Not perceptible
3	Just perceptible
5	Noticeable difference
10	Twice (or half) as loud
15	Large change
20	Four times (or quarter) as loud

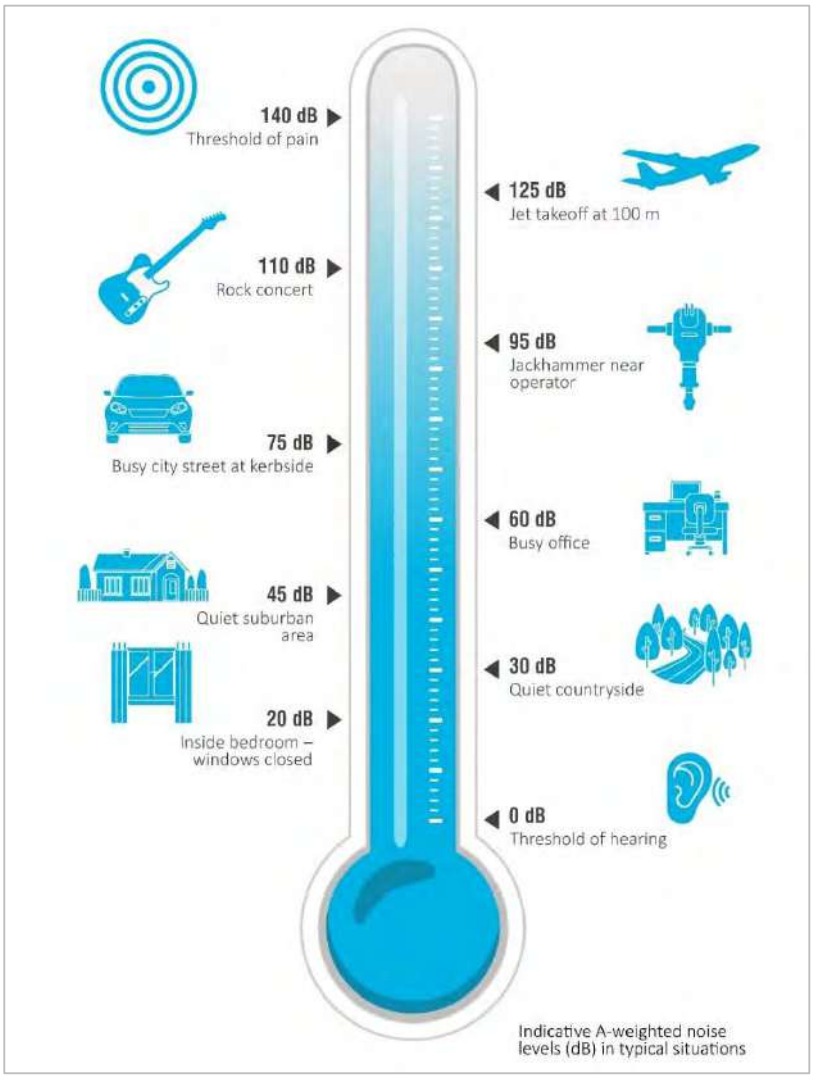


Figure A.1 Common noise levels

Appendix B
Regulator documents

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B.1 Project approval

SCHEDULE 3
SPECIFIC ENVIRONMENTAL CONDITIONS

NOISE

Construction Noise

1. The Applicant must ensure that the noise generated by any construction work is managed in accordance with the requirements outlined in the *Interim Construction Noise Guideline* (DECC, 2009).

Operational Noise Criteria

2. Except for the carrying out of construction works, the Applicant must ensure that the noise generated by the development does not exceed the criteria in Table 1 at any residence[a] on privately-owned land.

***Table 1**: Operational noise criteria dB(A)*

Noise Assessment Location	***Day*** $L_{Aeq\ (15\ min)}$	***Evening*** $L_{Aeq\ (15\ min)}$	***Night*** $L_{Aeq\ (15\ min)}$	***Night*** $L_{A1\ (1\ min)}$
4 – di Rocco	40	36	36	46
5 - Keighran	40	39	39	49
6 – Swan	40	37	37	47
7 – Druitt	40	35	35	45
8 – Macquarie Shores Home Village	42	42	42	47
9 - Jeans	40	37	37	47
11 - Jeans	40	36	36	46
18 - Jeans	40	36	36	46
20 – Knight and all other privately-owned residences	40	36	36	46

[a] *The Noise Assessment Locations referred to in Table 1 are shown in Appendix 4.*

Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the *NSW Noise Policy for Industry* (EPA, 2017).

3. The noise criteria in Table 1 do not apply if the Applicant has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Noise Operating Conditions

3A. The Applicant must:

(a) take all reasonable steps to minimise noise from construction and operational activities, including low frequency noise and other audible characteristics, associated with the development;

(b) implement reasonable and feasible noise attenuation measures on all plant and equipment that will operate in noise sensitive areas;

(c) operate a comprehensive noise management system commensurate with the risk of impact;

(d) take all reasonable steps to minimise the noise impacts of the development during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);

(e) carry out regular attended noise monitoring (at least once a month, unless otherwise agreed by the Planning Secretary) to determine whether the development is complying with the relevant conditions of this consent;

(f) regularly assess the noise monitoring data and modify or stop operations on the site to ensure compliance with the relevant conditions of this consent; and
(g) implement reasonable and feasible measures to further enclose the structure housing the coal crusher in order to further mitigate noise from operational activites.

3B. The Applicant must decommission the surface rotary breaker identified in the Statement of Commitments at Appendix 3, within 3 months of approval of Modification 5.

Noise Management Plan

3C. The Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
(a) be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;
(b) describe the measures to be implemented to ensure:
i. compliance with the noise criteria and operating conditions in this consent;
ii. best practice management is being employed; and
iii. noise impacts of the development are minimised during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);
(c) describe the noise management system in detail; and
(d) include a monitoring program that:
i. uses a combination of real-time and supplementary attended monitoring to evaluate the performance of the development;
ii. monitors noise at the nearest and/or most affected residences;
iii. includes a program to calibrate and validate the real-time noise monitoring results with the attended monitoring results over time;
iv. adequately supports the noise management system;
v. includes a protocol for distinguishing noise emissions of the development from any neighbouring developments; and
vi. includes a protocol for identifying any noise-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of any such event.

The Applicant must implement the Noise Management Plan as approved by the Planning Secretary.

SUBSIDENCE

4. The Applicant must limit its coal extraction methods on the site to first workings only, and must not undertake second workings.

5. Deleted.

SOIL AND WATER

Discharge

6. The Applicant must only discharge water from the site as expressly provided for by its EPL.

7. The Applicant must investigate, assess and report on the ecological interactions of minewater discharged from the site with the aquatic ecology of the unnamed creek and wetlands (and associated vegetation) between the minewater discharge point/s and Lake Macquarie. This report must:
(a) be prepared in consultation with EPA by suitably qualified expert/s whose appointment/s have been approved by the Planning Secretary;
(b) be submitted to the Planning Secretary by the end of March 2009; and
(c) assess the probable alterations in the local ecology attributable to previous and proposed minewater discharges and any future cessation of minewater discharge flows.

Water Management Plan

8. The Applicant must prepare a Water Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
(a) be prepared in consultation with DPIE Water by suitably qualified expert/s whose appointment/s have been approved by the Planning Secretary;
(b) be submitted the Planning Secretary by the end of March 2009; and
(c) include a:
- Site Water Balance;

B.2 Environment Protection Licence

Environment Protection Licence

L4 Waste

L4.1 The licensee must not cause, permit or allow any waste to be received at the premises, except the wastes expressly referred to in the column titled “Waste” and meeting the definition, if any, in the column titled “Description” in the table below.
Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled “Activity” in the table below.
Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste contained in the column titled “Other Limits” in the table below.
This condition does not limit any other conditions in this licence.

Code	Waste	Description	Activity	Other Limits
NA	Waste	Any other waste received on the premises for storage, treatment, processing, sorting or disposal and which receipt is not a scheduled activity under Schedule 1 of the POEO Act, as in force from time to time.		
NA	General or Specific exempted waste	Waste that meets all the conditions of a resource recovery exemption under Clause 51A of the Protection of the Environment Operations (Waste) Regulation 2014	As specified in each particular resource recovery exemption	N/A

L4.2 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.

L4.3 This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if it requires an environment protection licence.

L5 Noise limits

Note: Noise limits are not specified as a condition of this licence. Noise limits are prescribed with the conditions of Project Approval 06_0311 granted under the *Environmental Planning and Assessment Act 1979.* Under the *Environmental Planning and Assessment Act 1979* the Department of Planning is the appropriate authority in respect of the administration and regulation of the Project Approval.

B.3 Approved noise management plan

The above noise monitoring locations are representative of residential receivers most likely to be affected by CVC operational noise. Adherence with the relevant noise criteria at these locations will indicate that noise criteria will be met at other surrounding noise-sensitive locations.

4.2.3 Mannering Colliery

Consistent with the Noise Impact Assessment (EMM 2019) undertaken as part of the Project Approval MP06_0311 MOD 5, rural and residential receivers have been divided into three (3) receiver areas (RA's) with similar geographical and acoustic features. The following points are considered representative of each receiver area:

- RA1, rural residential properties south of MC and fronting the Pacific Highway. The dominant noise source in this area is road traffic. Birds, insects and other industrial sources are also audible at times.
- RA2, privately-owned relocatable residences within the MSHV, east of MC. The dominant noise sources in this RA are birds, insects, traffic and other industrial sources. Activities at MC are also noted to be audible at times.
- RA3, various rural residential residences on Tall Timbers Road at Kingfisher Shores and adjacent to the Chain Valley Bay suburban area. The dominant noise sources in this RA are birds, insects, other industrial sources and traffic movements. Activities at MC are also noted to be audible at times.

The attended noise monitoring locations for MC and relevant noise criteria are identified below in **Table 6**.

Table 6: Noise Monitoring Locations and Limits for Mannering Colliery

Location	Receivers Represented MP06_0311 ID	Coordinates	Day $L_{Aeq(15\ min)}$ dB (A)	Evening $L_{Aeq(15\ min)}$ dB (A)	Night $L_{Aeq(15\ min)}$ dB (A)	Night $L_{A1(1\ min)}$ dB (A)
RA1	4, 5, 6	364646E 6327221N	40	36	36	46
RA2	7, 8	365164E 6328332N	40	40	40	45
RA3	9, 11, 18, 20	365069E 6328953N	40	39	39	49

The above noise monitoring locations are representative of residential receivers most likely to be affected by MC operational noise. Adherence with the relevant noise criteria at these locations will indicate that noise criteria will be met at other surrounding noise-sensitive locations.

Appendix C
Calibration certificates

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CERTIFICATE OF CALIBRATION

CERTIFICATE NO: C37508

EQUIPMENT TESTED : Sound Level Calibrator

Manufacturer: Svantek
Type No: SV 36 **Serial No:** 79952
Class: 1
Owner: EMM Consulting Pty Ltd
L3, 175 Scott Street
Newcastle, NSW 2300
Tests Performed: Measured Output Pressure level, Frequency & Distortion
Comments: See Details and Class Tolerance overleaf.

CONDITION OF TEST:

Ambient Pressure	1005	hPa ±1 hPa	**Date of Receipt :**	26/09/2023
Temperature	23	°C ±1° C	**Date of Calibration :**	27/09/2023
Relative Humidity	47	% ±5%	**Date of Issue :**	28/09/2023

Acu-Vib Test Procedure: AVP02 (Calibrators)
Test Method: AS IEC 60942 - 2017

CHECKED BY: .....

AUTHORISED SIGNATURE: .....
Hein Soe

Accredited for compliance with ISO/IEC 17025 - Calibration
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CERTIFICATE OF CALIBRATION

CERTIFICATE NO: SLM34169

EQUIPMENT TESTED: Sound Level Meter

Manufacturer:	B & K		
Type No:	2250	**Serial No:**	3029363
Mic. Type:	4189	**Serial No:**	3260501
Pre-Amp. Type:	ZC0032	**Serial No:**	30109
Filter Type:	1/3 Octave	**Test No:**	F034175

Owner: EMM Consulting
Suite 01, 20 Chandos St
St Leonards NSW 2065

Tests Performed: IEC 61672-3:2013 & IEC 61260-3:2016

Comments: All Test passed for Class 1. (See overleaf for details)

CONDITIONS OF TEST:

Ambient Pressure	1002	hPa ±1 hPa	**Date of Receipt :**	02/11/2022
Temperature	24	°C ±1° C	**Date of Calibration :**	03/11/2022
Relative Humidity	35	% ±5%	**Date of Issue :**	04/11/2022

Acu-Vib Test Procedure: AVP10 (SLM) & AVP06 (Filters)

CHECKED BY: ..... **AUTHORISED SIGNATURE:** .....

Jack Kielt

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Mannering Colliery

Monthly attended noise monitoring - September 2024

Prepared for Great Southern Energy Pty Ltd (trading as Delta Coal)

October 2024

Mannering Colliery

Monthly attended noise monitoring - September 2024

Great Southern Energy Pty Ltd (trading as Delta Coal)

E240010 RP1

October 2024

Version	Date	Prepared by	Reviewed by	Comments
V1	3 October 2024	Teanuanua Villierme	Najah Ishac	Draft
V2	9 October 2024	Teanuanua Villierme	Najah Ishac	Final

Approved by



Katie Teyhan
Team Manager – Acoustics
9 October 2024

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ABN: 28 141 736 558

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1 Introduction

1.1 Background

EMM Consulting Pty Ltd (EMM) was engaged by Great Southern Energy Pty Ltd (trading as Delta Coal) to conduct a monthly noise survey of operations at Mannering Colliery (MC, the site) located at Ruttleys Road, Mannering Park NSW. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

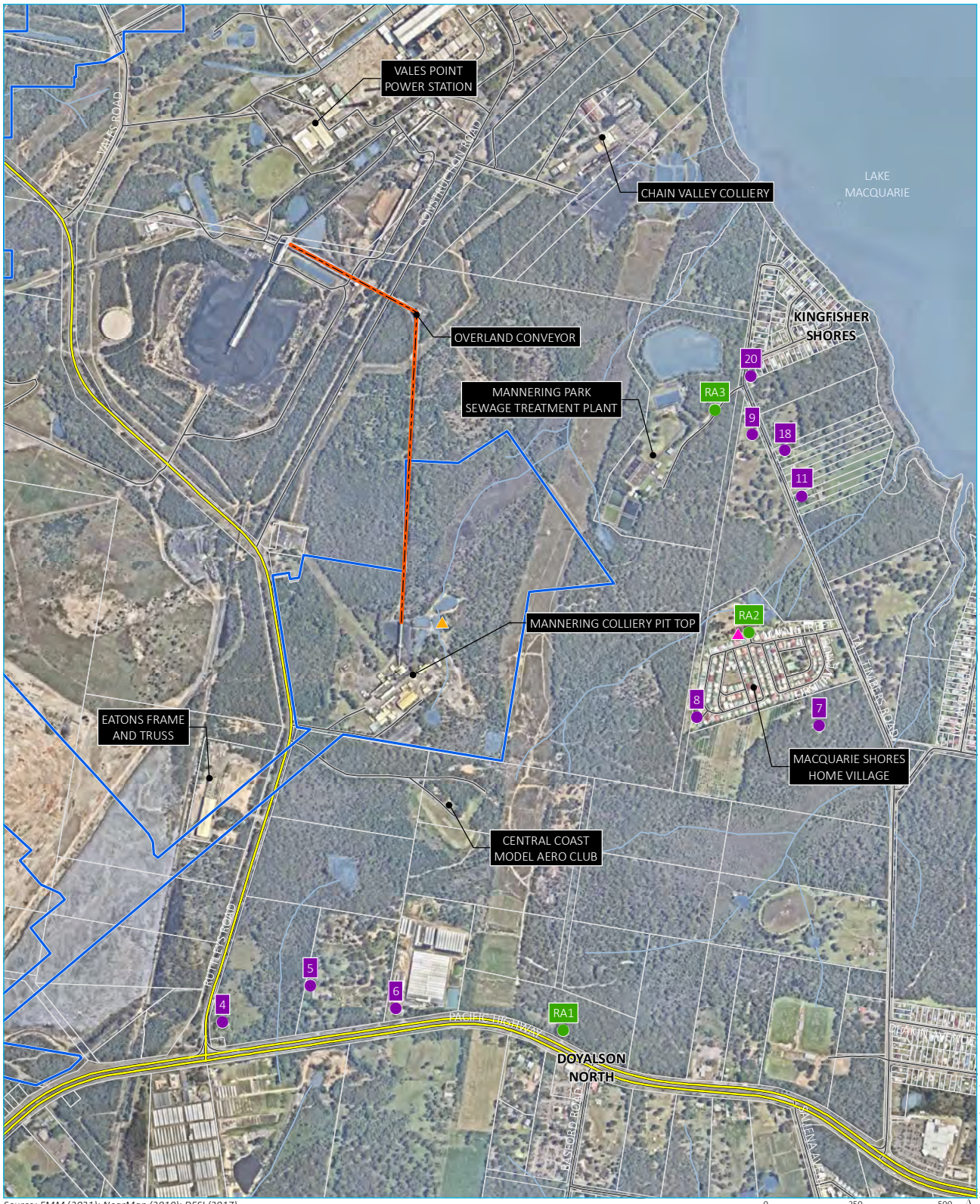
Attended environmental noise monitoring described in this report was done during the evening and night periods on 11 September 2024 at three monitoring locations.

1.2 Attended monitoring locations

Site monitoring locations are detailed in Table 1.1 and shown on Figure 1.1. It should be noted that Figure 1.1 shows actual monitoring positions, not necessarily the location of residences.

Table 1.1 Attended noise monitoring locations

Location descriptor/ID	Description/address	Coordinates (MGA56)	
		Easting	Northing
RA1	Pacific Highway, Doyalson North	364646	6327221
RA2	Macquarie Shores Home Village, Doyalson North	365164	6328332
RA3	Tall Timbers Road (northern end), Kingfisher Shores	365069	6328953



\\Emmsvr1\emm3\2021\H210018 - Delta Noise 2021\8 GIS\02_Maps\N001_NoiseMonitoringLocations_20210225_01.mxd 26/02/2021

Source: EMM (2021); NearMap (2019); DFSI (2017)

KEY

- Mannering Colliery project approval boundary
- Alignment of overland conveyor to VPPS
- Main road
- Local road
- Watercourse/drainage line
- Waterbody
- Cadastral boundary
- Assessment location
- Attended monitoring location
- Continuous monitoring location
- Meteorological station

Attended noise monitoring and assessment locations

Mannering Colliery
Figure 1.1

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1.3 Terminology and abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

Table 1.2 Terminology and abbreviations

Term/descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The "A" weighting scale is used to approximate how humans hear noise.
L_{Amax}	The maximum root mean squared A-weighted noise level over a time period.
L_{A1}	The A-weighted noise level which is exceeded for 1% of the time.
$L_{A1,1minute}$	The A-weighted noise level which is exceeded for 1% of the specified time period of 1 minute.
L_{A10}	The A-weighted noise level which is exceeded for 10% of the time.
L_{Aeq}	The energy average A-weighted noise level.
$L_{Aeq,15minute}$	The energy average A-weighted noise level over the specified time period of 15 minutes.
L_{A50}	The A-weighted noise level which is exceeded for 50% of the time, also the median noise level during a measurement period.
L_{A90}	The A-weighted noise level exceeded for 90% of the time, also referred to as the "background" noise level and commonly used to derive noise limits.
L_{Amin}	The minimum A-weighted noise level over a time period.
L_{Ceq}	The energy 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.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	Monday – Saturday: 7 am to 6 pm, on Sundays and Public Holidays: 8 am to 6 pm.
Evening	Monday – Saturday: 6 pm to 10 pm, on Sundays and Public Holidays: 6 pm to 10 pm.
Night	Monday – Saturday: 10 pm to 7 am, on Sundays and Public Holidays: 10 pm to 8 am.
NPfI	NSW EPA Noise Policy for Industry (2017)
Temperature inversion	A meteorological condition where the atmospheric temperature increases with altitude.

Appendix A provides further information that gives an indication as to how an average person perceives changes in noise level, and examples of common noise levels.

2 Noise limits

2.1 Project approval

Mannering Colliery noise limits are provided in Table 1, Condition 2 of Schedule 3 of the current project approval (PA) PA MP06_0311 dated 5 June 2020. Relevant sections of the PA are reproduced in Appendix B.1.

2.2 Environment protection licence

The current Environment Protection Licence (EPL) 191 dated 16 June 2023 references the PA with respect to noise limits. Relevant sections of the EPL are reproduced in Appendix B.2.

2.3 Noise management plan

The approved Noise Management Plan (NMP) (dated 20 April 2022) was prepared in line with the Mod 5 approval and in accordance with the NSW EPA 'Noise Policy for Industry' (NPfI) issued in October 2017. Three attended noise monitoring locations representative of the PA noise assessment locations have been adopted in the NMP for the purpose of determining compliance with relevant noise limits. Relevant sections of the NMP are reproduced in Appendix B.3.

2.4 Noise limits

Noise limits consistent with the PA, EPL and approved NMP are as shown in Table 2.1.

Table 2.1 Noise limits, dB

Location	Day $L_{Aeq,15minute}$	Evening $L_{Aeq,15minute}$	Night $L_{Aeq,15minute}$	Night $L_{A1,1minute}$
RA1	40	36	36	46
RA2	40	40	40	45
RA3	40	39	39	49

2.5 Meteorological conditions

The PA (Mod 5) states the following:

> Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Noise Policy for Industry (EPA, 2017).

Section 5.2 of the NPfI states that noise limits applicable under 'very noise-enhancing' conditions should be the limits that apply under 'standard' or 'noise-enhancing' conditions plus 5 dB.

As per the PA (Mod 5) and in accordance with the NPfI, limits are adjusted when monitoring is undertaken during the following 'very noise-enhancing' conditions:

- wind speeds greater than 3 m/s at 10 m above ground level;
- stability category F temperature inversion conditions with wind speeds greater than 2 m/s at 10 m above ground level; or
- stability category G temperature inversion conditions.

Therefore, if monthly noise monitoring occurs during 'very noise-enhancing' conditions, this assessment adopts a +5 dB adjustment to the limits shown in Table 2.1. This is indicated in Table 4.3, where relevant. It is noted that monthly noise monitoring for the site is always scheduled to occur during appropriate forecasted meteorological conditions in accordance with the 'Approved methods for the measurement and analysis of environmental noise in NSW' (EPA 2022) (the approved methods).

2.6 Additional considerations

Monitoring and reporting have been done in accordance with the NSW EPA's NPfI and the approved methods.

3 Methodology

3.1 Overview

Attended environmental noise monitoring was done in general accordance with Australian Standard AS1055:2018 'Acoustics – Description and Measurement of Environmental Noise' and relevant EPA requirements. Meteorological data was obtained from the Mannering Colliery on-site automatic weather station (AWS) which allowed correlation of atmospheric parameters with measured noise levels.

3.2 Attended noise monitoring

During this survey, attended noise monitoring was done during the evening and night periods at each location in accordance with the NMP. The duration of each measurement was 15 minutes. Atmospheric conditions were measured at each monitoring location.

Measured sound levels from various sources were noted during each measurement, and particular attention was paid to the extent of site contribution (if any) to measured levels. At each monitoring location, the site-only $L_{Aeq,15minute}$ and L_{Amax} were measured directly or determined by other methods detailed in Section 7.1 of the NPfI. For example, frequency filtering and observations when extraneous noise is low are some of the techniques used to isolate site noise contribution.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may be used in this report. When site noise is noted as IA, it was inaudible at the monitoring location. When site noise is noted as NM, this means it was audible but could not be quantified. All results noted as IA or NM in this report were due to one or more of the following:

- Site noise levels were very low, typically more than 10 dB below the measured background (L_{A90}), and unlikely to be noticed.
- Site noise levels were masked by other, more dominant, noise sources that are characteristic of the environment (such as breeze in foliage or continuous road traffic noise) that cannot be eliminated by monitoring at an alternate or intermediate location.
- It was not feasible or reasonable to employ methods such as move closer and back calculate. Cases may include rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

If exact noise levels from site could not be established due to masking by other noise sources in a similar frequency range but were determined to be at least 5 dB lower than relevant limits, then a maximum estimate of site noise may be provided. These are expressed as a 'less than' quantity, such as <20 dB or <30 dB.

For this assessment, the measured L_{Amax} has been used as a conservative estimate of $L_{A1,1minute}$. The EPA accepts sleep disturbance analysis based on either the $L_{A1,1minute}$ or L_{Amax} metrics, with the L_{Amax} representing a more conservative assessment of site noise emissions.

3.3 Meteorological data

This assessment determined stability categories throughout attended monitoring periods using the sigma-theta method as per Fact Sheet D of the NPfI. This data was sourced from the site AWS, in accordance with PA requirements.

3.4 Modifying factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. If applicable, modifying factor adjustments have been reported and added to measured site-only L_{Aeq}.

Low-frequency modifying factor penalties have only been applied if site was the only contributing low-frequency noise source. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

3.5 Instrumentation and personnel

Attended noise monitoring was conducted by acoustical consultant Teanuanua Villierme. Qualifications, experience and competency are in accordance with the Approved Methods and demonstration of this is available upon request.

Equipment used to measure environmental noise levels is detailed in Table 3.1. Calibration certificates are provided in Appendix C.

Table 3.1 Attended noise monitoring equipment

Item	Serial number	Calibration due date	Relevant standard
Brüel & Kjær 2250 sound level meter	3029363	3/11/2024	IEC 61672-1:2013
Svantek SV-36 calibrator	79952	27/09/2025	IEC 60942:2017

4 Results

4.1 Total measured noise levels and atmospheric conditions

Overall noise levels measured at each location during attended measurements are provided in Table 4.1.

Table 4.1 Total measured noise levels[1], dB – September 2024

Location	Start date and time	L_{Amax}	L_{A1}	L_{A10}	L_{Aeq}	L_{A50}	L_{A90}	L_{Amin}
RA1	11/09/2024 20:17	71	67	62	58	56	44	38
RA3	11/09/2024 20:37	56	46	41	40	39	38	36
RA2	11/09/2024 21:45	57	40	39	37	37	36	34
RA2	11/09/2024 22:00	60	57	45	45	40	38	36
RA3	11/09/2024 22:20	52	46	44	43	43	41	39
RA1	11/09/2024 23:02	69	65	58	54	45	37	34

Notes: 1. Levels in this table are not necessarily the result of activity at site.

Atmospheric conditions data measured by the operator during each measurement using a hand-held weather meter is shown in Table 4.2. The wind speed, direction and temperature were measured at approximately 1.5 m above ground. Attended noise monitoring is not done during rain, hail, or wind speeds above 5 m/s at microphone height.

Table 4.2 Measured atmospheric conditions – September 2024

Location	Start date and time	Temperature °C	Wind speed m/s	Wind direction °Magnetic north[1]	Cloud cover 1/8s
RA1	11/09/2024 20:17	19	<0.5	-	8
RA3	11/09/2024 20:37	19	<0.5	-	7
RA2	11/09/2024 21:45	17	<0.5	-	8
RA2	11/09/2024 22:00	17	<0.5	-	8
RA3	11/09/2024 22:20	18	<0.5	-	8
RA1	11/09/2024 23:02	19	<0.5	-	8

Notes: 1. "-" indicates calm conditions (wind speed <0.5 m/s) at monitoring location.

4.2 Site only noise levels

4.2.1 Modifying factors

There were no modifying factors, as defined in the NPfI, applicable during the survey.

4.2.2 Monitoring results

Table 4.3 provides site noise levels in the absence of other sources, where possible, and includes weather data from the site AWS. Noise limits are applicable under all weather conditions but have been adjusted, where relevant, during very noise-enhancing weather conditions as defined by the NPfI (refer to Section 2.5).

Table 4.3 Site noise levels and limits – September 2024

Location	Start date and time	Wind		Stability class	Standard limits apply?[1]	Limit, dB		Site level, dB[2]		Exceedance, dB	
		Speed (m/s)	Direction[3]			$L_{Aeq,15minute}$	$L_{A1,1minute}$	$L_{Aeq,15minute}$	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}
RA1	11/09/2024 20:17	0.5	19	F	Yes	36	N/A	IA	N/A	Nil	N/A
RA3	11/09/2024 20:37	0.3	160	F	Yes	39	N/A	IA	N/A	Nil	N/A
RA2	11/09/2024 21:45	0.7	46	F	Yes	40	N/A	IA	N/A	Nil	N/A
RA2	11/09/2024 22:00	0.8	55	E	Yes	40	45	IA	IA	Nil	Nil
RA3	11/09/2024 22:20	1.0	55	F	Yes	39	49	IA	IA	Nil	Nil
RA1	11/09/2024 23:02	0.7	31	F	Yes	36	46	IA	IA	Nil	Nil

Notes: 1. If "No", adjusted noise limits (standard limit + 5 dB) apply during 'very noise-enhancing' meteorological conditions as stated in Section 2.5.

2. Site-only $L_{Aeq,15minute}$ include modifying factor adjustments if applicable.

3. Degrees magnetic north, "-" indicates calm conditions.

5 Discussion

5.1 Noted noise sources

During attended monitoring, the time variations (temporal characteristics) of noise sources are considered in each measurement via statistical descriptors. From these observations, summaries have been derived for the location and provided in this chapter. Statistical 1/3 octave-band analysis of environmental noise was undertaken and the following figures display frequency ranges of various noise sources at each location for L_{A1}, L_{A10}, L_{Aeq}, L_{A50}, and L_{A90} descriptors. These figures also provide, graphically, statistical information for these noise levels.

An example (non-site related) is provided as Figure 5.1, where frogs and insects are seen to be generating noise at frequencies above 1,000 Hz, while industrial noise is generally observed at frequencies less than 1,000 Hz.

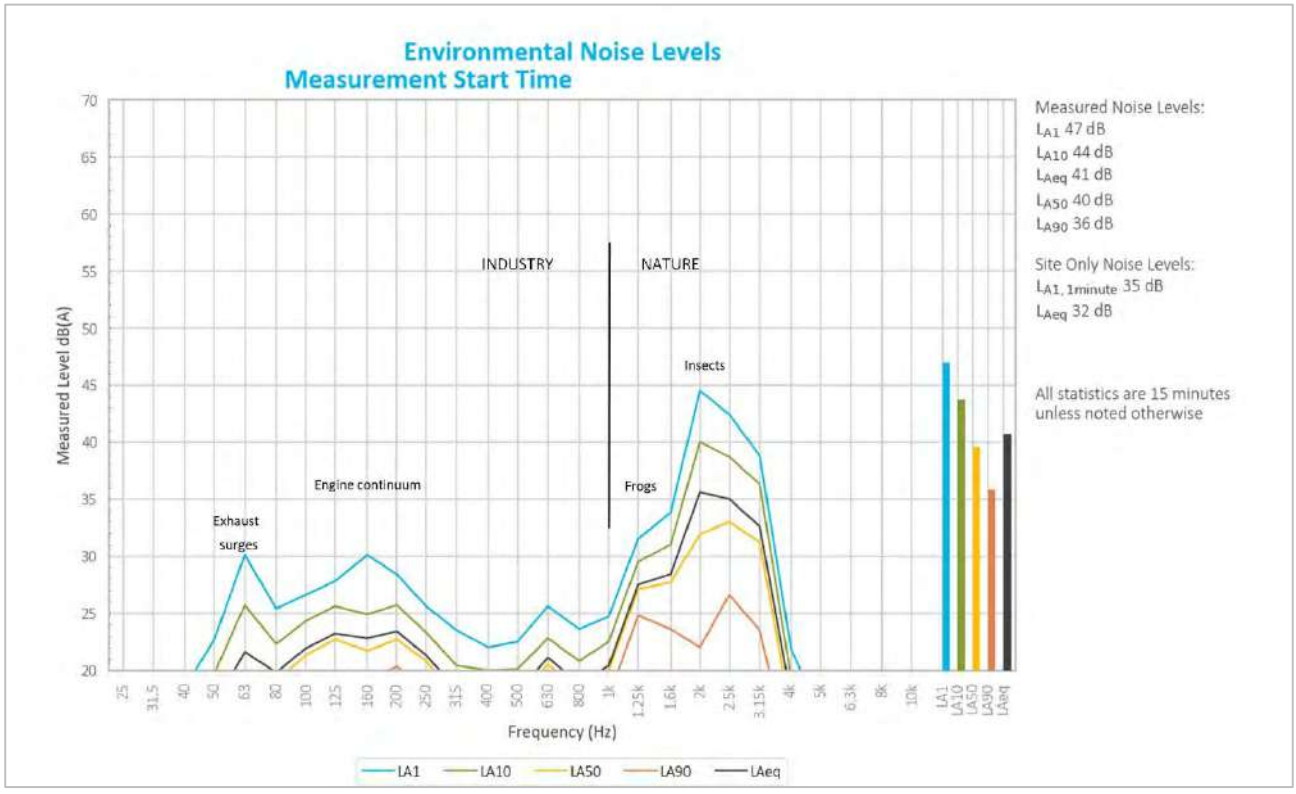


Figure 5.1 Example graph (refer to Section 5.1 for explanatory note)

5.2 RA1 – Evening

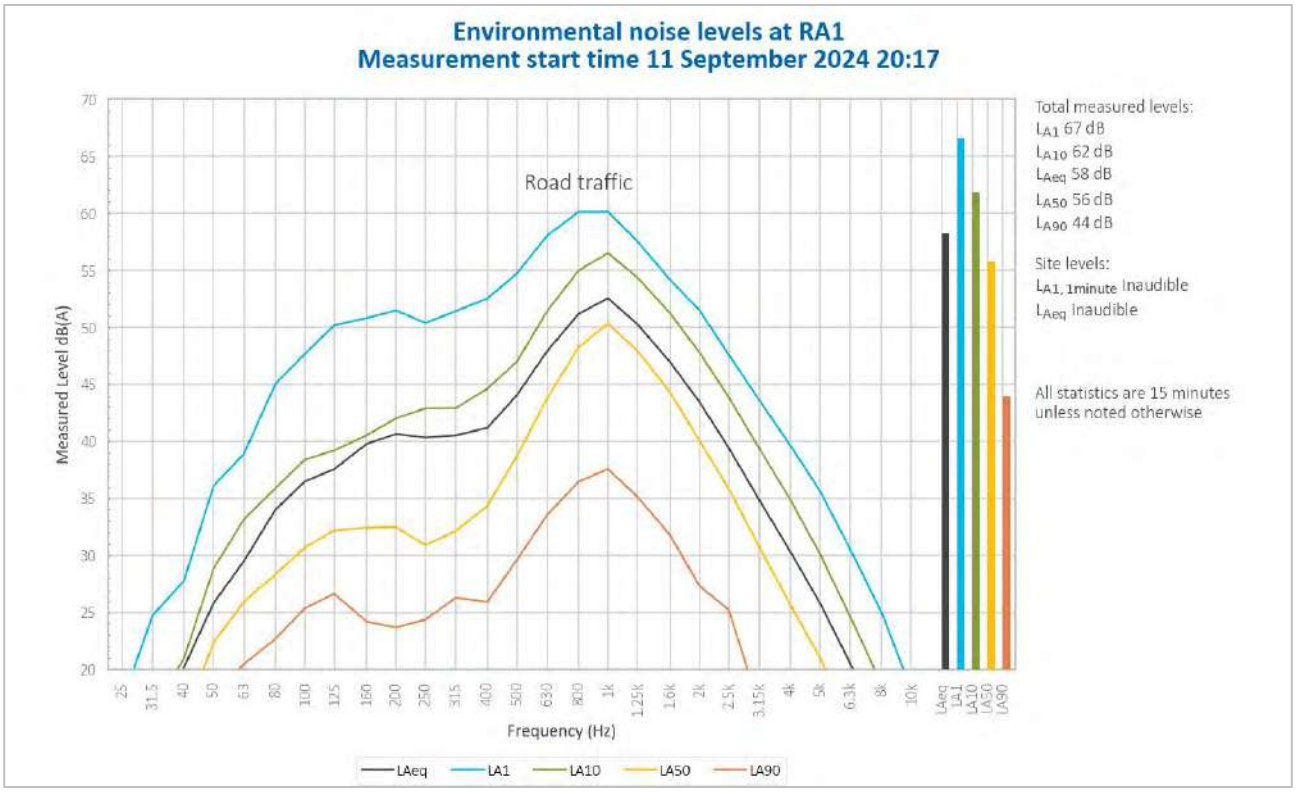


Figure 5.2 Environmental noise levels – RA1 (Pacific Highway) – Evening

MC operations were inaudible during the entire measurement.

Road traffic dominated measured noise levels.

5.3 RA3 – Evening

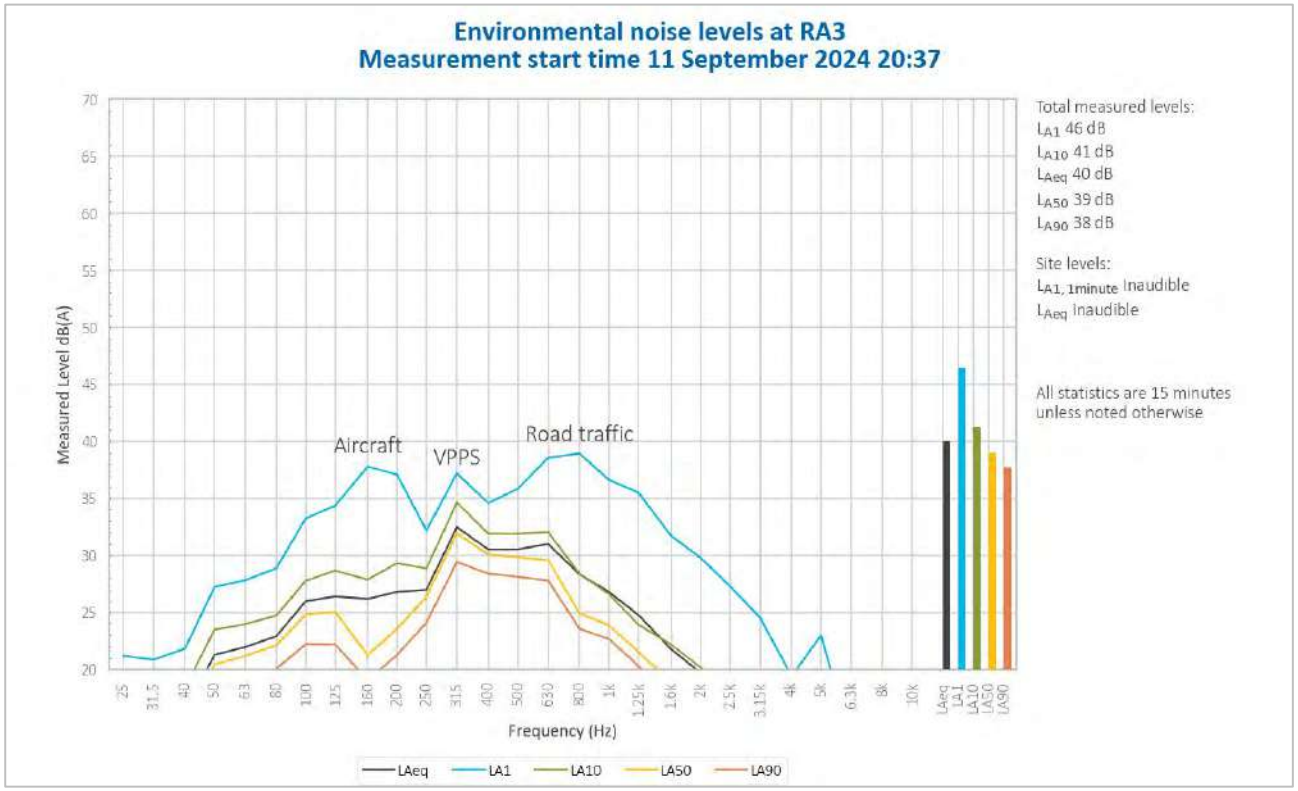


Figure 5.3 Environmental noise levels – RA3 (Kingfisher Shores) – Evening

MC operations were inaudible during the entire measurement.

Vales Point Power Station (VPPS) (primarily), road traffic and aircraft noise contributed to measured noise levels. Road traffic generated the measured L_{A1}.

5.4 RA2 – Evening

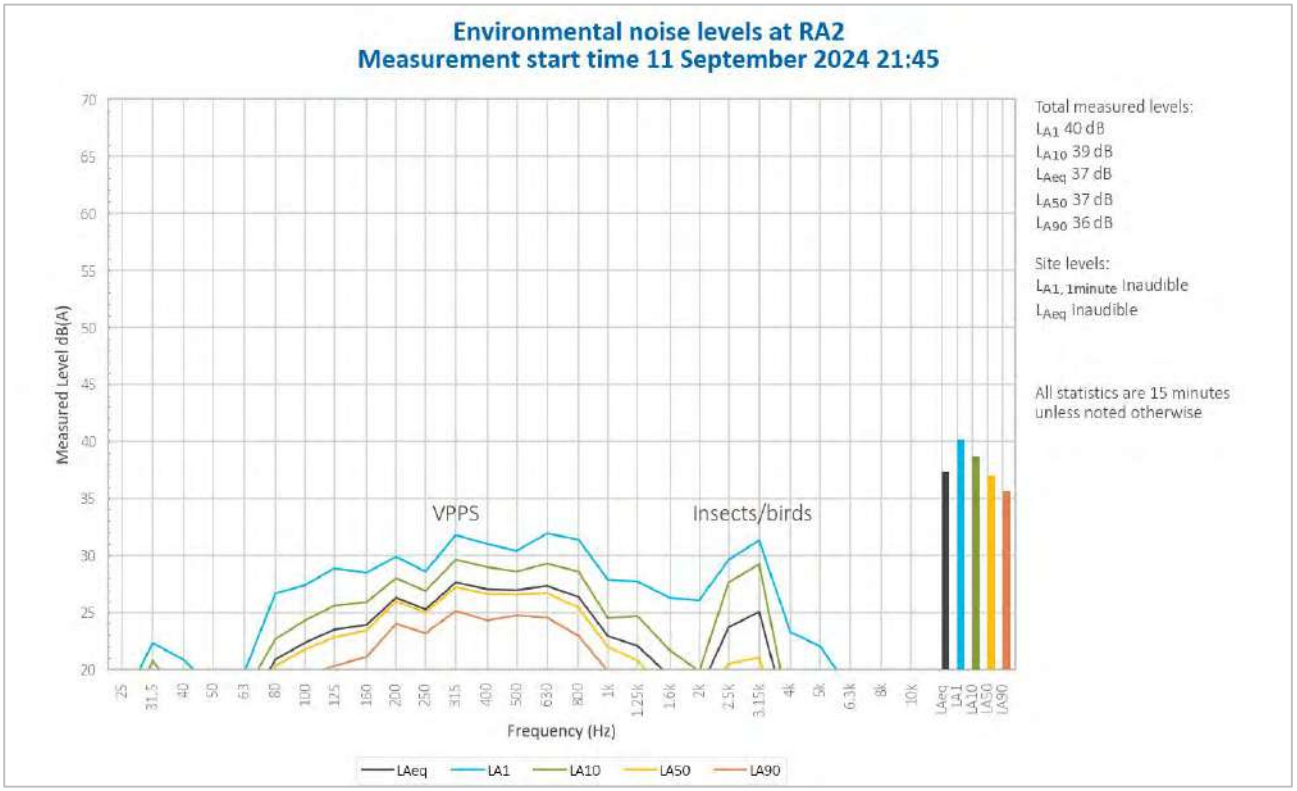


Figure 5.4 Environmental noise levels – RA2 (Macquarie Shores) – Evening

MC operations were inaudible during the entire measurement.

VPPS dominated measured noise levels.

5.5 RA2 – Night

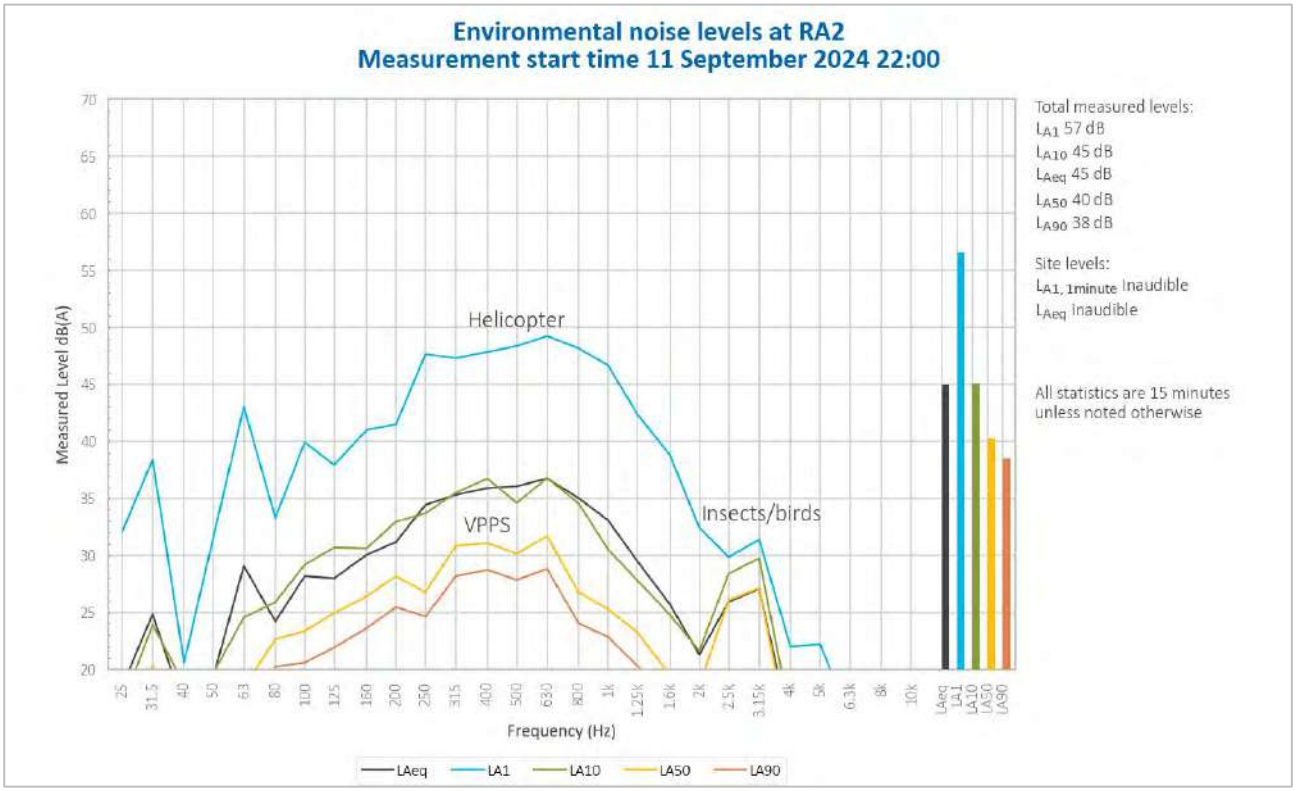


Figure 5.6 Environmental noise levels – RA2 (Macquarie Shores) – Night

MC operations were inaudible during the entire measurement.

A helicopter (primarily) and VPPS contributed to measured noise levels. Helicopter noise generated the measured L_{A1}.

5.6 RA3 – Night

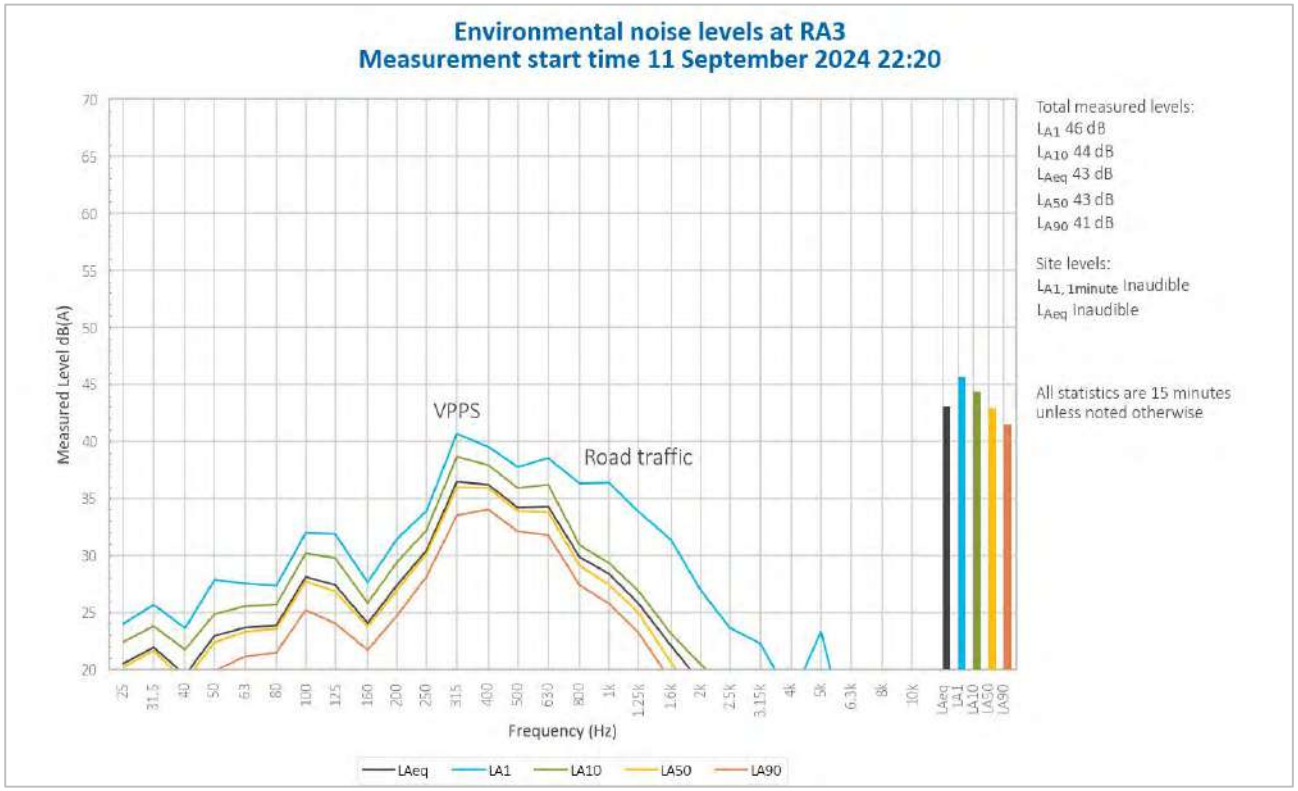


Figure 5.7 Environmental noise levels – RA3 (Kingfisher Shores) – Night

MC operations were inaudible during the entire measurement.

VPPS dominated measured noise levels.

5.7 RA1 – Night

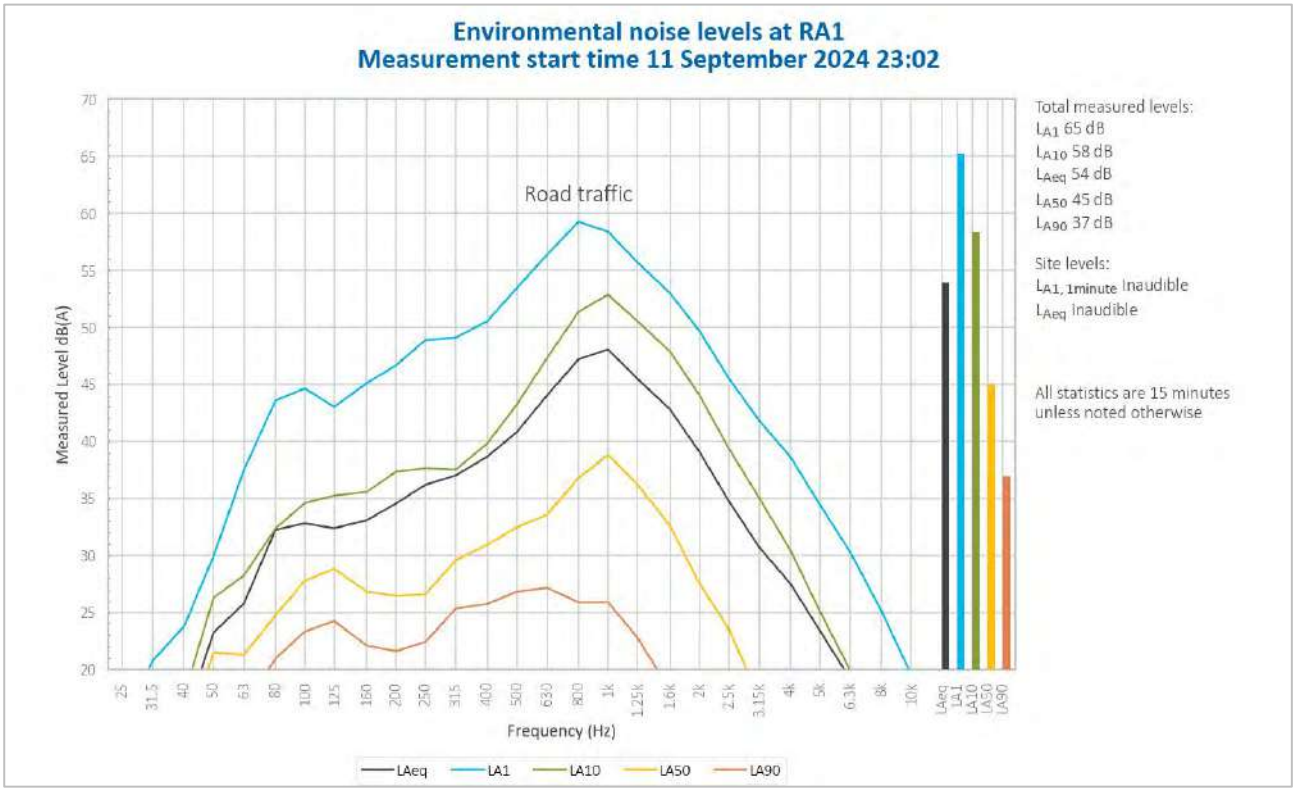


Figure 5.5 Environmental noise levels – RA1 (Pacific Highway) – Night

MC operations were inaudible during the entire measurement.

Road traffic dominated measured noise levels.

6 Summary

EMM Consulting Pty Ltd (EMM) was engaged by Great Southern Energy Pty Ltd (trading as Delta Coal) to complete a monthly noise survey of operations conducted at Mannering Colliery. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

Attended environmental noise monitoring described in this report was done during the evening and night periods on 11 September 2024 at three monitoring locations.

Noise levels from site complied with relevant limits at all monitoring locations during the September 2024 survey.

Appendix A
Noise perception and examples

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A.1 Noise levels

Table A.1 gives an indication as to how an average person perceives changes in noise level. Examples of common noise levels are provided in Figure A.1.

Table A.1 Perceived change in noise

Change in sound pressure level (dB)	Perceived change in noise
Up to 2	Not perceptible
3	Just perceptible
5	Noticeable difference
10	Twice (or half) as loud
15	Large change
20	Four times (or quarter) as loud

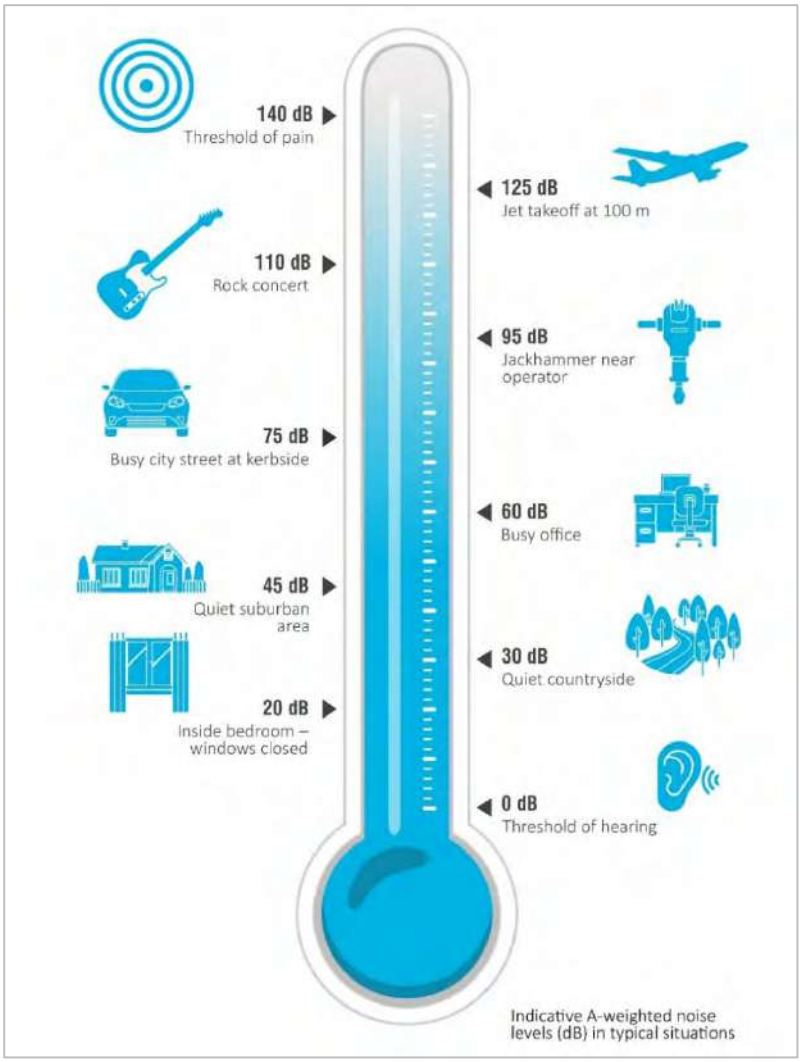


Figure A.1 Common noise levels

Appendix B
Regulator documents

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B.1 Project approval

SCHEDULE 3
SPECIFIC ENVIRONMENTAL CONDITIONS

NOISE

Construction Noise

1. The Applicant must ensure that the noise generated by any construction work is managed in accordance with the requirements outlined in the *Interim Construction Noise Guideline* (DECC, 2009).

Operational Noise Criteria

2. Except for the carrying out of construction works, the Applicant must ensure that the noise generated by the development does not exceed the criteria in Table 1 at any residence[a] on privately-owned land.

***Table 1**: Operational noise criteria dB(A)*

Noise Assessment Location	***Day*** $L_{Aeq\ (15\ min)}$	***Evening*** $L_{Aeq\ (15\ min)}$	***Night*** $L_{Aeq\ (15\ min)}$	***Night*** $L_{A1\ (1\ min)}$
4 – di Rocco	40	36	36	46
5 - Keighran	40	39	39	49
6 – Swan	40	37	37	47
7 – Druitt	40	35	35	45
8 – Macquarie Shores Home Village	42	42	42	47
9 - Jeans	40	37	37	47
11 - Jeans	40	36	36	46
18 - Jeans	40	36	36	46
20 – Knight and all other privately-owned residences	40	36	36	46

[a] *The Noise Assessment Locations referred to in Table 1 are shown in Appendix 4.*

Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the *NSW Noise Policy for Industry* (EPA, 2017).

3. The noise criteria in Table 1 do not apply if the Applicant has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Noise Operating Conditions

3A. The Applicant must:

(a) take all reasonable steps to minimise noise from construction and operational activities, including low frequency noise and other audible characteristics, associated with the development;

(b) implement reasonable and feasible noise attenuation measures on all plant and equipment that will operate in noise sensitive areas;

(c) operate a comprehensive noise management system commensurate with the risk of impact;

(d) take all reasonable steps to minimise the noise impacts of the development during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);

(e) carry out regular attended noise monitoring (at least once a month, unless otherwise agreed by the Planning Secretary) to determine whether the development is complying with the relevant conditions of this consent;

(f) regularly assess the noise monitoring data and modify or stop operations on the site to ensure compliance with the relevant conditions of this consent; and
(g) implement reasonable and feasible measures to further enclose the structure housing the coal crusher in order to further mitigate noise from operational activites.

3B. The Applicant must decommission the surface rotary breaker identified in the Statement of Commitments at Appendix 3, within 3 months of approval of Modification 5.

Noise Management Plan

3C. The Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
(a) be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;
(b) describe the measures to be implemented to ensure:
i. compliance with the noise criteria and operating conditions in this consent;
ii. best practice management is being employed; and
iii. noise impacts of the development are minimised during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);
(c) describe the noise management system in detail; and
(d) include a monitoring program that:
i. uses a combination of real-time and supplementary attended monitoring to evaluate the performance of the development;
ii. monitors noise at the nearest and/or most affected residences;
iii. includes a program to calibrate and validate the real-time noise monitoring results with the attended monitoring results over time;
iv. adequately supports the noise management system;
v. includes a protocol for distinguishing noise emissions of the development from any neighbouring developments; and
vi. includes a protocol for identifying any noise-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of any such event.

The Applicant must implement the Noise Management Plan as approved by the Planning Secretary.

SUBSIDENCE

4. The Applicant must limit its coal extraction methods on the site to first workings only, and must not undertake second workings.

5. Deleted.

SOIL AND WATER

Discharge

6. The Applicant must only discharge water from the site as expressly provided for by its EPL.

7. The Applicant must investigate, assess and report on the ecological interactions of minewater discharged from the site with the aquatic ecology of the unnamed creek and wetlands (and associated vegetation) between the minewater discharge point/s and Lake Macquarie. This report must:
(a) be prepared in consultation with EPA by suitably qualified expert/s whose appointment/s have been approved by the Planning Secretary;
(b) be submitted to the Planning Secretary by the end of March 2009; and
(c) assess the probable alterations in the local ecology attributable to previous and proposed minewater discharges and any future cessation of minewater discharge flows.

Water Management Plan

8. The Applicant must prepare a Water Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
(a) be prepared in consultation with DPIE Water by suitably qualified expert/s whose appointment/s have been approved by the Planning Secretary;
(b) be submitted the Planning Secretary by the end of March 2009; and
(c) include a:
- Site Water Balance;

B.2 Environment Protection Licence

Environment Protection Licence

L4 Waste

L4.1 The licensee must not cause, permit or allow any waste to be received at the premises, except the wastes expressly referred to in the column titled “Waste” and meeting the definition, if any, in the column titled “Description” in the table below.
Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled “Activity” in the table below.
Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste contained in the column titled “Other Limits” in the table below.
This condition does not limit any other conditions in this licence.

Code	Waste	Description	Activity	Other Limits
NA	Waste	Any other waste received on the premises for storage, treatment, processing, sorting or disposal and which receipt is not a scheduled activity under Schedule 1 of the POEO Act, as in force from time to time.		
NA	General or Specific exempted waste	Waste that meets all the conditions of a resource recovery exemption under Clause 51A of the Protection of the Environment Operations (Waste) Regulation 2014	As specified in each particular resource recovery exemption	N/A

L4.2 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.

L4.3 This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if it requires an environment protection licence.

L5 Noise limits

Note: Noise limits are not specified as a condition of this licence. Noise limits are prescribed with the conditions of Project Approval 06_0311 granted under the *Environmental Planning and Assessment Act 1979.* Under the *Environmental Planning and Assessment Act 1979* the Department of Planning is the appropriate authority in respect of the administration and regulation of the Project Approval.

B.3 Approved noise management plan

The above noise monitoring locations are representative of residential receivers most likely to be affected by CVC operational noise. Adherence with the relevant noise criteria at these locations will indicate that noise criteria will be met at other surrounding noise-sensitive locations.

4.2.3 Mannering Colliery

Consistent with the Noise Impact Assessment (EMM 2019) undertaken as part of the Project Approval MP06_0311 MOD 5, rural and residential receivers have been divided into three (3) receiver areas (RA's) with similar geographical and acoustic features. The following points are considered representative of each receiver area:

- RA1, rural residential properties south of MC and fronting the Pacific Highway. The dominant noise source in this area is road traffic. Birds, insects and other industrial sources are also audible at times.
- RA2, privately-owned relocatable residences within the MSHV, east of MC. The dominant noise sources in this RA are birds, insects, traffic and other industrial sources. Activities at MC are also noted to be audible at times.
- RA3, various rural residential residences on Tall Timbers Road at Kingfisher Shores and adjacent to the Chain Valley Bay suburban area. The dominant noise sources in this RA are birds, insects, other industrial sources and traffic movements. Activities at MC are also noted to be audible at times.

The attended noise monitoring locations for MC and relevant noise criteria are identified below in **Table 6**.

Table 6: Noise Monitoring Locations and Limits for Mannering Colliery

Location	Receivers Represented MP06_0311 ID	Coordinates	Day $L_{Aeq(15\ min)}$ dB (A)	Evening $L_{Aeq(15\ min)}$ dB (A)	Night $L_{Aeq(15\ min)}$ dB (A)	Night $L_{A1(1\ min)}$ dB (A)
RA1	4, 5, 6	364646E 6327221N	40	36	36	46
RA2	7, 8	365164E 6328332N	40	40	40	45
RA3	9, 11, 18, 20	365069E 6328953N	40	39	39	49

The above noise monitoring locations are representative of residential receivers most likely to be affected by MC operational noise. Adherence with the relevant noise criteria at these locations will indicate that noise criteria will be met at other surrounding noise-sensitive locations.

Appendix C
Calibration certificates

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CERTIFICATE OF CALIBRATION

CERTIFICATE NO: SLM34169

EQUIPMENT TESTED: Sound Level Meter

Manufacturer:	B & K		
Type No:	2250	**Serial No:**	3029363
Mic. Type:	4189	**Serial No:**	3260501
Pre-Amp. Type:	ZC0032	**Serial No:**	30109
Filter Type:	1/3 Octave	**Test No:**	F034175

Owner: EMM Consulting
Suite 01, 20 Chandos St
St Leonards NSW 2065

Tests Performed: IEC 61672-3:2013 & IEC 61260-3:2016

Comments: All Test passed for Class 1. (See overleaf for details)

CONDITIONS OF TEST:

Ambient Pressure	1002	hPa ±1 hPa	**Date of Receipt :**	02/11/2022
Temperature	24	°C ±1° C	**Date of Calibration :**	03/11/2022
Relative Humidity	35	% ±5%	**Date of Issue :**	04/11/2022

Acu-Vib Test Procedure: AVP10 (SLM) & AVP06 (Filters)

CHECKED BY: ..... **AUTHORISED SIGNATURE:** .....

Jack Kielt

Accredited for compliance with ISO/IEC 17025 - Calibration
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Head Office & Calibration Laboratory
Unit 14, 22 Hudson Ave. Castle Hill NSW 2154
(02) 9680 8133
www.acu-vib.com.au

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: C37508

EQUIPMENT TESTED : Sound Level Calibrator

Manufacturer: Svantek
Type No: SV 36 **Serial No:** 79952
Class: 1
Owner: EMM Consulting Pty Ltd
L3, 175 Scott Street
Newcastle, NSW 2300
Tests Performed: Measured Output Pressure level, Frequency & Distortion
Comments: See Details and Class Tolerance overleaf.

CONDITION OF TEST:

Ambient Pressure	1005	hPa ±1 hPa	**Date of Receipt :**	26/09/2023
Temperature	23	°C ±1° C	**Date of Calibration :**	27/09/2023
Relative Humidity	47	% ±5%	**Date of Issue :**	28/09/2023

Acu-Vib Test Procedure: AVP02 (Calibrators)
Test Method: AS IEC 60942 - 2017

CHECKED BY: .....

AUTHORISED SIGNATURE: .....
Hein Soe

Accredited for compliance with ISO/IEC 17025 - Calibration
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Mannering Colliery

Monthly attended noise monitoring - October 2024

Prepared for Great Southern Energy Pty Ltd (trading as Delta Coal)

November 2024

Mannering Colliery

Monthly attended noise monitoring - October 2024

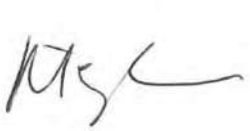
Great Southern Energy Pty Ltd (trading as Delta Coal)

E240010 RP1

November 2024

Version	Date	Prepared by	Reviewed by	Comments
V1	13 November 2024	Kirsten Garlick	Teanuanua Villierme/Katie Teyhan	Draft
V2	14 November 2024	Kirsten Garlick	Teanuanua Villierme/Katie Teyhan	Final

Approved by



Katie Teyhan
Associate Director Acoustics Consultant, Team Manager Acoustics
14 November 2024

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

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1 Introduction

1.1 Background

EMM Consulting Pty Ltd (EMM) was engaged by Great Southern Energy Pty Ltd (trading as Delta Coal) to conduct a monthly noise survey of operations at Mannering Colliery (MC, the site) located at Ruttleys Road, Mannering Park NSW. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

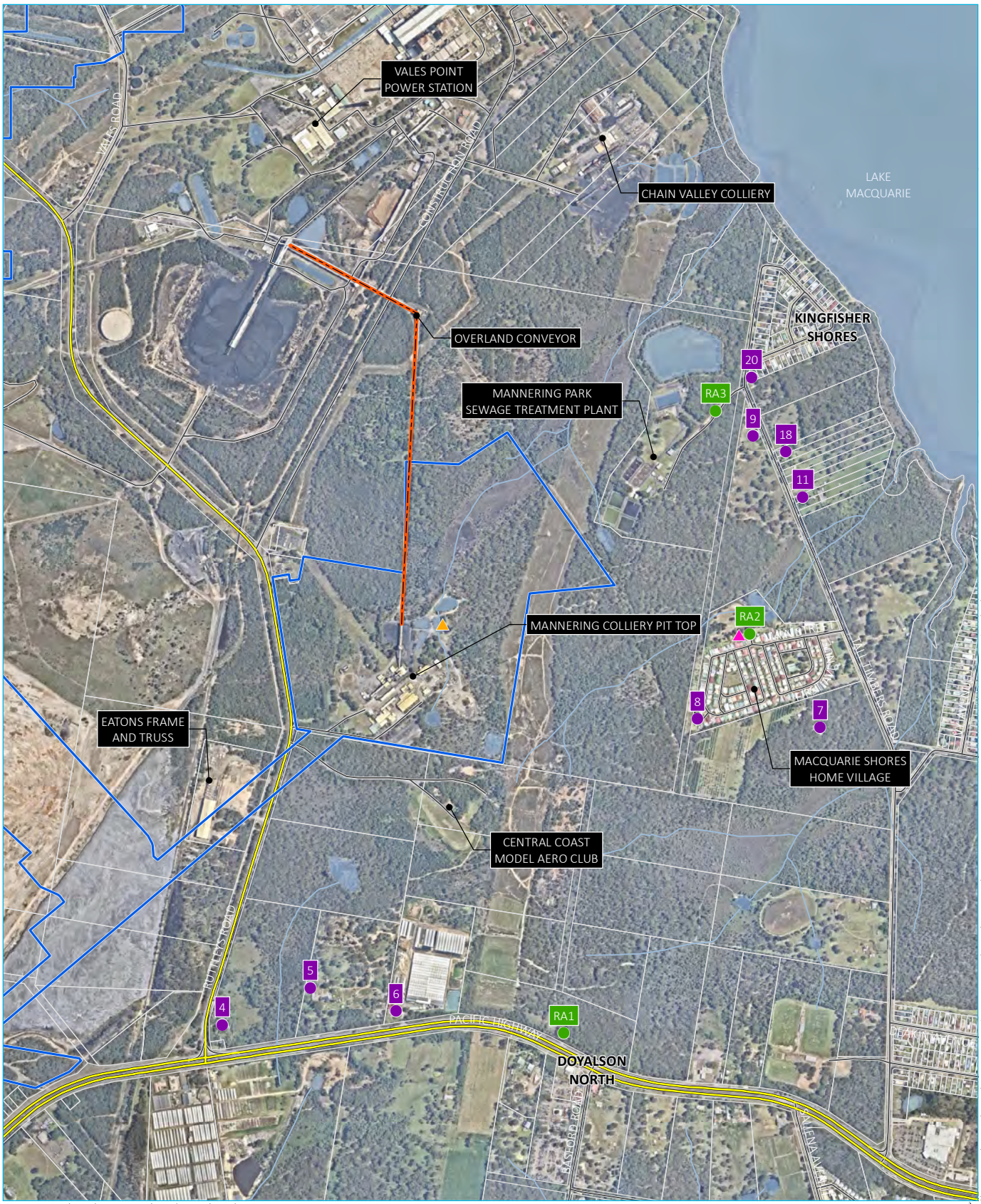
Attended environmental noise monitoring described in this report was done during the evening and night periods on 23 October 2024 at three monitoring locations.

1.2 Attended monitoring locations

Site monitoring locations are detailed in Table 1.1 and shown on Figure 1.1. It should be noted that Figure 1.1 shows actual monitoring positions, not necessarily the location of residences.

Table 1.1 Attended noise monitoring locations

Location descriptor/ID	Description/address	Coordinates (MGA56)	
		Easting	Northing
RA1	Pacific Highway, Doyalson North	364646	6327221
RA2	Macquarie Shores Home Village, Doyalson North	365164	6328332
RA3	Tall Timbers Road (northern end), Kingfisher Shores	365069	6328953



Source: EMM (2021); NearMap (2019); DFSI (2017)

0 250 500 m

GDA 1994 MGA Zone 56

N

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KEY

- Mannering Colliery project approval boundary
- Alignment of overland conveyor to VPPS
- Main road
- Local road
- Watercourse/drainage line
- Waterbody
- Cadastral boundary
- Assessment location
- Attended monitoring location
- Continuous monitoring location
- Meteorological station

Attended noise monitoring and assessment locations

Mannering Colliery
Figure 1.1

EMM creating opportunities

1.3 Terminology and abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

Table 1.2 Terminology and abbreviations

Term/descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The "A" weighting scale is used to approximate how humans hear noise.
L_{Amax}	The maximum root mean squared A-weighted noise level over a time period.
L_{A1}	The A-weighted noise level which is exceeded for 1% of the time.
$L_{A1,1minute}$	The A-weighted noise level which is exceeded for 1% of the specified time period of 1 minute.
L_{A10}	The A-weighted noise level which is exceeded for 10% of the time.
L_{Aeq}	The energy average A-weighted noise level.
$L_{Aeq,15minute}$	The energy average A-weighted noise level over the specified time period of 15 minutes.
L_{A50}	The A-weighted noise level which is exceeded for 50% of the time, also the median noise level during a measurement period.
L_{A90}	The A-weighted noise level exceeded for 90% of the time, also referred to as the "background" noise level and commonly used to derive noise limits.
L_{Amin}	The minimum A-weighted noise level over a time period.
L_{Ceq}	The energy 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.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	Monday – Saturday: 7 am to 6 pm, on Sundays and Public Holidays: 8 am to 6 pm.
Evening	Monday – Saturday: 6 pm to 10 pm, on Sundays and Public Holidays: 6 pm to 10 pm.
Night	Monday – Saturday: 10 pm to 7 am, on Sundays and Public Holidays: 10 pm to 8 am.
NPfI	NSW EPA Noise Policy for Industry (2017)
Temperature inversion	A meteorological condition where the atmospheric temperature increases with altitude.

Appendix A provides further information that gives an indication as to how an average person perceives changes in noise level, and examples of common noise levels.

2 Noise limits

2.1 Project approval

Mannering Colliery noise limits are provided in Table 1, Condition 2 of Schedule 3 of the current project approval (PA) PA MP06_0311 dated 5 June 2020. Relevant sections of the PA are reproduced in Appendix B.1.

2.2 Environment protection licence

The current Environment Protection Licence (EPL) 191 dated 16 June 2023 references the PA with respect to noise limits. Relevant sections of the EPL are reproduced in Appendix B.2.

2.3 Noise management plan

The approved Noise Management Plan (NMP) (dated 20 April 2022) was prepared in line with the Mod 5 approval and in accordance with the NSW EPA 'Noise Policy for Industry' (NPfI) issued in October 2017. Three attended noise monitoring locations representative of the PA noise assessment locations have been adopted in the NMP for the purpose of determining compliance with relevant noise limits. Relevant sections of the NMP are reproduced in Appendix B.3.

2.4 Noise limits

Noise limits consistent with the PA, EPL and approved NMP are as shown in Table 2.1.

Table 2.1 Noise limits, dB

Location	Day $L_{Aeq,15minute}$	Evening $L_{Aeq,15minute}$	Night $L_{Aeq,15minute}$	Night $L_{A1,1minute}$
RA1	40	36	36	46
RA2	40	40	40	45
RA3	40	39	39	49

2.5 Meteorological conditions

The PA (Mod 5) states the following:

> Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Noise Policy for Industry (EPA, 2017).

Section 5.2 of the NPfI states that noise limits applicable under 'very noise-enhancing' conditions should be the limits that apply under 'standard' or 'noise-enhancing' conditions plus 5 dB.

As per the PA (Mod 5) and in accordance with the NPfI, limits are adjusted when monitoring is undertaken during the following 'very noise-enhancing' conditions:

- wind speeds greater than 3 m/s at 10 m above ground level;
- stability category F temperature inversion conditions with wind speeds greater than 2 m/s at 10 m above ground level; or
- stability category G temperature inversion conditions.

Therefore, if monthly noise monitoring occurs during 'very noise-enhancing' conditions, this assessment adopts a +5 dB adjustment to the limits shown in Table 2.1. This is indicated in Table 4.3, where relevant. It is noted that monthly noise monitoring for the site is always scheduled to occur during appropriate forecasted meteorological conditions in accordance with the 'Approved methods for the measurement and analysis of environmental noise in NSW' (EPA 2022) (the approved methods).

2.6 Additional considerations

Monitoring and reporting have been done in accordance with the NSW EPA's NPfI and the approved methods.

3 Methodology

3.1 Overview

Attended environmental noise monitoring was done in general accordance with Australian Standard AS1055:2018 'Acoustics – Description and Measurement of Environmental Noise' and relevant EPA requirements. Meteorological data was obtained from the Mannering Colliery on-site automatic weather station (AWS) which allowed correlation of atmospheric parameters with measured noise levels.

3.2 Attended noise monitoring

During this survey, attended noise monitoring was done during the evening and night periods at each location in accordance with the NMP. The duration of each measurement was 15 minutes. Atmospheric conditions were measured at each monitoring location.

Measured sound levels from various sources were noted during each measurement, and particular attention was paid to the extent of site contribution (if any) to measured levels. At each monitoring location, the site-only $L_{Aeq,15minute}$ and L_{Amax} were measured directly or determined by other methods detailed in Section 7.1 of the NPfI. For example, frequency filtering and observations when extraneous noise is low are some of the techniques used to isolate site noise contribution.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may be used in this report. When site noise is noted as IA, it was inaudible at the monitoring location. When site noise is noted as NM, this means it was audible but could not be quantified. All results noted as IA or NM in this report were due to one or more of the following:

- Site noise levels were very low, typically more than 10 dB below the measured background (L_{A90}), and unlikely to be noticed.
- Site noise levels were masked by other, more dominant, noise sources that are characteristic of the environment (such as breeze in foliage or continuous road traffic noise) that cannot be eliminated by monitoring at an alternate or intermediate location.
- It was not feasible or reasonable to employ methods such as move closer and back calculate. Cases may include rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

If exact noise levels from site could not be established due to masking by other noise sources in a similar frequency range but were determined to be at least 5 dB lower than relevant limits, then a maximum estimate of site noise may be provided. These are expressed as a 'less than' quantity, such as <20 dB or <30 dB.

For this assessment, the measured L_{Amax} has been used as a conservative estimate of $L_{A1,1minute}$. The EPA accepts sleep disturbance analysis based on either the $L_{A1,1minute}$ or L_{Amax} metrics, with the L_{Amax} representing a more conservative assessment of site noise emissions.

3.3 Meteorological data

This assessment determined stability categories throughout attended monitoring periods using the sigma-theta method as per Fact Sheet D of the NPfI. This data was sourced from the site AWS, in accordance with PA requirements.

3.4 Modifying factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. If applicable, modifying factor adjustments have been reported and added to measured site-only L_{Aeq}.

Low-frequency modifying factor penalties have only been applied if site was the only contributing low-frequency noise source. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

3.5 Instrumentation and personnel

Attended noise monitoring was conducted by acoustical consultant Teanuanua Villierme. Qualifications, experience and competency are in accordance with the Approved Methods and demonstration of this is available upon request.

Equipment used to measure environmental noise levels is detailed in Table 3.1. Calibration certificates are provided in Appendix C.

Table 3.1 Attended noise monitoring equipment

Item	Serial number	Calibration due date	Relevant standard
Brüel & Kjær 2250 sound level meter	3029363	3/11/2024	IEC 61672-1:2013
Svantek SV-36 calibrator	79952	9/10/2025	IEC 60942:2017

4 Results

4.1 Total measured noise levels and atmospheric conditions

Overall noise levels measured at each location during attended measurements are provided in Table 4.1.

Table 4.1 Total measured noise levels[1], dB – October 2024

Location	Start date and time	L_{Amax}	L_{A1}	L_{A10}	L_{Aeq}	L_{A50}	L_{A90}	L_{Amin}
RA1	23/10/2024 20:50	72	67	62	58	55	43	38
RA2	23/10/2024 21:15	55	44	40	38	36	34	32
RA3	23/10/2024 21:34	75	57	39	47	36	35	33
RA2	23/10/2024 22:00	58	40	38	37	36	35	33
RA3	23/10/2024 22:19	57	40	39	38	38	37	36
RA1	23/10/2024 22:48	70	63	58	53	42	38	35

Notes: 1. Levels in this table are not necessarily the result of activity at site.

Atmospheric conditions data measured by the operator during each measurement using a hand-held weather meter is shown in Table 4.2. The wind speed, direction and temperature were measured at approximately 1.5 m above ground. Attended noise monitoring is not done during rain, hail, or wind speeds above 5 m/s at microphone height.

Table 4.2 Measured atmospheric conditions – October 2024

Location	Start date and time	Temperature °C	Wind speed m/s	Wind direction ° Magnetic north[1]	Cloud cover 1/8s
RA1	23/10/2024 20:50	22	<0.5	-	8
RA2	23/10/2024 21:15	22	<0.5	-	8
RA3	23/10/2024 21:34	21	<0.5	-	8
RA2	23/10/2024 22:00	19	<0.5	-	8
RA3	23/10/2024 22:19	19	<0.5	-	8
RA1	23/10/2024 22:48	19	<0.5	-	8

Notes: 1. "-" indicates calm conditions (wind speed <0.5 m/s) at monitoring location.

4.2 Site only noise levels

4.2.1 Modifying factors

There were no modifying factors, as defined in the NPfI, applicable during the survey.

4.2.2 Monitoring results

Table 4.3 provides site noise levels in the absence of other sources, where possible, and includes weather data from the site AWS. Noise limits are applicable under all weather conditions but have been adjusted, where relevant, during very noise-enhancing weather conditions as defined by the NPfI (refer to Section 2.5).

Table 4.3 Site noise levels and limits – October 2024

Location	Start date and time	Wind		Stability class	Standard limits apply?[1]	Limit, dB		Site level, dB[2]		Exceedance, dB	
		Speed (m/s)	Direction[3]			$L_{Aeq,15minute}$	$L_{A1,1minute}$	$L_{Aeq,15minute}$	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}
RA1	23/10/2024 20:50	0.5	187	F	Yes	36	N/A	IA	N/A	Nil	N/A
RA2	23/10/2024 21:15	0.9	159	F	Yes	40	N/A	IA	N/A	Nil	N/A
RA3	23/10/2024 21:34	0.3	190	F	Yes	39	N/A	IA	N/A	Nil	N/A
RA2	23/10/2024 22:00	0.7	227	F	Yes	40	45	IA	IA	Nil	Nil
RA3	23/10/2024 22:19	1.1	237	F	Yes	39	49	IA	IA	Nil	Nil
RA1	23/10/2024 22:48	0.8	191	F	Yes	36	46	IA	IA	Nil	Nil

Notes: 1. If "No", adjusted noise limits (standard limit + 5 dB) apply during 'very noise-enhancing' meteorological conditions as stated in Section 2.5.

2. Site-only $L_{Aeq,15minute}$ include modifying factor adjustments if applicable.

3. Degrees magnetic north, "-" indicates calm conditions.

5 Discussion

5.1 Noted noise sources

During attended monitoring, the time variations (temporal characteristics) of noise sources are considered in each measurement via statistical descriptors. From these observations, summaries have been derived for the location and provided in this chapter. Statistical 1/3 octave-band analysis of environmental noise was undertaken and the following figures display frequency ranges of various noise sources at each location for L_{A1}, L_{A10}, L_{Aeq}, L_{A50}, and L_{A90} descriptors. These figures also provide, graphically, statistical information for these noise levels.

An example (non-site related) is provided as Figure 5.1, where frogs and insects are seen to be generating noise at frequencies above 1,000 Hz, while industrial noise is generally observed at frequencies less than 1,000 Hz.

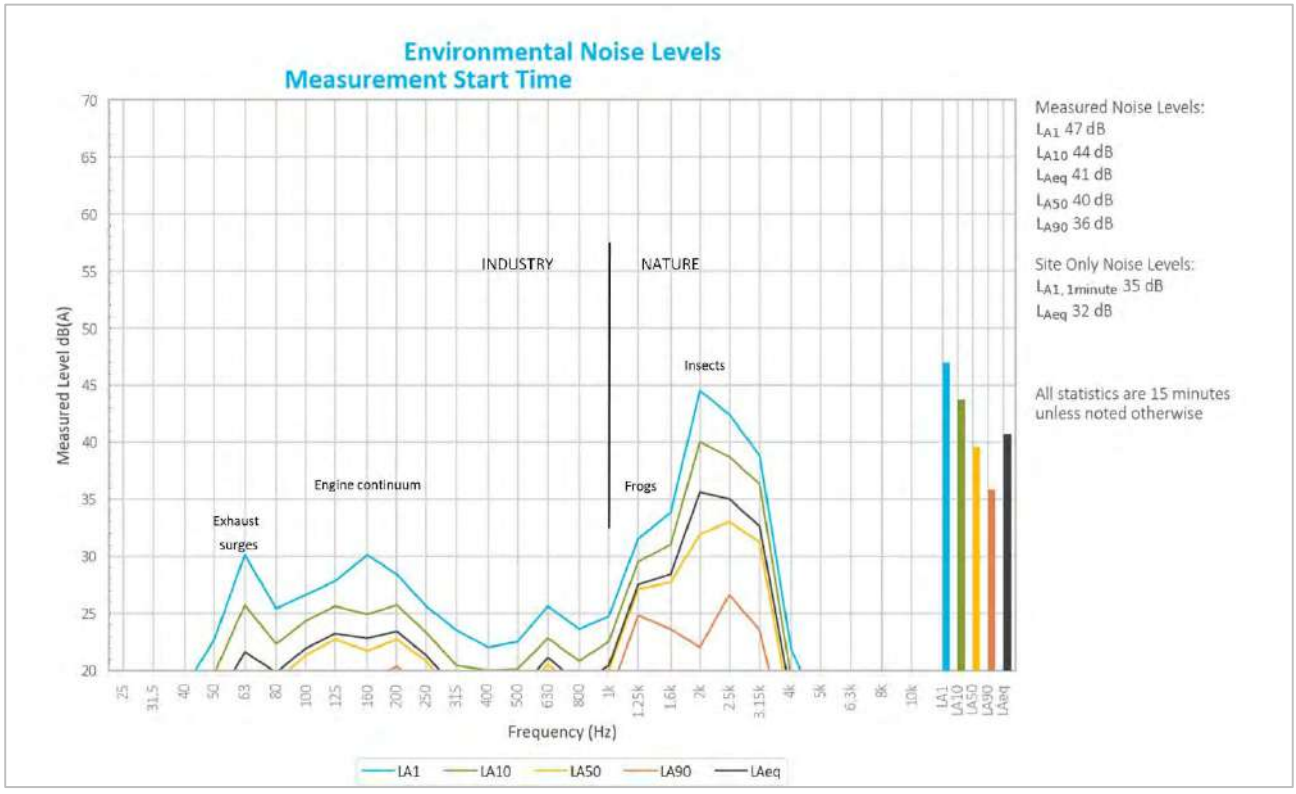


Figure 5.1 Example graph (refer to Section 5.1 for explanatory note)

5.2 RA1 – Evening

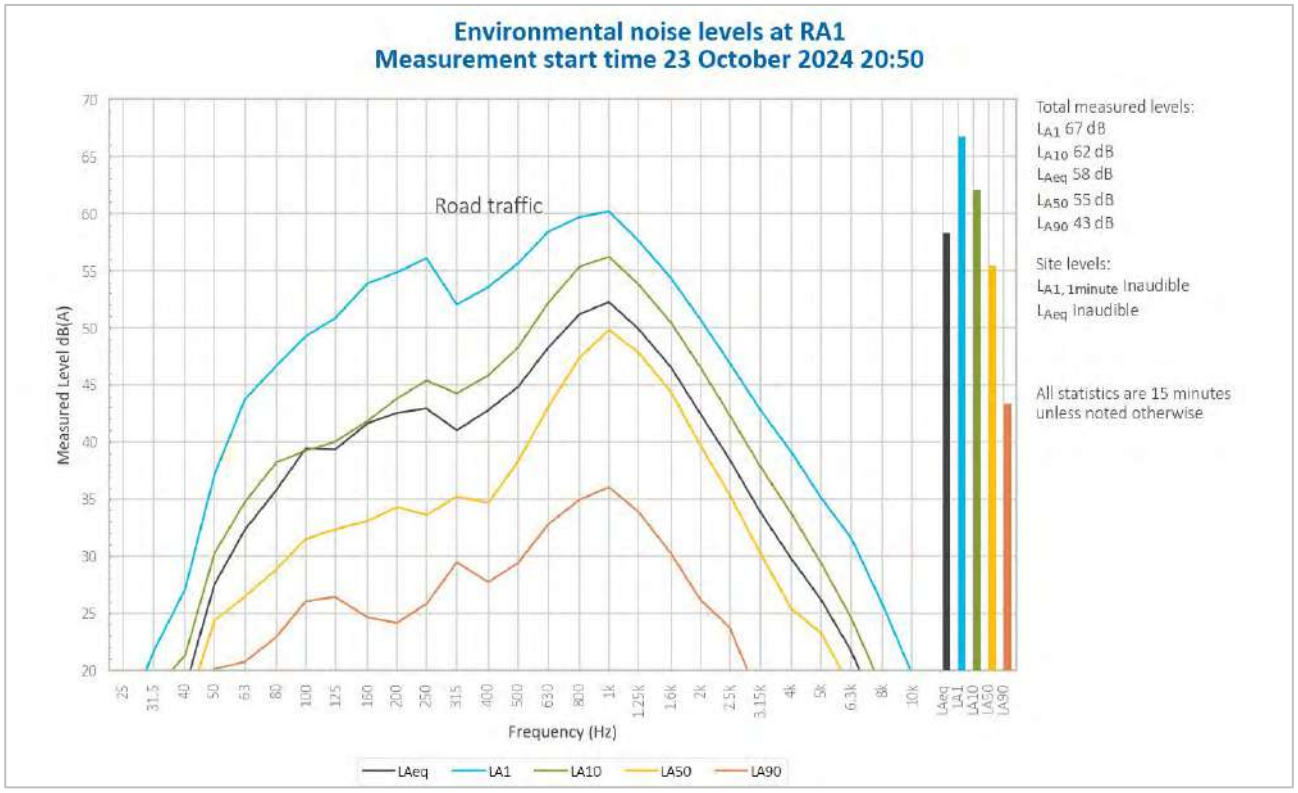


Figure 5.2 Environmental noise levels – RA1 (Pacific Highway) – Evening

MC operations were inaudible during the entire measurement.

Road traffic dominated measured noise levels.

5.3 RA2 – Evening

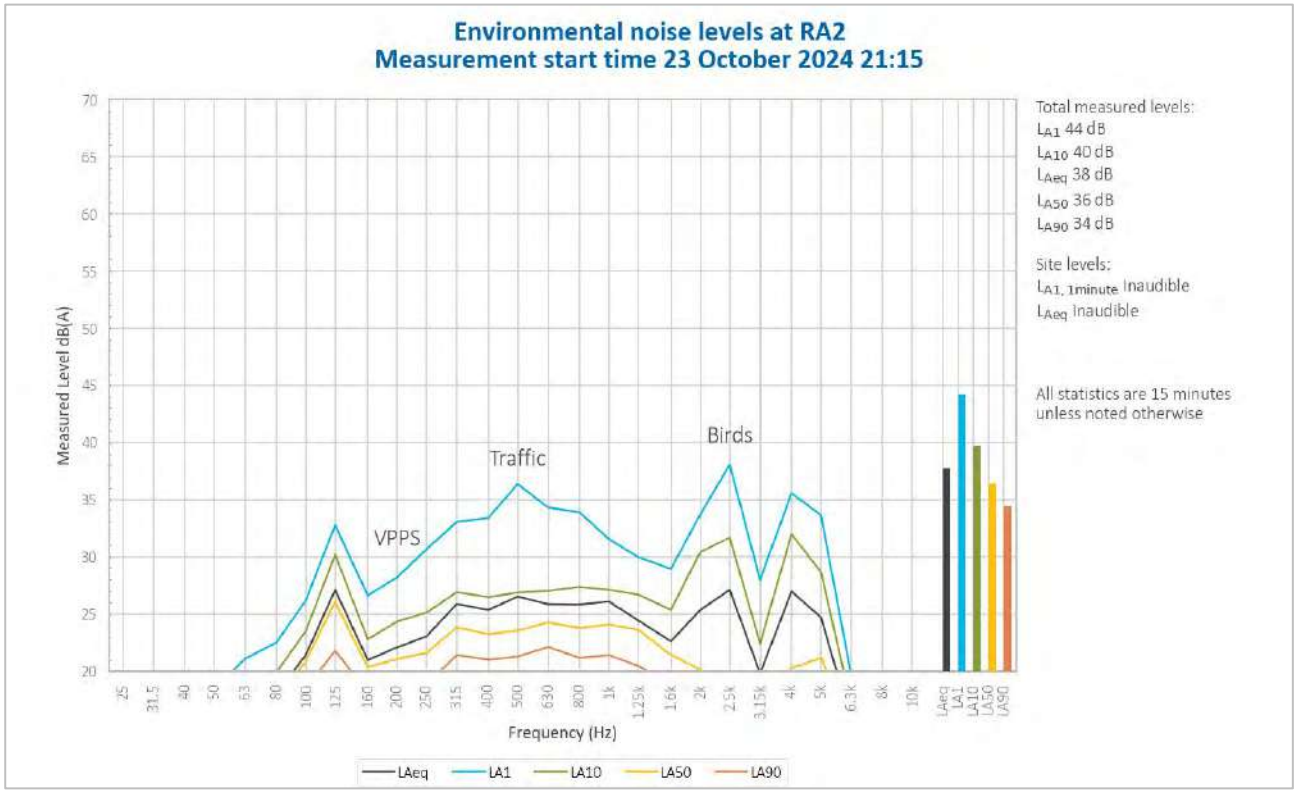


Figure 5.3 Environmental noise levels – RA2 (Macquarie Shores) – Evening

MC operations were inaudible during the entire measurement.

Vales Point Power Station (VPPS) generated the measured L_{Aeq}, L_{A50} and L_{A50}. Road traffic generated the measured L_{A1}. Birds generated the measured L_{A10}.

5.4 RA3 – Evening

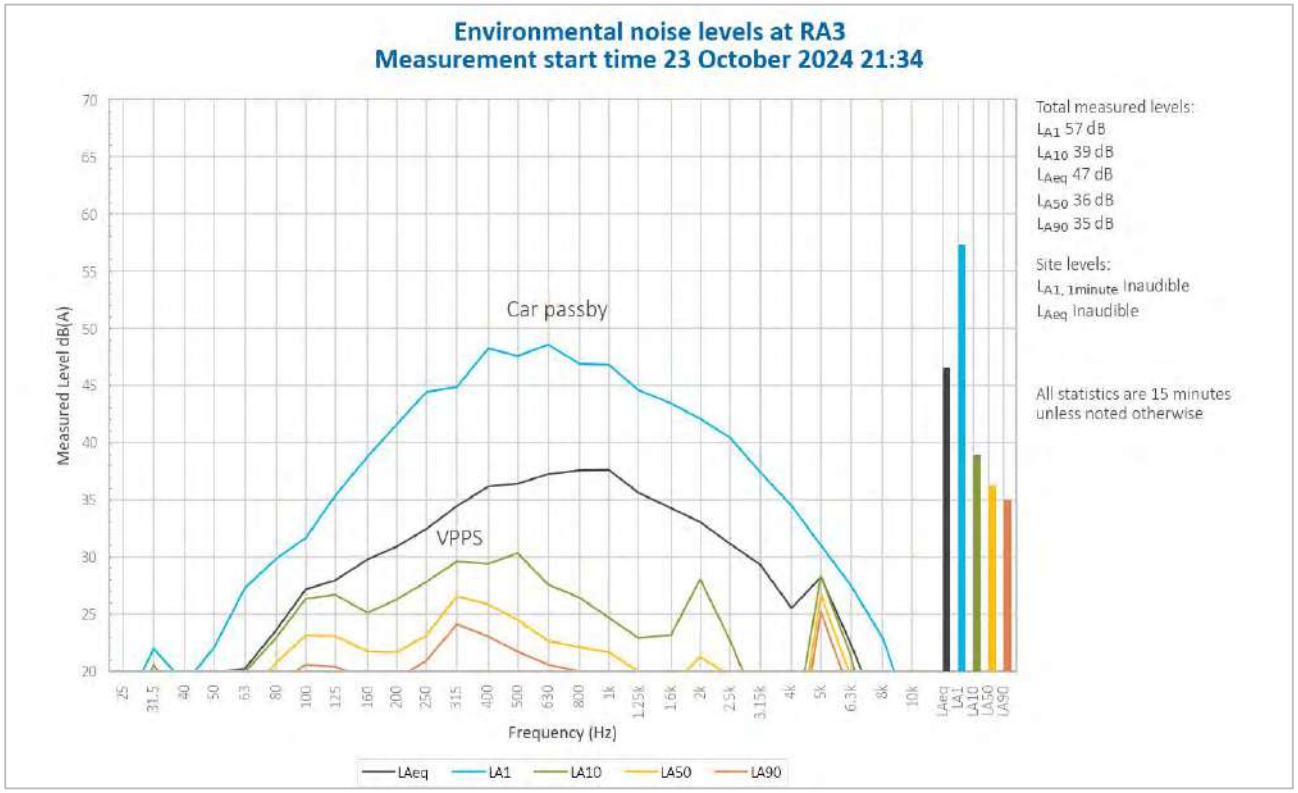


Figure 5.4 Environmental noise levels – RA3 (Kingfisher Shores) – Evening

MC operations were inaudible during the entire measurement.

VPPS generated the measured LA50 and LA90. Road traffic (car passby) generated the measured LA1, LA10 and LAeq.

5.5 RA2 – Night

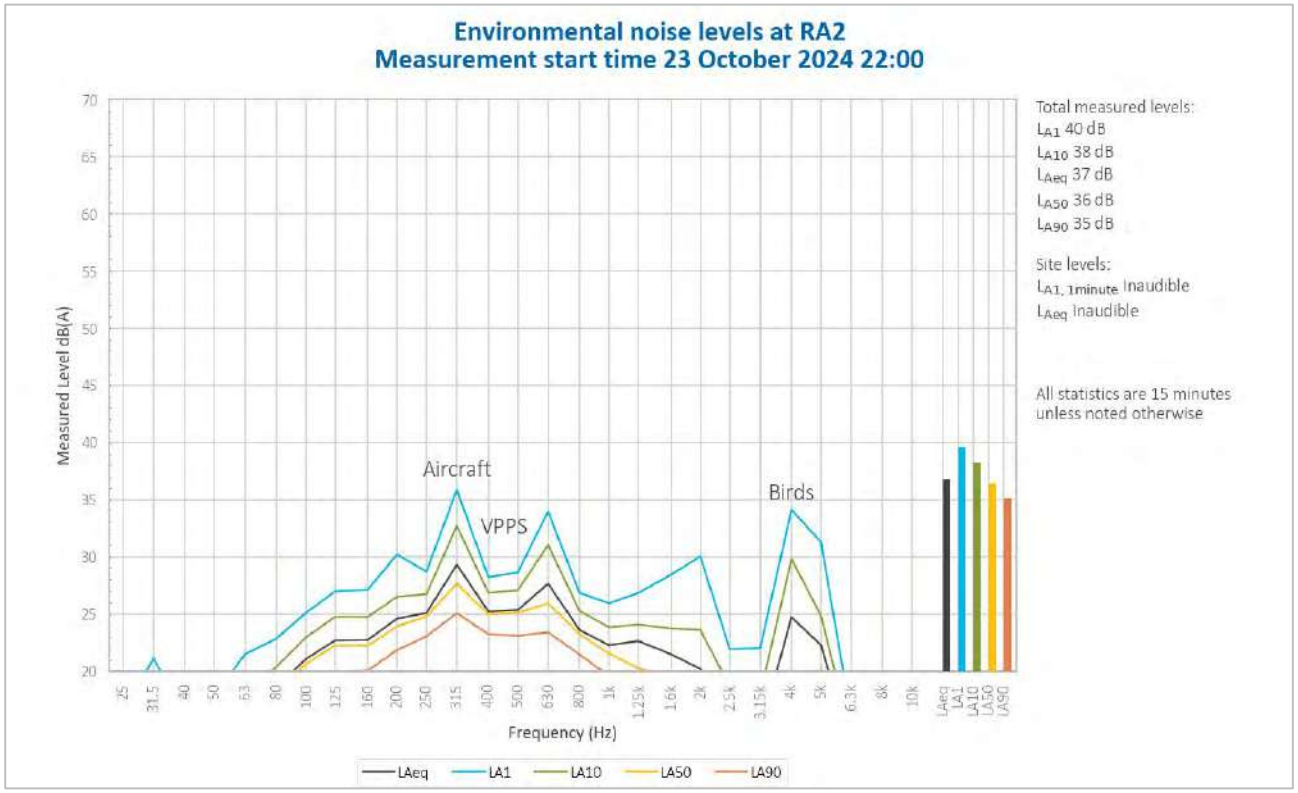


Figure 5.6 Environmental noise levels – RA2 (Macquarie Shores) – Night

MC operations were inaudible during the entire measurement.

VPPS generated the measured LAeq, LA50 and LA90. Aircraft (plane flying above) generated the measured LA1 and LA10.

5.6 RA3 – Night

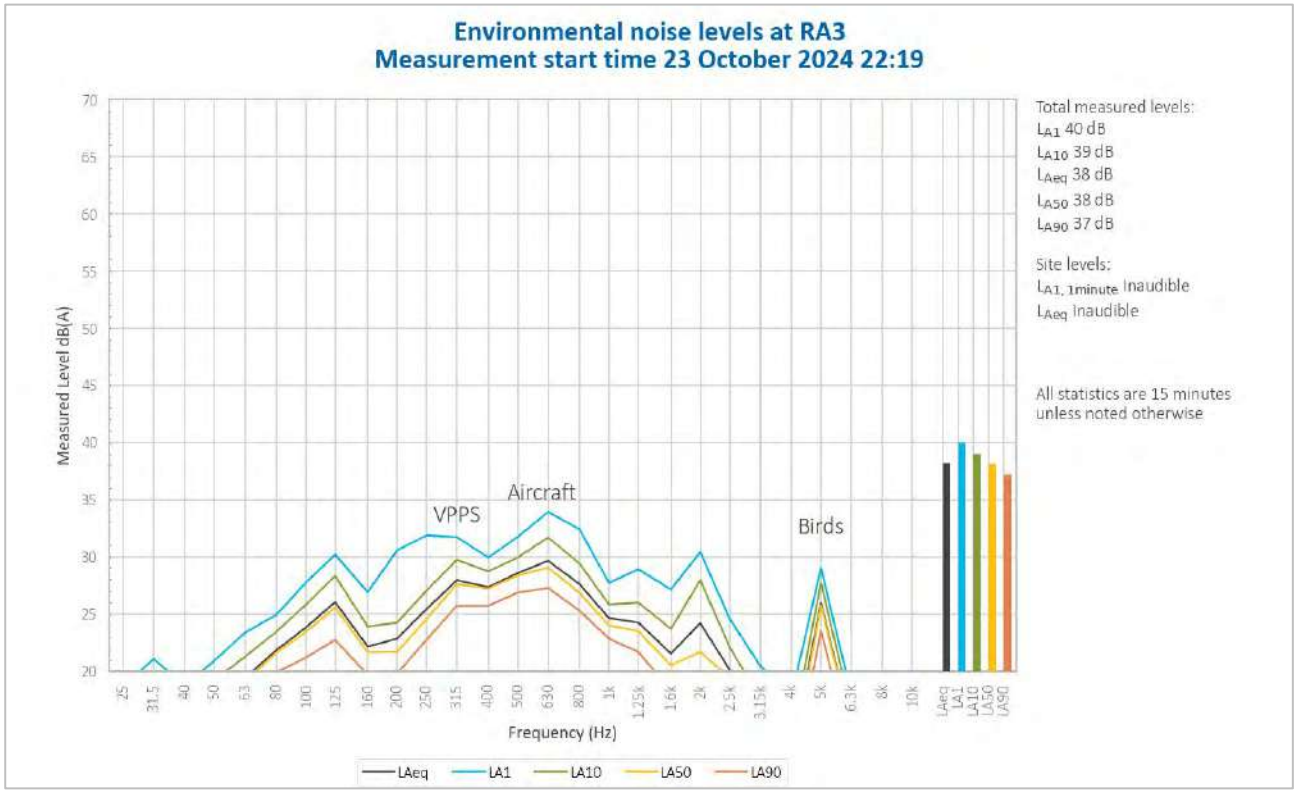


Figure 5.7 Environmental noise levels – RA3 (Kingfisher Shores) – Night

MC operations were inaudible during the entire measurement.

VPPS generated the measured LA10, LAeq, LA50 and LA90. Aircraft (plane flying above) generated the measured LA1.

5.7 RA1 – Night

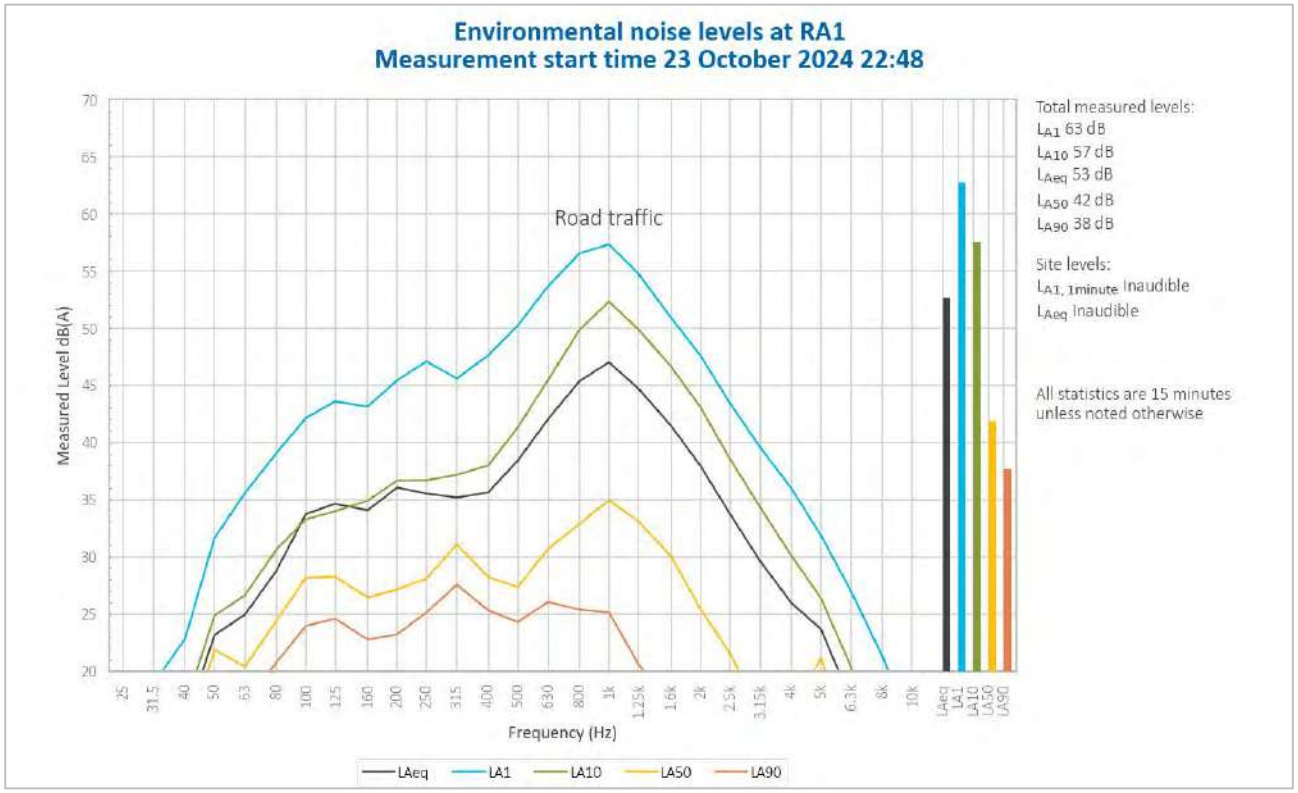


Figure 5.5 Environmental noise levels – RA1 (Pacific Highway) – Night

MC operations were inaudible during the entire measurement.

Road traffic generated the measured noise levels.

6 Summary

EMM Consulting Pty Ltd (EMM) was engaged by Great Southern Energy Pty Ltd (trading as Delta Coal) to complete a monthly noise survey of operations conducted at Mannering Colliery. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

Attended environmental noise monitoring described in this report was done during the evening and night periods on 23 October 2024 at three monitoring locations.

Noise levels from site complied with relevant limits at all monitoring locations during the October 2024 survey.

Appendix A
Noise perception and examples

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A.1 Noise levels

Table A.1 gives an indication as to how an average person perceives changes in noise level. Examples of common noise levels are provided in Figure A.1.

Table A.1 Perceived change in noise

Change in sound pressure level (dB)	Perceived change in noise
Up to 2	Not perceptible
3	Just perceptible
5	Noticeable difference
10	Twice (or half) as loud
15	Large change
20	Four times (or quarter) as loud

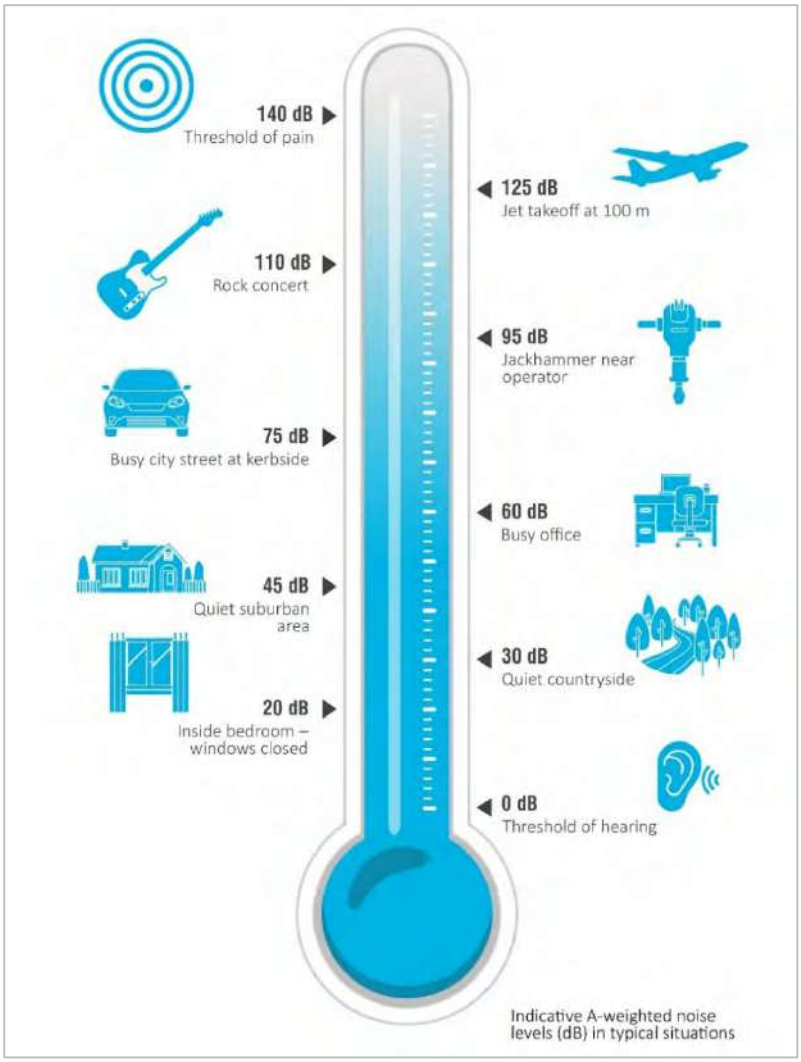


Figure A.1 Common noise levels

Appendix B
Regulator documents

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B.1 Project approval

SCHEDULE 3
SPECIFIC ENVIRONMENTAL CONDITIONS

NOISE

Construction Noise

1. The Applicant must ensure that the noise generated by any construction work is managed in accordance with the requirements outlined in the *Interim Construction Noise Guideline* (DECC, 2009).

Operational Noise Criteria

2. Except for the carrying out of construction works, the Applicant must ensure that the noise generated by the development does not exceed the criteria in Table 1 at any residence[a] on privately-owned land.

***Table 1**: Operational noise criteria dB(A)*

Noise Assessment Location	***Day*** $L_{Aeq\ (15\ min)}$	***Evening*** $L_{Aeq\ (15\ min)}$	***Night*** $L_{Aeq\ (15\ min)}$	***Night*** $L_{A1\ (1\ min)}$
4 – di Rocco	40	36	36	46
5 - Keighran	40	39	39	49
6 – Swan	40	37	37	47
7 – Druitt	40	35	35	45
8 – Macquarie Shores Home Village	42	42	42	47
9 - Jeans	40	37	37	47
11 - Jeans	40	36	36	46
18 - Jeans	40	36	36	46
20 – Knight and all other privately-owned residences	40	36	36	46

[a] *The Noise Assessment Locations referred to in Table 1 are shown in Appendix 4.*

Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the *NSW Noise Policy for Industry* (EPA, 2017).

3. The noise criteria in Table 1 do not apply if the Applicant has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Noise Operating Conditions

3A. The Applicant must:

(a) take all reasonable steps to minimise noise from construction and operational activities, including low frequency noise and other audible characteristics, associated with the development;

(b) implement reasonable and feasible noise attenuation measures on all plant and equipment that will operate in noise sensitive areas;

(c) operate a comprehensive noise management system commensurate with the risk of impact;

(d) take all reasonable steps to minimise the noise impacts of the development during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);

(e) carry out regular attended noise monitoring (at least once a month, unless otherwise agreed by the Planning Secretary) to determine whether the development is complying with the relevant conditions of this consent;

(f) regularly assess the noise monitoring data and modify or stop operations on the site to ensure compliance with the relevant conditions of this consent; and
(g) implement reasonable and feasible measures to further enclose the structure housing the coal crusher in order to further mitigate noise from operational activites.

3B. The Applicant must decommission the surface rotary breaker identified in the Statement of Commitments at Appendix 3, within 3 months of approval of Modification 5.

Noise Management Plan

3C. The Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
(a) be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;
(b) describe the measures to be implemented to ensure:
i. compliance with the noise criteria and operating conditions in this consent;
ii. best practice management is being employed; and
iii. noise impacts of the development are minimised during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);
(c) describe the noise management system in detail; and
(d) include a monitoring program that:
i. uses a combination of real-time and supplementary attended monitoring to evaluate the performance of the development;
ii. monitors noise at the nearest and/or most affected residences;
iii. includes a program to calibrate and validate the real-time noise monitoring results with the attended monitoring results over time;
iv. adequately supports the noise management system;
v. includes a protocol for distinguishing noise emissions of the development from any neighbouring developments; and
vi. includes a protocol for identifying any noise-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of any such event.

The Applicant must implement the Noise Management Plan as approved by the Planning Secretary.

SUBSIDENCE

4. The Applicant must limit its coal extraction methods on the site to first workings only, and must not undertake second workings.

5. Deleted.

SOIL AND WATER

Discharge

6. The Applicant must only discharge water from the site as expressly provided for by its EPL.

7. The Applicant must investigate, assess and report on the ecological interactions of minewater discharged from the site with the aquatic ecology of the unnamed creek and wetlands (and associated vegetation) between the minewater discharge point/s and Lake Macquarie. This report must:
(a) be prepared in consultation with EPA by suitably qualified expert/s whose appointment/s have been approved by the Planning Secretary;
(b) be submitted to the Planning Secretary by the end of March 2009; and
(c) assess the probable alterations in the local ecology attributable to previous and proposed minewater discharges and any future cessation of minewater discharge flows.

Water Management Plan

8. The Applicant must prepare a Water Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
(a) be prepared in consultation with DPIE Water by suitably qualified expert/s whose appointment/s have been approved by the Planning Secretary;
(b) be submitted the Planning Secretary by the end of March 2009; and
(c) include a:
- Site Water Balance;

B.2 Environment Protection Licence

Environment Protection Licence

L4 Waste

L4.1 The licensee must not cause, permit or allow any waste to be received at the premises, except the wastes expressly referred to in the column titled “Waste” and meeting the definition, if any, in the column titled “Description” in the table below.
Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled “Activity” in the table below.
Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste contained in the column titled “Other Limits” in the table below.
This condition does not limit any other conditions in this licence.

Code	Waste	Description	Activity	Other Limits
NA	Waste	Any other waste received on the premises for storage, treatment, processing, sorting or disposal and which receipt is not a scheduled activity under Schedule 1 of the POEO Act, as in force from time to time.		
NA	General or Specific exempted waste	Waste that meets all the conditions of a resource recovery exemption under Clause 51A of the Protection of the Environment Operations (Waste) Regulation 2014	As specified in each particular resource recovery exemption	N/A

L4.2 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.

L4.3 This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if it requires an environment protection licence.

L5 Noise limits

Note: Noise limits are not specified as a condition of this licence. Noise limits are prescribed with the conditions of Project Approval 06_0311 granted under the *Environmental Planning and Assessment Act 1979.* Under the *Environmental Planning and Assessment Act 1979* the Department of Planning is the appropriate authority in respect of the administration and regulation of the Project Approval.

B.3 Approved noise management plan

The above noise monitoring locations are representative of residential receivers most likely to be affected by CVC operational noise. Adherence with the relevant noise criteria at these locations will indicate that noise criteria will be met at other surrounding noise-sensitive locations.

4.2.3 Mannering Colliery

Consistent with the Noise Impact Assessment (EMM 2019) undertaken as part of the Project Approval MP06_0311 MOD 5, rural and residential receivers have been divided into three (3) receiver areas (RA's) with similar geographical and acoustic features. The following points are considered representative of each receiver area:

- RA1, rural residential properties south of MC and fronting the Pacific Highway. The dominant noise source in this area is road traffic. Birds, insects and other industrial sources are also audible at times.
- RA2, privately-owned relocatable residences within the MSHV, east of MC. The dominant noise sources in this RA are birds, insects, traffic and other industrial sources. Activities at MC are also noted to be audible at times.
- RA3, various rural residential residences on Tall Timbers Road at Kingfisher Shores and adjacent to the Chain Valley Bay suburban area. The dominant noise sources in this RA are birds, insects, other industrial sources and traffic movements. Activities at MC are also noted to be audible at times.

The attended noise monitoring locations for MC and relevant noise criteria are identified below in **Table 6**.

Table 6: Noise Monitoring Locations and Limits for Mannering Colliery

Location	Receivers Represented MP06_0311 ID	Coordinates	Day $L_{Aeq(15\ min)}$ dB (A)	Evening $L_{Aeq(15\ min)}$ dB (A)	Night $L_{Aeq(15\ min)}$ dB (A)	Night $L_{A1(1\ min)}$ dB (A)
RA1	4, 5, 6	364646E 6327221N	40	36	36	46
RA2	7, 8	365164E 6328332N	40	40	40	45
RA3	9, 11, 18, 20	365069E 6328953N	40	39	39	49

The above noise monitoring locations are representative of residential receivers most likely to be affected by MC operational noise. Adherence with the relevant noise criteria at these locations will indicate that noise criteria will be met at other surrounding noise-sensitive locations.

Appendix C
Calibration certificates

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CERTIFICATE OF CALIBRATION

CERTIFICATE NO: SLM34169

EQUIPMENT TESTED: Sound Level Meter

Manufacturer:	B & K		
Type No:	2250	**Serial No:**	3029363
Mic. Type:	4189	**Serial No:**	3260501
Pre-Amp. Type:	ZC0032	**Serial No:**	30109
Filter Type:	1/3 Octave	**Test No:**	F034175

Owner: EMM Consulting
Suite 01, 20 Chandos St
St Leonards NSW 2065

Tests Performed: IEC 61672-3:2013 & IEC 61260-3:2016

Comments: All Test passed for Class 1. (See overleaf for details)

CONDITIONS OF TEST:

Ambient Pressure	1002	hPa ±1 hPa	**Date of Receipt :**	02/11/2022
Temperature	24	°C ±1° C	**Date of Calibration :**	03/11/2022
Relative Humidity	35	% ±5%	**Date of Issue :**	04/11/2022

Acu-Vib Test Procedure: AVP10 (SLM) & AVP06 (Filters)

CHECKED BY: ..... **AUTHORISED SIGNATURE:** .....

Jack Kielt

Accredited for compliance with ISO/IEC 17025 - Calibration
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Head Office & Calibration Laboratory
Unit 14, 22 Hudson Ave. Castle Hill NSW 2154
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www.acu-vib.com.au

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: C51438

EQUIPMENT TESTED : Acoustic Calibrator

Manufacturer:	Svantek
Type No:	SV 36 **Serial No:** 79952
Class:	1
Owner:	EMM Consulting Pty Ltd L3, 175 Scott Street Newcastle, NSW 2300
Tests Performed:	Measured Output Pressure level, Frequency & Distortion
Comments:	See Details and Class Tolerance overleaf.

CONDITION OF TEST:

Ambient Pressure	1013	hPa ±1 hPa	**Date of Receipt :**	02/10/2024
Temperature	22	°C ±1° C	**Date of Calibration :**	09/10/2024
Relative Humidity	42	% ±5%	**Date of Issue :**	09/10/2024

Acu-Vib Test Procedure: AVP02 (Calibrators)
Test Method: AS IEC 60942 - 2017

CHECKED BY: .....

AUTHORISED SIGNATURE: .....
Hein Soe

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Accredited Laboratory No. 9262
Acoustic and Vibration Measurements

The Calibrator described in this report has been tested to the requirements of the standard IEC 60942-[Ed 4]:2017-11.
The tests described in Annex B of the standard (Periodic tests) were carried out under the environmental conditions listed above to the following clauses:

Clause	**Test description**
B4.6	Sound Pressure Level (By comparison with a reference calibrator).
B4.7	Frequency (By measurement with a calibrated frequency meter).
B4.8	Total distortion and noise. (By measurement with a calibrated Noise and Distortion meter).

Notes:

1. The calibrator was calibrated with the main axis vertical and facing down.
2. No corrections have been made for atmospheric pressure, temperature, or humidity.

Parameter	Pre-Adj	Adj Y/N	Output: **(dB re 20 µPa)**	Frequency **(Hz)**	THD&N **(%)**
Level1:	NA	N	94.12 dB	1000.01 Hz	1.00 %
Level2:	NA	N	114.08 dB	1000.01 Hz	0.71 %
Uncertainty			±0.11 dB	±0.05%	±0.20 %
Uncertainty (at 95% c.l.) k=2					

Parameter	Class 1		Class 2	
Nominal Frequency	250 Hz	1 kHz	250 Hz	1 kHz
Output dB SPL	0.25 dB	0.25 dB	0.40 dB	0.40 dB
Frequency Hz	0.7 % (1.75 Hz)	0.7 % (7 Hz)	1.7 % (4.25 Hz)	1.7 % (17 Hz)
THD&N	2.5 %	2.5 %	3.0 %	3.0 %

Tolerance limits from AS/IEC60942 (edition 4)

Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.

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Mannering Colliery

Monthly attended noise monitoring - November 2024

Prepared for Great Southern Energy Pty Ltd (trading as Delta Coal)

December 2024

Mannering Colliery

Monthly attended noise monitoring - November 2024

Great Southern Energy Pty Ltd (trading as Delta Coal)

E240010 RP1

December 2024

Version	Date	Prepared by	Reviewed by	Comments
V1	11 December 2024	Kirsten Garlick	Teanuanua Villierme/Katie Teyhan	Draft
V2	13 December 2024	Kirsten Garlick	Teanuanua Villierme/Katie Teyhan	Final

Approved by



Katie Teyah
Team Manager - Acoustics
13 December 2024

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1 Introduction

1.1 Background

EMM Consulting Pty Ltd (EMM) was engaged by Great Southern Energy Pty Ltd (trading as Delta Coal) to conduct a monthly noise survey of operations at Mannering Colliery (MC, the site) located at Ruttleys Road, Mannering Park NSW. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

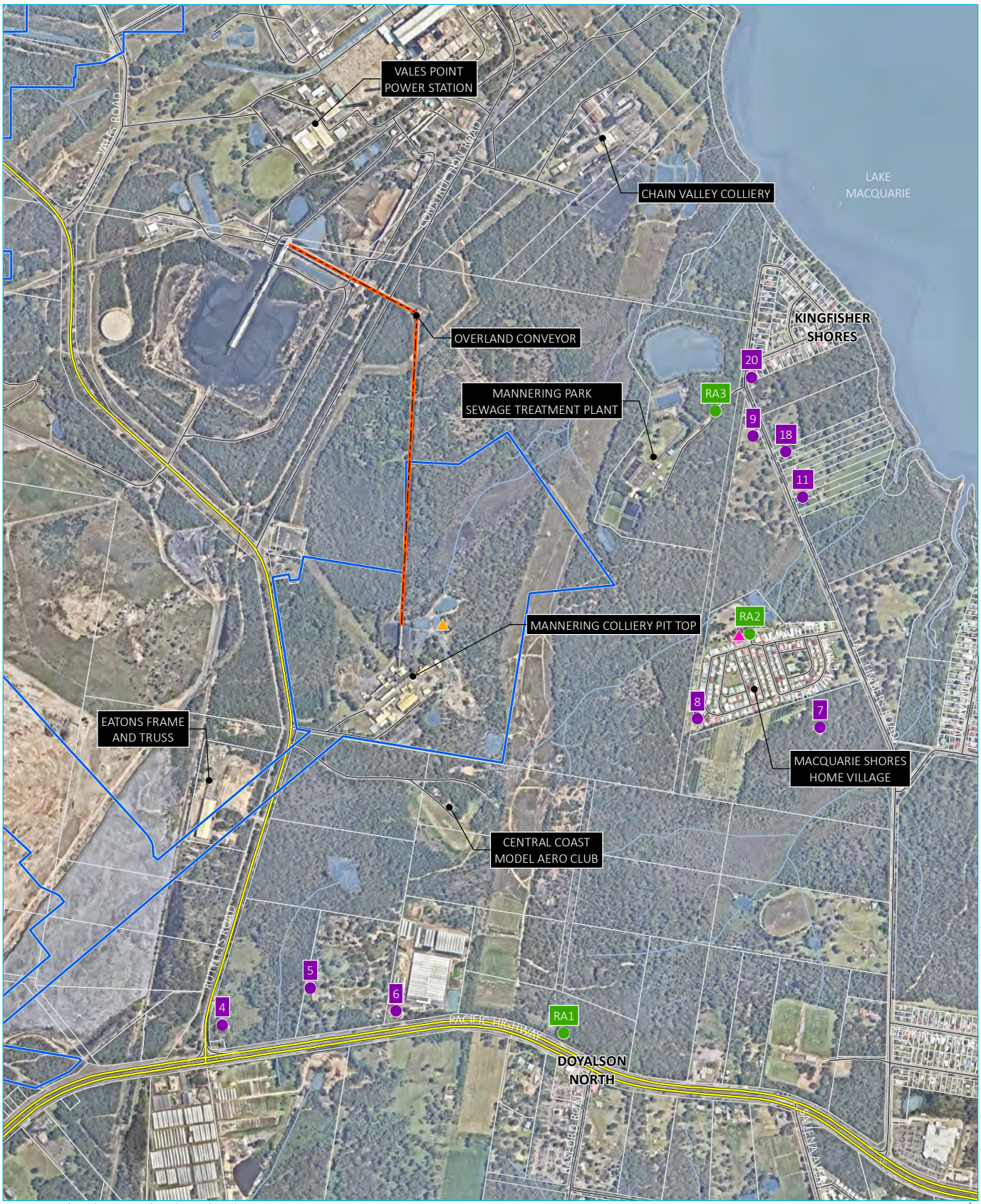
Attended environmental noise monitoring described in this report was done during the evening and night periods on 19 November 2024 at three monitoring locations.

1.2 Attended monitoring locations

Site monitoring locations are detailed in Table 1.1 and shown on Figure 1.1. It should be noted that Figure 1.1 shows actual monitoring positions, not necessarily the location of residences.

Table 1.1 Attended noise monitoring locations

Location descriptor/ID	Description/address	Coordinates (MGA56)	
		Easting	Northing
RA1	Pacific Highway, Doyalson North	364646	6327221
RA2	Macquarie Shores Home Village, Doyalson North	365164	6328332
RA3	Tall Timbers Road (northern end), Kingfisher Shores	365069	6328953



Source: EMM (2021); NearMap (2019); DFSI (2017)

0 250 500 m

GDA 1994 MGA Zone 56

N

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KEY

- Mannering Colliery project approval boundary
- Alignment of overland conveyor to VPPS
- Main road
- Local road
- Watercourse/drainage line
- Waterbody
- Cadastral boundary
- Assessment location
- Attended monitoring location
- Continuous monitoring location
- Meteorological station

Attended noise monitoring and assessment locations

Mannering Colliery
Figure 1.1

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1.3 Terminology and abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

Table 1.2 Terminology and abbreviations

Term/descriptor	Definition
dB	Noise level measurement units are decibels (dB).
A-weighting	The "A" weighting scale is used to approximate how humans hear noise.
L_{Amax}	The maximum root mean squared A-weighted noise level over a time period.
L_{A1}	The A-weighted noise level which is exceeded for 1% of the time.
$L_{A1,1minute}$	The A-weighted noise level which is exceeded for 1% of the specified time period of 1 minute.
L_{A10}	The A-weighted noise level which is exceeded for 10% of the time.
L_{Aeq}	The energy average A-weighted noise level.
$L_{Aeq,15minute}$	The energy average A-weighted noise level over the specified time period of 15 minutes.
L_{A50}	The A-weighted noise level which is exceeded for 50% of the time, also the median noise level during a measurement period.
L_{A90}	The A-weighted noise level exceeded for 90% of the time, also referred to as the "background" noise level and commonly used to derive noise limits.
L_{Amin}	The minimum A-weighted noise level over a time period.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	Monday – Saturday: 7 am to 6 pm, on Sundays and Public Holidays: 8 am to 6 pm.
Evening	Monday – Saturday: 6 pm to 10 pm, on Sundays and Public Holidays: 6 pm to 10 pm.
Night	Monday – Saturday: 10 pm to 7 am, on Sundays and Public Holidays: 10 pm to 8 am.
NPfI	NSW EPA Noise Policy for Industry (2017)
Temperature inversion	A meteorological condition where the atmospheric temperature increases with altitude.

Appendix A provides further information that gives an indication as to how an average person perceives changes in noise level, and examples of common noise levels.

2 Noise limits

2.1 Project approval

Mannering Colliery noise limits are provided in Table 1, Condition 2 of Schedule 3 of the current project approval (PA) PA MP06_0311 dated 5 June 2020. Relevant sections of the PA are reproduced in Appendix B.1.

2.2 Environment protection licence

The current Environment Protection Licence (EPL) 191 dated 16 June 2023 references the PA with respect to noise limits. Relevant sections of the EPL are reproduced in Appendix B.2.

2.3 Noise management plan

The approved Noise Management Plan (NMP) (dated 20 April 2022) was prepared in line with the Mod 5 approval and in accordance with the NSW EPA Noise Policy for Industry (NPfI) issued in October 2017. Three attended noise monitoring locations representative of the PA noise assessment locations have been adopted in the NMP for the purpose of determining compliance with relevant noise limits. Relevant sections of the NMP are reproduced in Appendix B.3.

2.4 Noise limits

Noise limits consistent with the PA, EPL and approved NMP are as shown in Table 2.1.

Table 2.1 Noise limits, dB

Location	Day $L_{Aeq,15minute}$	Evening $L_{Aeq,15minute}$	Night $L_{Aeq,15minute}$	Night $L_{A1,1minute}$
RA1	40	36	36	46
RA2	40	40	40	45
RA3	40	39	39	49

2.5 Meteorological conditions

The PA (Mod 5) states the following:

> Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Noise Policy for Industry (EPA, 2017).

Section 5.2 of the NPfI states that noise limits applicable under 'very noise-enhancing' conditions should be the limits that apply under 'standard' or 'noise-enhancing' conditions plus 5 dB.

As per the PA (Mod 5) and in accordance with the NPfI, limits are adjusted when monitoring is undertaken during the following 'very noise-enhancing' conditions:

- wind speeds greater than 3 m/s at 10 m above ground level
- stability category F temperature inversion conditions with wind speeds greater than 2 m/s at 10 m above ground level

- stability category G temperature inversion conditions.

Therefore, if monthly noise monitoring occurs during 'very noise-enhancing' conditions, this assessment adopts a +5 dB adjustment to the limits shown in Table 2.1. This is indicated in Table 4.3, where relevant. It is noted that monthly noise monitoring for the site is always scheduled to occur during appropriate forecasted meteorological conditions in accordance with the 'Approved methods for the measurement and analysis of environmental noise in NSW' (EPA 2022) (the approved methods).

2.6 Additional considerations

Monitoring and reporting have been done in accordance with the NSW EPA's NPfI and the approved methods.

3 Methodology

3.1 Overview

Attended environmental noise monitoring was done in general accordance with Australian Standard AS1055:2018 'Acoustics – Description and Measurement of Environmental Noise' and relevant EPA requirements. Meteorological data was obtained from the Mannering Colliery on-site automatic weather station (AWS) which allowed correlation of atmospheric parameters with measured noise levels.

3.2 Attended noise monitoring

During this survey, attended noise monitoring was done during the evening and night periods at each location in accordance with the NMP. The duration of each measurement was 15 minutes. Atmospheric conditions were measured at each monitoring location.

Measured sound levels from various sources were noted during each measurement, and particular attention was paid to the extent of site contribution (if any) to measured levels. At each monitoring location, the site-only $L_{Aeq,15minute}$ and L_{Amax} were measured directly or determined by other methods detailed in Section 7.1 of the NPfI. For example, frequency filtering and observations when extraneous noise is low are some of the techniques used to isolate site noise contribution.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may be used in this report. When site noise is noted as IA, it was inaudible at the monitoring location. When site noise is noted as NM, this means it was audible but could not be quantified. All results noted as IA or NM in this report were due to one or more of the following:

- Site noise levels were very low, typically more than 10 dB below the measured background (L_{A90}), and unlikely to be noticed.
- Site noise levels were masked by other, more dominant, noise sources that are characteristic of the environment (such as breeze in foliage or continuous road traffic noise) that cannot be eliminated by monitoring at an alternate or intermediate location.
- It was not feasible or reasonable to employ methods such as move closer and back calculate. Cases may include rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

If exact noise levels from site could not be established due to masking by other noise sources in a similar frequency range but were determined to be at least 5 dB lower than relevant limits, then a maximum estimate of site noise may be provided. These are expressed as a 'less than' quantity, such as <20 dB or <30 dB.

For this assessment, the measured L_{Amax} has been used as a conservative estimate of $L_{A1,1minute}$. The EPA accepts sleep disturbance analysis based on either the $L_{A1,1minute}$ or L_{Amax} metrics, with the L_{Amax} representing a more conservative assessment of site noise emissions.

3.3 Meteorological data

This assessment determined stability categories throughout attended monitoring periods using the sigma-theta method as per Fact Sheet D of the NPfI. This data was sourced from the site AWS, in accordance with PA requirements.

3.4 Modifying factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. If applicable, modifying factor adjustments have been reported and added to measured site-only L_{Aeq}.

Low-frequency modifying factor penalties have only been applied if site was the only contributing low-frequency noise source. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

3.5 Instrumentation and personnel

Attended noise monitoring was conducted by acoustical consultant Teanuanua Villierme. Qualifications, experience and competency are in accordance with the Approved Methods and demonstration of this is available upon request.

Equipment used to measure environmental noise levels is detailed in Table 3.1. Calibration certificates are provided in Appendix C.

Table 3.1 Attended noise monitoring equipment

Item	Serial number	Calibration due date	Relevant standard
Brüel & Kjær 2250 sound level meter	2759405	20/12/2025	IEC 61672-1:2013
Svantek SV-36 calibrator	79952	9/10/2025	IEC 60942:2017

4 Results

4.1 Total measured noise levels and atmospheric conditions

Overall noise levels measured at each location during attended measurements are provided in Table 4.1.

Table 4.1 Total measured noise levels[1], dB – November 2024

Location	Start date and time	L_{Amax}	L_{A1}	L_{A10}	L_{Aeq}	L_{A50}	L_{A90}	L_{Amin}
RA1	19/11/2024 20:56	69	66	62	57	53	43	40
RA2	19/11/2024 21:30	62	40	37	36	35	34	31
RA3	19/11/2024 21:49	46	41	40	39	39	37	35
RA2	19/11/2024 22:15	60	40	38	37	36	34	32
RA3	19/11/2024 22:44	55	47	40	39	39	37	36
RA1	19/11/2024 23:07	68	65	59	55	47	38	35

Notes: 1. Levels in this table are not necessarily the result of activity at site.

Atmospheric conditions data measured by the operator during each measurement using a hand-held weather meter is shown in Table 4.2. The wind speed, direction and temperature were measured at approximately 1.5 m above ground. Attended noise monitoring is not done during rain, hail, or wind speeds above 5 m/s at microphone height.

Table 4.2 Measured atmospheric conditions – November 2024

Location	Start date and time	Temperature °C	Wind speed m/s	Wind direction °Magnetic north[1]	Cloud cover 1/8s
RA1	19/11/2024 20:56	19	<0.5	-	5
RA2	19/11/2024 21:30	19	<0.5	-	0
RA3	19/11/2024 21:49	19	<0.5	-	0
RA2	19/11/2024 22:15	19	<0.5	-	0
RA3	19/11/2024 22:44	19	<0.5	-	0
RA1	19/11/2024 23:07	19	<0.5	-	0

Notes: 1. "-" indicates calm conditions (wind speed <0.5 m/s) at monitoring location.

4.2 Site only noise levels

4.2.1 Modifying factors

There were no modifying factors, as defined in the NPfI, applicable during the survey.

4.2.2 Monitoring results

Table 4.3 provides site noise levels in the absence of other sources, where possible, and includes weather data from the site AWS. Noise limits are applicable under all weather conditions but have been adjusted, where relevant, during very noise-enhancing weather conditions as defined by the NPfI (refer to Section 2.5).

Table 4.3 Site noise levels and limits – November 2024

Location	Start date and time	Wind		Stability class	Standard limits apply?[1]	Limit, dB		Site level, dB[2]		Exceedance, dB	
		Speed (m/s)	Direction[3]			$L_{Aeq,15minute}$	$L_{A1,1minute}$	$L_{Aeq,15minute}$	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}
RA1	19/11/2024 20:56	1.1	75	F	Yes	36	NA	IA	NA	Nil	NA
RA2	19/11/2024 21:30	1.3	61	F	Yes	40	NA	IA	NA	Nil	NA
RA3	19/11/2024 21:49	1.3	57	F	Yes	39	NA	IA	NA	Nil	NA
RA2	19/11/2024 22:15	1.5	53	F	Yes	40	45	IA	IA	Nil	Nil
RA3	19/11/2024 22:44	1.4	49	F	Yes	39	49	IA	IA	Nil	Nil
RA1	19/11/2024 23:07	1.4	46	F	Yes	36	46	IA	IA	Nil	Nil

Notes: 1. If "No", adjusted noise limits (standard limit + 5 dB) apply during 'very noise-enhancing' meteorological conditions as stated in Section 2.5.

2. Site-only $L_{Aeq,15minute}$ include modifying factor adjustments if applicable.

3. Degrees magnetic north, "-" indicates calm conditions.

5 Discussion

5.1 Noted noise sources

During attended monitoring, the time variations (temporal characteristics) of noise sources are considered in each measurement via statistical descriptors. From these observations, summaries have been derived for the location and provided in this chapter. Statistical 1/3 octave-band analysis of environmental noise was undertaken and the following figures display frequency ranges of various noise sources at each location for L_{A1}, L_{A10}, L_{Aeq}, L_{A50}, and L_{A90} descriptors. These figures also provide, graphically, statistical information for these noise levels.

An example (non-site related) is provided as Figure 5.1, where frogs and insects are seen to be generating noise at frequencies above 1,000 Hz, while industrial noise is generally observed at frequencies less than 1,000 Hz.

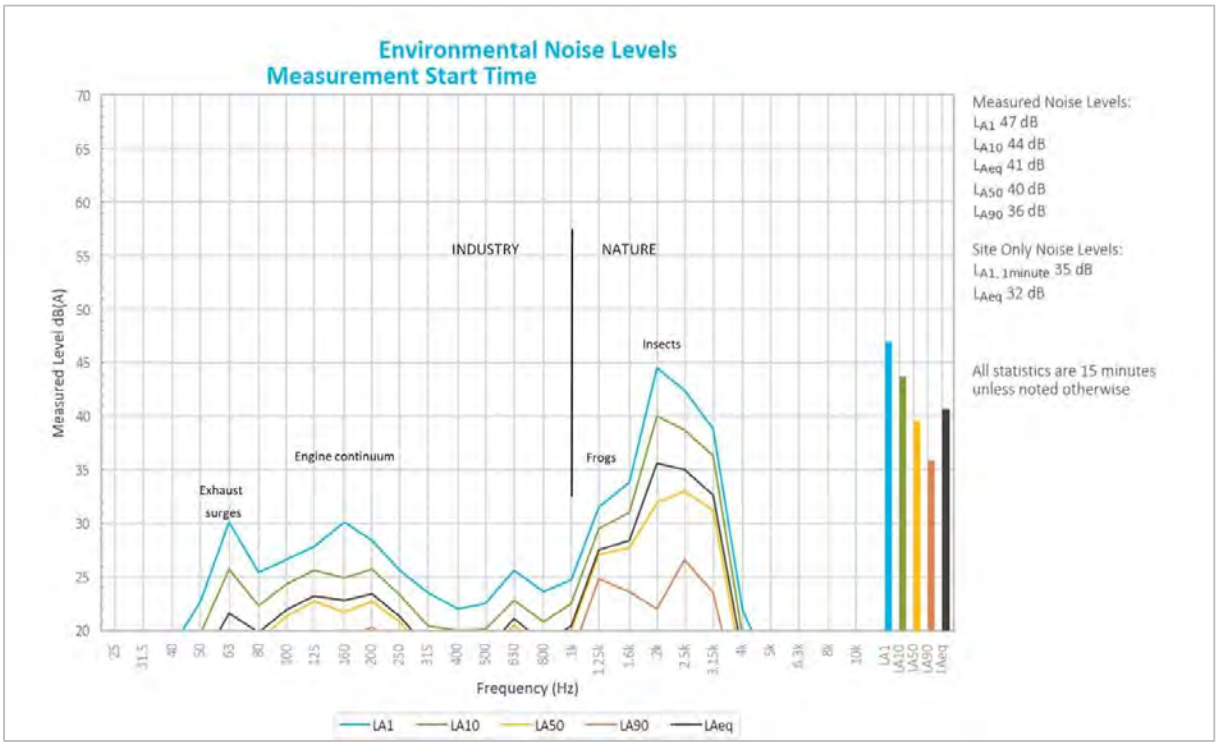


Figure 5.1 Example graph (refer to Section 5.1 for explanatory note)

5.2 RA1 – Evening

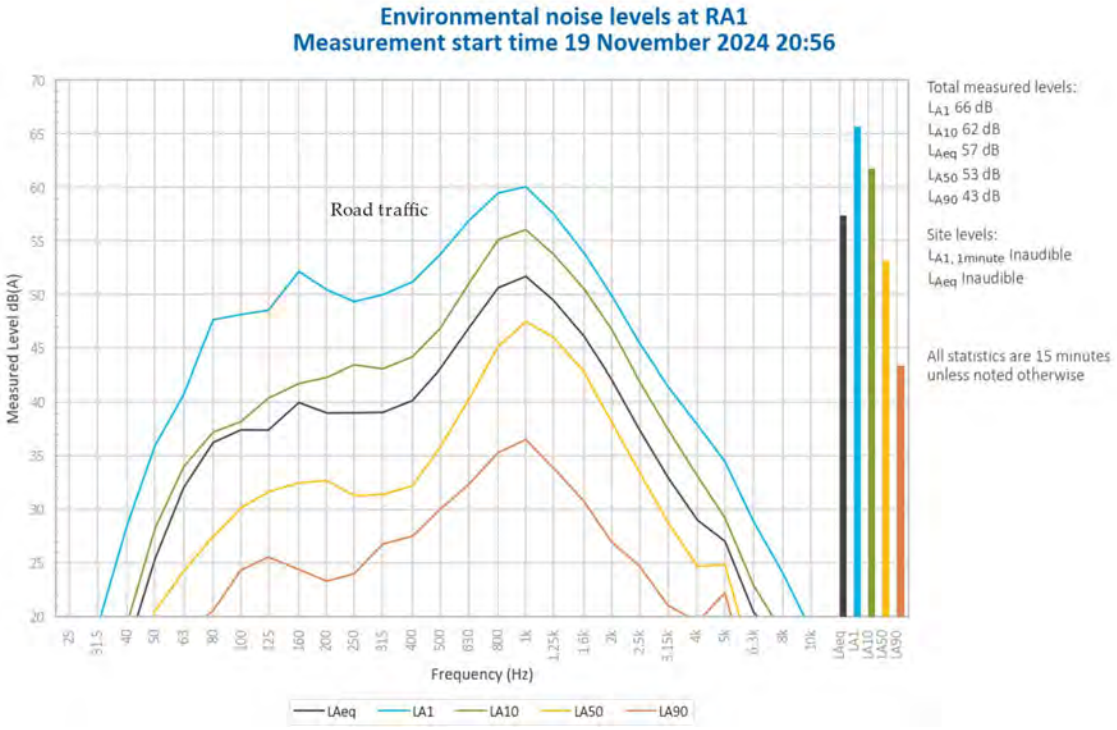


Figure 5.2 Environmental noise levels – RA1 (Pacific Highway) – Evening

MC operations were inaudible during the entire measurement.

Road traffic dominated measured noise levels.

5.3 RA2 – Evening

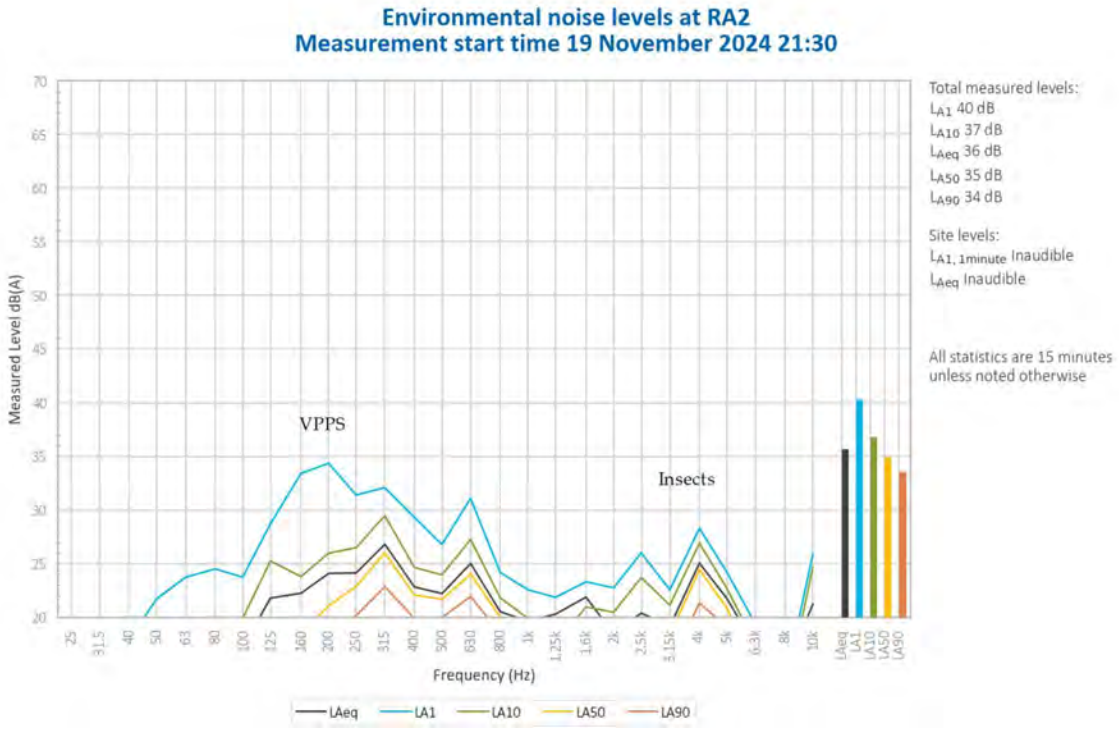


Figure 5.3 Environmental noise levels – RA2 (Macquarie Shores) – Evening

MC operations were inaudible during the entire measurement.

Vales Point Power Station (VPPS) generated the total measured levels.

5.4 RA3 – Evening

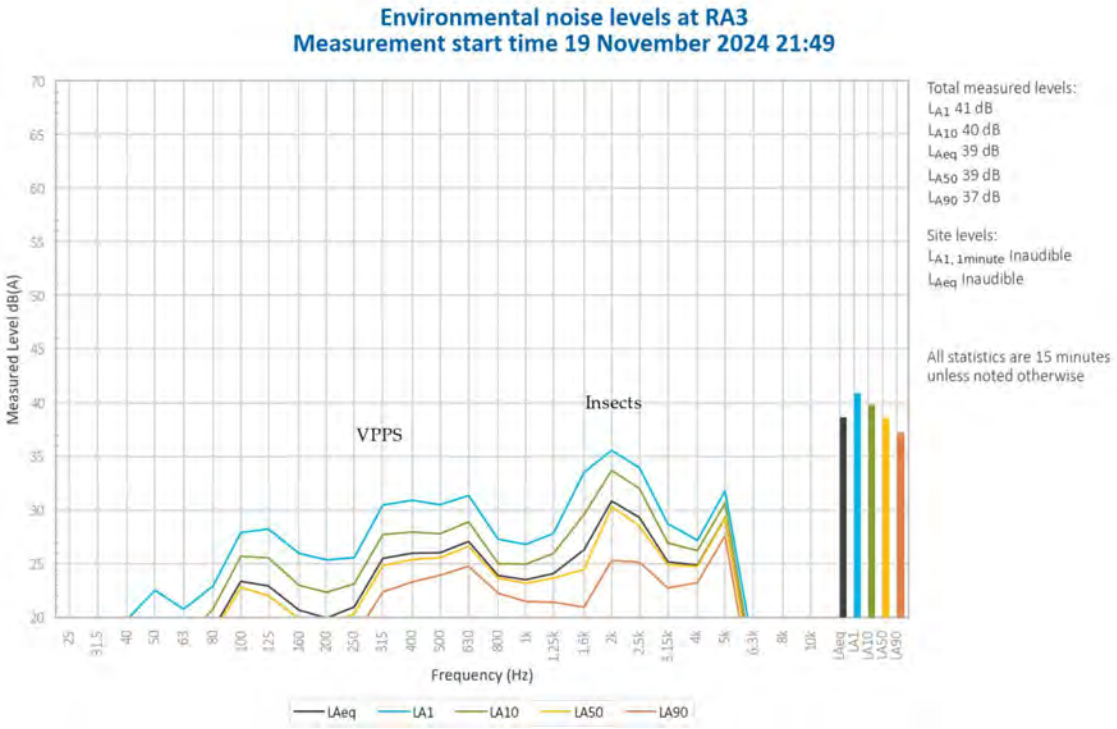


Figure 5.4 Environmental noise levels – RA3 (Kingfisher Shores) – Evening

MC operations were inaudible during the entire measurement.

Insects (primarily) and VPPS generated total measured levels.

5.5 RA2 – Night

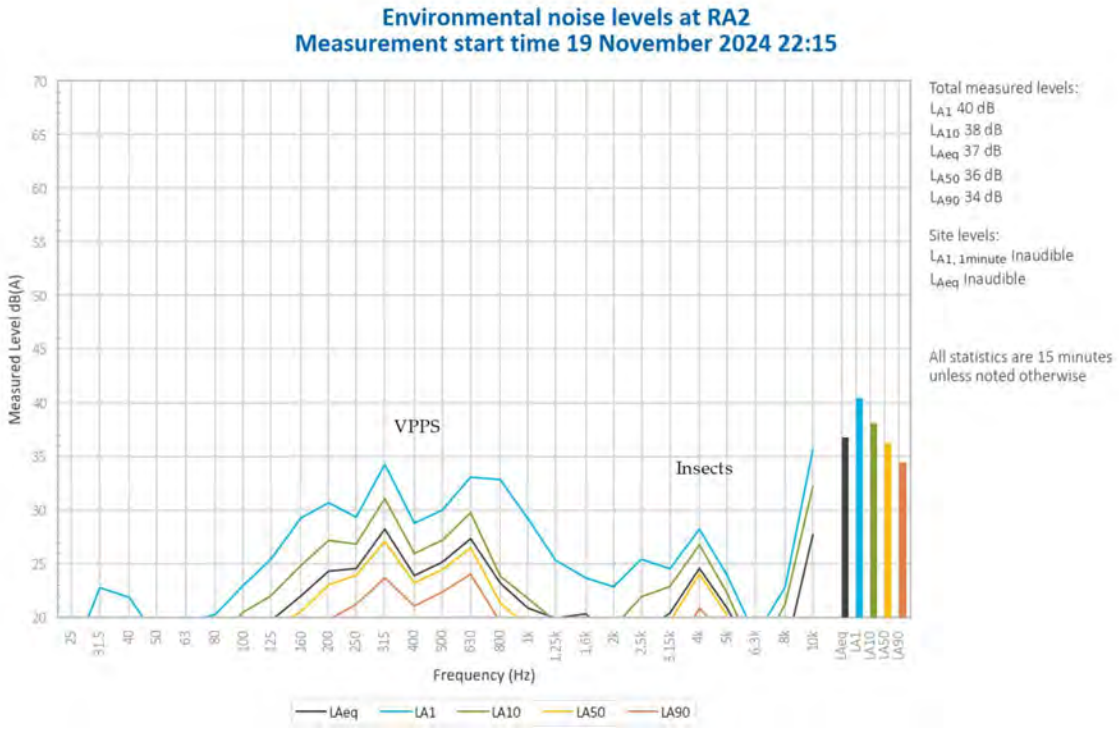


Figure 5.6 Environmental noise levels – RA2 (Macquarie Shores) – Night

MC operations were inaudible during the entire measurement.

VPPS generated the total measured levels. A person talking (briefly) contributed to the measured L_{A1}.

5.6 RA3 – Night

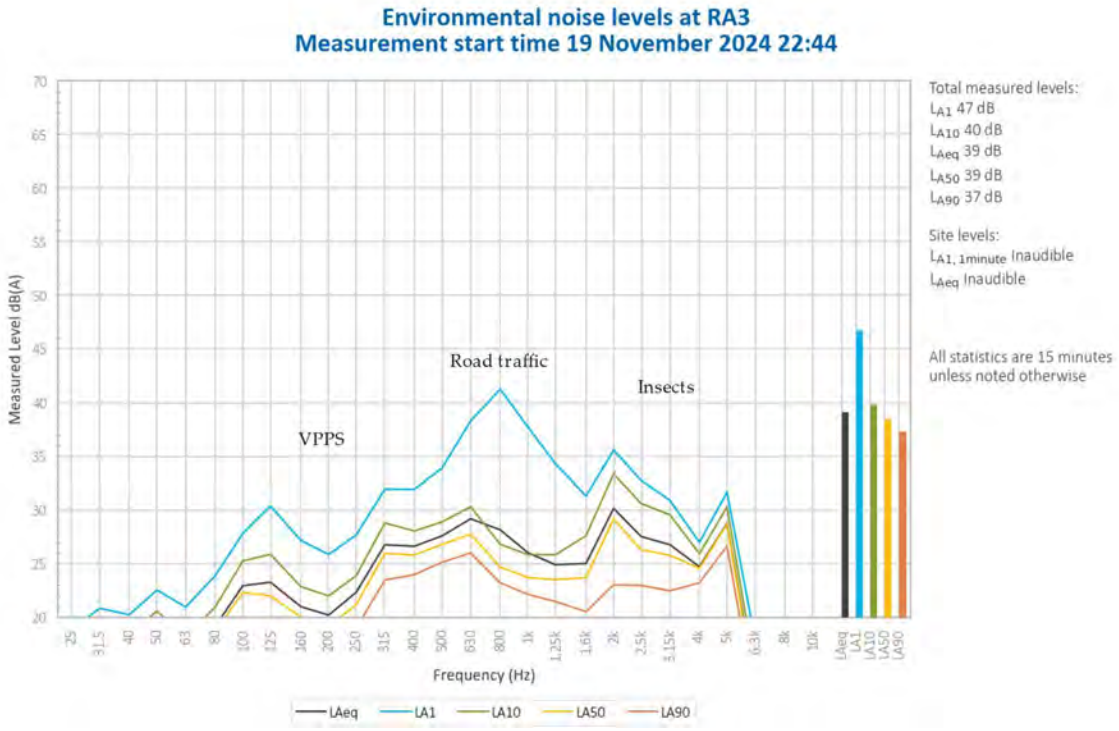


Figure 5.7 Environmental noise levels – RA3 (Kingfisher Shores) – Night

MC operations were inaudible during the entire measurement.

VPPS (primarily) and insects generated the total measured levels. Road traffic (car passby) generated the measured L_{A1}.

5.7 RA1 – Night

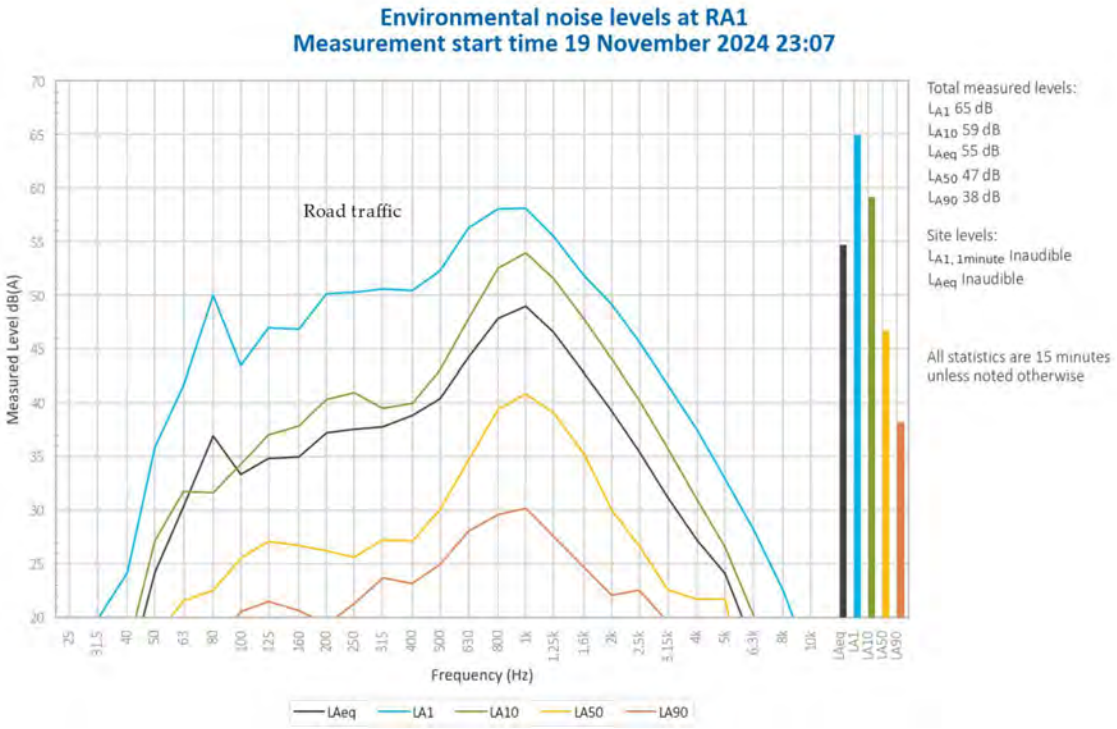


Figure 5.5 Environmental noise levels – RA1 (Pacific Highway) – Night

MC operations were inaudible during the entire measurement.

Road traffic dominated the total measured noise levels.

6 Summary

EMM Consulting Pty Ltd (EMM) was engaged by Great Southern Energy Pty Ltd (trading as Delta Coal) to complete a monthly noise survey of operations conducted at Mannering Colliery. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

Attended environmental noise monitoring described in this report was done during the evening and night periods on 19 November 2024 at three monitoring locations.

Noise levels from site complied with relevant limits at all monitoring locations during the November 2024 survey.

Appendix A

Noise perception and examples

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A.1 Noise levels

Table A.1 gives an indication as to how an average person perceives changes in noise level. Examples of common noise levels are provided in Figure A.1.

Table A.1 Perceived change in noise

Change in sound pressure level (dB)	Perceived change in noise
Up to 2	Not perceptible
3	Just perceptible
5	Noticeable difference
10	Twice (or half) as loud
15	Large change
20	Four times (or quarter) as loud

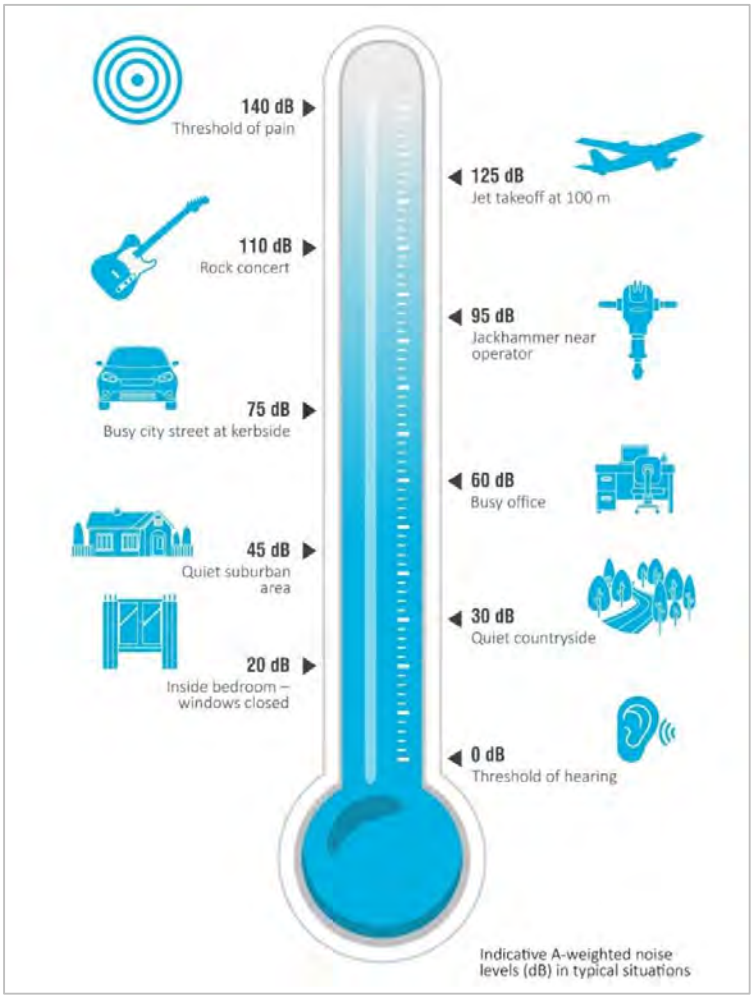


Figure A.1 Common noise levels

Appendix B
Regulator documents

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B.1 Project approval

SCHEDULE 3
SPECIFIC ENVIRONMENTAL CONDITIONS

NOISE

Construction Noise

1. The Applicant must ensure that the noise generated by any construction work is managed in accordance with the requirements outlined in the *Interim Construction Noise Guideline* (DECC, 2009).

Operational Noise Criteria

2. Except for the carrying out of construction works, the Applicant must ensure that the noise generated by the development does not exceed the criteria in Table 1 at any residence[a] on privately-owned land.

***Table 1**: Operational noise criteria dB(A)*

Noise Assessment Location	***Day*** $L_{Aeq\ (15\ min)}$	***Evening*** $L_{Aeq\ (15\ min)}$	***Night*** $L_{Aeq\ (15\ min)}$	***Night*** $L_{A1\ (1\ min)}$
4 – di Rocco	40	36	36	46
5 - Keighran	40	39	39	49
6 – Swan	40	37	37	47
7 – Druitt	40	35	35	45
8 – Macquarie Shores Home Village	42	42	42	47
9 - Jeans	40	37	37	47
11 - Jeans	40	36	36	46
18 - Jeans	40	36	36	46
20 – Knight and all other privately-owned residences	40	36	36	46

[a] *The Noise Assessment Locations referred to in Table 1 are shown in Appendix 4.*

Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the *NSW Noise Policy for Industry* (EPA, 2017).

3. The noise criteria in Table 1 do not apply if the Applicant has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Noise Operating Conditions

3A. The Applicant must:

(a) take all reasonable steps to minimise noise from construction and operational activities, including low frequency noise and other audible characteristics, associated with the development;

(b) implement reasonable and feasible noise attenuation measures on all plant and equipment that will operate in noise sensitive areas;

(c) operate a comprehensive noise management system commensurate with the risk of impact;

(d) take all reasonable steps to minimise the noise impacts of the development during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);

(e) carry out regular attended noise monitoring (at least once a month, unless otherwise agreed by the Planning Secretary) to determine whether the development is complying with the relevant conditions of this consent;

(f) regularly assess the noise monitoring data and modify or stop operations on the site to ensure compliance with the relevant conditions of this consent; and
(g) implement reasonable and feasible measures to further enclose the structure housing the coal crusher in order to further mitigate noise from operational activites.

3B. The Applicant must decommission the surface rotary breaker identified in the Statement of Commitments at Appendix 3, within 3 months of approval of Modification 5.

Noise Management Plan

3C. The Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
(a) be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;
(b) describe the measures to be implemented to ensure:
i. compliance with the noise criteria and operating conditions in this consent;
ii. best practice management is being employed; and
iii. noise impacts of the development are minimised during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);
(c) describe the noise management system in detail; and
(d) include a monitoring program that:
i. uses a combination of real-time and supplementary attended monitoring to evaluate the performance of the development;
ii. monitors noise at the nearest and/or most affected residences;
iii. includes a program to calibrate and validate the real-time noise monitoring results with the attended monitoring results over time;
iv. adequately supports the noise management system;
v. includes a protocol for distinguishing noise emissions of the development from any neighbouring developments; and
vi. includes a protocol for identifying any noise-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of any such event.

The Applicant must implement the Noise Management Plan as approved by the Planning Secretary.

SUBSIDENCE

4. The Applicant must limit its coal extraction methods on the site to first workings only, and must not undertake second workings.

5. Deleted.

SOIL AND WATER

Discharge

6. The Applicant must only discharge water from the site as expressly provided for by its EPL.

7. The Applicant must investigate, assess and report on the ecological interactions of minewater discharged from the site with the aquatic ecology of the unnamed creek and wetlands (and associated vegetation) between the minewater discharge point/s and Lake Macquarie. This report must:
(a) be prepared in consultation with EPA by suitably qualified expert/s whose appointment/s have been approved by the Planning Secretary;
(b) be submitted to the Planning Secretary by the end of March 2009; and
(c) assess the probable alterations in the local ecology attributable to previous and proposed minewater discharges and any future cessation of minewater discharge flows.

Water Management Plan

8. The Applicant must prepare a Water Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
(a) be prepared in consultation with DPIE Water by suitably qualified expert/s whose appointment/s have been approved by the Planning Secretary;
(b) be submitted the Planning Secretary by the end of March 2009; and
(c) include a:
- Site Water Balance;

B.2 Environment Protection Licence

Environment Protection Licence

L4 Waste

L4.1 The licensee must not cause, permit or allow any waste to be received at the premises, except the wastes expressly referred to in the column titled “Waste” and meeting the definition, if any, in the column titled “Description” in the table below.
Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled “Activity” in the table below.
Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste contained in the column titled “Other Limits” in the table below.
This condition does not limit any other conditions in this licence.

Code	Waste	Description	Activity	Other Limits
NA	Waste	Any other waste received on the premises for storage, treatment, processing, sorting or disposal and which receipt is not a scheduled activity under Schedule 1 of the POEO Act, as in force from time to time.		
NA	General or Specific exempted waste	Waste that meets all the conditions of a resource recovery exemption under Clause 51A of the Protection of the Environment Operations (Waste) Regulation 2014	As specified in each particular resource recovery exemption	N/A

L4.2 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.

L4.3 This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if it requires an environment protection licence.

L5 Noise limits

Note: Noise limits are not specified as a condition of this licence. Noise limits are prescribed with the conditions of Project Approval 06_0311 granted under the *Environmental Planning and Assessment Act 1979.* Under the *Environmental Planning and Assessment Act 1979* the Department of Planning is the appropriate authority in respect of the administration and regulation of the Project Approval.

B.3 Approved noise management plan

The above noise monitoring locations are representative of residential receivers most likely to be affected by CVC operational noise. Adherence with the relevant noise criteria at these locations will indicate that noise criteria will be met at other surrounding noise-sensitive locations.

4.2.3 Mannering Colliery

Consistent with the Noise Impact Assessment (EMM 2019) undertaken as part of the Project Approval MP06_0311 MOD 5, rural and residential receivers have been divided into three (3) receiver areas (RA's) with similar geographical and acoustic features. The following points are considered representative of each receiver area:

- RA1, rural residential properties south of MC and fronting the Pacific Highway. The dominant noise source in this area is road traffic. Birds, insects and other industrial sources are also audible at times.
- RA2, privately-owned relocatable residences within the MSHV, east of MC. The dominant noise sources in this RA are birds, insects, traffic and other industrial sources. Activities at MC are also noted to be audible at times.
- RA3, various rural residential residences on Tall Timbers Road at Kingfisher Shores and adjacent to the Chain Valley Bay suburban area. The dominant noise sources in this RA are birds, insects, other industrial sources and traffic movements. Activities at MC are also noted to be audible at times.

The attended noise monitoring locations for MC and relevant noise criteria are identified below in **Table 6**.

Table 6: Noise Monitoring Locations and Limits for Mannering Colliery

Location	Receivers Represented MP06_0311 ID	Coordinates	Day $L_{Aeq(15\ min)}$ dB (A)	Evening $L_{Aeq(15\ min)}$ dB (A)	Night $L_{Aeq(15\ min)}$ dB (A)	Night $L_{A1(1\ min)}$ dB (A)
RA1	4, 5, 6	364646E 6327221N	40	36	36	46
RA2	7, 8	365164E 6328332N	40	40	40	45
RA3	9, 11, 18, 20	365069E 6328953N	40	39	39	49

The above noise monitoring locations are representative of residential receivers most likely to be affected by MC operational noise. Adherence with the relevant noise criteria at these locations will indicate that noise criteria will be met at other surrounding noise-sensitive locations.

Appendix C
Calibration certificates

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Sydney Calibration Laboratory
Suite 4.03, Level 4, 3 Thomas Holt Drive, Macquarie Park NSW 2113, Australia
Accredited for compliance with ISO/IEC 17025 - Calibration. Laboratory No. 1301

CERTIFICATE OF CALIBRATION

Certificate No: CAU2300941

CALIBRATION OF:

Sound Level Meter:	Brüel & Kjær	2250	No: 2759405
Microphone:	Brüel & Kjær	4189	No: 2983733
Preamplifier:	Brüel & Kjær	ZC-0032	No: 22666
Supplied Calibrator:	None		
Software version:	BZ7224 Version 4.7.4	Pattern Approval:	-
Instruction manual:	BE1712-22	Identification:	N/A

CUSTOMER:

EMM Consulting Pty Limited
20 Chandos Street
St Leonards NSW 2065

CALIBRATION CONDITIONS:

Preconditioning:	4 hours at 23 °C
Environment conditions:	*see actual values in **Environmental conditions** sections*

SPECIFICATIONS:

The Sound Level Meter has been calibrated in accordance with the requirements as specified in IEC61672-1:2013 class 1.
Procedures from IEC 61672-3:2013 were used to perform the periodic tests.
The measurements included in this document are traceable to Australian/National standards.

PROCEDURE:

The measurements have been performed with the assistance of Brüel & Kjær Sound Level Meter Calibration System B&K 3630 with application software type 7763 (version 8.6 - DB: 8.60) and test procedure 2250-4189.

RESULTS:

	Initial calibration		Calibration prior to repair/adjustment
X	Calibration without repair/adjustment		Calibration after repair/adjustment

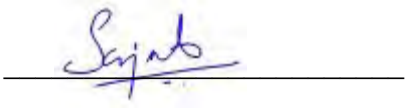
The reported expanded uncertainty is based on the standard uncertainty multiplied by a coverage factor $k = 2$ providing a level of confidence of approximately 95 %. The uncertainty evaluation has been carried out in accordance with EA-4/02 from elements originating from the standards, calibration method, effect of environmental conditions and any short time contribution from the device under calibration.

Date of Calibration:20/12/2023

Certificate issued:21/12/2023

Calibration Technician: Sajeeb Tharayil

Approved signatory: Sajeeb Tharayil



Reproduction of the complete certificate is allowed. Part of the certificate may only be reproduced after written permission.

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: C51438

EQUIPMENT TESTED : Acoustic Calibrator

Manufacturer:	Svantek
Type No:	SV 36 **Serial No:** 79952
Class:	1
Owner:	EMM Consulting Pty Ltd L3, 175 Scott Street Newcastle, NSW 2300
Tests Performed:	Measured Output Pressure level, Frequency & Distortion
Comments:	See Details and Class Tolerance overleaf.

CONDITION OF TEST:

Ambient Pressure	1013	hPa ±1 hPa	**Date of Receipt :**	02/10/2024
Temperature	22	°C ±1° C	**Date of Calibration :**	09/10/2024
Relative Humidity	42	% ±5%	**Date of Issue :**	09/10/2024

Acu-Vib Test Procedure: AVP02 (Calibrators)
Test Method: AS IEC 60942 - 2017

CHECKED BY: .....

AUTHORISED SIGNATURE: .....
Hein Soe

Accredited for compliance with ISO/IEC 17025 - Calibration

Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

This report applies only to the item identified in the report and may not be reproduced in part.

The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.

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Mannering Colliery

Monthly attended noise monitoring - December 2024

Prepared for Great Southern Energy Pty Ltd (trading as Delta Coal)

December 2024

Mannering Colliery

Monthly attended noise monitoring - December 2024

Great Southern Energy Pty Ltd (trading as Delta Coal)

E240010 RP1

December 2024

Version	Date	Prepared by	Reviewed by	Comments
V1	19 December 2024	Kirsten Garlick/Teanuanua Villierme	Katie Teyhan	Draft
V2	19 December 2024	Kirsten Garlick/Teanuanua Villierme	Katie Teyhan	Final

Approved by



Katie Teyhan
Associate Director - Acoustics Team Manager
19 December2024

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

This report has been prepared in accordance with the brief provided by Great Southern Energy Pty Ltd (trading as Delta Coal) and, in its preparation, EMM has relied upon the information collected at the times and under the conditions specified in this report. All findings, conclusions or recommendations contained in this report are based on those aforementioned circumstances. The contents of this report are private and confidential. This report is only for Great Southern Energy Pty Ltd (trading as Delta Coal)'s use in accordance with its agreement with EMM and is not to be relied on by or made available to any other party without EMM's prior written consent. Except as permitted by the Copyright Act 1968 (Cth) and only to the extent incapable of exclusion, any other use (including use or reproduction of this report for resale or other commercial purposes) is prohibited without EMM's prior written consent. Except where expressly agreed to by EMM in writing, and to the extent permitted by law, EMM will have no liability (and assumes no duty of care) to any person in relation to this document, other than to Great Southern Energy Pty Ltd (trading as Delta Coal) (and subject to the terms of EMM's agreement with Great Southern Energy Pty Ltd (trading as Delta Coal)).

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ABN: 28 141 736 558

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1 Introduction

1.1 Background

EMM Consulting Pty Ltd (EMM) was engaged by Great Southern Energy Pty Ltd (trading as Delta Coal) to conduct a monthly noise survey of operations at Mannering Colliery (MC, the site) located at Ruttleys Road, Mannering Park NSW. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

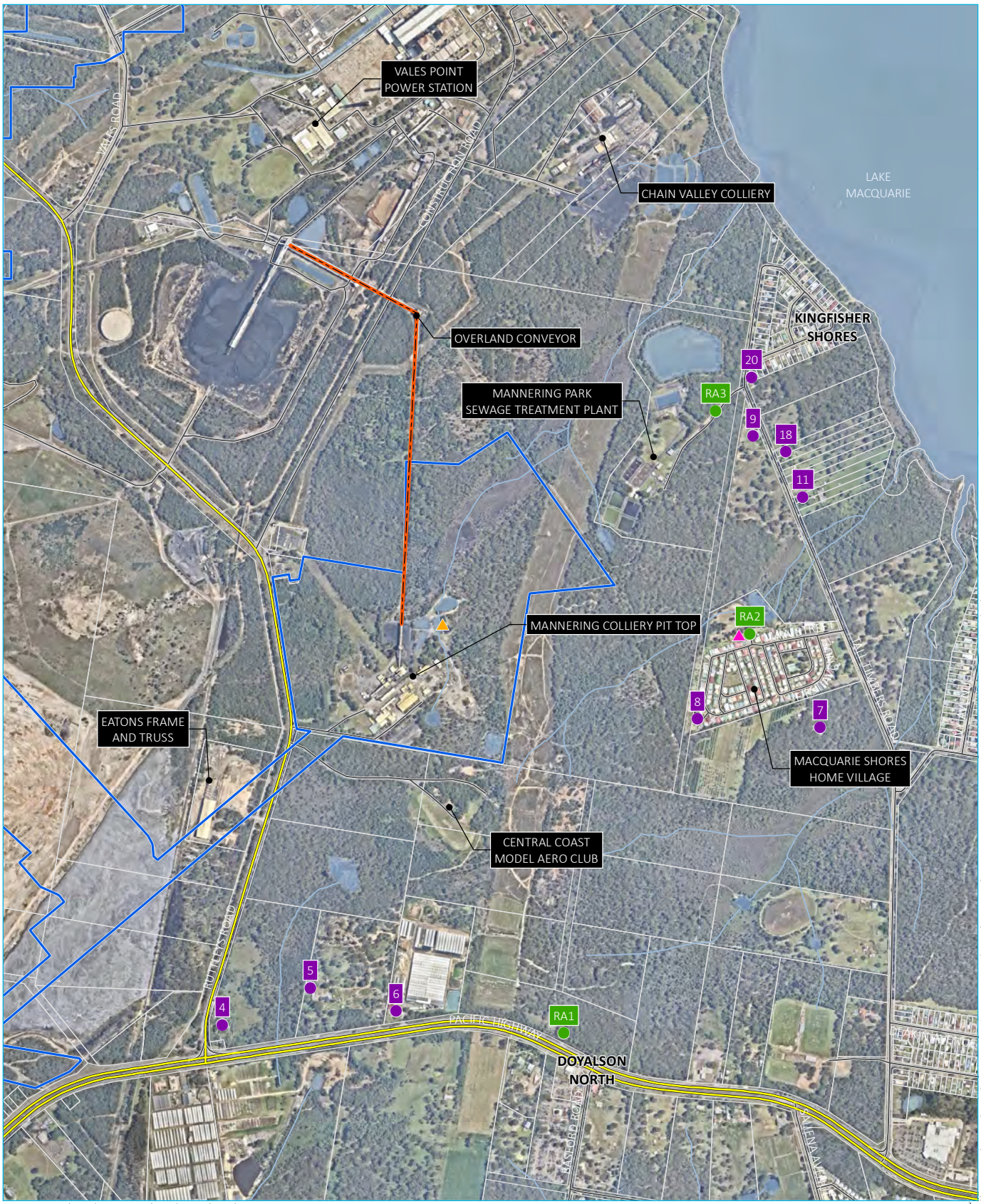
Attended environmental noise monitoring described in this report was done during the evening and night periods on 3 December 2024 at three monitoring locations.

1.2 Attended monitoring locations

Site monitoring locations are detailed in Table 1.1 and shown on Figure 1.1. It should be noted that Figure 1.1 shows actual monitoring positions, not necessarily the location of residences.

Table 1.1 Attended noise monitoring locations

Location descriptor/ID	Description/address	Coordinates (MGA56)	
		Easting	Northing
RA1	Pacific Highway, Doyalson North	364646	6327221
RA2	Macquarie Shores Home Village, Doyalson North	365164	6328332
RA3	Tall Timbers Road (northern end), Kingfisher Shores	365069	6328953



Source: EMM (2021); NearMap (2019); DFSI (2017)

0 250 500 m

GDA 1994 MGA Zone 56

N

\\Emmsvr1\emm3\2021\P210018 - Delta Noise 2021\8 GIS\02_Maps\N001_NoiseMonitoringLocations_20210225_01.mxd 26/02/2021

KEY

- Mannering Colliery project approval boundary
- Alignment of overland conveyor to VPPS
- Main road
- Local road
- Watercourse/drainage line
- Waterbody
- Cadastral boundary
- Assessment location
- Attended monitoring location
- Continuous monitoring location
- Meteorological station

Attended noise monitoring and assessment locations

Mannering Colliery
Figure 1.1

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1.3 Terminology and abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

Table 1.2 Terminology and abbreviations

Term/descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The "A" weighting scale is used to approximate how humans hear noise.
L_{Amax}	The maximum root mean squared A-weighted noise level over a time period.
L_{A1}	The A-weighted noise level which is exceeded for 1% of the time.
$L_{A1,1minute}$	The A-weighted noise level which is exceeded for 1% of the specified time period of 1 minute.
L_{A10}	The A-weighted noise level which is exceeded for 10% of the time.
L_{Aeq}	The energy average A-weighted noise level.
$L_{Aeq,15minute}$	The energy average A-weighted noise level over the specified time period of 15 minutes.
L_{A50}	The A-weighted noise level which is exceeded for 50% of the time, also the median noise level during a measurement period.
L_{A90}	The A-weighted noise level exceeded for 90% of the time, also referred to as the "background" noise level and commonly used to derive noise limits.
L_{Amin}	The minimum A-weighted noise level over a time period.
L_{Ceq}	The energy 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.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	Monday – Saturday: 7 am to 6 pm, on Sundays and Public Holidays: 8 am to 6 pm.
Evening	Monday – Saturday: 6 pm to 10 pm, on Sundays and Public Holidays: 6 pm to 10 pm.
Night	Monday – Saturday: 10 pm to 7 am, on Sundays and Public Holidays: 10 pm to 8 am.
NPfI	NSW EPA Noise Policy for Industry (2017)
Temperature inversion	A meteorological condition where the atmospheric temperature increases with altitude.

Appendix A provides further information that gives an indication as to how an average person perceives changes in noise level, and examples of common noise levels.

2 Noise limits

2.1 Project approval

Mannering Colliery noise limits are provided in Table 1, Condition 2 of Schedule 3 of the current project approval (PA) PA MP06_0311 dated 5 June 2020. Relevant sections of the PA are reproduced in Appendix B.1.

2.2 Environment protection licence

The current Environment Protection Licence (EPL) 191 dated 16 June 2023 references the PA with respect to noise limits. Relevant sections of the EPL are reproduced in Appendix B.2.

2.3 Noise management plan

The approved Noise Management Plan (NMP) (dated 20 April 2022) was prepared in line with the Mod 5 approval and in accordance with the NSW EPA 'Noise Policy for Industry' (NPfI) issued in October 2017. Three attended noise monitoring locations representative of the PA noise assessment locations have been adopted in the NMP for the purpose of determining compliance with relevant noise limits. Relevant sections of the NMP are reproduced in Appendix B.3.

2.4 Noise limits

Noise limits consistent with the PA, EPL and approved NMP are as shown in Table 2.1.

Table 2.1 Noise limits, dB

Location	Day $L_{Aeq,15minute}$	Evening $L_{Aeq,15minute}$	Night $L_{Aeq,15minute}$	Night $L_{A1,1minute}$
RA1	40	36	36	46
RA2	40	40	40	45
RA3	40	39	39	49

2.5 Meteorological conditions

The PA (Mod 5) states the following:

> Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Noise Policy for Industry (EPA, 2017).

Section 5.2 of the NPfI states that noise limits applicable under 'very noise-enhancing' conditions should be the limits that apply under 'standard' or 'noise-enhancing' conditions plus 5 dB.

As per the PA (Mod 5) and in accordance with the NPfI, limits are adjusted when monitoring is undertaken during the following 'very noise-enhancing' conditions:

- wind speeds greater than 3 m/s at 10 m above ground level;
- stability category F temperature inversion conditions with wind speeds greater than 2 m/s at 10 m above ground level; or
- stability category G temperature inversion conditions.

Therefore, if monthly noise monitoring occurs during 'very noise-enhancing' conditions, this assessment adopts a +5 dB adjustment to the limits shown in Table 2.1. This is indicated in Table 4.3, where relevant. It is noted that monthly noise monitoring for the site is always scheduled to occur during appropriate forecasted meteorological conditions in accordance with the 'Approved methods for the measurement and analysis of environmental noise in NSW' (EPA 2022) (the approved methods).

2.6 Additional considerations

Monitoring and reporting have been done in accordance with the NSW EPA's NPfI and the approved methods.

3 Methodology

3.1 Overview

Attended environmental noise monitoring was done in general accordance with Australian Standard AS1055:2018 'Acoustics – Description and Measurement of Environmental Noise' and relevant EPA requirements. Meteorological data was obtained from the Mannering Colliery on-site automatic weather station (AWS) which allowed correlation of atmospheric parameters with measured noise levels.

3.2 Attended noise monitoring

During this survey, attended noise monitoring was done during the evening and night periods at each location in accordance with the NMP. The duration of each measurement was 15 minutes. Atmospheric conditions were measured at each monitoring location.

Measured sound levels from various sources were noted during each measurement, and particular attention was paid to the extent of site contribution (if any) to measured levels. At each monitoring location, the site-only $L_{Aeq,15minute}$ and L_{Amax} were measured directly or determined by other methods detailed in Section 7.1 of the NPfI. For example, frequency filtering and observations when extraneous noise is low are some of the techniques used to isolate site noise contribution.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may be used in this report. When site noise is noted as IA, it was inaudible at the monitoring location. When site noise is noted as NM, this means it was audible but could not be quantified. All results noted as IA or NM in this report were due to one or more of the following:

- Site noise levels were very low, typically more than 10 dB below the measured background (L_{A90}), and unlikely to be noticed.
- Site noise levels were masked by other, more dominant, noise sources that are characteristic of the environment (such as breeze in foliage or continuous road traffic noise) that cannot be eliminated by monitoring at an alternate or intermediate location.
- It was not feasible or reasonable to employ methods such as move closer and back calculate. Cases may include rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

If exact noise levels from site could not be established due to masking by other noise sources in a similar frequency range but were determined to be at least 5 dB lower than relevant limits, then a maximum estimate of site noise may be provided. These are expressed as a 'less than' quantity, such as <20 dB or <30 dB.

For this assessment, the measured L_{Amax} has been used as a conservative estimate of $L_{A1,1minute}$. The EPA accepts sleep disturbance analysis based on either the $L_{A1,1minute}$ or L_{Amax} metrics, with the L_{Amax} representing a more conservative assessment of site noise emissions.

3.3 Meteorological data

This assessment determined stability categories throughout attended monitoring periods using the sigma-theta method as per Fact Sheet D of the NPfI. This data was sourced from the site AWS, in accordance with PA requirements.

3.4 Modifying factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. If applicable, modifying factor adjustments have been reported and added to measured site-only L_{Aeq}.

Low-frequency modifying factor penalties have only been applied if site was the only contributing low-frequency noise source. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

3.5 Instrumentation and personnel

Attended noise monitoring was conducted by acoustical consultant Teanuanua Villierme. Qualifications, experience and competency are in accordance with the Approved Methods and demonstration of this is available upon request.

Equipment used to measure environmental noise levels is detailed in Table 3.1. Calibration certificates are provided in Appendix C.

Table 3.1 Attended noise monitoring equipment

Item	Serial number	Calibration due date	Relevant standard
Brüel & Kjær 2250 sound level meter	2759405	20/12/2025	IEC 61672-1:2013
Svantek SV-36 calibrator	79952	9/10/2025	IEC 60942:2017

4 Results

4.1 Total measured noise levels and atmospheric conditions

Overall noise levels measured at each location during attended measurements are provided in Table 4.1.

Table 4.1 Total measured noise levels[1], dB – December 2024

Location	Start date and time	L_{Amax}	L_{A1}	L_{A10}	L_{Aeq}	L_{A50}	L_{A90}	L_{Amin}
RA1	3/12/2024 19:51	75	69	65	62	61	54	47
RA2	3/12/2024 20:15	56	54	53	51	51	49	46
RA3	3/12/2024 20:51	56	50	48	48	48	47	46
RA2	3/12/2024 22:30	47	41	39	38	38	37	35
RA3	3/12/2024 22:49	70	56	55	52	52	42	40
RA1	3/12/2024 23:12	79	67	60	56	45	41	37

Notes: 1. Levels in this table are not necessarily the result of activity at site.

Atmospheric conditions data measured by the operator during each measurement using a hand-held weather meter is shown in Table 4.2. The wind speed, direction and temperature were measured at approximately 1.5 m above ground. Attended noise monitoring is not done during rain, hail, or wind speeds above 5 m/s at microphone height.

Table 4.2 Measured atmospheric conditions – December 2024

Location	Start date and time	Temperature °C	Wind speed m/s	Wind direction °Magnetic north[1]	Cloud cover 1/8s
RA1	3/12/2024 19:51	25	<0.5	N/A	8
RA2	3/12/2024 20:15	25	<0.5	N/A	8
RA3	3/12/2024 20:51	25	<0.5	N/A	8
RA2	3/12/2024 22:30	24	<0.5	N/A	7
RA3	3/12/2024 22:49	24	<0.5	N/A	8
RA1	3/12/2024 23:12	24	<0.5	N/A	7

Notes: 1. "-" indicates calm conditions (wind speed <0.5 m/s) at monitoring location.

4.2 Site only noise levels

4.2.1 Modifying factors

There were no modifying factors, as defined in the NPfI, applicable during the survey.

4.2.2 Monitoring results

Table 4.3 provides site noise levels in the absence of other sources, where possible, and includes weather data from the site AWS. Noise limits are applicable under all weather conditions but have been adjusted, where relevant, during very noise-enhancing weather conditions as defined by the NPfI (refer to Section 2.5).

Table 4.3 Site noise levels and limits – December 2024

Location	Start date and time	Wind		Stability class	Standard limits apply?[1]	Limit, dB		Site level, dB[2]		Exceedance, dB	
		Speed (m/s)	Direction[3]			$L_{Aeq,15minute}$	$L_{A1,1minute}$	$L_{Aeq,15minute}$	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}
RA1	3/12/2024 19:51	2.2	344	F	No	41 (36+5)	N/A	IA	IA	Nil	N/A
RA2	3/12/2024 20:15	1.4	348	F	Yes	40	N/A	IA	IA	Nil	N/A
RA3	3/12/2024 20:51	1.2	350	F	Yes	39	N/A	IA	IA	Nil	N/A
RA2	3/12/2024 22:30	1.1	3	F	Yes	40	45	IA	IA	Nil	Nil
RA3	3/12/2024 22:49	1.6	20	F	Yes	39	49	IA	IA	Nil	Nil
RA1	3/12/2024 23:12	1.6	2	F	Yes	36	46	IA	IA	Nil	Nil

Notes: 1. If "No", adjusted noise limits (standard limit + 5 dB) apply during 'very noise-enhancing' meteorological conditions as stated in Section 2.5.

2. Site-only $L_{Aeq,15minute}$ include modifying factor adjustments if applicable.

3. Degrees magnetic north, "-" indicates calm conditions

4. N/A means "Not applicable". The $L_{A1,1minute}$ and L_{Amax} only apply during the night period.

5 Discussion

5.1 Noted noise sources

During attended monitoring, the time variations (temporal characteristics) of noise sources are considered in each measurement via statistical descriptors. From these observations, summaries have been derived for the location and provided in this chapter. Statistical 1/3 octave-band analysis of environmental noise was undertaken and the following figures display frequency ranges of various noise sources at each location for L_{A1}, L_{A10}, L_{Aeq}, L_{A50}, and L_{A90} descriptors. These figures also provide, graphically, statistical information for these noise levels.

An example (non-site related) is provided as Figure 5.1, where frogs and insects are seen to be generating noise at frequencies above 1,000 Hz, while industrial noise is generally observed at frequencies less than 1,000 Hz.

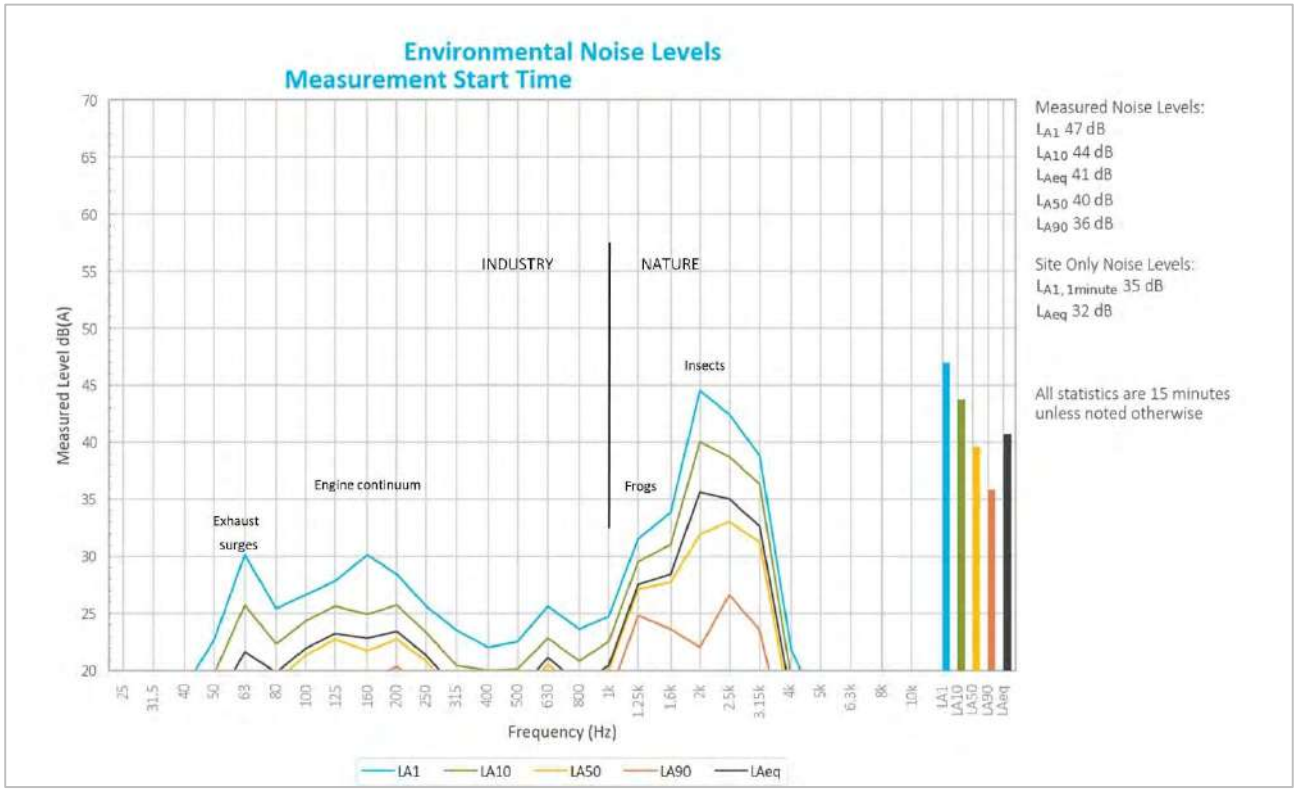


Figure 5.1 Example graph (refer to Section 5.1 for explanatory note)

5.2 RA1 – Evening

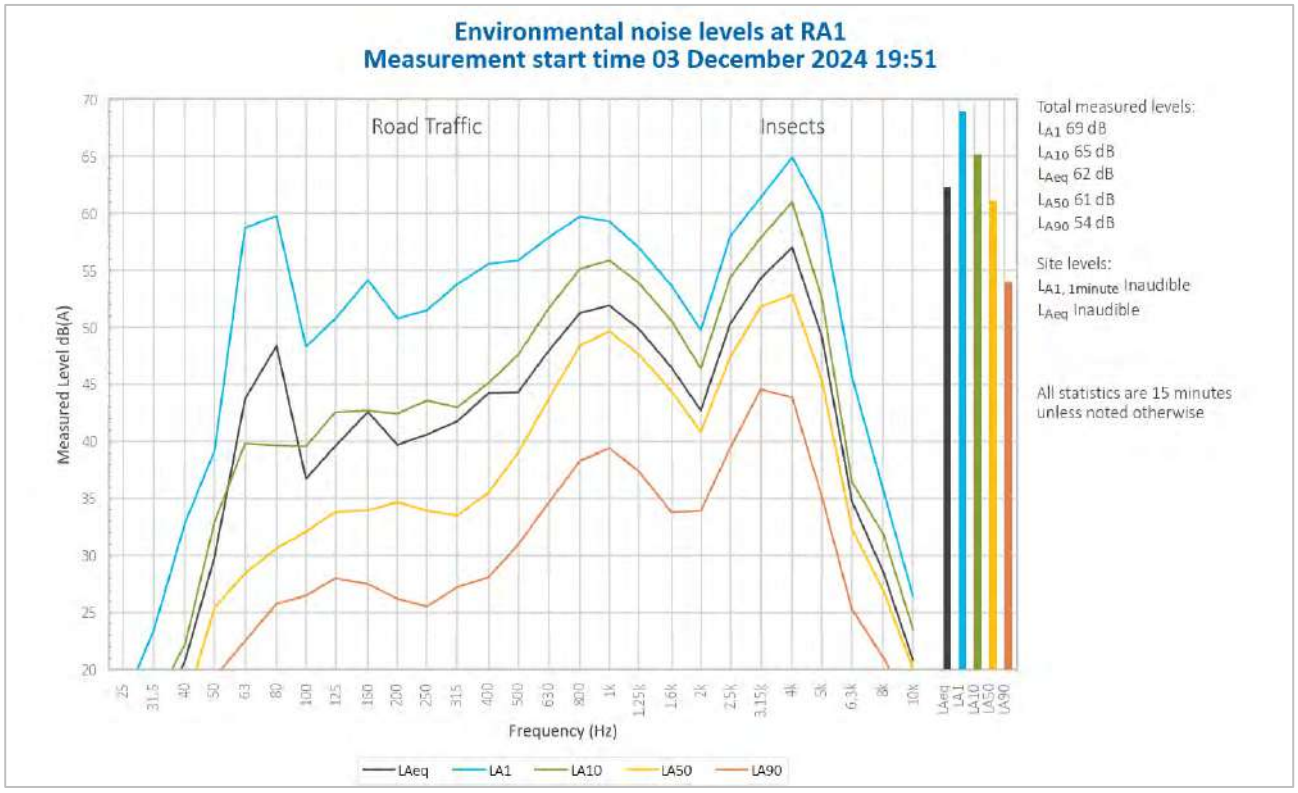


Figure 5.2 Environmental noise levels – RA1 (Pacific Highway) – Evening

MC operations were inaudible during the entire measurement.

Insects (primarily) and road traffic dominated measured noise levels.

5.3 RA2 – Evening

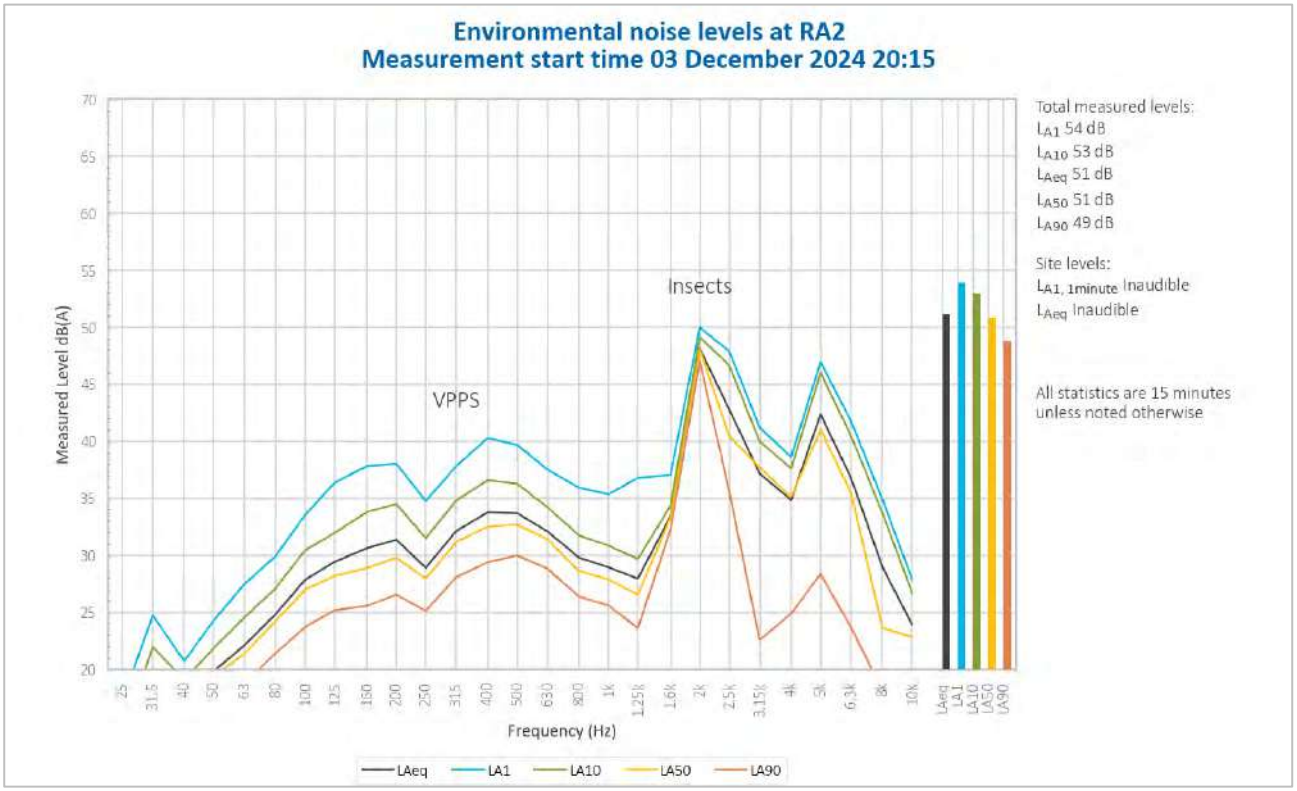


Figure 5.3 Environmental noise levels – RA2 (Macquarie Shores) – Evening

MC operations were inaudible during the entire measurement.

Insects were the main contributor to the total measured levels. Noise from Vales Point Power Station (VPPS) and road traffic also contributed to measured levels.

5.4 RA3 – Evening

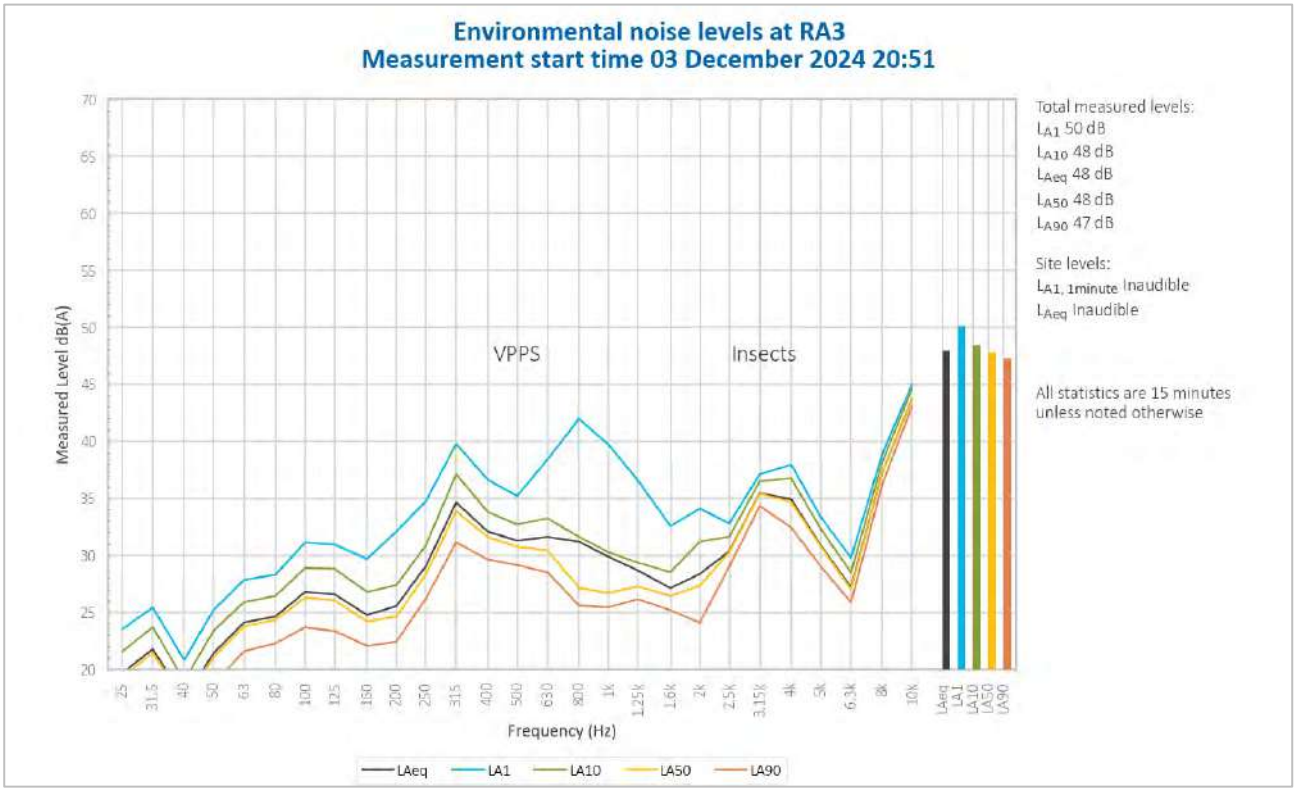


Figure 5.4 Environmental noise levels – RA3 (Kingfisher Shores) – Evening

MC operations were inaudible during the entire measurement.

Insects (primarily) and VPPS generated total measured levels. Road traffic also contributed to measured levels.

5.5 RA2 – Night

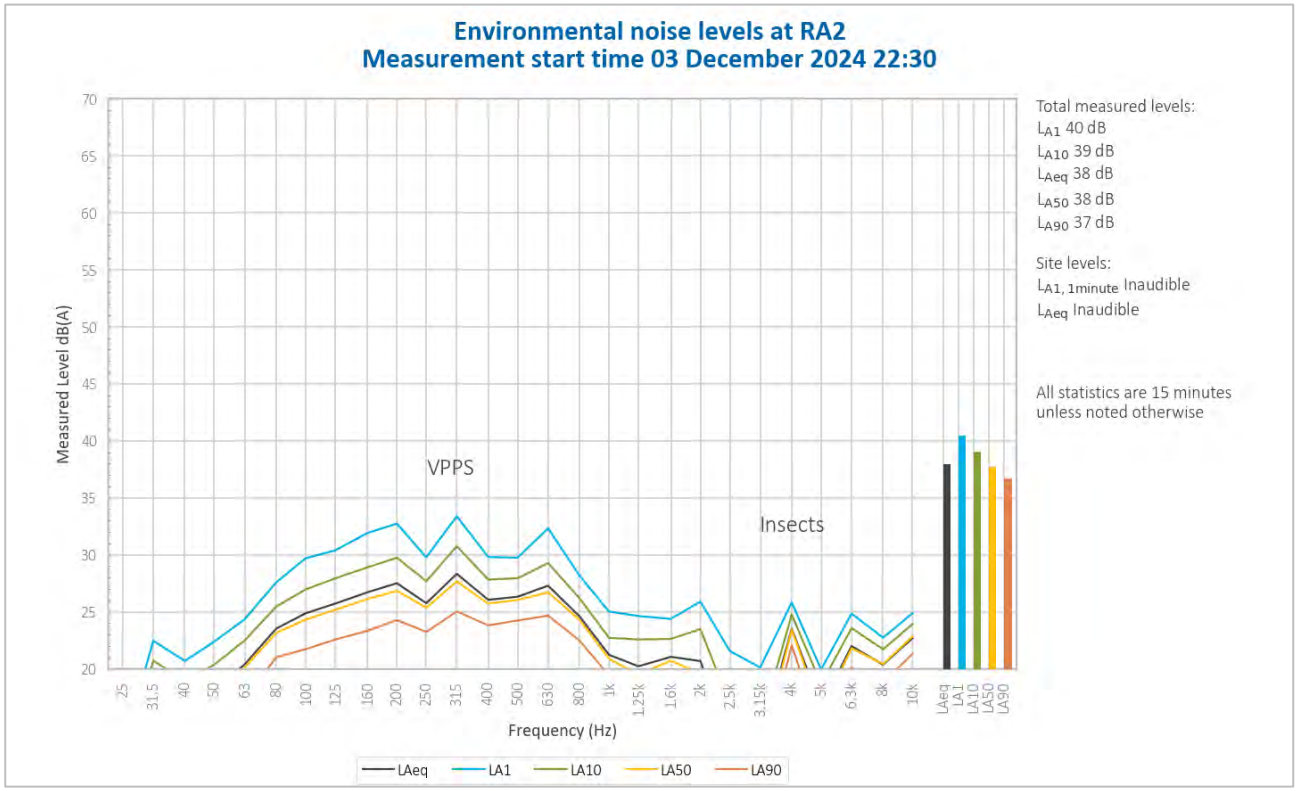


Figure 5.6 Environmental noise levels – RA2 (Macquarie Shores) – Night

MC operations were inaudible during the entire measurement.

VPPS (primarily) and insects were the main contributors to the total measured levels.

5.6 RA3 – Night

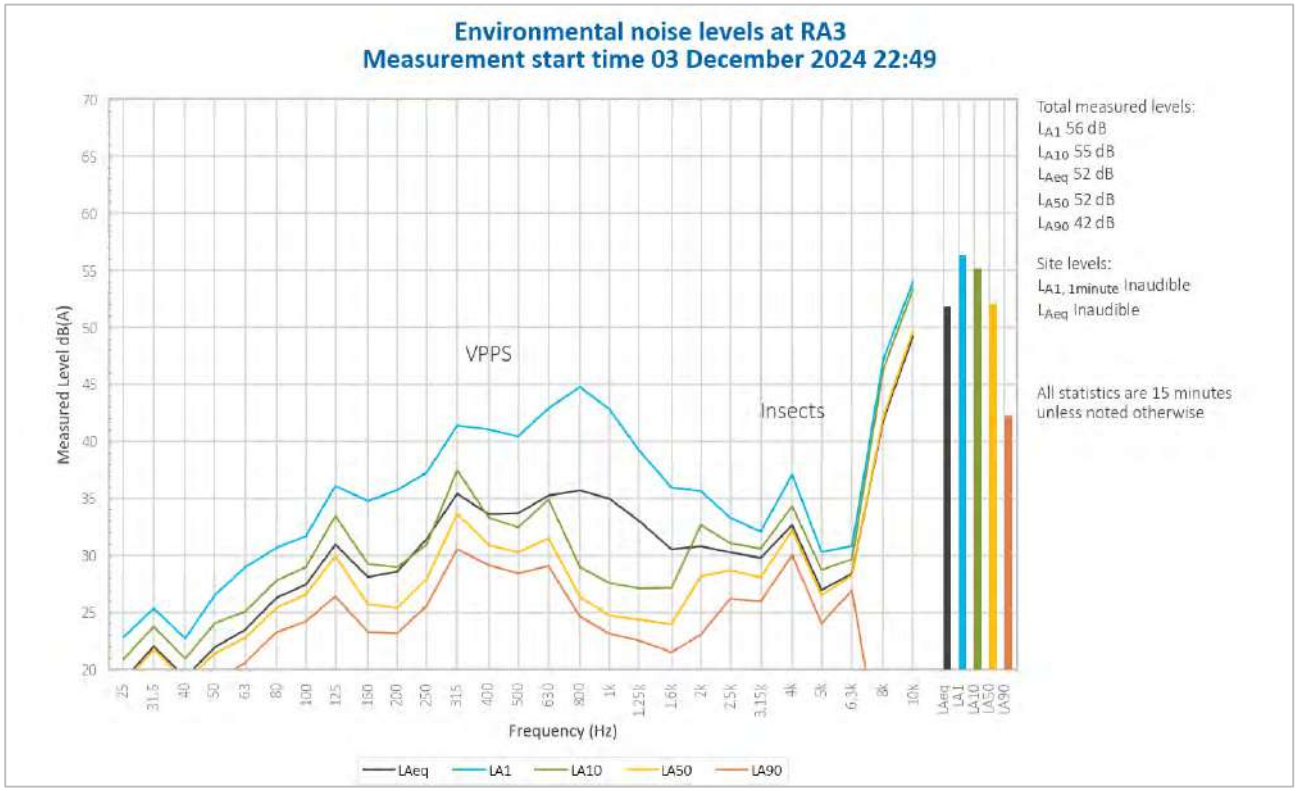


Figure 5.7 Environmental noise levels – RA3 (Kingfisher Shores) – Night

MC operations were inaudible during the entire measurement.

Insects, VPPS and aircraft noise were the main contributors to the total measured levels. Road traffic (car passby) generated the measured L_{A1}.

5.7 RA1 – Night

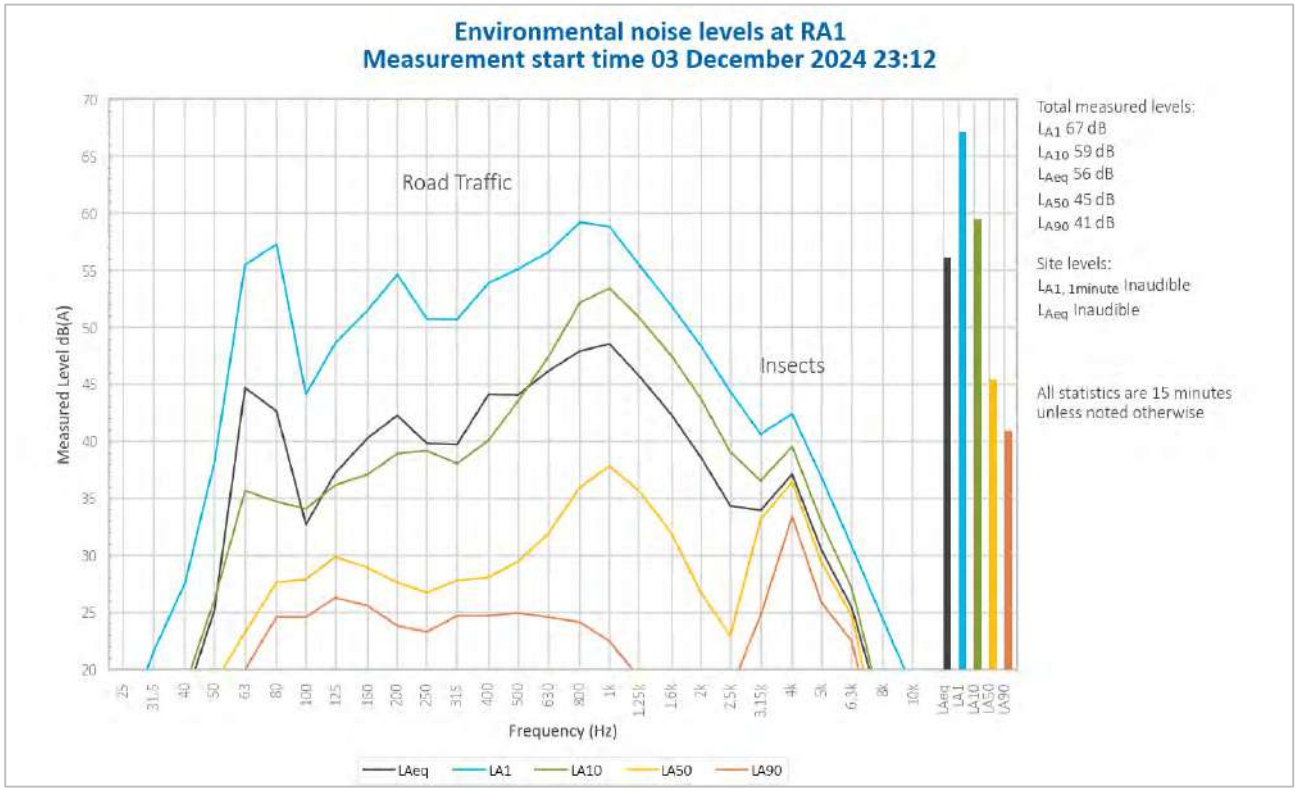


Figure 5.5 Environmental noise levels – RA1 (Pacific Highway) – Night

MC operations were inaudible during the entire measurement.

Road traffic dominated the total measured noise levels. Insects also contributed to the measured levels.

6 Summary

EMM Consulting Pty Ltd (EMM) was engaged by Great Southern Energy Pty Ltd (trading as Delta Coal) to complete a monthly noise survey of operations conducted at Mannering Colliery. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

Attended environmental noise monitoring described in this report was done during the evening and night periods on 3 December 2024 at three monitoring locations.

Noise levels from site complied with relevant limits at all monitoring locations during the December 2024 survey.

Appendix A
Noise perception and examples

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A.1 Noise levels

Table A.1 gives an indication as to how an average person perceives changes in noise level. Examples of common noise levels are provided in Figure A.1.

Table A.1 Perceived change in noise

Change in sound pressure level (dB)	Perceived change in noise
Up to 2	Not perceptible
3	Just perceptible
5	Noticeable difference
10	Twice (or half) as loud
15	Large change
20	Four times (or quarter) as loud



Figure A.1 Common noise levels

Appendix B
Regulator documents

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B.1 Project approval

SCHEDULE 3
SPECIFIC ENVIRONMENTAL CONDITIONS

NOISE

Construction Noise

1. The Applicant must ensure that the noise generated by any construction work is managed in accordance with the requirements outlined in the *Interim Construction Noise Guideline* (DECC, 2009).

Operational Noise Criteria

2. Except for the carrying out of construction works, the Applicant must ensure that the noise generated by the development does not exceed the criteria in Table 1 at any residence[a] on privately-owned land.

***Table 1**: Operational noise criteria dB(A)*

Noise Assessment Location	***Day*** $L_{Aeq\ (15\ min)}$	***Evening*** $L_{Aeq\ (15\ min)}$	***Night*** $L_{Aeq\ (15\ min)}$	***Night*** $L_{A1\ (1\ min)}$
4 – di Rocco	40	36	36	46
5 - Keighran	40	39	39	49
6 – Swan	40	37	37	47
7 – Druitt	40	35	35	45
8 – Macquarie Shores Home Village	42	42	42	47
9 - Jeans	40	37	37	47
11 - Jeans	40	36	36	46
18 - Jeans	40	36	36	46
20 – Knight and all other privately-owned residences	40	36	36	46

[a] *The Noise Assessment Locations referred to in Table 1 are shown in Appendix 4.*

Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the *NSW Noise Policy for Industry* (EPA, 2017).

3. The noise criteria in Table 1 do not apply if the Applicant has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Noise Operating Conditions

3A. The Applicant must:

(a) take all reasonable steps to minimise noise from construction and operational activities, including low frequency noise and other audible characteristics, associated with the development;

(b) implement reasonable and feasible noise attenuation measures on all plant and equipment that will operate in noise sensitive areas;

(c) operate a comprehensive noise management system commensurate with the risk of impact;

(d) take all reasonable steps to minimise the noise impacts of the development during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);

(e) carry out regular attended noise monitoring (at least once a month, unless otherwise agreed by the Planning Secretary) to determine whether the development is complying with the relevant conditions of this consent;

(f) regularly assess the noise monitoring data and modify or stop operations on the site to ensure compliance with the relevant conditions of this consent; and
(g) implement reasonable and feasible measures to further enclose the structure housing the coal crusher in order to further mitigate noise from operational activites.

3B. The Applicant must decommission the surface rotary breaker identified in the Statement of Commitments at Appendix 3, within 3 months of approval of Modification 5.

Noise Management Plan

3C. The Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
(a) be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;
(b) describe the measures to be implemented to ensure:
i. compliance with the noise criteria and operating conditions in this consent;
ii. best practice management is being employed; and
iii. noise impacts of the development are minimised during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI);
(c) describe the noise management system in detail; and
(d) include a monitoring program that:
i. uses a combination of real-time and supplementary attended monitoring to evaluate the performance of the development;
ii. monitors noise at the nearest and/or most affected residences;
iii. includes a program to calibrate and validate the real-time noise monitoring results with the attended monitoring results over time;
iv. adequately supports the noise management system;
v. includes a protocol for distinguishing noise emissions of the development from any neighbouring developments; and
vi. includes a protocol for identifying any noise-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of any such event.

The Applicant must implement the Noise Management Plan as approved by the Planning Secretary.

SUBSIDENCE

4. The Applicant must limit its coal extraction methods on the site to first workings only, and must not undertake second workings.

5. Deleted.

SOIL AND WATER

Discharge

6. The Applicant must only discharge water from the site as expressly provided for by its EPL.

7. The Applicant must investigate, assess and report on the ecological interactions of minewater discharged from the site with the aquatic ecology of the unnamed creek and wetlands (and associated vegetation) between the minewater discharge point/s and Lake Macquarie. This report must:
(a) be prepared in consultation with EPA by suitably qualified expert/s whose appointment/s have been approved by the Planning Secretary;
(b) be submitted to the Planning Secretary by the end of March 2009; and
(c) assess the probable alterations in the local ecology attributable to previous and proposed minewater discharges and any future cessation of minewater discharge flows.

Water Management Plan

8. The Applicant must prepare a Water Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
(a) be prepared in consultation with DPIE Water by suitably qualified expert/s whose appointment/s have been approved by the Planning Secretary;
(b) be submitted the Planning Secretary by the end of March 2009; and
(c) include a:
- Site Water Balance;

B.2 Environment Protection Licence

Environment Protection Licence

L4 Waste

L4.1 The licensee must not cause, permit or allow any waste to be received at the premises, except the wastes expressly referred to in the column titled “Waste” and meeting the definition, if any, in the column titled “Description” in the table below.
Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled “Activity” in the table below.
Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste contained in the column titled “Other Limits” in the table below.
This condition does not limit any other conditions in this licence.

Code	Waste	Description	Activity	Other Limits
NA	Waste	Any other waste received on the premises for storage, treatment, processing, sorting or disposal and which receipt is not a scheduled activity under Schedule 1 of the POEO Act, as in force from time to time.		
NA	General or Specific exempted waste	Waste that meets all the conditions of a resource recovery exemption under Clause 51A of the Protection of the Environment Operations (Waste) Regulation 2014	As specified in each particular resource recovery exemption	N/A

L4.2 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.

L4.3 This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if it requires an environment protection licence.

L5 Noise limits

Note: Noise limits are not specified as a condition of this licence. Noise limits are prescribed with the conditions of Project Approval 06_0311 granted under the *Environmental Planning and Assessment Act 1979.* Under the *Environmental Planning and Assessment Act 1979* the Department of Planning is the appropriate authority in respect of the administration and regulation of the Project Approval.

B.3 Approved noise management plan

The above noise monitoring locations are representative of residential receivers most likely to be affected by CVC operational noise. Adherence with the relevant noise criteria at these locations will indicate that noise criteria will be met at other surrounding noise-sensitive locations.

4.2.3 Mannering Colliery

Consistent with the Noise Impact Assessment (EMM 2019) undertaken as part of the Project Approval MP06_0311 MOD 5, rural and residential receivers have been divided into three (3) receiver areas (RA's) with similar geographical and acoustic features. The following points are considered representative of each receiver area:

- RA1, rural residential properties south of MC and fronting the Pacific Highway. The dominant noise source in this area is road traffic. Birds, insects and other industrial sources are also audible at times.
- RA2, privately-owned relocatable residences within the MSHV, east of MC. The dominant noise sources in this RA are birds, insects, traffic and other industrial sources. Activities at MC are also noted to be audible at times.
- RA3, various rural residential residences on Tall Timbers Road at Kingfisher Shores and adjacent to the Chain Valley Bay suburban area. The dominant noise sources in this RA are birds, insects, other industrial sources and traffic movements. Activities at MC are also noted to be audible at times.

The attended noise monitoring locations for MC and relevant noise criteria are identified below in **Table 6**.

Table 6: Noise Monitoring Locations and Limits for Mannering Colliery

Location	Receivers Represented MP06_0311 ID	Coordinates	Day $L_{Aeq(15\ min)}$ dB (A)	Evening $L_{Aeq(15\ min)}$ dB (A)	Night $L_{Aeq(15\ min)}$ dB (A)	Night $L_{A1(1\ min)}$ dB (A)
RA1	4, 5, 6	364646E 6327221N	40	36	36	46
RA2	7, 8	365164E 6328332N	40	40	40	45
RA3	9, 11, 18, 20	365069E 6328953N	40	39	39	49

The above noise monitoring locations are representative of residential receivers most likely to be affected by MC operational noise. Adherence with the relevant noise criteria at these locations will indicate that noise criteria will be met at other surrounding noise-sensitive locations.

Appendix C
Calibration certificates

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Sydney Calibration Laboratory
Suite 4.03, Level 4, 3 Thomas Holt Drive, Macquarie Park NSW 2113, Australia
Accredited for compliance with ISO/IEC 17025 - Calibration. Laboratory No. 1301

CERTIFICATE OF CALIBRATION

Certificate No: CAU2300941

CALIBRATION OF:

Sound Level Meter:	Brüel & Kjær	2250	No: 2759405
Microphone:	Brüel & Kjær	4189	No: 2983733
Preamplifier:	Brüel & Kjær	ZC-0032	No: 22666
Supplied Calibrator:	None		
Software version:	BZ7224 Version 4.7.4	Pattern Approval:	-
Instruction manual:	BE1712-22	Identification:	N/A

CUSTOMER:

EMM Consulting Pty Limited
20 Chandos Street
St Leonards NSW 2065

CALIBRATION CONDITIONS:

Preconditioning:	4 hours at 23 °C
Environment conditions:	*see actual values in **Environmental conditions** sections*

SPECIFICATIONS:

The Sound Level Meter has been calibrated in accordance with the requirements as specified in IEC61672-1:2013 class 1.
Procedures from IEC 61672-3:2013 were used to perform the periodic tests.
The measurements included in this document are traceable to Australian/National standards.

PROCEDURE:

The measurements have been performed with the assistance of Brüel & Kjær Sound Level Meter Calibration System B&K 3630 with application software type 7763 (version 8.6 - DB: 8.60) and test procedure 2250-4189.

RESULTS:

	Initial calibration		Calibration prior to repair/adjustment
X	Calibration without repair/adjustment		Calibration after repair/adjustment

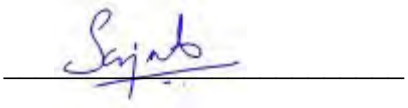
The reported expanded uncertainty is based on the standard uncertainty multiplied by a coverage factor $k = 2$ providing a level of confidence of approximately 95 %. The uncertainty evaluation has been carried out in accordance with EA-4/02 from elements originating from the standards, calibration method, effect of environmental conditions and any short time contribution from the device under calibration.

Date of Calibration:20/12/2023

Certificate issued:21/12/2023

Calibration Technician: Sajeeb Tharayil

Approved signatory: Sajeeb Tharayil



Reproduction of the complete certificate is allowed. Part of the certificate may only be reproduced after written permission.

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: C51438

EQUIPMENT TESTED : Acoustic Calibrator

Manufacturer:	Svantek
Type No:	SV 36 **Serial No:** 79952
Class:	1
Owner:	EMM Consulting Pty Ltd L3, 175 Scott Street Newcastle, NSW 2300
Tests Performed:	Measured Output Pressure level, Frequency & Distortion
Comments:	See Details and Class Tolerance overleaf.

CONDITION OF TEST:

Ambient Pressure	1013	hPa ±1 hPa	**Date of Receipt :**	02/10/2024
Temperature	22	°C ±1° C	**Date of Calibration :**	09/10/2024
Relative Humidity	42	% ±5%	**Date of Issue :**	09/10/2024

Acu-Vib Test Procedure: AVP02 (Calibrators)
Test Method: AS IEC 60942 - 2017

CHECKED BY: .....

AUTHORISED SIGNATURE: .....
Hein Soe

Accredited for compliance with ISO/IEC 17025 - Calibration

Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

This report applies only to the item identified in the report and may not be reproduced in part.

The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.

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Appendix 5: Annual Subsidence Report

SITE:	Chain Valley Colliery and Mannering Colliery
Department:	Health, Safety and Environment
REPORT TITLE:	2024 Annual Subsidence Report
Prepared by:	Lachlan McWha – Environment & Approvals Coordinator
Report Date:	19 March 2025
Distribution:	Department of Planning, Housing and Infrastructure NSW Resources Regulator

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1 Introduction

1.1 Background

Chain Valley Colliery (CVC) and Mannering Colliery (MC) are underground coal mines on the southern side of Lake Macquarie, approximately 60 kilometres (km) south of Newcastle and 80 km north of Sydney.

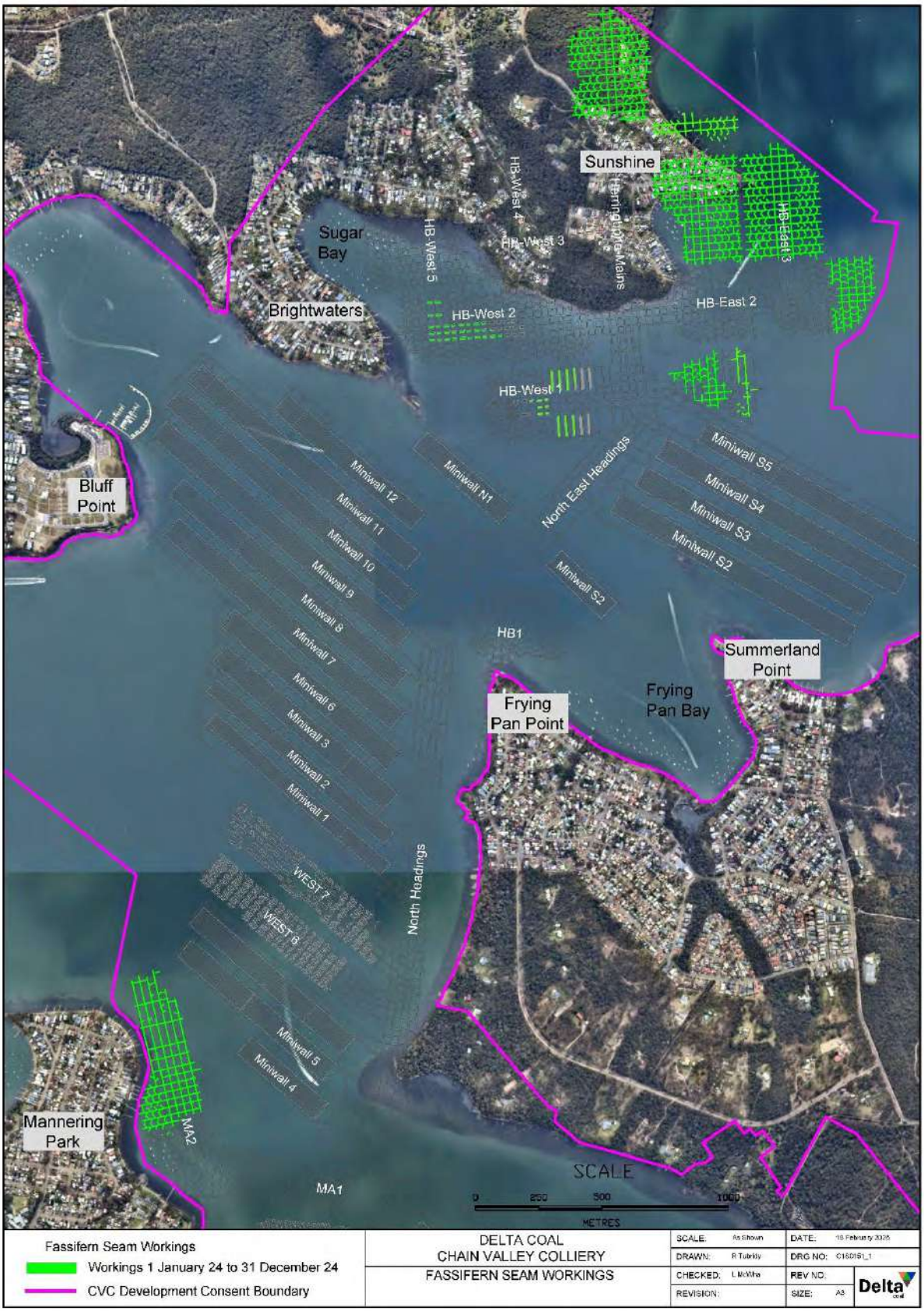
CVC operates under Development Consent SSD-5465, as modified, which was originally granted on 23 December 2013 by the then Minister for Planning and Infrastructure under Part 4, Division 4.1 of the NSW Environmental Planning and Assessment Act 1979 (EP&A Act), which relates to State significant development (SSD). The consent permits underground bord and pillar mining as well as Miniwall mining in the Fassifern Seam at a maximum rate of 2.1 million tonnes per annum (Mtpa) of run-of-mine (ROM) coal, with all secondary extraction confined to areas under the Lake Macquarie water body.

MC was granted Project Approval (MP06_0311) under Part 3A of the EP&A Act on 12 March 2008 and, as modified, permits the extraction of up to 1.1 Mtpa of ROM coal until 31 December 2027. It also permits the handling of up to 2.1 Mtpa ROM coal with that coal transported via a dedicated overland conveyor to Delta Electricity's Vales Point Power Station (VPPS) for domestic energy generation.

1.2 Purpose

This Annual Subsidence Report (ASR) provides an overview of subsidence monitoring data and management performance for CVC and MC in the 2024 calendar year and has been prepared as an appendix to the Chain Valley Colliery and Mannering Colliery Annual reviews.

Figure 1 - CVC Fassifern Workings (pink represents 2024 Mining Progress)



1.3 Approvals and Legislation

This ASR has been prepared to meet the annual subsidence report requirement within the CVC SSD-5465 Statement of Commitments.

Subsidence monitoring is undertaken in accordance with Chain Valley Colliery's approved Subsidence Monitoring Programs (SMP):

- Chain Valley Colliery, Subsidence Monitoring Program, Northern Mining Area First Workings and Lake Macquarie Extraction, August 2021.
- Chain Valley Colliery, Subsidence Monitoring Program, Miniwall S5 and Northern Mining Area Pillar Extraction, November 2020 (forms part of the approved CVC MWS5 and NMA Extraction Plan Amendment 1).

1.4 Stakeholder Engagement

Delta Coal has consulted with the local community via the CVC and MC Community Consultative Committee (CCC) on subsidence results at the four quarterly meetings undertaken in 2024. This report is appended to the 2024 Chain Valley Colliery and Mannering Colliery Annual Reviews and will be made available to the CCC and applicable stakeholders as well as being made publicly available on the Delta Coal website.

1.5 Supporting Documentation

This ASR is informed by the relevant sections of the following documents:

- March 2024, Lake Macquarie Benthos Survey Report No. 24. Report prepared by J.H. & E.S. Laxton – Environmental Consultants P/L for Delta Coal
- June 2024, Seagrass Survey of Chain Valley Bay, Summerland Point, Bardens Bay and Crangan Bay, Lake Macquarie, NSW (Results for 2008 to 2024). Report prepared by J.H. & E.S. Laxton – Environmental Consultants P/L for Delta Coal
- 2023 Benthic Communities Management Plan, Delta Coal
- 2022 Seagrass Management Plan, Delta Coal
- 2020 Subsidence Monitoring Program, Delta Coal (Extraction Plan Miniwall S5 and Northern Pillar Extraction)
- 2021 Subsidence Monitoring Program, Delta Coal (Northern Mining Area First Workings and Lake Macquarie Pillar Extraction)
- 2020 Chain Valley Colliery Miniwall S5 and Northern Pillar Area Extraction Plan

- 2021 Built Features Management Plan, Delta Coal
- 2021 Public Safety Management Plan, Delta Coal
- 2024 Benthic Communities Monitoring Statistical Analysis Report prepared by EMM Consulting for Delta Coal

2 Monitoring and Comparison

2.1 Monitoring Overview

As detailed in Section 1.4.1, CVC has a two actively approved Subsidence Monitoring Programs, with one program addressing Miniwall S5 and pillar extraction and the other addressing first-workings and pillar extraction in Lake Macquarie. Scope of Subsidence Monitoring.

Monitoring undertaken in 2024 comprised:

- Shoreline and terrestrial monitoring of fixed reference points installed prior to underground mining to determine levels of vertical subsidence;
- Bathymetric scans of the lake bed in areas of secondary extraction, surveys are undertaken prior to, during and following secondary extraction; and
- Visual inspections undertaken of areas overlying mining zones, with particular focus on steep slopes and cliffs in built areas, for signs of possible surface disturbance.

2.1.1 Shoreline (High Water Mark Subsidence Control Zones)

In accordance with Condition 1, Schedule 4 of SSD-5465, vertical subsidence within the HWMSB is limited to a maximum subsidence (S_{max}) of 20 mm. The primary control to achieve this limit is the implementation of a conservative mine design, utilising first workings only with long term stable pillars in this zone.

To monitor the effectiveness of the mine design, monitoring of the shoreline is carried out at fixed reference marks (subsidence marks) which are surveyed at regular intervals. The frequency is dependent on the proximity to active operations.

2.1.2 Seagrass

Condition 2, Schedule 4 of SSD-5465 requires that negligible environmental consequences occur to the seagrass beds due to underground mining operations (in Lake Macquarie). Surveys of the seagrass extents are undertaken in order to monitor impacts on the seagrass population.

Delta Coal's *Seagrass Management Plan* (2022) outlines the methodology used to determine changes to composition and quantity of seagrass populations in Lake Macquarie as a result of mining activities at CVC.

Subsidence monitoring of the lakebed is undertaken via bathymetric survey over CVC's current mining areas to validate subsidence predictions.

2.1.3 Benthic Communities

Annual surveys of the lakebed are undertaken in order to monitor variations in the composition and density of benthos due to mining, environmental and/or other seasonal factors. Condition 2, Schedule 4 of SSD-5465 permits minor environmental consequences to benthic communities as a result of mining induced subsidence.

Delta Coal's *Benthic Communities Management Plan* (Delta Coal 2023) outlines the methodology used to determine changes to species diversity and abundance.

Subsidence monitoring of the lakebed is undertaken via bathymetric survey over CVC's current mining area in order to validate subsidence predictions and to determine approximate levels of subsidence on specific benthic sample locations.

2.1.4 Methods of Subsidence Monitoring

2.1.4.1 Overview

Subsidence monitoring at CVC includes a combination of bathymetric surveys and terrestrial level monitoring. Results are used to validate modelled outcomes; enable early detection of subsidence trends which allows adaptive management and the implementation of contingency measures.

2.1.4.2 Bathymetric Surveys

A third party is commissioned to undertake bathymetric surveys over the areas of past, current and proposed workings at CVC and MC. Baseline bathymetric data was provided to NSW Office of Environment and Heritage (OEH) in 2010. The accuracy of the bathymetric surveys are ±0.1 m.

Since 2012, bathymetric surveys have been completed on at least an annual basis with ongoing surveys providing accurate details of the lake depth within CVC's mining areas. During the 2017 survey it was identified that the site had exceeded vertical subsidence predictions over the MW7-12 mining area by approximately 370mm. LakeCoal (the operator at that time) notified the relevant authorities of the exceedance and submitted an incident report on 11 November 2017. Subsidence associated with MW7-12 has proven to have stabilised since, with no discernible affect identified within seagrass and benthic communities monitoring.

Table 1 - Chain Valley Colliery Secondary Extraction Subsidence Monitoring Commitments

Secondary Extraction Panel	Approved S_{max}(mm)	Predicted S_{max} (mm)	Measured S_{max} (mm)	Extraction Completion date	Post Extraction Bathymetric Scanning Commitment
Miniwall S1	780	420	<200	September 2018	Annual for 3 years unless TARP triggered
Miniwall S2	780	300	200-250	March 2020	Annual for 3 years unless TARP triggered
Miniwall S3	780	300	350-400	July 2020	Annual for 3 years unless TARP triggered
Miniwall S4	780	300	500-550	February 2021	Annual for 3 years unless TARP triggered
Miniwall S5	780	500	350-400	August 2021	Annual for 3 years unless TARP triggered
NMA Pillar Extraction	780	500	n/a	Not commenced in 2023.	Annual for 3 years unless TARP triggered

Monitoring will continue in accordance with the approved *Miniwall S5 and Northern Pillar Extraction Plan* in the 2024 period.

A software error was identified in the bathymetric survey results in the 2023 reporting period, which altered the survey height results. Unfortunately, this software error resulted in a -0.15m height discrepancy between the old and new projects.

This was a software developer error for that particular version (2012) of the software and was corrected in the 2023 bathymetric data, but was present in previous surveys (excluding the baseline survey). Going forward, Delta Coal will keep the old project levels and adjust survey values by +0.15m to align with the old data. All data will be remain relevant to the original baseline survey.

3 Bathymetric Monitoring

Bathymetric scans undertaken in March and September 2024 have been provided as **Figure 2** and **Figure 3** includes:

- MWS1, MWS2, MWS3, MWS4, MWS5 and NMA Mains.

Figure 2 presents Bathymetric surveys over the Miniwall S1-S5 extraction area which have indicated subsidence of up to 500-550 mm directly over the extracted area of MWS4 which prompted a independent geotechnical review to ensure ongoing compliance with the subsidence limit of 780mm. The report noted that while there was minimal risk of exceeding the 780mm subsidence limit, there was a likelihood for additional subsidence of 30-50mm.

Figure 2 – Miniwalls S2-S5 Bathymetric Scan – March 2024

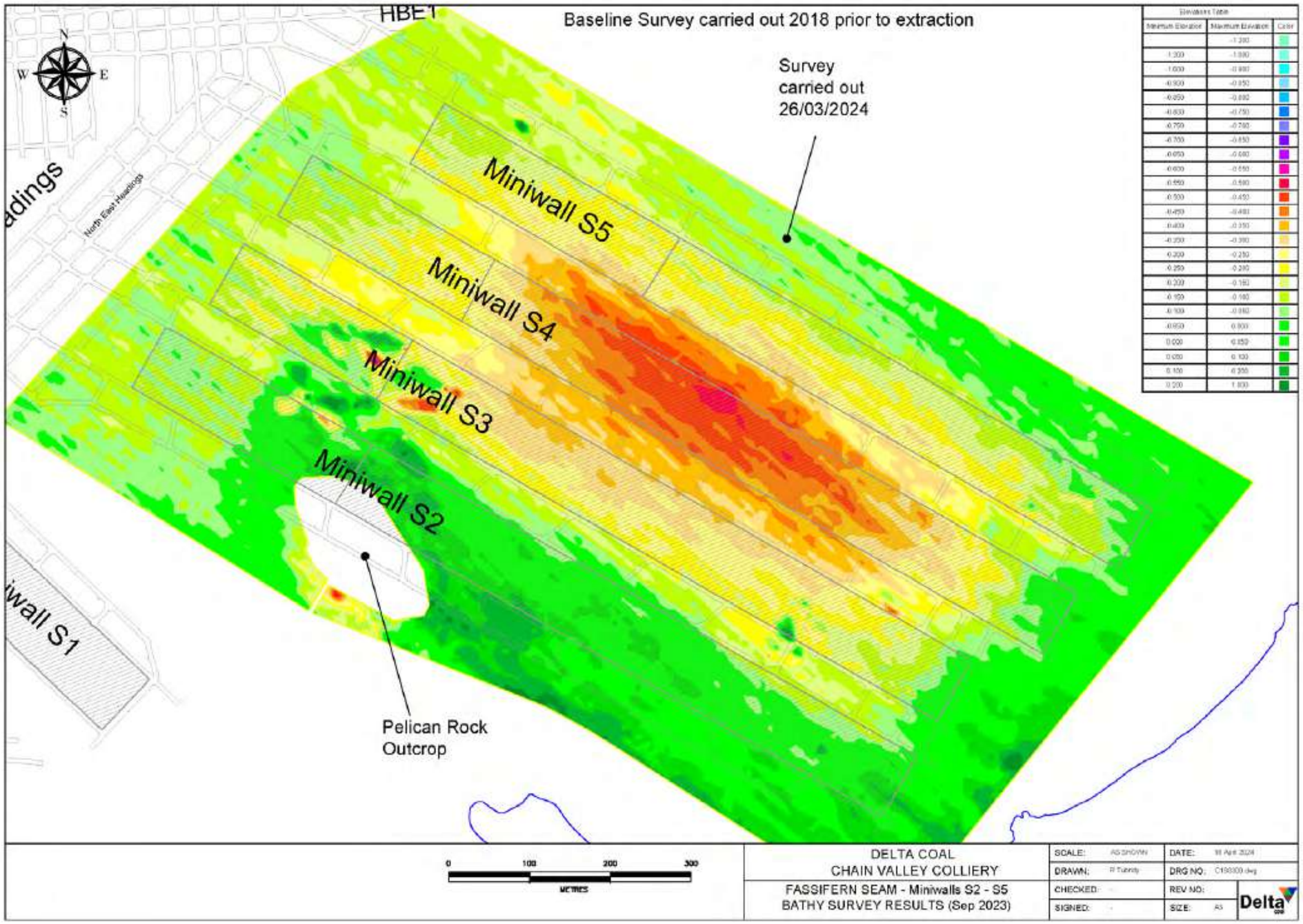
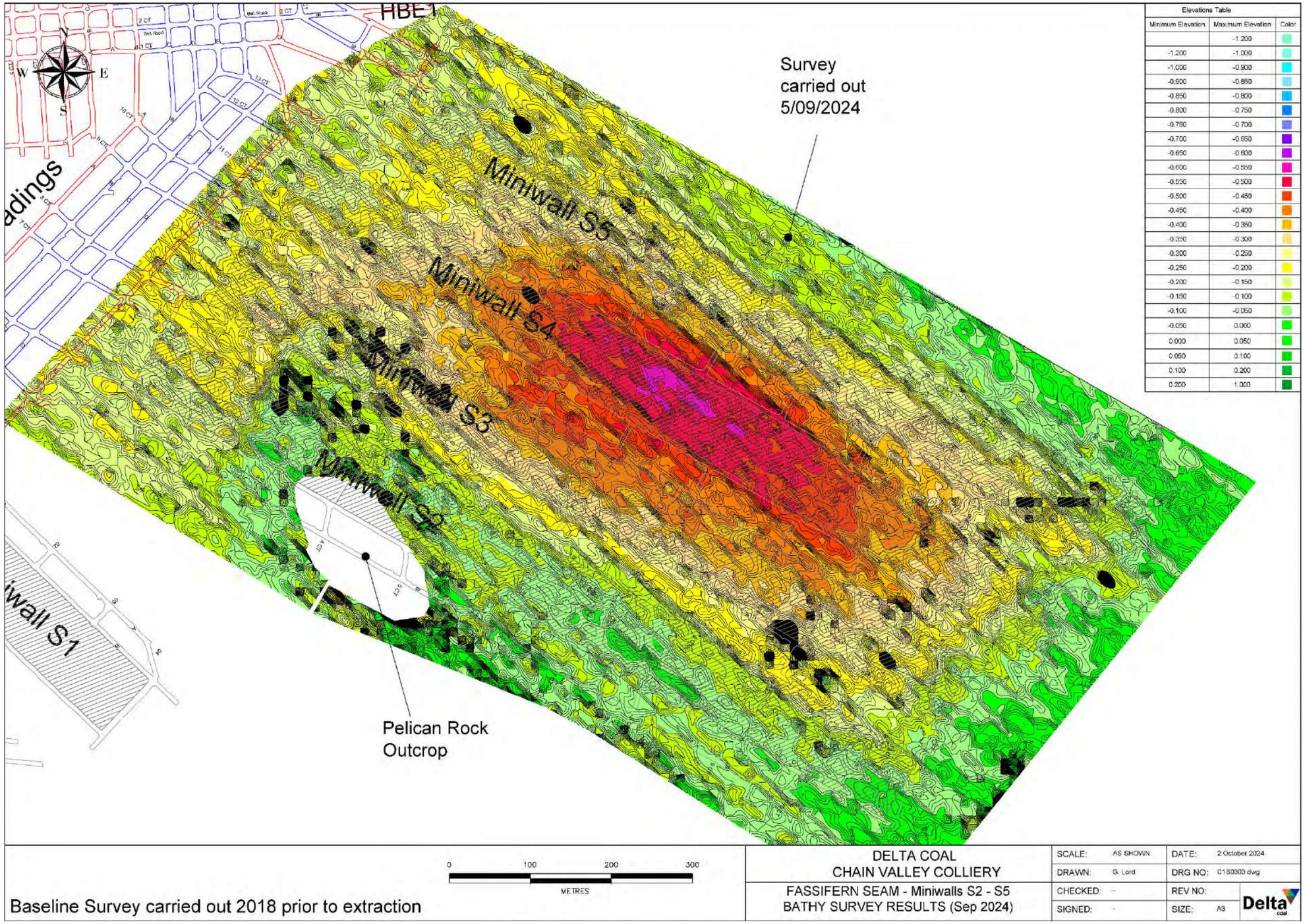


Figure 3 - Miniwalls S2-S5 Bathymetric Scan, September 2024

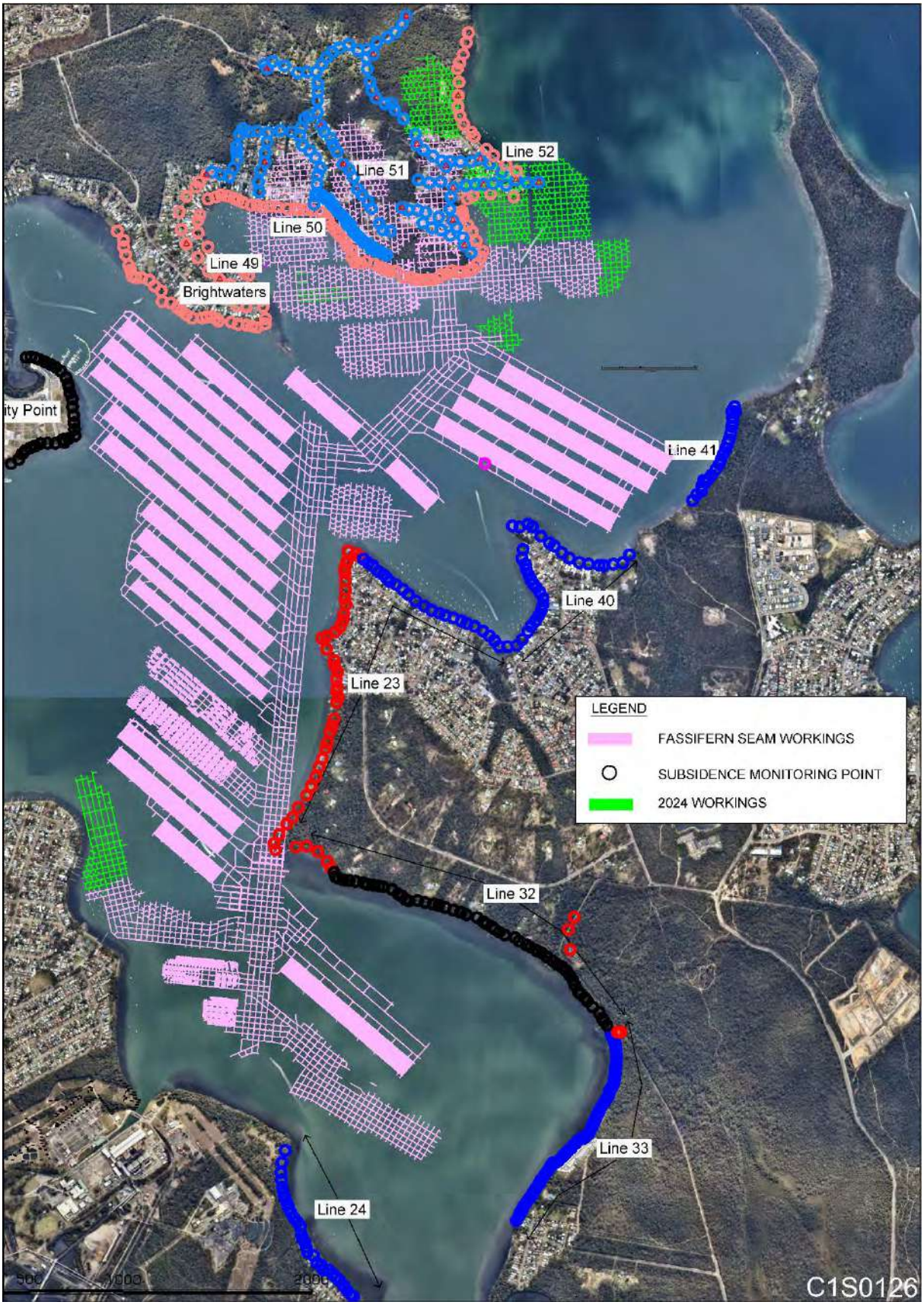


4 Foreshore Monitoring

Delta Coal completes subsidence monitoring around Trinity Point, Brightwaters, Mirrabooka, Sunshine Frying Pan Bay, Summerland Point & Chain Valley Bay (**Figure 3**). Monitoring points occur along the foreshore at approximately 20 m – 30 m intervals where practicable / achievable. Monitoring survey results are uploaded to the Resources Regulator SSIMS portal within 10 days of survey.

A Visual Subsidence Inspection Proforma is completed at monthly intervals over the current mining areas under an agreement between Delta Coal and the Resources Regulator. These visual inspections, look for any signs of impacts or changes to public safety and include visual inspection of steep slopes, ponding and other potential effects of mine subsidence. Annual foreshore surveying was undertaken throughout 2024.

Figure 3 - Foreshore Subsidence Monitoring Points



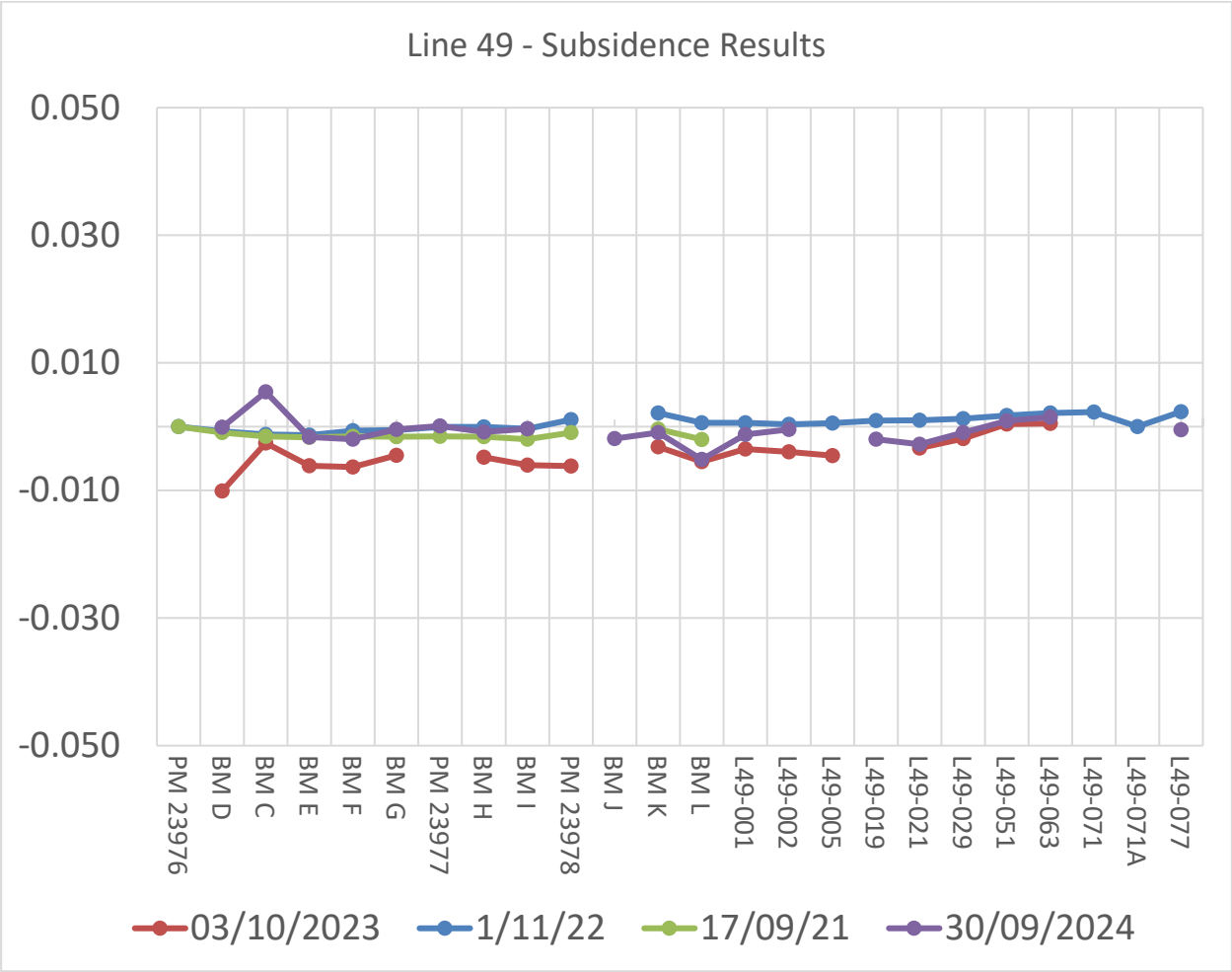
4.1 Chain Valley Colliery

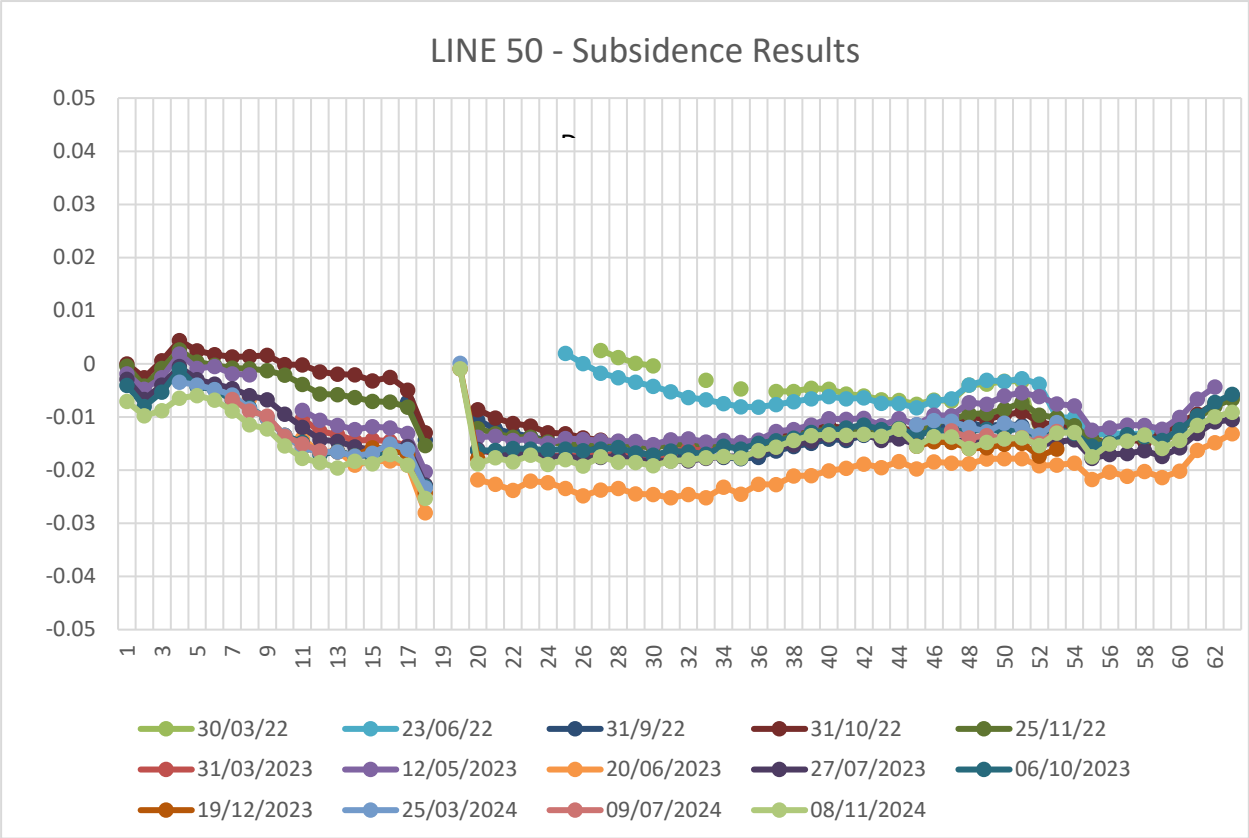
4.1.1 Morisset Peninsula Line 49, 50, 51 and 52

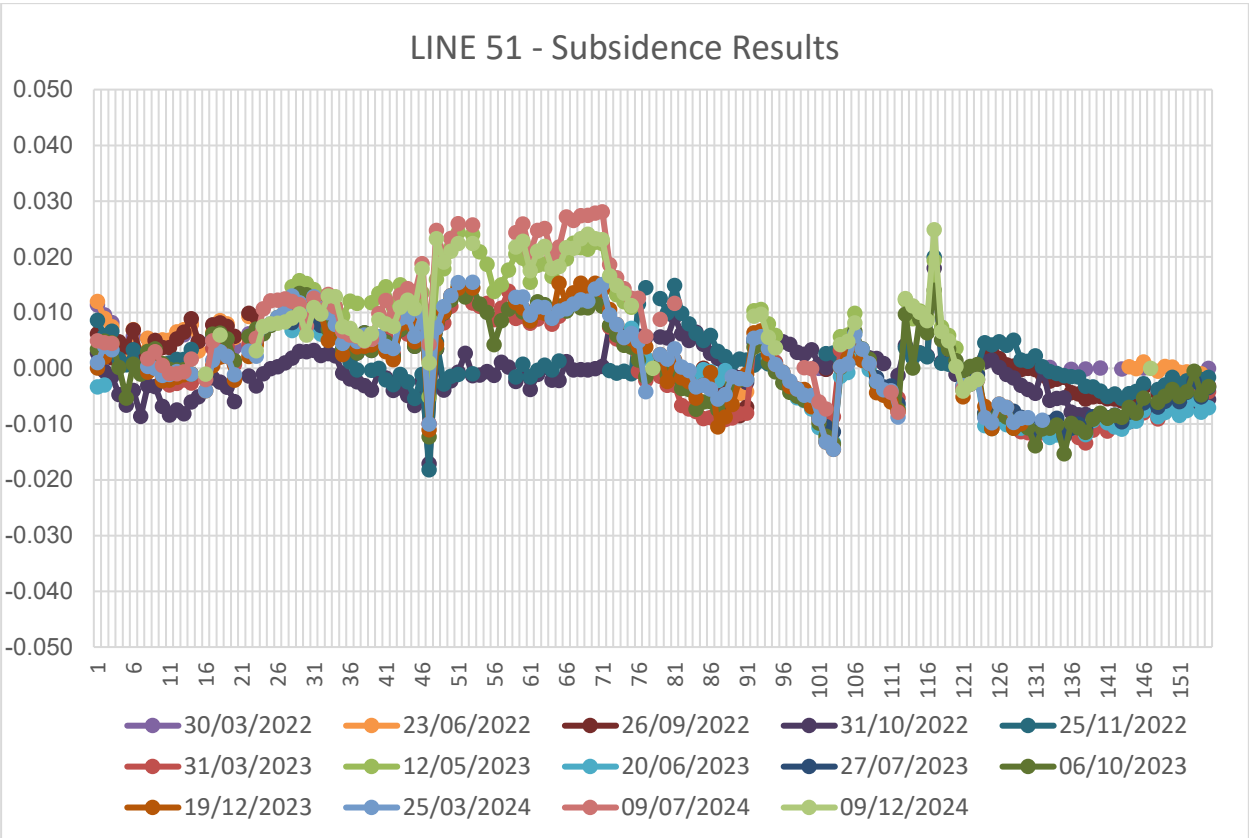
Foreshore monitoring lines 49, 50 and 51 were installed in 2021, for the purpose of monitoring potential subsidence associated with future northern mining area workings. Line 52 was installed in 2022 to cover the foreshore as mining extends to the north. Surveys are carried out over the current mining areas quarterly, with annual surveys over the full grid.

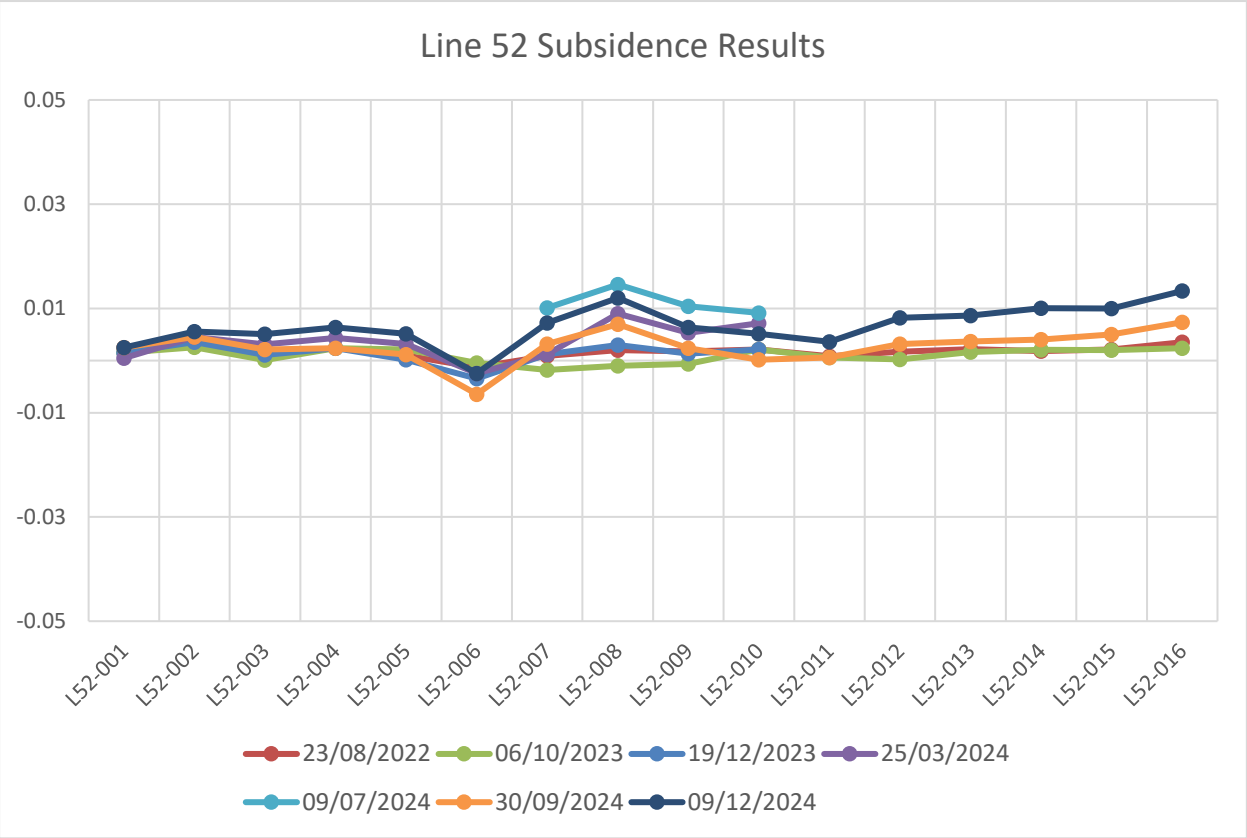
Survey results in the charts below show less than 20mm movement, with exception to:

- Anomalous results from L50-18.
- Anomalous results received from L50 June 2023 survey, presumed to be natural ground movement as subsequent survey results were compliant with the 20mm subsidence limit (July 2023, October 2023 and December 2023).



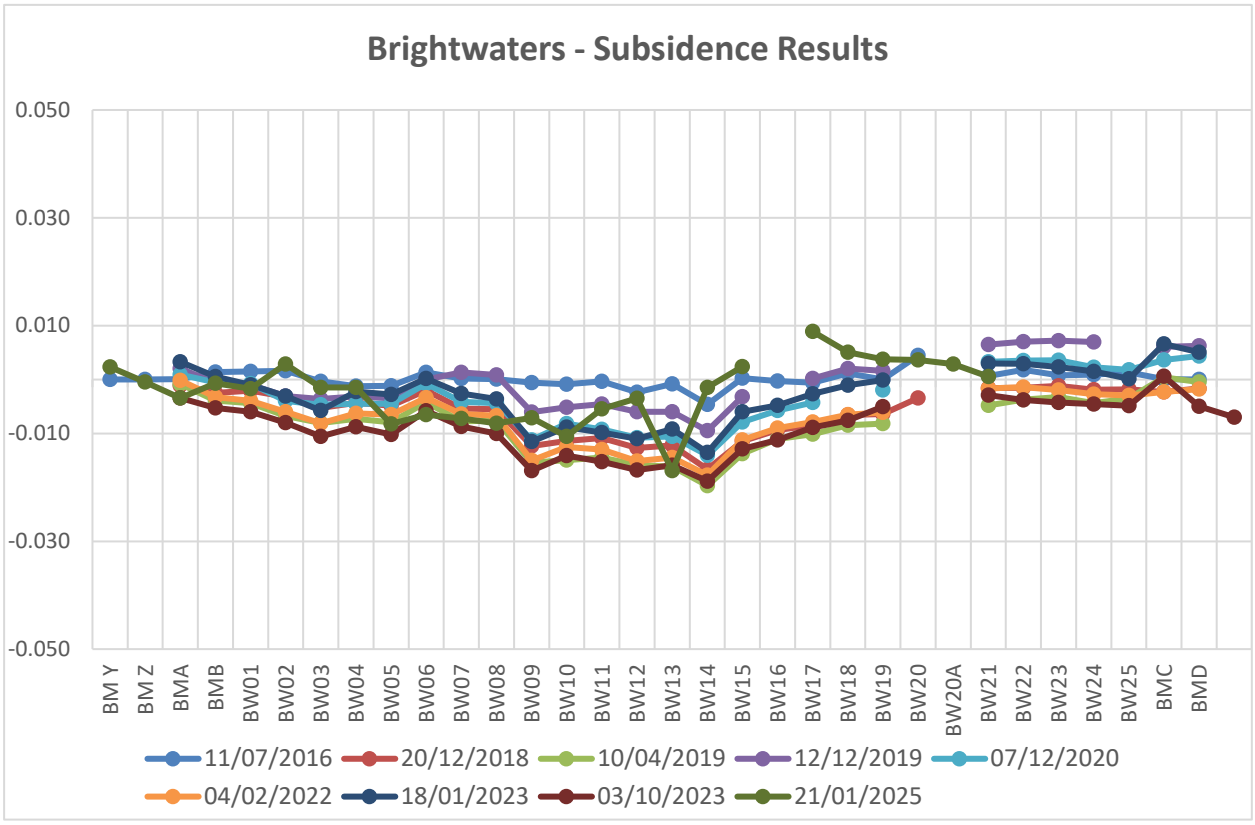

LINE 50 - Subsidence Results
0.05
0.04
0.03
0.02
0.01
0
-0.01
-0.02
-0.03
-0.04
-0.05
1 3 5 7 9 11 13 15 17 19 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62
30/03/22
23/06/22
31/9/22
31/10/22
25/11/22
31/03/2023
12/05/2023
20/06/2023
27/07/2023
06/10/2023
19/12/2023
25/03/2024
09/07/2024
08/11/2024


LINE 51 - Subsidence Results
0.050
0.040
0.030
0.020
0.010
0.000
-0.010
-0.020
-0.030
-0.040
-0.050
1 6 11 16 21 26 31 36 41 46 51 56 61 66 71 76 81 86 91 96 101 106 111 116 121 126 131 136 141 146 151
30/03/2022
23/06/2022
26/09/2022
31/10/2022
25/11/2022
31/03/2023
12/05/2023
20/06/2023
27/07/2023
06/10/2023
19/12/2023
25/03/2024
09/07/2024
09/12/2024


Line 52 Subsidence Results
0.05
0.03
0.01
-0.01
-0.03
-0.05
L52-001
L52-002
L52-003
L52-004
L52-005
L52-006
L52-007
L52-008
L52-009
L52-010
L52-011
L52-012
L52-013
L52-014
L52-015
L52-016
23/08/2022
06/10/2023
19/12/2023
25/03/2024
09/07/2024
30/09/2024
09/12/2024

4.1.2 Brightwaters

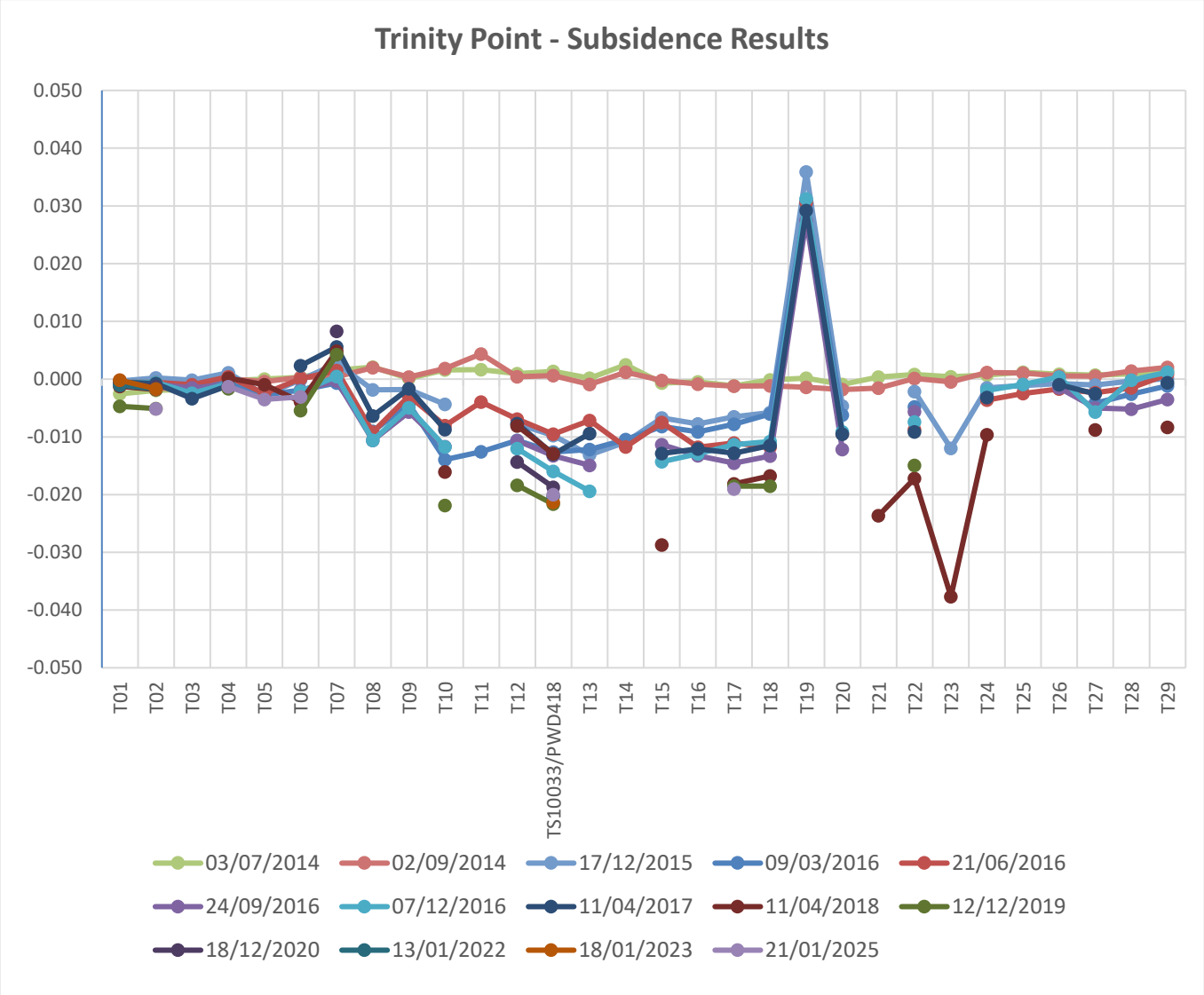
Monitoring points were installed along the Brightwaters peninsula in June 2016 to monitor the effects of Miniwall 11 and 12 extraction. Surveys are carried out over the Brightwaters foreshore annually.



4.1.3 Trinity Point

Monitoring points were installed in the Trinity Point area in 2014 for shoreline monitoring during extraction of Miniwalls 7-12 panels. Since 2018 a number of marks have been disturbed or destroyed due to development along the foreshore in the area. The 2024 annual survey (Jan-25) shows only 6 marks that were able to be identified, however nil movement attributable to subsidence has been detected. A few anomalous marks show greater than 20mm movement but all can be attributed to local disturbance of the mark. These anomalous marks are PWD418, T15, T21 and T23.

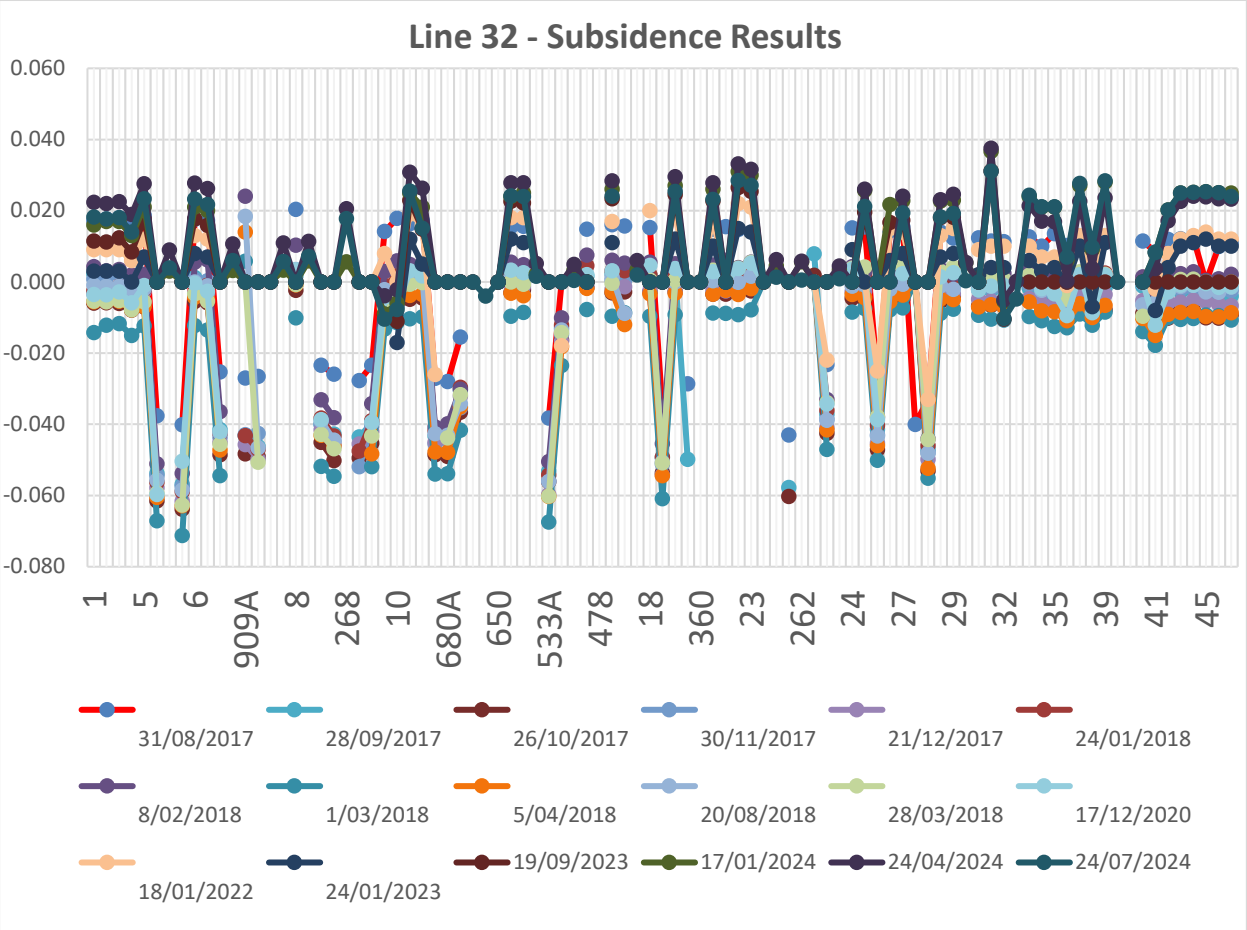
This monitoring line is surveyed annually.



4.1.4 Summerland Point, Lines 32, 23, 40 and 41

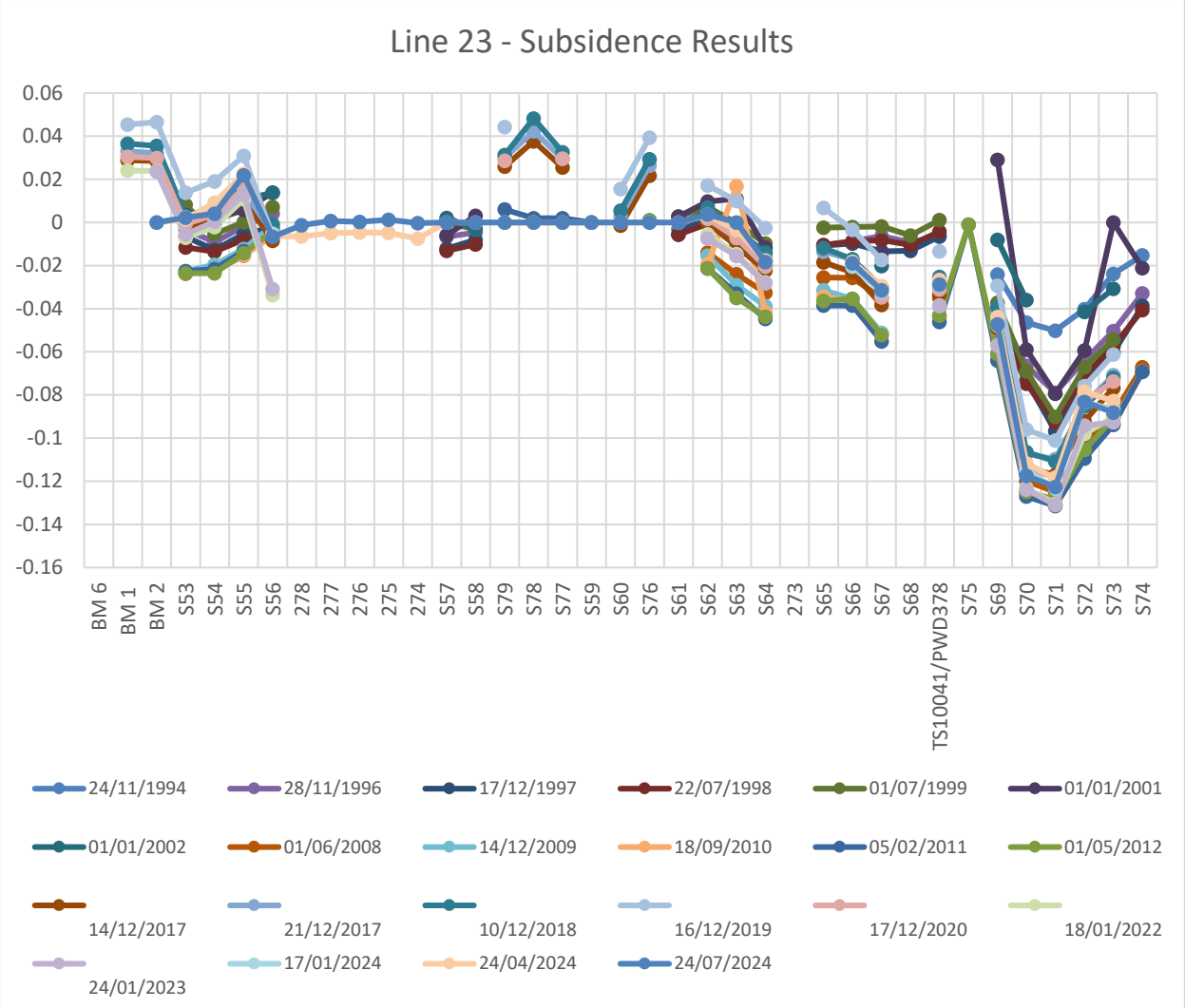
Line 32

Line 32 was originally installed in 1989. Due to their age and that a number of the marks are steel star pickets, the integrity of some of the marks has been affected. Monitoring data shows that the area has been stable for the past few years. Line 32 monitoring marks are surveyed annually.



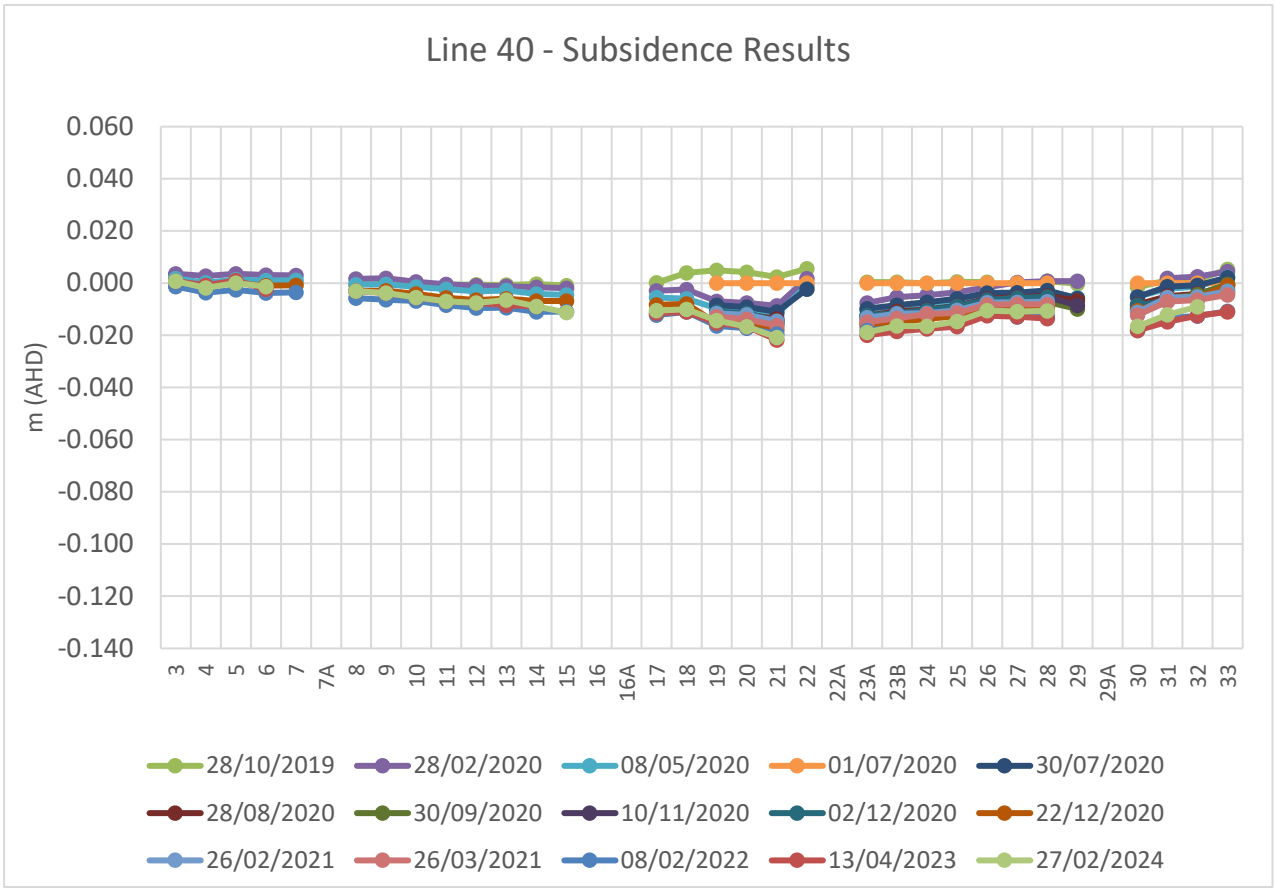
Line 23

The foreshore along Summerland Point has been monitored since 1994, after secondary extraction was undertaken in the Wallarah Seam beneath the south-western point (corresponding to mark S63 – 74 of Line 23). Approximately 130mm to 150mm of subsidence was measured (Point S71 - Line 23). There has been no observable movement from the 2008 datasets to the current (Figure 11). Line 23 monitoring marks are surveyed annually.



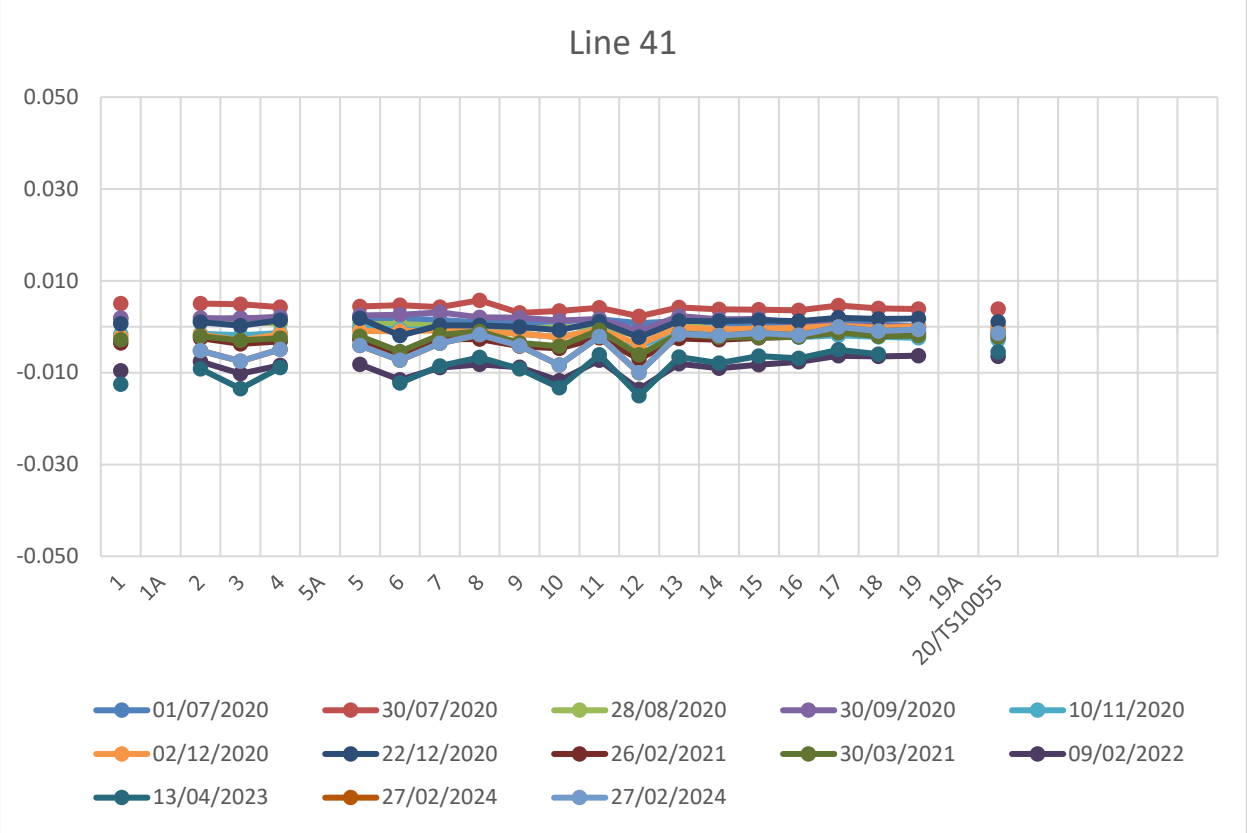
Line 40

Monitoring points along Line 40 were established in 2018 to monitor the shoreline adjacent to Miniwall S1. This line was extended in 2019 as part of the subsidence monitoring program for Miniwalls S2 and S3. Minor ground movement along the line appears seasonal, with movement limited to <20mm. Monitoring of Line 40 is undertaken annually. Point 21 and 24 recorded results of 22 mm and 20 mm respective, given these results met or exceeded the 20mm subsidence limit Chain Valley Colliery is continuing to monitor the survey line. The 20mm of recorded subsidence is not all believed to be mining induced with the results for Point 21 and Point 24 in January 2024 monitoring was 21mm and 19mm of recorded subsidence from the baseline.


Line 40 - Subsidence Results
m (AHD)
0.060
0.040
0.020
0.000
-0.020
-0.040
-0.060
-0.080
-0.100
-0.120
-0.140
3
4
5
6
7
7A
8
9
10
11
12
13
14
15
16
16A
17
18
19
20
21
22
22A
23A
23B
24
25
26
27
28
29
29A
30
31
32
33
28/10/2019
28/02/2020
08/05/2020
01/07/2020
30/07/2020
28/08/2020
30/09/2020
10/11/2020
02/12/2020
22/12/2020
26/02/2021
26/03/2021
08/02/2022
13/04/2023
27/02/2024

Line 41

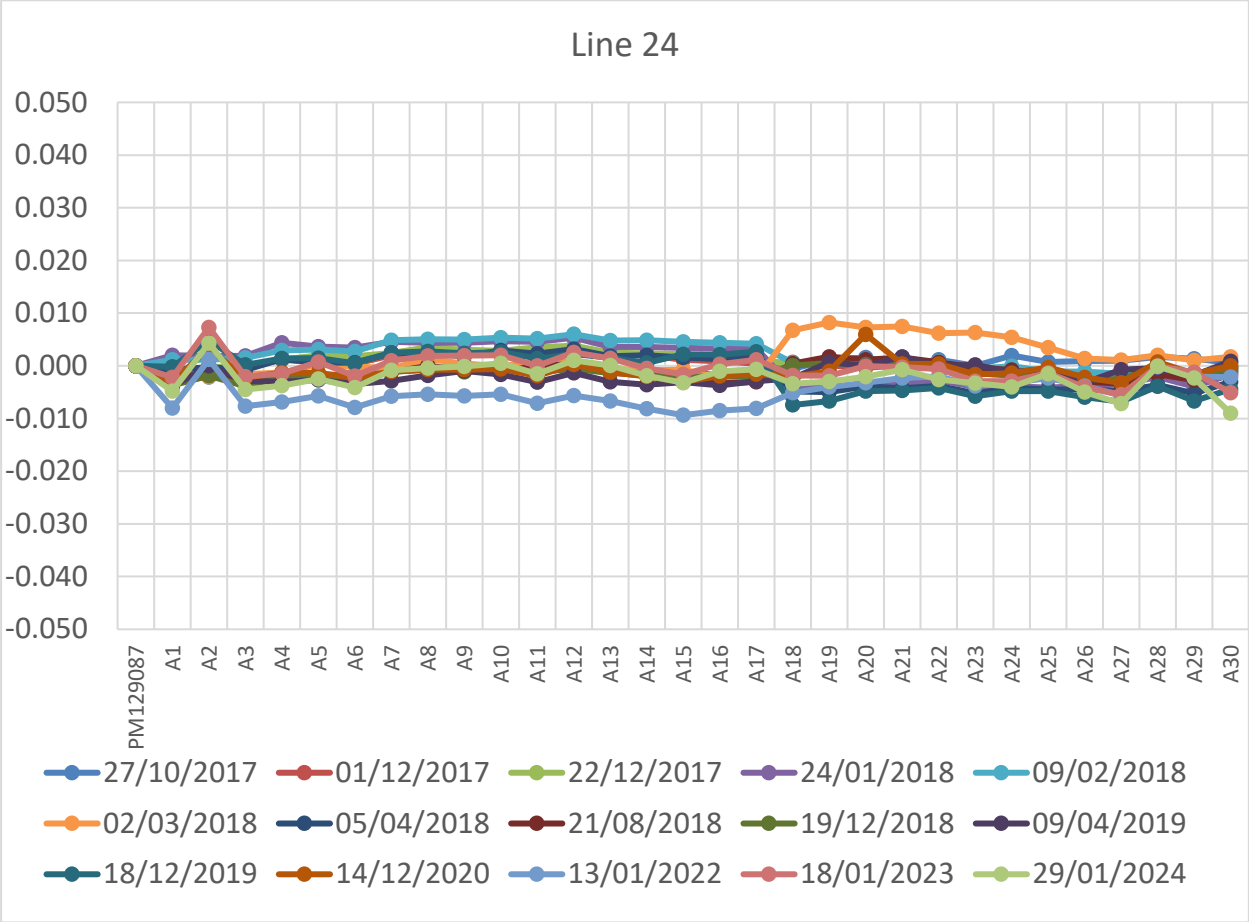
Line 41 was established in July 2020 to monitor the shoreline adjacent Miniwall S4. Monitoring is undertaken annually, with surveys indicating negligible (<20mm) movement within compliance limits.



4.1.5 Chain Valley Bay, Lines 24 and 33

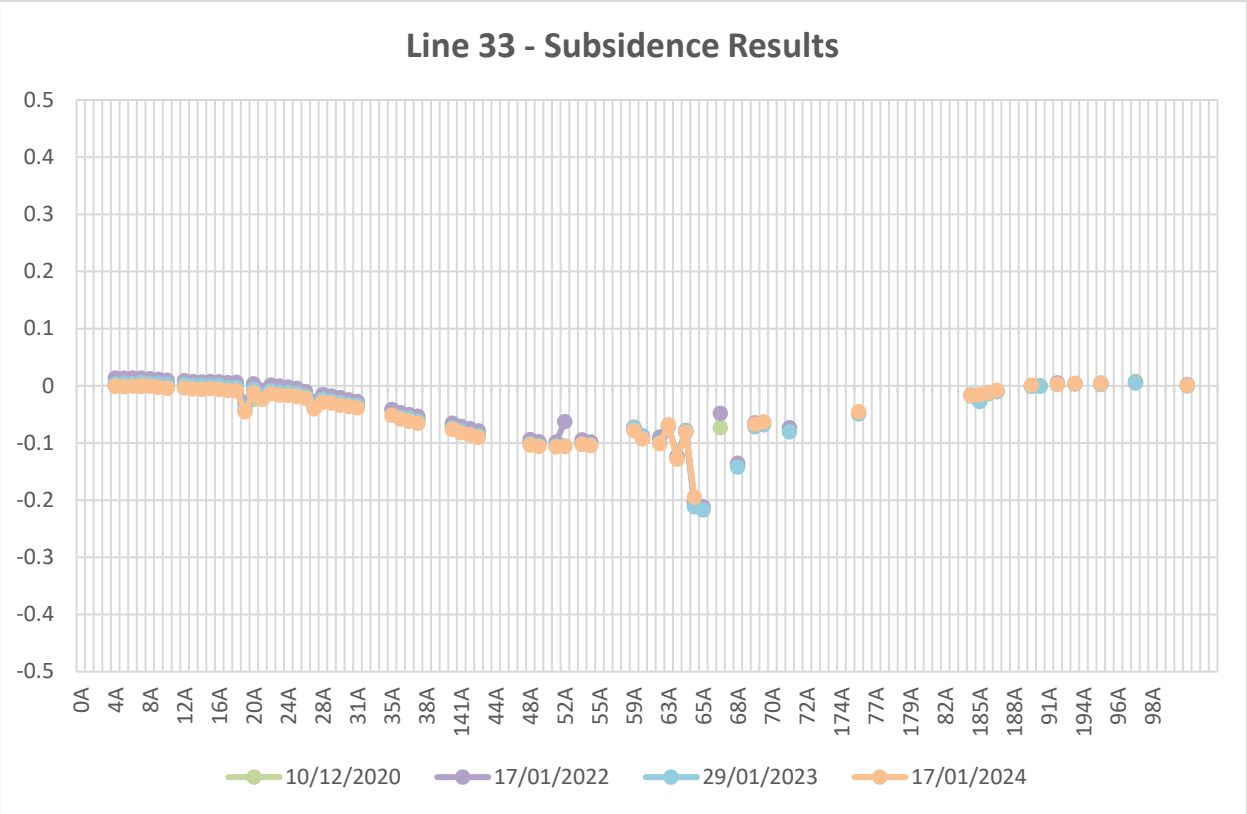
Line 24

Line 24 lies on the western foreshore of Chain Valley Bay. Monitoring results have not identified mining induced vertical movement (< 20mm). Line 24 monitoring points are surveyed annually.



Line 33

Line 33 is underlain with old mine workings in the upper seams and many of the historically monitored subsidence marks have experienced greater than negligible (20mm) subsidence. The Line 33 baseline survey was conducted in 1991. No additional subsidence movement was detected during the miniwall extraction in CVB. No additional subsidence was observed at Line 33A within the reporting period. The monitoring indicates compliance to limits with one monitoring location (A63) impacted by surface activities unrelated to the mine site.


Line 33 - Subsidence Results
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
-0.3
-0.4
-0.5
0A
4A
8A
12A
16A
20A
24A
28A
31A
35A
38A
141A
44A
48A
52A
55A
59A
63A
65A
68A
70A
72A
174A
77A
179A
82A
185A
188A
91A
194A
96A
98A
10/12/2020
17/01/2022
29/01/2023
17/01/2024

4.1.6 Timing of Subsidence Monitoring

Timing of subsidence monitoring at CVC is defined in approved Extraction Plans and is summarised in **Table 2**. CVC has also made subsidence monitoring commitments to first-workings, also presented in **Table 2**.

Table 2 - Frequency of Subsidence Monitoring for Secondary Extraction

Type of monitoring	Pre-extraction requirements	During extraction requirements	Post extraction requirements
Secondary Extraction			
Bathymetric surveys	Single baseline survey prior to extraction	End of panel (of relevance to S2, S3, S4 and S5) Annual surveys over areas of pillar extraction (not commenced)	Annual for three years unless TARP triggered
Foreshore monitoring	Baseline survey prior to commencement of extraction	Monthly intervals	Annual for three years unless TARP triggered
Pelican Rock Navigation Marker	Baseline RL and tilt measurements	End of panel (of relevance to S2 and S3)	Visual inspection and confirmation from RMS of nil impacts
Seagrass survey points	Survey of concrete monitoring points during regular seagrass monitoring		
First Workings			
Terrestrial based subsidence monitoring (foreshore)	Baseline prior to extraction	Annual surveys during extraction unless TARP triggered	Annual surveys ongoing unless TARP triggered
Terrestrial based subsidence monitoring (along main roads in suburbs of Brightwaters, Mirrabooka and Sunshine)	Baseline prior to extraction	Annual surveys during extraction unless TARP triggered	Annual surveys ongoing unless TARP triggered

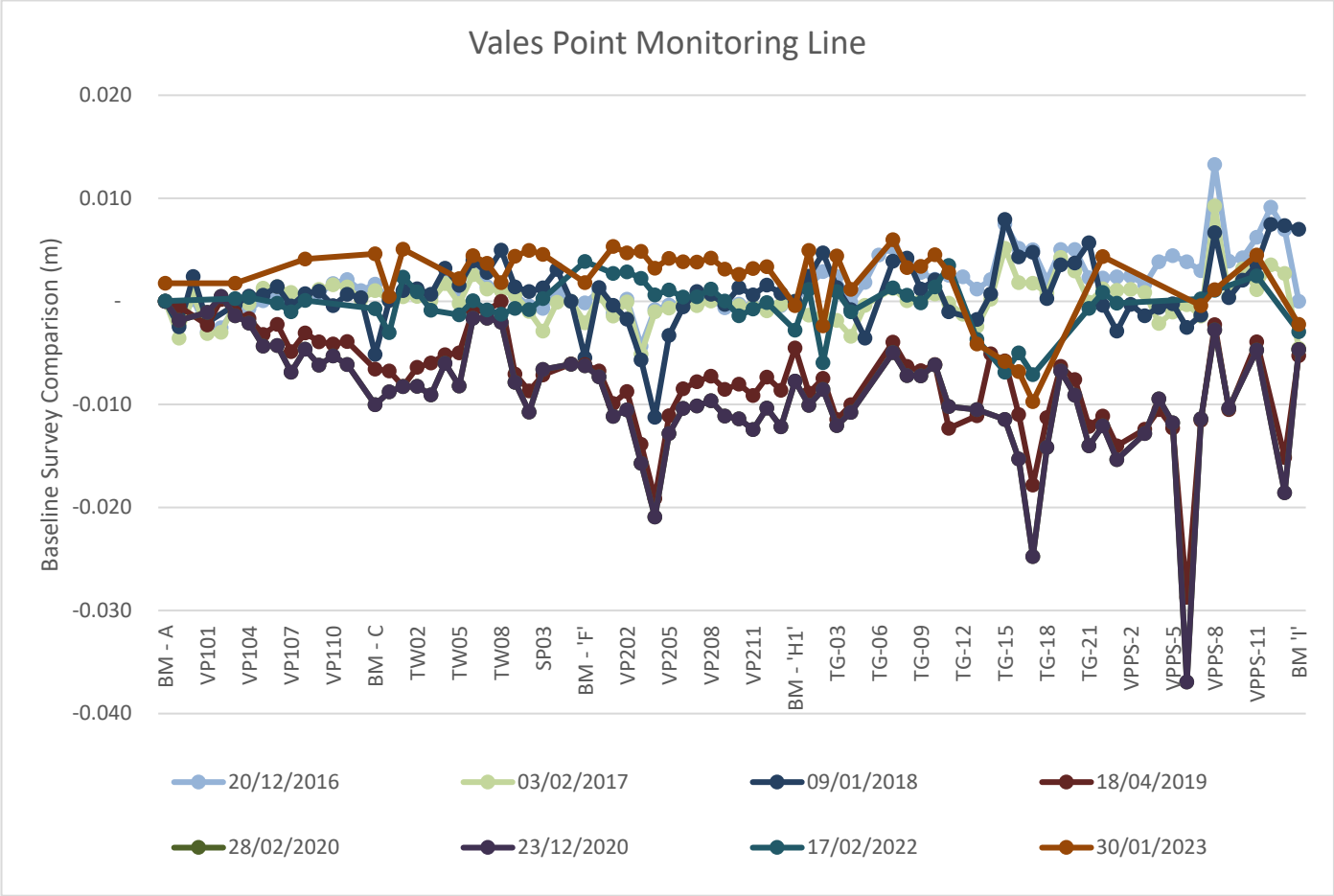
4.2 Mannering Colliery

4.2.1 Monitoring Overview

At the commencement of mining operations associated with the link road project between CVC and MC, a subsidence monitoring program was implemented. Due to the sensitive nature of the infrastructure being undermined (ie VPPS), subsidence monitoring was undertaken on a weekly basis within a 250 m radius of the mining activity. At the completion of mining, the frequency of subsidence monitoring of the link road development was reduced to an annual survey. Monitoring results have been presented in **Figure 16** and indicate <30 mm subsidence recorded to date, with anomalous readings recorded at monitoring point VPPS-6 from 18/04/2019.

There was no mining undertaken at Mannering Colliery during 2024. Surveying of the VPPS monitoring line was ceased after 8-conseective years of subsidence monitoring, displaying negligible movement.

Figure 4 - Vales Point Power Station Subsidence Results



5 Impacts to Built Features from 2024 Mining Activities

5.1 Chain Valley Colliery

No built features have been identified as requiring direct subsidence management from mining activities undertaken at CVC during 2024.

First workings were undertaken beneath the Morisset Peninsula within the NMA with no subsidence impacts to surface facilities or infrastructure reported to date.

5.1.1 Pelican Rock Navigational Marker

As described in CVC's Subsidence Monitoring Program, the Pelican Rock Navigation Marker is expected to be impacted by approximately 90 mm of subsidence from mining within Miniwall panels S2 and S3.

NSW Roads and Maritime Services (RMS) has indicated a functional impact on the marker is likely to occur at 500 mm of subsidence and 5° or 87 mm/m of tilt.

A survey for RL and tilt was conducted on 10 July 2019 by Daly Smith Surveyors prior to mining and measured Pelican Rock Navigation Marker was 1.14m Australian Height Datum (AHD) and the navigational pole was vertical.

A final survey was undertaken on 16 June 2023, recording the level at 1.09 mAHD, indicating an impact of 50 mm. Miniwall mining methods were ceased at Chain Valley Colliery in August 2021, with MWS3 completed in July 2020.

Following completion of the June 2023 survey of Pelican Rock navigational marker, Delta Coal contacted Transport for NSW (formerly RMS), seeking confirmation that the navigational marker was deemed still suitable for operation and to confirm monitoring of the marker could cease, provided no further subsidence impacts where anticipated. In 2024, Delta Coal received confirmation from Transport for NSW that Delta Coal was able to cease monitoring of the Pelican Rock navigational marker.



5.2 Mannering Colliery

There were no built features identified as requiring direct subsidence management as a result of MC former workings during 2024.

6 Impacts to Natural Features

6.1 Chain Valley Colliery

Subsidence impact performance measures to natural and heritage features are detailed in SSD-5465 Modification 4, Table 6 as below.

Biodiversity	
Threatened species or endangered populations	Negligible environmental consequences
Seagrass beds	Negligible environmental consequences including: • *negligible* change in the size and distribution of seagrass beds; • *negligible* change in the functioning of seagrass beds; and • *negligible* change to the composition or distribution of seagrass species within seagrass beds.
Benthic communities	Minor environmental consequences, including minor changes to species composition and/or distribution.

6.1.1 Seagrass Bed Monitoring

Annual seagrass bed monitoring was undertaken in June and July 2024 as per the approved Seagrass Management Plan. The Seagrass monitoring report is publicly available at www.deltacoal.com.au. **Table 3** is taken from the report and displays compliance to the subsidence impact performance measures table for 2024.

Table 3 - Seagrass Monitoring Compliance

Condition from SSD5465 - Mod 4	Compliance Status and Comments
Schedule 4 Environmental Conditions - underground mining Performance Measures - Natural Environment Biodiversity - Benthic Communities. Subsidence Impact Performance Measure - Minor environmental consequences, including minor changes composition and/or distribution.	Compliant - See section 16 - Conclusions
Measurements undertaken by generally accepted methods.	Compliant - See section 4 and 5
Measurements Methods fully described.	Compliant - See section 4 and 5

6.1.2 Benthic Communities Monitoring

Benthic monitoring was undertaken in March 2024. The Benthic Communities reports are publicly available at www.deltacoal.com.au. The below table is taken from the March 2024 report and displays compliance to the subsidence impact performance measures.

The results from the March 2024 benthic communities monitoring show compliance to SSD5465 (Mod 4) with respect to the Subsidence Impact Performance Measures for Benthic communities, which display nil to minor environmental consequences due to underground mining.

Table 4 - Benthic Communities Compliance

Conditions from SSD-5465 – Mod 4	Compliance Status and Comments
Schedule 4 Environmental Conditions – underground mining Performance Measures – Natural Environment Biodiversity – Benthic Communities Subsidence Impact Performance Measure – Minor environmental consequences, including minor changes composition and/or distribution.	Compliant – See section 16 - Conclusions
Measurements undertaken by generally accepted methods. Measures Methods fully described.	Compliant – See section 4 and 5 Compliant – See section 4 and 5

7 Adaptive Management – Subsidence Management Trigger Action Response Plan (TARP) Implementation and Remediation

7.1 Chain Valley Colliery

Adaptive management includes monitoring subsidence impacts and subsidence effects. based on the results, modifying the mining plan as mining proceeds to ensure that the effects, impacts and/or associated environmental consequences remain within predicted and designated ranges and in compliance with the conditions of this consent. The subsidence Monitoring TARPs for Miniwall S5 and Northern Pillar Extraction has been provided as **Figure 6**.

Triggers and performance indicators (including measured subsidence and inspections for environmental impact) are provided across a number of different management plans at CVC and include specific information regarding:

- subsidence monitoring requirements (including baseline monitoring)
- remediation
- adaptive management techniques and
- contingency plans.

A summary of these are provided in CVC's Subsidence Management TARP which aims to consolidate all subsidence management requirements into a central location, triggering a response or set of responses commensurate with the nature of the measurement or the impact that has been identified.

There were no subsidence related remediation activities undertaken during 2024 as a result of mining activities at CVC.

7.2 Mannering Colliery

There is no subsidence management TARP at MC, with no mining undertaken within the collieries boundaries since the establishment of the link road.

There were no subsidence related remediation activities undertaken during 2024 as associated with Mannering Colliery.

Figure 5 - CVC Subsidence Management TARP

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CHAIN VALLEY COLLIERY- SUBSIDENCE MANAGEMENT TRIGGER ACTION RESPONSE PLAN (TARP 00136)

SUBSIDENCE MANAGEMENT NORTHERN MINING AREA DOMAIN (S5 and Northern Pillar Area)

	DETAILED PERFORMANCE INDICATORS	MONITORING REQUIREMENTS	CONTAINMENT / REMEDIATION MEASURES	ADAPTIVE MANAGEMENT MEASURES	CONTINGENCY PLANS
SUBSIDENCE PARAMETERS (Bathymetric Survey)	**Normal** Subsidence ≤ 500mm	As per Subsidence Monitoring (SM) Program			
	Trigger Level 1 Subsidence > 500mm to ≤ 780mm	6 monthly surveys until subsidence stabilises, then as per SM Program		Update subsidence predictions based on monitoring data Identify controlling mechanisms Review potential change in impact on natural and built features & update management plans if required	Review ability to limit further increases based on understood mechanisms including: Extraction heights, panel widths, panel recovery
	Trigger Level 2 Subsidence >780mm	6 monthly until subsidence stabilises then as per SM Program	Review if increase likely to create impact at foreshore/seagrass or exceed final subsidence prediction Notify immediately DPIE if incident and within 7 days for non-compliance Notify RR, BCD, affected landholders or infrastructure owner	Implement further controls as applicable from review Update subsidence predictions based on monitoring data Update impact assessment on natural and built features	Immediately review mine plan including panel width, pillar widths, extraction height and panel length Consult with DPIE and RR Review and update Extraction Plan
SUBSIDENCE PARAMETERS (Foreshore / Land Based Survey over minimum of 2 adjacent pegs)	**Normal** <20mm recorded movement	Monitoring as per SM Program			
	Trigger Level 1 <20mm recorded movement with slow (3-5mm/month) creep	Validate increase with additional monthly survey/s then as per SM program		Update subsidence predictions based on monitoring data Identify controlling mechanisms Review potential change in impact on natural and built features & update management plans if reqd	
	Trigger Level 2 >20mm recorded movement (assoicated with mining)	Implement Ecological Monitoring program for HWMSB exceedance Increase frequency of subsidence parameter monitoring to until rates stabilises. Then as per SM program	**Cease extraction in panel in question until review conducted in consultation with DPIE and DRE** Notify immediately DPIE if incident and within 7 days for non-compliance Notify RR, OEH, affected landholders or infrastructure owner	Investigate cause of exceedance (ie validate impact due to FAS extraction or not). Update subsidence predictions based on monitoring data Update impact assessment on natural and built features	Provide offsets for any ecological communities or threatened species in the HWMSB if impacts detected Immediately review mine plan including panel width, pillar widths, extraction height in consultation. Consult with DPIE and RR Review and update Extraction Plan
BUILT FEATURES	**Normal** No damage requiring remediation	Monitoring as per Subsidence Monitoring Program RMS routine monitoring navigation markers			
	Trigger Level 1 Subsidence parameters exceeded such that Fassifern workings Indicated to have potential impact on foreshore Private bore capacity reduced	Monitoring as per BFMP (Built Feature Management Plan)	Review navigational marker freeboard and notify Transport for NSW if impacted Notify immediately DPIE if incident and within 7 days for non-compliance Notify RR and potentially affected landholders or infrastructure owner. Provide temporary water if required.		Develop BFMP in conjunction with owner for built features surrounding potential impact area
	Trigger Level 2 Impact to built feature	Monitoring as per BFMP	**Cease extraction in panel in question until review conducted in consultation with DPIE and RR** Assist owner with information to aid in Subsidence Advisory NSW claim in accordance with BFMP	Update impact assessment based on observed damage	Immediately review mine plan including panel width, pillar widths Consult with DPIE and RR Review and update Extraction Plan

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CHAIN VALLEY COLLIERY- SUBSIDENCE MANAGEMENT TRIGGER ACTION RESPONSE PLAN (TARP 00136)

SUBSIDENCE MANAGEMENT NORTHERN MINING AREA DOMAIN (S5 and Northern Pillar Area)

		DETAILED PERFORMANCE INDICATORS	MONITORING REQUIREMENTS	CONTAINMENT / REMEDIATION MEASURES	ADAPTIVE MANAGEMENT MEASURES	CONTINGENCY PLANS
Triggers	PUBLIC SAFETY (Foreshore / Land Based areas and steep slopes)	**Normal** No impact	Monitoring as per SM Program and Public Safety MP			
		Trigger Level 1 Subsidence parameters exceeded such that Fassifern workings indicated to have potential impact on foreshore / land based areas	Increase visual inspection of foreshore to daily until public safety risk quantified as low Inspect Foreshore / Land Based areas in vicinity of steep slopes and retaining walls for signs of movement ASAP. Implement TARP as required.		Review potential of flooding and drainage impacts about foreshore or Land Based areasor stability concerns at steep slopes/ retaining walls. Undertake appropriate risk assessments	
		Trigger Level 2 Area around foreshore or other land based areas becomes unstable or shows signs of mining induced impact Flooding or drainage impacts considered likely as result of Fassifern extraction	Visual inspections frequency to be commensurate with level of risk (ie increase until controls put in place) Inspect Foreshore / Land Based areas in vicinity of other steep slopes and retaining walls for signs of movement ASAP. Implement TARP as required.	**Cease extraction in panel in question until review conducted in consultation with DPIE and RR** Immediately implement temporary safety controls (barricades and signage available from mine site). Arrange for assistance and stay at site if immediate risk to public exists Inform ECC as to result of inspection Geotechnical Engineer to inspect area immediately. Notify LMCC and Transport for NSW Notify BCD, DPIE and RR	Implement longer term safety controls	Foreshore / Land based area stabilisation of unsafe areas in consultation with LMCC/CC Council and RR as soon as possible Flooding and drainage rectification works in consultation with infrastructure owner as soon as possible
	BENTHIC COMMUNITIES	**Normal** ANOVA/ANOSIM >5%	Monitoring as per Benthic MP			
		Trigger Level 1 ANOVA/ANOSIM level is approaching 5%	Liaise with monitoring consultant & undertake internal review to determine if impacts are related to mining Arrange a peer review of the monitoring results and statistical analysis			
		Trigger Level 2 ANOVA/ANOSIM <5%	Undertake follow up monitoring at affected sites to obtain confirmation of impacts. Incident Report to be completed and distributed to relevant agencies	Notify DPIE-Fisheries, LMCC and DPIE Notify immediately DPIE if incident and within 7 days for non-compliance	Consult with relevant authorities about monitoring and management controls	Consult with relevant authorities to identify if offsets are required and how these are to be implemented.
	SEAGRASS	**Normal** Negligible impact	Monitoring as per Seagrass MP			
		Trigger Level 1 Approaching 20% decline in condition Approaching 20mm of additional mine induced subsidence within mapped seagrass	Liaise with monitoring consultant & undertake internal review to determine if impacts are related to mining		Review if variation is within broader background variation range for the site.	
		Trigger Level 2 >20% decline in conditions from year baseline survey >150mm of additional mine induced subsidence at survey location	Incident Report to be completed and distributed to relevant agencies	Notify immediately DPIE if incident and within 7 days for non-compliance Notify DPIE-Fisheries and LMCC	Consult with relevant authorities about monitoring and management controls	Consult with relevant authorities to identify if offsets are required and how these are to be implemented.
	THREATENED SPECIES AND ENDANGERED POPULATIONS	**Normal** Negligible environmental consequences	Monitoring as per Subsidence Monitoring Program, Benthic Communities Management Plan and Seagrass Management Plan			
		Trigger Level 1 As per Seagrass and Benthic Community Management Plans Monitoring Level 1 triggers	Liaise with monitoring consultant & undertake internal review to determine if impacts are related to mining and greater than negligible environmental consequences.		Review if variation is within broader background variation range for the site.	
		Trigger Level 2 As per Seagrass and Benthic Community Management Plans Monitoring Level 2 triggers >780mm subsidence	Incident Report to be completed and distributed to relevant agencies	Notify immediately DPIE if incident and within 7 days for non-compliance Notify DPIE-Fisheries and LMCC	Initiate ecological monitoring program to assess the impacts to ecological communities and threatened species. Consult with relevant authorities about monitoring and management controls	Consult with relevant authorities to identify if offsets or rehabilitation is required and how this is to be implemented.
	WATER INFLOW	Ongoing monitoring of water inflows and site water management through operational Water Management and Monitoring TARP process				

		Revision 4 - 10/08/2021 CHAIN VALLEY COLLIERY- SUBSIDENCE MANAGEMENT TRIGGER ACTION RESPONSE PLAN (TARP 00136) **SUBSIDENCE MANAGEMENT NORTHERN MINING AREA DOMAIN (S5 and Northern Pillar Area)**
Responsibilities	Environment Compliance Coordinator	Coordinate and undertake all environmental monitoring as outlined in TARP Implement TARP actions in consultation with regulatory agencies as/if required Notify the relevant Government agencies and other affected parties of exceedance of performance measures Coordinate Subsidence Review as a part of Annual Environmental Reporting Arrange for subsidence prediction and impact updates as required Update Extraction Plan as required Audit public safety controls regularly
	Mine Surveyor	Coordinate subsidence monitoring as outlined in TARP Review subsidence monitoring results against TARP triggers Inform relevant stakeholders as to subsidence monitoring trends and exceedances
	Mine Manager	Ensure adequate financial and personnel resources are made available for implementation of this plan Review and approve required mine plan changes

Appendix 6: Complaints & Incidents Register

Mannering Colliery Complaints and Incidents Register 2024

Last Updated: 13/01/2025

Date	Nature of Complaint / Incident	Complaint / Incident	Action Taken
Friday, 3 May 2024	Total Suspended Solids Exceedance	On 8 May 2024 Delta Coal received water quality analytical results for an exceedance of the 50 mg/L total suspended solids (TSS) limit. The sample was collected on the 3 May 2024 at 7:45 am with a TSS concentration of 169 mg/L.	The TSS exceedance was investigated and reported to the NSW EPA, NSW DPE and NSW Resources Regulator. Actions resulting from the incident investigation include: - Continue to review the MC site water balance and TARP, to identify improvements in the management of sediment-laden run-off received by the mine water management ponds; and - Re-position the sites silt curtain to ensure full functionality. - Assess flocculant basket locations to ensure flocculant basket locations are optimal for treatment of storm water within the sites sediment ponds. - Investigate potential improvements of silt retention in Ponds 1-3.
Monday, 6 May 2024	Volumetric Discharge Exceedance	On 6 May 2024 an exceedance of the daily volume discharge limit for Point 1 was recorded by the site flow meters due to an intensive rainfall event. The recorded daily volume discharged was 4,382 kL against the limit of 4,000 kL/Day.	The volumetric exceedance was reported to the NSW EPA, NSW DPE and NSW Resources Regulator. Actions resulting from the incident investigation include: - Review the Delta Coal TARP system controlling underground mine dewatering during high rainfall events. Consideration will be given to reducing the trigger level for ceasing Mannering Colliery groundwater discharge. - Delta Coal will investigate the alarm level to the control room operator for total surface discharge, determining if an earlier warning is suitable via the SCADA system to mitigate the likelihood of exceedance as a result of groundwater discharge.

Appendix 7: Mannering Colliery Independent Environmental Audit



Mannering Colliery

Independent Environmental Audit for PA 06_0311

Delta Coal

20 June 2022

The Power of Commitment

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1. Introduction

1.1 Introduction and purpose of this report

The Mannering Colliery is an underground coal mine located at the southern end of Lake Macquarie, approximately 60 km south of Newcastle, New South Wales (NSW). Mannering Colliery is owned and operated by Great Southern Energy Pty Ltd (trading as 'Delta Coal').

Mannering Colliery was granted project approval (MP06_0311) under Part 3A of the EP&A Act on 12 March 2008 and, as modified, permits the extraction of up to 1.1 Mtpa of ROM coal until 30 June 2022. It also permits the handling of up to 1.3 Mtpa ROM coal with that coal transported via a dedicated overland conveyor to Delta Coal Electricity's Vales Point Power Station (VPPS) for domestic energy generation.

Mannering Colliery is subject to PA 06_0311. In 2013 the mine lodged an application for the Chain Valley Colliery Mining Extension 1 Project (PA 06_0311) under Part 4 of the EP&A Act, which was approved on 23 December 2013.

This audit covers a period of time from 10 April 2019 to 2 May 2022. The site inspection component of the IEA was conducted 2 May 2022. This report provides an outline of the audit methodology and results and provides recommended actions for achieving full compliance with environmental approvals.

The audit was led by *Elliot Holland*, Lead Auditor – Environmental Management Systems (number: 115351) with assistance from *Lachlan Taylor*. A technical review completed by *Michelle Kiejda* - Technical Director – Environment.

Schedule 6, Condition 9 of PA 06_0311 requires an IEA to be commissioned by the end of February 2022, and every three years thereafter. Schedule 6, Condition 9 constitutes the audit scope and requires that:

> *By the end of February 2022, and every three years after, unless the Planning Secretary directs otherwise, the Applicant must commission and pay the full cost of an Independent Environmental Audit of the development. The audit must:*
>
> *(a) led by a suitably qualified, experienced and independent auditor whose appointment has been endorsed by the Planning Secretary;*
>
> *(b) be led and conducted by a suitably qualified, experienced and independent team of experts (including any be expert in field/s specified by the Planning Secretary) whose appointment has been endorsed by the Planning Secretary;*
>
> *(c) be carried out in consultation with the relevant agencies and the CCC;*
>
> *(d) assess the environmental performance of the development and whether it is complying with the relevant requirements in this consent, water licences and mining leases for the development (including any assessment, strategy, plan or program required under these approvals);*
>
> *(e) review the adequacy of any approved strategy, plan or program required under the abovementioned approvals and this consent;*
>
> *(f) recommend appropriate measures or actions to improve the environmental performance of the development and any assessment, strategy, plan or program required under the abovementioned approvals and this consent; and*
>
> *(g) be conducted and reported to the satisfaction of the Planning Secretary.*

As required by Schedule 6, Condition 9 of PA 06_0311the audit team was approved by the Department of Planning and Environment (DPE) to undertake the audit on 23 February 2022 (see Appendix A).

1.2 Scope of the audit

The audit took the following form:

– An initial start-up teleconference was held with relevant Delta Coal representatives to discuss the audit methodology, identify relevant personnel involved in the project, key activities and systems occurring on the Mine, documentation for review and to schedule a date for the Mine inspection.
– Relevant agencies and the Community Consultative Committee chair (CCC chair), including the Department of Planning and Environment (DPE), DPE – Water, Department of Primary Industries – Fisheries (DPI – Fisheries), Environment Protection Authority (EPA), Biodiversity Conservation Division (BCD), the NSW Resources Regulator, Lake Macquarie City Council (LMCC), and Central Coast Council (CC Council) were requested to provide comment on the performance and/or compliance of the project with relevant requirements and/or approvals.
– A review of available key documentation including the Environmental Assessment (EA) documentation, Development Consent, Environment Protection Licence (EPL) and other relevant site and environmental information (such as correspondence with relevant agencies and management plans and/or monitoring results) was undertaken prior to interviews with Delta Coal representatives and the Mine inspection. Additional documents were reviewed during and following the interviews with Delta Coal representatives and the Mine inspection.
– A one-day site inspection, including interviews, to assess the general environmental performance of site and discuss Development Consent and EPL compliance with key site-based personnel.
– Preparation of a draft audit report for Delta Coal to review.
– Finalisation of the audit report and submission to Delta Coal.

1.3 Audit participants

The personnel listed in Table 1.1 were involved over the course of the audit.

Table 1.1 Audit team members

Audit team members	Organisation	Role
Michelle Kiejda	GHD	Technical Review
Elliot Holland	GHD	Lead Auditor
Lachlan Taylor	GHD	Assistant auditor
Lachlan McWha	Delta Coal	Environmental Compliance Coordinator

1.4 Limitations

This report: has been prepared by GHD for Delta Coal and may only be used and relied on by Delta Coal for the purpose agreed between GHD and Delta Coal as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than Delta Coal arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

2. Methodology

2.1 Audit inception

An initial start-up teleconference for the audit was held on 11 March 2022 with relevant Delta Coal representatives to discuss the audit methodology, identify relevant personnel involved in the project, key activities and systems occurring on site, documentation for review and to schedule a date for the site inspection.

2.2 Document review

Environmental documentation associated with the Mine was reviewed by the auditors prior to site visit. Delta Coal personnel provided a number of documents for review including:

- Road Transport Protocol, including Traffic Management Plan (TMP) and Code of Conduct
- Noise Management Plan (NMP)
- Air Quality Greenhouse Gas Management Plan (AQGGMP)
- Water Management Plan (WMP)
- Non-Indigenous Heritage Management Plan (NIHMP)
- Aboriginal Cultural Heritage Management Plan (ACHMP)
- Pollution Incident Response Management Plan (PIRMP)
- Land Management Plan (LMP)
- Environmental Management Strategy (EMS)
- Mining Operations Plan (MOP)
- PA 06_0311
- EPL 191
- Mining lease (ML) 1781 (formerly Consolidated Coal Lease (CCL) 719) and ML 1783 (formerly CCL 721)
- EA documentation
- Correspondence to/from relevant agencies and Community Consultative Committee (CCC) Chairperson

Additional documents were provided during and following the audit as evidence of compliance with PA 06_0311, the EPL, and relevant lease(s).

2.3 Agency consultation

As part of the audit process, the following agencies were invited to provide comment in regard to Development Consent conditions requiring specific consultation with the particular agencies, including:

- DPE
- NSW Resources Regulator
- DPE – Water
- BCD
- EPA
- LMCC
- CC Council
- DPI – Fisheries
- The CCC Chairperson

Letters requesting comment from the agencies were emailed on 23 March 2022. Correspondence was received from DPE, NSW Resources Regulator, EPA, and CCC Chairperson.

Copies of this correspondence are provided in Appendix B. A summary of the auditor's response to issues raised by the agencies is included in Section 4.7

2.4 Site inspection and interviews

2.4.1 Opening and closing meeting

GHD undertook a site visit of Mannering Colliery on 2 May 2022. The audit team used the site inspection to review compliance with various environmental requirements of the Mine.

Conditions on the day of the site inspection were noted to be up to 22.3 degrees Celsius (°C), with wind gusts up to 17 km/hr, from the south-east.

The opening meeting was held at Mannering Colliery, with the closing meeting being held at Chain Valley Colliery. The list of participants is provided in Table 2.1.

Table 2.1 Opening and closing meeting attendees

Audit team members	Organisation	Role
Elliot Holland	GHD	Lead Auditor
Lachlan Taylor	GHD	Assistant auditor
Lachlan McWha	Delta Coal	Environmental Compliance Coordinator
Pieter Van Rooyen	Delta Coal	Environment and Community Relations Superintendent

Following the opening meeting, a site inspection was undertaken of the Mine and operations. The objectives of the closing meeting were to discuss any outstanding matters, present preliminary findings and outline the process for finalising the audit report.

2.4.2 Audit interviews

During the on-site component of the audit, interviews were conducted with the Delta Coal staff identified in Table 2.1.

2.4.3 Data collection and verification

Where possible, documents and data collected during the audit process were reviewed whilst on-site. A number of documents were provided to the audit team prior to the on-site component of the audit. Several documents that were not available during the on-site component were provided following the audit.

All information obtained during the audit process was verified by the audit team where possible. For example, statements made by site personnel were verified by viewing documentation and/or via visual observations made during the site inspection. Where suitable verification was unable to be obtained, this has been identified.

2.4.4 Site inspection

A detailed site inspection of Mannering Colliery was undertaken on 2 May 2022. The following locations were inspected:

– Above ground tanks and bunding
– Oily water separator
– Workshop
– Hazardous and dangerous goods storage area
– Coal stockpile area
– Coal handling preparation plant (CHPP) facilities
– Water storage dams
– EPL licensed discharge location

2.5 Reporting

This report has been prepared on an exception basis, highlighting the compliance issues identified along with any areas where action or improvement is required. The IEA has been prepared in accordance with the *NSW Government Independent Audit Guideline* (NSW Government, 2015).

Table 2.2 details where the key requirements of the guidelines have been addressed.

Table 2.2 Independent Audit Guideline Requirements

Section	Description	Where addressed
2	Assess the operator's compliance with the requirements of regulatory approvals, including (as applicable): – The Development Consent – The Environment Protection Licence – The Mining Lease (Consolidated Coal Leases) – Water licences and approvals	Section 4
2, 3	The scope of the audit and the audit team (including any technical specialists) to be determined by the lead regulator.	Sections 1.2 and 1.3
3.3	The auditor must be independent of the development being audited and audit findings must be based on verifiable evidence.	Appendix C
4.2	The compliance status of each requirement or commitment should be assessed in accordance with the compliance assessment criteria and risk levels in the audit guidelines.	Section 4. However, compliance assessment criteria is in accordance with DPE's audit team approval letter (see Appendix A).
5.1	The audit outcomes to be documented in a thorough, accessible and accurate audit report that is written in a neutral tone reflecting facts gathered by the audit team.	This audit report
5.1	The audit report should include the following sections: – Introduction, providing a brief overview of the development, audit scope and objectives. – Methodology, describing the audit team, methodology applied, document reviews, site inspections and interviews. – Audit findings, including documentation of consultation, outcome of actions from the previous audit, assessment of compliance status against the conditions and commitments in relevant documents and discussion of environmental incidents and performance. – Recommendations, identifying any opportunities for improvement identified in the audit.	This audit report
5.2	Audit reports submitted to the lead regulator must be certified by the lead auditor on an attached 'Independent Audit Submission Form'.	See Appendix D
5.3	Copies of the final audit report to be distributed to regulator agencies within two weeks of finalisation and placed on the development's website.	Delta Coal to complete
6	The operator of the development to response to the lead regulator responding to the audit findings and recommendations with an action plan within four weeks of receiving the final audit report.	Delta Coal to complete

2.6 Definitions

Reporting results from the 2020 IEA was generally based on *NSW Government Independent Audit Guideline* (NSW Government, 2015); however, as per the request of DPE (see Appendix A), only the following descriptors have been used.

Compliant

Where sufficient verifiable evidence has been gathered to demonstrate that the intent and all elements of the requirement of the regulatory approval have been complied with within the scope of the audit.

Non-Compliant

Where sufficient verifiable evidence has been gathered to demonstrate that the intent of one or more specific elements of the regulatory approval have not been complied with within the scope of the audit.

Table 2.3 details the risk levels for non-compliances.

Table 2.3 Risk level for non-compliances

Risk level	Colour code	Description
High		Non-compliance with potential for significant environmental consequences, regardless of the likelihood of occurrence.
Medium		Non-compliance with: – Potential for serious environmental consequences, but is unlikely to occur, or – Potential for moderate environmental consequences, but is likely to occur.
Low		Non-compliance with: – Potential for moderate environmental consequences, but is unlikely to occur, or – Potential for low environmental consequences, but is likely to occur.
Administrative Non-compliance		Only to be applied where the non-compliance does not result in any risk of environmental harm (e.g. submitting a report to government later than required under approval conditions).

Not triggered

A regulatory approval requirement has an activation or timing trigger that had not been met at the time of the audit inspection, therefore a determination of compliance could not be made.

Note

A statement or fact, where no assessment of compliance is required.

Note: while 'note' was not identified as a relevant descriptor, a number of conditions of PA 06_0311, EPL 191, and relevant leases do not have any relevant compliance requirements. Therefore, note has been used to identify these conditions where no assessment of compliance is applicable.

3. Previous independent audit and status

The recommendations made in the 2019 IEA prepared by SLR Consulting Australia Pty Ltd (2019), and the status of recommendations as at 2 May 2022 are in Table 3.1 below.

Table 3.1 2019 IEA findings/recommendations

Reference	2019 findings/recommendations	2022 status	Status (closed/open)
Non-compliance recommendations from 2019 Audit			
EPL 191 – L1.1	Continue to undertake mitigation measures to comply with section 120 of the *Protection of the Environment Operations Act 1997*	Several exceedances of criteria occurred during the reporting period. As a result, **Corrective action 1** has been made in this audit.	Open
EPL 191 – L2.4	Continue to undertake water quality monitoring. If a water quality exceedance is detected undertake measures to improve water quality.	Several exceedances of water quality criteria occurred during the reporting period. As a result, **Corrective action 2** has been made in this audit.	Open
EPL 191 – O1.1 and PA 06_0311 Schedule 3 Condition 23	– Finish sorting out the piles of reject and rubbish at the pit top area. – Undertake contaminated sites/waste material assessment at the waste stockpile area. – SLR recommends none of the waste from the stockpile material is removed from site for waste disposal until an assessment on the waste is undertaken. – Install signage at the landfarm material at the pit top.	During the conduct of the audit, documentation reviewed, and the site inspection indicates that the site is being operated generally in compliance with the requirements of this condition.	Closed
EPL 191 – O4	2019 IEA Recommendation: Update the PIRMP to include: – Current site contacts – Email details for government contacts – Figures that clearly show the location of hazardous substances and where pollution response equipment is stored	A review of the PIRMP found that the recommendations of the 2019 IEA have been incorporated and are closed out.	Closed

Reference	2019 findings/recommendations	2022 status	Status (closed/open)
EPL 191 – L5 and PA 06_0311 – Schedule 3 Condition 2	Continue to undertake noise monitoring.	Noise monitoring continued over the reporting period. Frequency was increased from quarterly monitoring to monthly reporting in Q4 2019.	Closed
	Undertake follow-up actions if noise exceedances occur.	Noise mitigation projects have been undertaken.	Closed
	Continue to manage noise complaints.	A response to community complaints dated 2 October 2020 was viewed. The response from Delta Coal was adequate and thorough. DPIE were also informed of the response.	Closed
	Provide DPE with EMM Noise Mitigation Study dated March 2019.	Provided to DPIE as an Appendix to the 2019 Annual Review.	Closed
EPL 191 – M5.2	Include in the Complaints Register: – Time of the complaint – Personal details of the complainant – Method by which the complaint was made	The internal and website published complaints and incident registered were viewed during the site audit. Whilst the website published register did not contain all the requirements of this condition, the internal register contained the full details required.	Closed
EPL 191 – M6.2	With the new ownership an advertisement should be placed in the paper providing a link to the Delta Coal website and outlining the complaint management details.	The Community Newsletter from July 2019 fulfilled the 2019 IEA recommendation.	Closed
EPL 191 – M6.4	Update the details of designated representatives of the company in the PIRMP.	The PIRMP has been updated since the previous audit and contains the contact details of the current representees of the company.	Closed
EPL 191 – R1.3	LakeCoal prepare an Annual Return for the period commencing on the first day of the reporting period (1 January 2019) and ending on the date the application for the transfer of the licence to the new licensee is granted (1 April 2019). Delta Coal prepare an Annual Return for the period commencing on the date the application for the transfer of EPL191 is granted (1 April 2019) and ending on the last day of the reporting period (31 December 2019).	The EPL was transferred from LakeCoal to Delta Coal on 1 April 2019, outside the scope of the reporting period. Delta Coal produced an Annual Return for the 2019 reporting year for the months of April to December.	Closed
PA 06_0311 – Schedule 2 Condition 8	Develop and implement a plan to update Mannering's Strategies, Plans and Programs.	This condition was removed in MOD5 and therefore compliance against the previous audit recommendation has not been assessed.	Closed
PA 06_0311 – Schedule 2 Condition 11	Ensure that all plant and equipment used on site is operated in a proper and efficient manner.	Workorders for routine maintenance on the Ash Analyser were produced upon request during the site inspection. The workorder tracking system, PULSE, was also viewed.	Closed

Reference	2019 findings/recommendations	2022 status	Status (closed/open)
PA 06_0311 – Schedule 2 Condition 12	Ensure VPA payments are made prior to the due date.	No coal has been produced by the site over the reporting period, and therefore VPA payments are not required.	Closed
PA 06_0311 – Schedule 3 Condition 8	The WMP needs to be updated.	The WMP was (rev 6.1) was updated on 3 February 2020. The plan included an updated Figure 1 as per the previous audit corrective action.	Closed
	Replace Figure 1 in the WMP with clear figures showing clean and dirty water management (i.e. replace with Figures 2.10 & Figure 2.11 from the 2018 Annual Review).		
PA 06_0311 – Schedule 3 Condition 9	The Water Balance in the WMP needs to be reviewed as it's out of date.	The water balance was updated during the audit period as per the previous audit recommendation.	Closed
PA 06_0311 – Schedule 3 Condition 11	Undertake visual assessment of the unnamed creek every 6 months, to monitor stability and erosion.	The recommendation of the previous audit to undertake visual assessment of the unnamed creek has been completed.	Closed
	A TARP should be developed in the next review of the WMP which outlines quantitative and qualitative triggers for the creek and erosion.	A TARP is included in Section 6.5.9 of the WMP closing out this recommendation.	Closed
	Include results of the visual assessment of the unnamed creek in Annual Reviews. Include a reference again previous results.	The recommendation of the previous audit to undertake visual assessment of the unnamed creek is reported on in the annual review documentation.	Closed
	Ensure monitoring undertaken at the "Downstream" monitoring location is undertaken every 12 months.	Monitoring has been undertaken at the Downstream location.	Closed
	Include analysis results from monitoring undertaken at the "Downstream" monitoring location in Annual Reviews.	Monitoring results for the Downstream location are included in the Annual Review.	Closed
PA 06_0311 – Schedule 3 Condition 12	Include in Section 9.4 of the Water Management Plan reporting of ground water results in Annual Reviews.	Groundwater volumes as discharge are reported in section 8 of the annual review.	Closed
PA 06_0311 – Schedule 3 Condition 14	Attach the Bushfire Management Plan to the Land Management Plan.	The Bushfire Management Plan has not been attached to the LMP. As a result, **Recommendation 1** has been made in this audit.	Open
PA 06_0311 – Schedule 3 Condition 16	Update the AQGGMP.	The AQGGMP was last updated in December 2019.	Closed
	Include in the updated AQGGMP a plan showing dust monitoring locations and the location of the weather station.	Dust monitoring locations are shown in the updated AQGGMP.	Closed

Reference	2019 findings/recommendations	2022 status	Status (closed/open)
PA 06_0311 – Schedule 3 Condition 18A	Update the ACHMP to make it reflective of the Mannering site only.	The ACHMP was updated on 4 December 2019, satisfying the recommendation of the previous audit.	Closed
	Update the Non-Indigenous Heritage Management Plan.	NICHMP were updated on 4 December 2019, satisfying the recommendation of the previous audit.	Closed
PA 06_0311 – Schedule 3 Condition 22	Assess the relevance of the Energy Savings Action Plan (ESAP) and whether it requires updating or incorporation into the sites Air Quality Management Plan (AQMP).	This condition was removed in MOD5 and therefore compliance against the previous audit recommendation has not been assessed.	Closed
PA 06_0311 – Schedule 5 Condition 1	Review the Environmental Management Strategy (EMS).	The EMS was updated in 2021, which incorporated the most recent project approval (MOD5) and the recommendations of the 2019 IEA.	Closed
	Include in the reviewed EMS the incorrect monitoring frequency for conductivity, TSS, pH and Oil & Grease.		
PA 06_0311 – Schedule 5 Condition 3	All management plans require updating due to the length of time since the previous reviews.	Most management plans were updated over the reporting period. The LMP was the only plan not updated during the audit period, however the auditor notes that this is in the process of being updated and would be assessed next audit period.	Open
	Ensure there is a cross referencing table covering this condition in management plans.	The reviewed management plans have included the cross-referencing table as recommended by the previous audit.	Closed
	Additional detail including Trigger, Action, Response Tables (contingency plan) should be developed in the next round of management plan updates.	Management plans generally included Trigger, Action, Response Tables. The AQGGMP did not include the Trigger, Action, Response Tables. Refer to the recommendation for Schedule 3 Condition 17.	Open
	Include in the LMP and ACHMP reporting mechanisms (i.e. Annual Review).	Annual review reporting mechanisms are included in the ACHMP. As discussed above, the LMP is in the process of being updated and would be assessed next audit period.	Open
	Include in the WMP 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.	A contingency plan has not been included in the WMP. This recommendation therefore still remains open.	Open
	Include in the WMP a protocol for managing and reporting any incidents, complaints, non-compliances with statutory requirements; and exceedances of the impact assessment criteria and/or performance criteria.	A reporting procedure is included in the WMP.	Closed
	Include a complaints handling procedure in the include ACHMP.	A complaint handling procedure is included in the ACHMP.	Closed
	Include a protocol for periodic review of the ACHMP.	A process for periodic review is included in the ACHMP.	Closed

Reference	2019 findings/recommendations	2022 status	Status (closed/open)
	Ensure all management plans required under PA 06_0311 detail and consider the management condition.	The management plans reviewed were generally compliant with this condition. Some administrative non-compliances were identified. Refer to Table 5.1 and Table 5.2 for corrective actions.	Open
PA 06_0311 – Schedule 5 Condition 5	Include statement in future Annual Reviews stating that Management Plans have been reviewed and state which management plans will or will not be updated within 3 months.	Revision planning, and tracking is included in the 2021 Annual review, therefore closing out the recommendations of the previous IEA.	Compliant
	Develop and implement a plan to update Mannering's Strategies, Plans and Programs.		
PA 06_0311 – Schedule 5 Condition 6	Ensure all incidents are reported within the required timeframe.	A review of incident reports provided by Delta Coal have found that appropriate action was where the EPA and DPIE (where relevant) were notified upon discovery of the incident.	Closed
	Ensure the complaints/incidents register includes all incidents.	Whilst not a non-compliance against this condition, the complaints and incidents register provided by Delta Coal was missing incidents from May 2019 to December 2019. The recommendation of the previous IEA has therefore not been followed though. As a result, **Corrective action 8** has been made in this audit.	Open
PA 06_0311 – Schedule 5 Condition 8	Ensure Annual Reviews are submitted to DPE by 31 March.	Annual Reviews have been submitted by 31 of March for each reporting year over the audit period. However, this is a requirement of PA 06_0311 and is not viewed as a necessary ongoing recommendation. Therefore, this audit has considered it closed.	Closed
	Future Annual Reviews should clearly state noise and water quality performance criteria, and provide monitoring results against these.	Annual Reviews present data to the requirements of this recommendation.	Closed
	Include in future Annual Reviews: – Requirements of plans/programs required under PA 06_0311 for noise and water quality – The monitoring results of previous years, for noise and water – The relevant predictions in environmental assessments for air quality, noise and water – Trends in the monitoring data for air quality, noise and water, over the life of the project – Discrepancies between the predicted impacts in the EAs for air quality, noise and water, and actual impacts of the project	Delta Coal have generally closed this comment during the reporting period. The inclusion of data trends for noise monitoring has not been included in the Annual Reviews. As a result, **Corrective action 7** has been made in this audit.	Open

Reference	2019 findings/recommendations	2022 status	Status (closed/open)
	The Annual Reviews are set out differently to the DPE Annual Review Guidelines (2015). Ensure table of contents matches the guidelines.	Table of Contents in Annual Reviews have been updated to reflect the DPE Annual Review Guidelines.	Closed
	IEA Actions Plans should be included in every Annual Review going forward.	IEA Action Plans are included in Appendix 8 of the Annual Review.	Closed
PA 06_0311 – Schedule 5 Condition 10	Ensure future IEA reports are submitted within the required timeframe.	The 2019 IEA was submitted within 3 months of the audit being undertaken.	Closed
PA 06_0311 – Schedule 5 Condition 13	Include the following documentation on the project website: – The documents referred to in condition 2 of Schedule 2 (EAs for the original project and Mod 1 - Mod 4). – Up-to-date Complaints Register. The Register only includes complaints up to February 2019. – CCC minutes for 2017, 2017 and 2019. – 2016 Audit Action Plan. – Noise monitoring data not included in the Monthly Website Report. – 2018 - 2020 MOP.	The recommendations of the 2019 IEA have been addressed, except for the recommendation that noise monitoring be included in the monthly environmental reports. Noise monitoring is presented in a separate report located beneath the monthly environmental reports which is considered satisfactory to close out the 2019 IEA recommendations.	Closed
Statement of commitments recommendations	Prepare a report to determine what further actions can be undertaken to reduce noise exceedances and noise complaints.	EMM completed a Noise Compliance Study in 2019, which identified the rotary breaker was emitting elevated noise emissions. This has subsequently been removed.	Closed
	Include European heritage aspects in the “Lake Coal Surface Generic Surface Induction” and “Environmental Awareness Training” Assessment.	European heritage information is not included in the Environmental Awareness Training. This remains open from the previous audit.	Open
	Update the Environmental Monitoring Program to incorporate any commitments made in the Environmental Assessments (EAs) for Mod 1, Mod 2, Mod 3 & Mod 4, and any additional consent conditions (for these modifications).	The Environmental Monitoring Program was updated in 2021 and satisfied the recommendation from the previous audit.	Closed
CCL 721 – Condition 5	Report against compliance with the MOP in future Annual Reviews.	A review of the Annual Reviews found this recommendation has been closed.	Closed
CCL 721 – Condition 6	Ensure all additional environmental reports on specific surface disturbing operations are provided to the RR as required.	Review of documentation available on MinView confirms relevant reporting has been conducted in accordance with this condition.	Closed

Reference	2019 findings/recommendations	2022 status	Status (closed/open)
CCL 721 – Condition 18	Ensure all practicable measures are undertaken to reduce noise and water quality exceedances (refer to specific recommendations relating to noise and water quality).	Two noise mitigation projects have been undertaken over the reporting period: – Rotary breaker removal – CHPP enclosure undertaken Noise management measures are considered appropriate. There have been some water quality exceedances over the reporting period. Refer to **Corrective actions 1** and **2**.	Open
CCL 719 – Condition 3	Prepare Annual Rehabilitation Reports.	Review of documentation available on MinView confirms relevant reporting has been conducted in accordance with this condition.	Closed
	Include in Annual Reviews any non-compliances with the MOP, during the reporting period.	Non-compliances are presented in the Annual Review.	Closed
CCL 719 – Condition 8	Ensure an adequate security deposit is provided as a group security.	Review of relevant documentation indicates the security deposit was amended for the current approved MOP.	Closed
	Ensure group security has been approved by RR.		Closed
Additional recommendations	It provided difficult for Delta Coal to provide requested information in a timely manner. SLR recommends a review of the management system to ensure information is correctly filed and readily available.	Delta Coal provided information in a timely manner for this audit.	Closed
	Little information was provided to SLR prior to the audit which resulted in numerous additional information requests. Additional time is required by Delta Coal to prepare for the next IEA. An internal audit is recommended prior to the next IEA to ensure information and evidence is available to the Independent Environmental Auditor.	Delta Coal provided information in a timely manner for this audit.	Closed
	A separate subsidence impact assessment report should be prepared annually and appended to the Annual Review. This report should be prepared or peer reviewed by a subsidence specialist. This should assess subsidence performance measures from the Project Approval.	An annual subsidence report is prepared and appended to the Annual Review.	Closed

4. Audit findings

4.1 Context of compliance assessment

Mannering Colliery operates under PA 06_0311 which initially provided approval for the following activities:

- Mining operations to take place until 2027
- The approved maximum rate of production of 1.1 million tonnes per annum (Mtpa)
- The approved maximum rate of coal transport of 2.1 Mtpa
- Transport of coal via overland conveyor to Vales Point Power Station

PA 06_0311 has been modified five times during the operation of the mine:

- **Modification 1 (approved 25 October 2012):** The modification allowed for the extension of mining activities at Mannering Colliery:
  - Extension of underground mining operations within the Fassifern Seam beyond the existing approved 2008 Project Approval boundary using bord and pillar mining methods
  - Extension of underground mining operations into the Great Northern Seam using bord and pillar mining methods
  - Provide full time employment for a total of 170 personnel
- **Modification 2 (approved 2 November 2014):** Development of an underground linkage between Chain Valley Colliery and Mannering Colliery
- **Modification 3 and Modification 5 (approved 16 December 2015):** Allowed for the following changes to the Mannering Colliery operations:
  - An increase in the rate of ROM coal handling at, and transport from, MC from 1.1 Mtpa to a maximum of 1.3 Mtpa
  - An extension of the project approval period from 31 March 2018 to 30 June 2022
  - Minor vegetation clearing/disturbance adjacent to some infrastructure at MC's pit top to enable the extension/establishment of asset protection zones (APZs) for bushfire protection purposes
- **Modification 4 (approved 18 August 2016):** Allowed for the use of the rotary breaker in coal processing.
- **Modification 5 (approved 26 June 2020):** Allowed for the following changes to the Mannering Colliery operations:
  - Increasing the amount of ROM coal that can be transferred from Chain Valley Colliery to Mannering Colliery from 1.3 Mtpa to 2.1 Mtpa
  - Resource recovery through the broader use of bord and pillar mining methods within the approved consent boundary
  - An extension to the duration of Mannering Colliery consent to align with the duration of approved operations at Chain Valley Colliery and enable ongoing handling and processing of coal and a more flexible extraction regime across the sites
  - Greater flexibility in the approved layout of bord and pillar workings at Mannering Colliery
  - Minor changes to infrastructure at Mannering Colliery, including the addition of a new underground coal crusher

The site is regulated by EPL191 which was most recently reissued on 14 April 2021.

Mannering Colliery is regulated by two mining leases (formerly consolidated coal licenses):

- ML 1781 (formerly CCL 719 – sublease B). Granted 10 March 2022 with a lease expiry of 3 July 2031:
  - Sub-lease from Centennial Mannering for Mannering Colliery (subject to application to transfer to Delta Coal)

– ML 1782 (formerly CCL 721). Granted 24 January 2022 with a lease expiry of 29 July 2026:
    - Incorporates part of the approved mining area, Part sublease to Delta Coal, incorporated into Chain Valley Colliery holding. Includes Mannering surface facilities

4.2 Summary of compliance

– 12 non-compliances associated with PA 06_0311, including:
    - Three deemed to represent a low risk
    - Nine deemed administrative non-compliances (ANC)
– Eight non-compliances associated with EPL 191, including:
    - Four deemed to represent a low risk
    - Four deemed ANC

4.2.1 General environmental compliance

Delta Coal was generally compliant in terms of environmental performance during the audit period and site inspection. The site did not have any serious incidents or non-compliances deemed medium risk or higher.

4.2.1.1 Air quality

The AQGGMP was revised in January 2022 to cover both Mannering and Chain Valley sites. A review of the plans and annual review documentation identified that monitoring was being undertaken in accordance with the requirements of EPL 191 and PA 06_0311. During the audit period, MC experienced a number of exceedances of air quality criteria, which were all attributed to contamination of dust gauges and not activities at the site. These exceedances are therefore not considered non-compliances. This notwithstanding, they were reported as incidents and are covered in Section 4.2.3.

Two increases of greater than 2 g/m^2/month were observed between November 2019 and December 2019 and August 2021 and September 2021. These exceedances were not identified by Delta Coal at the time and have been identified as low risk non-compliances by this audit, as a result **corrective action 7** has been made.

Several complaints were made against the site in relation to dust in 2019 and 2020. The auditor believes the response taken by Delta Coal is satisfactory. There were no dust related complaints in 2021 and 2022 at the time of audit, indicating that adaptive management practices have been acceptable.

4.2.1.2 Noise

Noise monitoring identified several non-compliances in 2019 and 2020 against criteria in EPL 191 and PA 06_0311. These non-compliances were prior to Delta Coal removing the rotary breaker, undertaking maintenance of crushing hammers at the CHPP and enclosing, the CHPP. In addition, since the rotary breaker was decommissioned, initial crushing and sizing occurs underground before being conveyed to Mannering Colliery pit-top for further sizing and screening in the CHPP.

No noise exceedances have occurred since these changes. However, the majority of complaints received against Mannering Colliery during the reporting period were in relation to noise and vibration (28 during 2019, 45 during 2020, and 36 during the 2021 reporting period. Complaints were primarily received from one group of receivers close to the site. A review of the complaints register indicates that complaints received have decreased between 2020 and 2022.

Delta Coal have been active in reducing their noise though the removal of the rotary breaker and enclosure of the CHPP in noise mitigating material. Furthermore, the increase in complaints during 2020 (44) and 2021 (36) (versus 2019) are noted to have been received from the same complainant who has since moved away from the local area (as at February 2022). Since this time, only one noise complaint has been received during Quarter 1 of 2022. The response to this complaint was noted to have been proactive, with additional:

– Consultation undertaken with the complainant by senior Delta management.
– Maintenance conducted on the CHPP after inspection by senior Delta management (i.e. replacement of rock crushing hammers).

4.2.1.3 Water management

Water generated at the site is a mixture of groundwater and surface water runoff. Water is retained in sediment dams at the site prior to being discharged at the EPL licenced discharge point. Sediment ponds and the discharge point were viewed during site inspection.

Several non-compliances against criteria in EPL 191 were recorded during the reporting period. Exceedances included Total Suspended Solids (TSS), pH limit and oil and grease limits. These exceedances are discussed further in Section 4.2.3. These exceedances constitute a 'pollution' of waterways under the POEO Act and were identified as a low-risk non-compliance.

Water monitoring was undertaken in a way that was generally compliant with the requirements of PA 06_0311 and EPL 191. Six samples in late 2020 that were not analysed for conductivity as per the requirements of EPL 191, therefore constituting a non-compliance.

Delta Coal holds a groundwater bore license WAL40461 under the *Water Act, 1912*, which permits the industrial dewatering of groundwater up to volume of 450 megalitres (ML) per year. Based on the information in the Annual Reviews for the audit period, the site was within extraction licence limits allowed by WAL40461.

Wash bays and water traps viewed on site were in operational condition. One occurrence of daily volume discharge being above limits in EPL 191 was recorded during the reporting period. However, this was not deemed to be an exceedance, as operation of Condition L3.2 permits exceedances in certain conditions of which Delta Coal complied with.

4.2.1.4 Biodiversity

The project footprint has not been amended during the reporting period, and therefore no clearing works have been undertaken. Weed management is ongoing at the site and will continue into next reporting period.

4.2.1.5 Heritage

No incidents or any other things of note involving Aboriginal or non-Aboriginal Heritage have occurred over the reporting period.

4.2.1.6 Visual

No new structures or works have occurred within the reporting period that would negatively impact visual amenity, and therefore no changes to visual factors have occurred.

4.2.1.7 Waste

Remondis manages waste streams on-site, providing waste receipts which identify the types and quantities of wastes generated and where they are disposed.

Waste systems were viewed on site during the site inspection. There were adequate, clearly marked receptacles placed around the site for waste; however, it was observed that staff were not segregating waste appropriately. This therefore constitutes a non-compliance with a number of conditions of EPL 191 and PA 06_0311. **Corrective action 3** is proposed to address the low-risk non-compliance.

4.2.1.8 Rehabilitation

Review of the current approved MOP indicates minimal rehabilitation is proposed during the MOP period, with rehabilitation goals generally related to mine closure and addressing subsidence impacts, the consent allows operation up to 31 December 2027; therefore, closure planning in accordance with PA 06_0311 is not required to commence until 31 December 2022.

The site is currently in the process of preparing a Rehabilitation Management Plan (RMP) and Annual Rehabilitation Report and Forward Program (as now required by the NSW Resources Regulator instead of a MOP from 2 July 2022). As part of the RMP preparation, it is also recommended that this document discuss topsoil storage and estimated volumes required for rehabilitation.

4.2.2 Complaints

Review of incidents records for Mannering Colliery identified complaints is summarised in Table 4.1 below, with the auditor noting Delta Coal were responsive to community complaints and adapted operations to minimise potential impacts on the community, where applicable.

Table 4.1 Summary of complaints during the audit period

Date	Nature of complaint	Description	Action taken
2019			
25/04/2019	Noise	Complaint received from resident in Macquarie Shores Retirement Village. Sleep disturbance 11:26 PM.	Following investigation process with Dept. of Planning - Compliance.
26/04/2019	Noise	Complaint received from resident in Macquarie Shores Retirement Village. Sleep disturbance 11:26 PM.	Following investigation process with Dept. of Planning - Compliance.
12/06/2019	Noise	Complaint received from residents in Macquarie Shores Retirement Village. Sleep disturbance between 12:00 and 7:00 am. Residents requested to be provided with ear plugs.	Following investigation process with Dept. of Planning - Compliance. Ear plugs were provided to residents.
20/06/2019	Noise	Complaint received from residents in Macquarie Shores Retirement Village. Sleep disturbance 12:00 am and 7:00 am.	Technical Services alerted Mannering Colliery Production Supervisors and Control Room of current coal processing times and requested to minimise running Mannering Colliery outside of night-time hours where possible.
4/7/2019	Noise and Dust	Group complaint listing received from the manager of Macquarie Shores Retirement Village. Complainants were individually contacted to understand their concerns/major issues.	Residents were followed up with a phone call and main concerns were recorded. Residents were advised of the noise compliance monitoring and reporting process and noise mitigation works conducted and proposed. Manager was later contacted to let him know of the outcome of phone calls.
	Noise and Dust	Resident was contacted - the main concern was the noise impacts particularly at 10:00 pm. Can hear loud alarms, rumbling noises. Also reported having black dust on cars and windows.	Residents were followed up with a phone call and main concerns were recorded. Residents were advised of the noise compliance monitoring and reporting process and noise mitigation works conducted and proposed.
	Noise and Dust	Resident was contacted - Complainant mentioned that they were not personally affected but the complaint is regarding the power station which sometimes sounds like a jet plane going over and reports of dust in the air from the ash dam.	Residents were followed up with a phone call and main concerns were recorded. Residents were advised of the noise compliance monitoring and reporting process and noise mitigation works conducted and proposed.
	Noise	Resident was contacted - Complainants main concern was the increase in noise during night time in the last 3-6months.	Residents were followed up with a phone call and main concerns were recorded. Residents were advised of the noise compliance monitoring and reporting process and noise mitigation works conducted and proposed.

Date	Nature of complaint	Description	Action taken
	Noise and Dust	Resident was contacted - Complainants main concern was dust impacts on the community in particular the air quality to children's health. Also reported sleep disturbance cause by loud noises.	Residents were followed up with a phone call and main concerns were recorded. Residents were advised of the noise compliance monitoring and reporting process and noise mitigation works conducted and proposed.
	Noise and Vibration	Resident was contacted - Complainants main concern was the loud noises and vibrating/shaking at night. Has been woken up by house shaking and vibrating.	Residents were followed up with a phone call and main concerns were recorded. Residents were advised of the noise compliance monitoring and reporting process and noise mitigation works conducted and proposed.
15/07/2019	Noise	Sleep disturbance noises are still prevailing and have been bad particularly between midnight and 7:00 am in the morning and during the weekend.	Following investigation process with Dept. of Planning - Compliance. Resident was advised of the noise monitoring and reporting process and noise mitigation works conducted and proposed.
18/07/2019	Noise	Complaint received from residents in Macquarie Shores Retirement Village. Unbearable banging, clanging and thumping caused sleep disturbance between 12:00 am and 7:00 am.	Site inspection was conducted immediately after receiving complaint to check operations at Mannering Colliery. The coal processing plant or loader were not running at the time of complaint or at all during that day. A site inspection was also carried out at Macquarie Shores Retirement Village, where no audible noise could be heard from either Mannering Colliery or Vales Point Power station. Complainant's residence was visited but complainant did not respond.
19/07/2019	Noise and Vibration	Complaint received from resident in Macquarie Shores Retirement Village, regarding noise and vibrations and also reported via the EPA Officer.	Informed the EPA on current DPIE Noise Compliance Report process, to help the EPA to inform the redacted name of the complainant.
22/07/2019	Noise and Vibration	Complaint received from resident in Macquarie Shores Retirement Village. Noise vibrating through windows during 10:00 pm 19/7/2019 till Monday 22/7/2019. Loud clanging, buzzing, machinery, roaring from turbines etc, heard 24/7.	Visual amenity assessment survey conducted at 3:30 am on morning of complaint. No audible noise heard emanating from Mannering Colliery at this time.
11/08/2019	Noise	Complaint received from resident Macquarie Shores Retirement Village. Loud clanging, thumbing, stumping, tapping, engine and coal turbine roaring and buzzing have become worse and unbearable.	Resident was advised of the noise monitoring and reporting process and noise mitigation works conducted and proposed. Complainant was also advised that an unattended noise logger has been installed with results reported to Dept. of Planning on completion of study.
13/08/2019	Noise and Vibration	Complaint received from resident in Macquarie Shores Retirement Village. Loud vibrating sounds including thumbing, stumping and machinery noises between 1:00 am - 4:55 am. Bubbling noises were heard at 5:23 am.	Resident was advised of the noise monitoring and reporting process and noise mitigation works conducted and proposed. Complainant was also advised that an unattended noise logger has been installed with results reported to Dept. of Planning on completion of study.

Date	Nature of complaint	Description	Action taken
26/08/2019	Dust	Complaint received via EPA representative. Dust issue at Delta Coal Mannering Colliery in relation to EPL 191. Complainant said that water trucks are not being used in recent month and the dust is increasingly affecting residents nearby	Investigation was undertaken and email response to the allegation provided to the NSW EPA officer. The response outlined the current dust reduction measures that are in place including: a street sweeper for sealed roads, dust suppression spray used in the coal handling plant, coal conveyors are covered, use of sprinklers when needed in the car park of CVC to minimise airborne dust. The EPA officer was also informed of further upcoming dust reductions measures, including an application of dust suppressant chemical for site unsealed roads which is organised for the following week and also the use of a contracted water cart while a replacement cart is being source by Delta Coal. Ongoing monthly depositional dust gauge monitoring results are in compliance with the limits.
05/09/2019	Noise	Complaint received from resident in Macquarie Shores Retirement Village. Noise noted between night time and 7:00 am from 4/09/19 and 5/09/19.	Resident previously advised of the noise monitoring and reporting process and noise mitigation works conducted and proposed. Delta Coal representative spoke to complainant on 6/09/19 to further understand nature of complaint. Further investigations were being undertaken. Checked Mannering Colliery operations and no CHP or loader operation between 11:30 pm 3/9/19 and 6:30 am 5/9/19. Ongoing communication.
09/09/2019	Noise	Complaint received from resident in Macquarie Shores Retirement Village. Noise noted: Saturday 7/9/2019 5:33 am, Sunday 8/9/2019 10:24 pm and 9/9/2019 between 1:00 am and 7:00 am particularly 4:33 am the noises had been exceptionally loud. Vibrating thumbing noises, conveyor belt noises and roaring engine. On Sunday a siren was noted.	Resident previously advised of the noise monitoring and reporting process and noise mitigation works, ongoing communication.
11/09/2019	Noise	Noises (banging, thumping, conveyor belt and loud roaring loader engine) were exceptionally loud from 4:25 am 11/9/2019.	Resident previously advised of the noise monitoring and reporting process and noise mitigation works, ongoing communication.
26/09/2019	Noise	Complaint received via email from resident in Macquarie Shores Retirement Village. Noise noted between 12:00 am and 7:00 am, and in particular from 6:00 am.	Resident was advised that the MC coal handling plant did not operate from 5:25 pm on 25 September until 6:50 am on 26 September 2019. Surface operations at MC during the nominated period were limited to a single person on the surface undertaking cleaning activities (hosing down and shovelling). A start-up alarm would have sounded at 6:50 am on 26 September to warn personnel of the start-up of the plant as part of the commencement of operations.
07/10/2019	Noise	Complaint received from resident in Macquarie Shores Retirement Village. Noise noted between 12:00 am and 6:00 am on 7/10/19. Intermittent low pitch thumbing, buzzing and low pitch bass clanging noises could be heard.	Email sent to complainant acknowledging receipt of email. Operations to be reviewed.

Date	Nature of complaint	Description	Action taken
09/10/2019	Noise	Complaint received from resident in Macquarie Shores Retirement Village in relation to sleep disturbance. Noise noted at 4:20 am on 9/10/19. Clang, thumbing, buzzing and stumping vibrating noises could be heard.	Email sent to complainant on 11/10/19 acknowledging receipt of email. Complainant advised that the CHPP was operating continuously during the complaint period, and no irregularities were noted. In addition, the loader is not operated at night. Further discussions to take place during upcoming community meeting.
21/10/2019	Noise	Complaint received from resident in Macquarie Shores Retirement Village. Noise noted between from 4:00 am on 19/10/19 and 20/10/19 and from 6:20am on 21/10/19.	Email sent to complainant on 23/10/19 acknowledging receipt of email. Complainant advised that the CHPP was operating continuously during the complaint period, and no irregularities were noted at this time or during regular maintenance. Further discussions to take place during upcoming community meeting.
19/11/2019	Noise	Complaint received from resident in Macquarie Shores Retirement Village. Noise noted between 3:00 am and 4:00 am on 28/10/19.	Email sent to complainant on 29/10/19 acknowledging receipt of email. Complainant was advised that the CHPP was operating during the complaint period, but no abnormal sounds were noted during an inspection undertaken by DC staff on 29/10/19. Data from continuous noise monitor to be reviewed. Further feedback to be provided if additional information comes to light. Further discussions to take place during upcoming community meeting.
04/12/2019	Noise	Complaint received from resident in Macquarie Shores Retirement Village. Loud noises (knocking and clanging) between 11:30 pm 3/12 until the morning 4/12. Complainant also requested an update on the 24 hr unattended noise logger.	Email sent to complainant on 11/12/19 acknowledging receipt of emails. Complainant was advised that the monitoring data during this period was reviewed, Mannering CHP was operational, with no loader activities during this period. The Complainant was also advised that feedback from EMM was sought and provided noise monitoring results from the week prior which stated, “site noise was inaudible at all locations during the evening and night measurements”. The complaint was advised that Delta Coal are working to achieve the continuous noise monitoring at Macquarie shores, in line with the commitments addressed in the most recent Noise Management plan for Mannering Colliery.
16/12/2019	Noise	Complaint received from resident in Macquarie Shores Retirement Village. Loud noises (humming, buzzing. Clanging) were heard between Sunday 15/12 to Monday 16/12. The noises between 12:00 am and 7:00 am on 16/12 were the worst.	Follow up phone call received from complainant on 16/12/19. Complainants’ observations and concerns were discussed.
30/12/2019	Noise	Complaint received from resident in Macquarie Shores Retirement Village. Dumping and clanging noise from midnight and particularly 1:25 am Sunday 29/12/2019. Between midnight and 7:00 am in the morning is of primary concern.	Email sent to complainant on 6/1/2020 acknowledging receipt of email. Complainant was advised that production ceased prior to 7:00 am on the 24/12/2019 with CHP operations ceasing by 1:00 pm 24/12/2019. No production or CHP operations have occurred since this point. Activities have been limited to maintenance works during daylight hours only.

Date	Nature of complaint	Description	Action taken
2020			
21/01/2020	Noise	Complaint received from resident in Macquarie Shores Retirement Village. A siren was heard and loud clanging noises from 5:40 am Tuesday 28/01/20.	Email sent to complainant on 21/01/2020 acknowledging receipt of email. Complainant was advised that during an investigation of the complaint they were able to confirm that there were no emergency phone calls made, all Mannering Colliery plant was functioning and no faults evident, the VPPS conveyor did fault at the time reported and that all alarms at Mannering are all operating at minimum volumes (per Australian standards). The complainant was also advised that there is reason to think that this sound may be coming from Vales Point Power station and therefore forwarded the complaint on to them for investigation. Vales Point Power Station has reviewed the alarm levels on the conveyor route.
12/03/2020	Noise	Complaint received from resident in Macquarie Shores Retirement Village. Clanging, humping and engine rapping could be heard between 12:00 am – 7:00 am, Tuesday 9/03/20, Wednesday 10/03/20 and Thursday 11/03/20.	Email sent to complainant on 12/03/20 acknowledging receipt of email. Complainant was advised that stockpiling activities at Mannering have not occurred on any of these noted periods and have been limited to day shift only (start at 7:00 am). The complainant was also advised that attended noise monitoring was conducted on 17/2/20 while the loader stock pile was operating and during this period noise contributions satisfied the relevant noise limits.
18/03/2020	Noise	Complaint received from resident in Macquarie Shores Retirement Village Loud noises were heard at 2:55 am.	Email sent to complainant on 20/03/20 acknowledging receipt of email. Complainant was advised that CHP operations were occurring at Mannering from well before the period mentioned by complainant to a little after 5:00 am. The complainant was also advised that no coal stockpile or loader was operating overnight on 18/03/2020.
20/03/2020	Noise	Complaint received from resident in Macquarie Shores Retirement Village Loud thumbing, engine noise and clanging was heard between 4:30 am – 8:30 am.	Email sent to complainant on 20/03/20 acknowledging receipt of email. Complainant was advised that Delta Coal were not conducting any CHP or coal stockpile activities overnight. The Vales Point conveyor last operated at 10:57 am on 19/03/20 and the Mannering CHP was last operated at 6:42 am on 19/03/20.
1/04/2020	Noise	Complaint received from resident in Macquarie Shores Retirement Village. Continuous engine roaring could be heard from 2:55 am on 1/04/2020.	Email sent to complainant on 1/04/2020 acknowledging receipt of email. The complainant was advised that the coal plant was operational during the time period. The real time noise monitor at MACQUARIE SHORES RETIREMENT VILLAGE. showed directional levels well below the (night) noise limit LAeq of 43 dB detailed in the consent.
6/04/2020	Noise	Complaint received from resident in Macquarie Shores Retirement Village Loud, low, bass vibrating, stumping and clanging noises were heard between 1:24 am – 7:00 am on 6/04/2020.	Email sent to complainant on 27/04/20 acknowledging receipt of email. Complainant was advised that the loader was in use during this time period. The real time noise monitor at Macquarie Shores Retirement Village showed levels well below the (night) noise limit of LAeq 43 dB detailed in the consent.

Date	Nature of complaint	Description	Action taken
19/04/2020	Noise	Complaint received from resident in Macquarie Shores Retirement Village. Vibrating, knocking ad thumbing noises were heard around 3:30 am on 19/04/2020.	Email sent to complainant on 22/04/20 acknowledging receipt of email. The complainant was advised that the real time noise monitor at Macquarie Shores Retirement Village showed levels well below the (night) noise limit of LAeq 43 dB detailed in the consent.
24/04/2020	Noise	Complaint received from resident in Macquarie Shores Retirement Village. Loud vibrating and buzzing was heard from 12:00 am – 7:00 am 24/04/2020.	Email sent to complainant on 27/04/20 acknowledging receipt of email. The complainant was advised that the loader was in use during this time period. The real time noise monitor MACQUARIE SHORES RETIREMENT VILLAGE. showed levels well below the (night) noise limit of LAeq 43 dB detailed in the consent.
3/05/2020	Noise	Complaint received from resident in Macquarie Shores Retirement Village. Loud noise was heard from 2:46 am 03/05/2020.	Email sent to complainant on 06/05/20 acknowledging receipt of email. The complainant was advised that the complaint was investigated, and noise limits were below the consented limits during the time of the complaint.
5/05/2020	Noise, Dust and Vibration	The EPA received a complaint from a resident in Macquarie Shores Retirement Village. Excessive noise and vibrations from Chain Valley Colliery.	An email was sent to the EPA on 6/05/2020 acknowledging receipt of email. The EPA was advised that complainant may have been referring to Mannering Colliery as it is Macquarie Shores Retirement Village. s closest neighbour. Noise at Chain Valley Colliery has been dramatically reduced as there is no longer runs the ROM coal processing plant is no longer in operation and has drastically reduced stockpiling equipment. Minor levels of coal transport occur during day shift only and directly between Chain Valley Colliery to Vales Point Power Station via internal access/haul roads. The EPA was also advised that monitoring of depositional dust is done routinely and has generally been within the limits, excluding vandals. There is also access to an onsite water cart and is used when required, it was not used on the day complaint was recorded because there had been rain on 5/5.
28/05/2020	Noise and Vibration	Complaint received from resident in Macquarie Shores Retirement Village. Knocking clanging, banging and alarms were reportedly heard between 4:30 am and 5:00 am.	The complainant requested that a review of directional noise data and a summary of this data be tabulated and sent to him for review. A response was provided to the complainant by the Technical Services Manager providing a summary of site operations (Mannering Colliery plant and conveyors were operating normally without stoppages). Directional Noise logger data indicated that noise emissions from the direction of Mannering Colliery was not exceeding the consented noise limit value.
16/06/2020	Noise	Complaint received from resident in Macquarie Shores Retirement Village, noting engine and ‘thumbing’ noises between 12:00 pm and 7:00 am. The complainant also requested a update regarding the decommissioning status of the rotary breaker on site.	The Delta Coal Technical Services Manager provided update to the complainant on the 22/06/2020 noting the Rotary Breaker was no longer in commission, providing photographs of the removal of the rotary breaker from the coal handling and preparation plant (CHPP).

Date	Nature of complaint	Description	Action taken
26/06/2020	Noise	Complaint Received from resident in Macquarie Shores Retirement Village Loud noises were heard within between 2:00 am and 6:00 am.	An email was sent to the complainant on 03/07/2020 acknowledging receipt of their complaint. The complainant was provided with data detailing unattended directional continuous noise monitoring undertaken by Delta Coal to identify noise sourcing from Mannering Colliery. The complainant was also provided data detailing meteorological conditions for the time of their complaint. The complainant was informed that for the period, meteorological conditions may have enhanced noise sourcing from Mannering Colliery received by Macquarie Shores Retirement Village, however Mannering Colliery was within night-time noise compliance limits imposed by the site's development consent (monitoring indicated Manning Colliery's contribution to noise at the receiver was approximately 30 dB while noise limits are 43 dB).
2/07/2020	Noise	Complaint Received from resident in Macquarie Shores Retirement Village. Loud noises were heard within between 12:00 am and 10:00 am.	An email was sent to the complainant on 03/07/2020 acknowledging receipt of their complaint. The complainant was provided with data detailing unattended directional continuous noise monitoring undertaken by Delta Coal to identify noise sourcing from Mannering Colliery. The complainant was also provided data detailing meteorological conditions for the time of their complaint. The complainant was informed that for the period, meteorological conditions would not propagate noise toward Macquarie Shores Retirement Village from Mannering Colliery and Mannering Colliery was within night-time noise compliance limits imposed by the site's development consent (monitoring indicated Mannering Colliery's contribution to noise at the receiver was between 0 to 30 dB while noise limits are 43 dB).
6/07/2020	Noise	Complaint Received from resident in Macquarie Shores Retirement Village. Low frequency thumbing noise was heard from 11:30 pm. The complainant questioned the status of noise mitigation works being undertaken at the site.	An email was sent to the complainant on 13 July 2020 acknowledging receipt of their complaint. The complainant was informed that the site was operating within consented noise limits based upon data continuous directional loggers. The complainant was provided updates on noise mitigation projects, indicating that they were nearing completion.
14/07/2020	Noise	Complaint received from resident in Macquarie Shores Retirement Village. Low frequency engine type noise was heard from 11:30 pm. The complainant described eardrum soreness, impacts to mental health and sleep habits, suggesting the noise originated from the sites mine loader. The complainant questioned the status of noise mitigation works being undertaken at the site.	An email was sent to the complainant on 16 July 2020 acknowledging receipt of their complaint. The complainant was informed that the loaders at the site were not operational on 14/7 or 15/7 during the evening/night and that meteorological conditions for both evenings were less likely to propagate noise from mannering colliery toward Macquarie Shores Retirement Village. The complainant was informed that the rotary breaker had been decommissioned.
20/07/2020	Noise	Complaint received from resident in Macquarie Shores Retirement Village referencing vibrating, clanging and suspected loader noises from 8:45 pm (19/7) until 9:00 am (20/7).	Complaint responded to on the 23/07. The complainant was informed that the colliery had not had production between the 18/07 to the 21/07 due to a belt outage. Continuous directional noise logger data indicated Mannering Colliery's contribution to noise levels at the Macquarie Shores Retirement Village at the referenced time within the complaint was between 16 to 28 db(A) during the evening and night. The complainant was informed the loader at Mannering Colliery was operational.

Date	Nature of complaint	Description	Action taken
4/08/2020	Noise	Complaint received from resident in Macquarie Shores Retirement Village referencing loud 'stumping, thumbing and clanging noises' emitting from Mannering Colliery at 4:30 am. The complainant requested a review of recorded noise, operational and meteorological data be undertaken for the period of 00:00-10:00 am 04/08.	The complainant was responded to on 04/08 and was provided with requested review. The review indicated that the mine was not producing coal for the time period referenced and that no coal was moving from the stockpile to VPPS from 2:58 am to 8:00 am. CCTV footage indicated the mine loader was not operational for the period of the complaint until 8:30 am. Continuous directional noise logger data for the early morning period (2:00-5:00 am) was indicated an LAeq of 15 dB (A) adhering to the sites 42 dB(A) limit at the receptor.
21/08/2020	Noise	Complaint received from resident in Macquarie Shores Retirement Village referencing ticking and thumping at 3:15 am.	The complainant was provided a letter on the 28/08 following internal investigation for the complaints in the period of 21/08 - 28/08. Data was provided from Mannering Colliery's directional noise monitor and meteorological station, as well as a summary of site activity. It is noted that for the 11 periods highlighted, the site was active with exception of 3 time periods, where no operations were occurring at Mannering Colliery, comprising greater than 25% of the complaint periods, suggesting the complainant is also impacted by noise sources other than Mannering Colliery. The review indicated that Mannering Colliery noise emissions were below approved site limits during all periods of complaints based on directional noise data.
22/08/2020	Noise	Complaint received from resident in Macquarie Shore Home Village referencing ticking, clanging, low frequency banging at 4:00 am, 10:00 pm and 11:45 pm.	
23/08/2020	Noise	Complaint received from resident in Macquarie Shores Retirement Village referencing ticking, clanging, low frequency banging at 5:30 am and 9:30 pm.	
24/08/2020	Noise	Complaint received from resident in Macquarie Shores Retirement Village referencing ticking, clanging, low frequency banging at 3:00 am, 5:40 am and 11:20 pm.	
25/08/2020	Noise	Complaint received from resident in Macquarie Shores Retirement Village referencing ticking, clanging, low frequency banging at 3:00 am, 5:40 am and 11:20 pm.	
27/08/2020	Noise	Complaint received from resident in Macquarie Shores Retirement Village referencing "stamping and banging" at 2:40 am.	
6/09/2020	Noise	Complaint received from resident in Macquarie Shores Retirement Village referencing 'banging and clanging' noises at 12:05 am and 5:02 am.	The complainant was provided with a letter on the 9/09/2020 following internal investigation for the complaint period. The report identified that Mannering Colliery CHPP and Drift Belt was operational at the time of the complaint. It was noted that directional noise data for the periods of the complaints indicated that site operations were within consented noise limits. It was noted that meteorological conditions were considered noise enhancing for Mannering Colliery noise.

Date	Nature of complaint	Description	Action taken
12/09/2020	Noise	Complaint received from resident in Macquarie Shores Retirement Village. citing “vibrating thumb together with humping noise from VPPS” for periods 2:21 am and 5:45 am.	The complainant was provided with a letter on the 18/09/2020 following internal investigation for the complaints made within the period of 12 to 20 September 2020. The colliery was noted to be operational, a review of directional noise logger data installed at Macquarie Shores Retirement Village indicated the Mannering Colliery was operating within consented noise limits.
13/09/2020	Noise	Complaint received from resident in Macquarie Shores Retirement Village citing “vibrating thumb together with humping noise from VPPS” for period 4:30 am.	
14/09/2020	Noise	Complaint received from resident in Macquarie Shores Retirement Village citing “vibrating thumb together with humping noise from VPPS” for period 1:00 am and 2:00 am.	The complainant was provided with a letter on the 18/09/2020 following internal investigation for the complaints made within the period of 12 to 20 September 2020. The colliery was noted to be operational, a review of directional noise logger data installed at Macquarie Shores Retirement Village indicated the Mannering Colliery was operating within consented noise limits.
14/09/2020	Noise	Complaint received from resident in Macquarie Shores Retirement Village. citing audible machinery and humming noises. Complainant requested information around Mannering Colliery noise reduction projects.	Complaint was responded to via e-mail informing them of recent noise reduction projects including decommissioning of the rotary breaker and enclosure of the Coal Handling Plant. The complainant was also informed regarding recent reviews of continuous noise loggers and attended noise monitoring indicating the colliery was operating within consented noise limits.
19/09/2020	Noise	Complaint received from resident of Macquarie Shores Retirement Village citing “clanging and thumbing” noise at 4:20 am.	The complainant was provided with a letter on the 18/09/2020 following internal investigation for the complaints made within the period of 12 to 20 September 2020. The colliery was noted to be operational, a review of directional noise logger data installed at Macquarie Shores Retirement Village indicated the Mannering Colliery was operating within consented noise limits.
20/09/2020	Noise	Complaint received from resident of Macquarie Shores Retirement Village citing “very bad thumbing” for periods of 00:12 am and 6:00 am	The complainant was provided with a letter on the 18/09/2020 following internal investigation for the complaints made within the period of 12 to 20 September 2020. The colliery was noted to be operational at 00:12 am however was not producing or loading coal at or around 6:00 am. A review of directional noise logger data installed at Macquarie Shores Retirement Village indicated the Mannering Colliery was operating within consented noise limits, when operational.
22/09/2020	Noise	Complaint received from resident of Macquarie Shores Retirement Village citing “thumbing, humping, and vibrating noises” at 3:50 am.	The complainant was provided with a letter on 2 October 2020 following internal investigation for complaints made within the period of 22 - 28 September 2020. The colliery was noted to be operational during all periods of complaints. The review of directional noise logger data attended noise monitoring results and metrological conditions indicate that the colliery was satisfying consented noise limits (Project Approval MP06_0311). It was noted on 26 September at 6:15 am, noise limits did not apply to Mannering Colliery due to wind speeds greater then 3m/s.
23/09/2020	Noise	Complaint received from resident of Macquarie Shores Retirement Village citing “thumbing and clanging conveyor noise” at 4:00 am.	
23/09/2020	Noise	Complaint received from resident of Macquarie Shores Retirement Village citing “banging, thumbing and clanging noises” between 10:15 pm and 12:00 am.	

Date	Nature of complaint	Description	Action taken
25/09/2020	Noise	Complaint received from resident of Macquarie Shores Retirement Village citing “thumbing, banging and thumbing” at 2:20 am and 6:25 am.	
26/09/2020	Noise	Complaint received from resident of Macquarie Shores Retirement Village citing loud thumbing and banging noises at 6:15 am.	
27/09/2020	Noise	Complaint received from resident of Macquarie Shores Retirement Village citing loud thumbing and banging noises at 1:30 am and 5:30 am.	
28/09/2020	Noise	Complaint received from resident of Macquarie Shores Retirement Village citing “clanging and thumbing” noise at 4:40 am.	
28/10/2020	Noise	Complaint received from resident of Macquarie Shores Retirement Village citing engine and conveyor noise from 5:00 am.	The complainants email was acknowledged, investigation undertaken on site indicated that: Delta Coal operated conveyors, the coal handling and preparation plant and Mannering Colliery loader was not operational, which was further confirmed with review of unattended directional noise monitoring data for the period.
7/11/2020	Noise	Complaint received from resident of Macquarie Shores Retirement Village citing low-bass buzzing loader noise, vibrating and thumbing noise 1:00-2:07 am.	The complaint was acknowledged to the complainant via e-mail on the 9/11/2020. A letter report was issued to the complainant on the 18/11/2020 detailing the results of unattended noise monitoring during the periods of the complaints as well as meteorological monitoring.
12/11/2020	Noise	Complaint received from resident of Macquarie Shores Retirement Village citing loud ‘thumbing’ banging and vibrating from 1:00 am.	The complaint was acknowledged to the complainant via e-mail on the 13/11/2020. A letter report was issued to the complainant on the 18/11/2020 detailing the results of unattended noise monitoring during the periods of the complaints as well as meteorological monitoring.
23/11/2020	Noise	A complaint was received from a resident of Macquarie Shores Retirement Village at approximately 11:06 am via txt to the Environmental Compliance Coordinator, noting that the noise they could hear occurring at 3:00 am that evening was occurring at the current time. The complainant also submitted a complaint citing a loud thumbing noise that was vibrating in nature could be heard from Mannering Colliery at 3:15 am 23/11/2020.	The Environmental Compliance Coordinator attended Mannering Colliery at to confirm production was occurring as per normal and there were no noisy defects at 11:15 am (23/11/2020), noise did not appear unusual at the colliery. With no change in production rates at MC, the Environmental Compliance Coordinator attended Macquarie Shores Retirement Village, no noise was audible from Mannering Colliery at the time. The complainant was contacted to ask if the reported noise was still occurring, however the complainant reported it had ceased, assuming production at the colliery had ceased. Throughout the period of 11:00 am to 12:00 pm there were no considerable changes to attended noise monitoring records and production records. A letter report was issued to the complainant on the 14/12/2020 detailing the results of unattended noise monitoring during the periods of the complaints as well as meteorological monitoring.

Date	Nature of complaint	Description	Action taken
7/12/2020	Noise	A Complaint was received from a resident of Macquarie Shores Retirement Village, via text message to the Environmental Compliance Coordinators mobile number. The complaint stated “thumbing noise could be heard and has been very bad this morning from 6:30 am. Can you please check directional noise logger”.	“A review of the site data detailing site production and trends indicated that production of coal at Mannering Colliery had ceased at 4:30 am on the morning of 7 November 2020, and the following noise producing activities were NOT functional at the time specified in the complaint: – Conveyor belts operated by Delta Coal were operational, including the primary drift belt – The Coal Handling and Processing Plant – The Mannering Colliery Coal Stockpile Loader There have been no other identified sources of noise from Mannering Colliery audible at Macquarie Shores Home Village. The complainant was given this information via e-mail report on 14 December 2020”.
22/12/2020	Noise	A complaint was received from a resident of Macquarie Shores Retirement Village noting “loud thumbing and vibrating noises from 5:00 am, Can you please check if the noises were from Mannering Colliery”.	“The complainant was acknowledged upon receipt of their email, that a formal response would be provided. On 01/02/2021 Delta Coal provided the complainant with a formal response detailing site operation, site consented noise limits, directional noise logger data and meteorological conditions for the times specified in the complaint. Investigation identified that between 5:00 am and 7:00 am on 22/12/2020 Mannering Colliery’s primary noise sources (Drift Belts, Coal handling and preparation plant and rubber tyred loader) were not operational. Directional noise data indicated the sites noise contribution was significantly below development consent limits.”
23/12/2020	Noise	A complaint was received from a resident of Macquarie Shores Retirement Village noting “from 5:00 am thumbing, banging and clanging coming from Mannering end”.	"The complainant was acknowledged upon receipt of their email, that a formal response would be provided. On 01/02/2021 Delta Coal provided the complainant with a formal response detailing site operations, site consented noise limits, directional noise logger data and meteorological conditions for the times specified in the complaint. Investigation identified that between 5:00 am and 7:00 am on 23/12/2020 production was occurring at Mannering Colliery with the drift belts and coal handling and preparation plant operational. Directional noise logger data indicated Mannering Colliery was operating within consented noise limits by a significant margin.”
2021			
12/02/2021	Noise	Resident of Macquarie Shores Retirement Village emailed a complaint to the Delta Coal Environmental Compliance Coordinator (ECC) on 12 February 2021, indicating “exceptionally loud vibrating and thumbing noise suddenly came back from 3:27 am 12/2/2021”.	There were no notable changes in Delta Coal operations or plant during the complaint period. The complaint was acknowledged to the complainant. The complainant was provided with a graphical representation of the data captured by the directional noise logger installed at Macquarie Shores Retirement Village from which analysis indicated that Mannering Colliery (MC) was operating within consented noise limits during the complaint period. Attended noise monitoring was undertaken on the evening of 12/2/2021 during similar meteorological and operational conditions.

Date	Nature of complaint	Description	Action taken
26/02/2021	Noise	Resident of Macquarie Shores Retirement Village emailed through a complaint to the ECC on 26 February 2021, indicating “at 6:30 am the noise level was just unbearable. We could hear vibrating thumb and clan noises emitting from overland conveyor presumably the YE1 whilst transporting coal to your sister company VPPS”.	An e-mail response was provided to the complainant on the 26th of February 2021 which detailed the following: – Review of noise logger data provided results indicate compliance (significantly under consented levels). – The YE1 conveyor was unlikely to be the source of noise at Macquarie Shores Retirement Village. based upon a review of attended noise monitoring results conducted over the last 12 months and discussions with our noise consultant, having not previously identified the YE1/YE2 system as a source of industrial noise at Macquarie Shores Retirement Village. – The drift belt was initiated at 6:30am, this was likely the cause of noise observed at Macquarie Shores Retirement Village from MC, it was noted that MC cannot feasibly commit to being inaudible at all times at Macquarie Shores Retirement Village. – The complainant was provided with a summary of noise reduction works undertaken at Mannering Colliery within the 2020 period.
5/03/2021	Noise	Resident of Macquarie Shoes Retirement Village emailed a complaint to the Delta Coal ECC on 5 March 2020, describing “loud vibrating thumb and clang noises have been waking us up”. The complainant requested a graphical analysis be provided from the Delta Coal directional noise logger installed at Macquarie Shoes Retirement Village.	The complaint was acknowledged to the complainant following receipt of the complaint. On 22 March a formal response was provided to the complainant detailing the operations of MC during the complaint period and the results of the directional noise logger. It was noted that during the specified complaint period coal was being transported from underground via the MC drift belt and Coal Handling and Preparation Plant, however the Macquarie Shoes Retirement Village. directional logger all pass and low pass data was significantly below the consented MC noise limits, indicating that the site was likely operating in compliance with consented noise limits.
24/03/2021	Noise	Resident of Macquarie Shoes Retirement Village emailed a complaint to the Delta Coal ECC on 24 March 2021 describing “loud thumbing and vibrating noise”.	The complaint was acknowledged and provided with a graphical representation of the directional data logger for the complaint period. The directional logger data indicated that the low-frequency noise sourcing from the direction of Mannering Colliery was around 30 dB(A), based on this data it was considered likely that the site was operating within consented noise limits.
25/03/2021	Noise	The DPIE contacted the Delta Coal ECC on 25 March regarding a noise complaint received from a resident of Macquarie Shores Retirement Village for the period of 12:00 am to 9:00 am and requested to review the data from the directional noise logger, noting it is not a tool to measure compliance however can be used for indicative purposes.	A response was provided to the DPIE on 1 April 2021 which outlined the following: – Attended noise monitoring was undertaken at Macquarie Shoes Retirement Village on 25 March 2021 at 2:00 am and noted the site was compliant with consented noise levels. – Directional noise monitoring recorded similar levels to attended noise monitoring, indicating compliance with consented noise limits for MC.

Date	Nature of complaint	Description	Action taken
18/04/2021	Noise	Resident of Macquarie Shoes Retirement Village emailed a complaint to the Delta Coal ECC on 19 April 2021, describing a load roaring low-bass frequency loader noise running intermittently.	Response provided to the complainant on 22/04/2021 detailing that loader operations had been occurring within the timeframe stipulated within the complaint. It was noted that the use of a loader on Mannering Colliery's coal stockpile can be imperative to site operations. Attended monitoring was undertaken at Macquarie Shores Retirement Village on 20/04/2020 from midnight and did not identify exceedances of noise limits.
23/04/2021	Noise	Resident of Macquarie Shoes Retirement Village acknowledged Delta Coals previous response and made a complaint for the morning of 23/04/2021, from 1:15 am. Noise was described as "low bass loader engine buzzing and thumbing noise".	Both complaints were acknowledged immediately to the complainant and a formal response was provided on 26/04/2021. It was noted that the loader was generally operational during the complaint periods. Direction noise monitoring data did not indicate any likely exceedances of noise criteria. It was noted that the unattended directional noise monitor is utilised to indicate the sites noise emissions however is not a tool of compliance monitoring.
26/04/2021	Noise	Resident of Macquarie Shoes Retirement Village lodged a noise complaint against Mannering Colliery for 26/04/21 for the period of midnight, 2:10 am and 4:00 am.	
17/05/2021	Noise	Resident of Macquarie Shoes Retirement Village lodged a noise complaint for the time frame of 14/05/2021 - 17/05/2021 against Mannering colliery citing loud thumping, clanging and roaring noises.	The complaint was acknowledged immediately, and a letter response was provided to the complainant on 24/05/2021. The letter detailed directional noise logger results and site operations in respect to the noises observed for the complaints period. It was noted that directional data and recent attended monitoring did not indicate Mannering Colliery was in exceedance of its consented noise limits during routine site operations.
20/05/2021	Noise	Resident of Macquarie Shoes Retirement Village lodged a noise complaint for the time frame of 20/05/2021 against Mannering colliery citing thumping and vibrating noises, additionally noting nearby turbine noise was also particularly loud.	The complaint was acknowledged on 20/05/2021 and the complaint timeframe was included on in the letter response provided on 24/05/2021.
21/05/2021	Noise	Resident of Macquarie Shoes Retirement Village lodged a noise complaint for the time frame of 21/05/2021 against Mannering colliery citing thumping noise.	The complaint was acknowledged on 20/05/2021 and the complaint timeframe was included on in the letter response provided on 24/05/2021.
28/05/2021	Noise	Resident of Macquarie Shoes Retirement Village text messaged Delta Coal ECC and noted excessive noise during the hours of 12:00 am to 7:00 am, requesting the data form the Directional Logger be provided.	The residents message was logged and a response provided immediately provided 800 Hz filtered noise levels from the direction of Mannering Colliery as 37.5 dB(A) and 38.5 dB(A) (LAeq 15 minute) being the peaks in complaint period. The complainant requested that evidence of attended monitoring being undertaken in the complaint period to measure compliance, the complainant was referred to 12/02/2021 and noted a formal response would be provided within 7 days.
1/06/2021	Noise	Resident of Macquarie Shoes Retirement Village lodged a noise complaint requesting a review of noise early around 5:50 am on 1 June 2021.	The complaint was acknowledged immediately, and a formal response was provided on 7 June 2021, detailing operations at the time of the complaint and available noise logger data. A review of available data did not indicate a likelihood of the site exceeding noise criteria.

Date	Nature of complaint	Description	Action taken
8/06/2021	Noise	Resident of Macquarie Shoes Retirement Village lodged a noise complaint requesting a review of Mannering Colliery operations and logger data for 5:40 am.	The complaint was acknowledged and the complainant was notified that the colliery was not in operation the evening or morning due to a fire on the YE1 overland conveyor on 06/06/2021 which at that time was still unavailable. No loader operations were observed reviewing CCTV data. the complainant was provided with directional noise logger data for the period also. It was considered the complainant was likely hearing nearby industrial noise unrelated to Mannering Colliery. The complainant responded but did not acknowledge that MC was not operational.
11/06/2021	Noise	Resident of Macquarie Shoes Retirement Village lodged a noise complaint requesting a review of Mannering Colliery operations and logger data for 7:00 am.	The complaint was acknowledged on receipt (24/6 submitted by complainant) and the complainant was informed that: – Mannering Colliery was operational during the period of complaint. – At 7:00 am the low-pass directional LAEQ noise level was close to 25 dB(A) and Mannering Colliery has a noise contribution limit of 40 dB(A) LAEQ at Macquarie Shoes Retirement Village. – All pass directional noise was 35.5 dB(A). – Between midnight and 7:00 am on 11/6/2021 the low pass directional peaked at 34 dB(A). – Available data indicated the site was compliant with noise limits.
12/06/2021	Noise	Resident of Macquarie Shoes Retirement Village lodged a noise complaint requesting a review of Mannering Colliery operations and logger data for 5:35 am.	The complaint was acknowledged on 28/6 receipt (24/6 submission by the complainant) and the complainant was informed that: – Mannering Colliery was operational during the period of complaint. – At ~5:35 am the low-pass directional LAEQ noise level was 25.5 dB(A) and Mannering Colliery has a noise contribution limit of 40 dB(A) LAEQ at Macquarie Shores Retirement Village. – All pass directional noise was 28 dB(A). – Between midnight and 7:00 am on 12/6/2021 the low pass directional peaked at 29.5 dB(A). – Available data indicated the site was compliant with noise limits.
17/06/2021	Noise	Resident of Macquarie Shoes Retirement Village lodged a noise complaint requesting a review of Mannering Colliery operations and logger data for 3:55 am.	The complaint was acknowledged on 28/6 (complainant submitted 24/6) and the complainant was informed that: – Mannering Colliery was operational during the period of complaint. – At ~3:55 am the low-pass directional LAEQ noise level was 22.4 dB(A) and Mannering Colliery has a noise contribution limit of 40 dB(A) LAEQ at Macquarie Shoes Retirement Village. – All pass directional noise was 25.1 dB(A). – Available data indicated the site was compliant with noise limits.

Date	Nature of complaint	Description	Action taken
24/06/2021	Noise	Resident of Macquarie Shoes Retirement Village lodged a noise complaint requesting a review of Mannering Colliery operations and logger data for 5:10 am.	The complaint was acknowledged on 28/6 (complainant submitted 24/6) and the complainant was informed that: – Mannering Colliery was operational during the period of complaint. – Wind directions at the time were considered not to enhance MC noise. – At ~5:10 am the low-pass directional LAEQ noise level was 0.1 dB(A) and Mannering Colliery has a noise contribution limit of 40 dB(A) LAEQ at Macquarie Shoes Retirement Village. – All pass directional noise was 23.2 dB(A). – Available data indicated the site was compliant with noise limits.
26/06/2021	Noise	Resident of Macquarie Shoes Retirement Village lodged a noise complaint requesting a review of Mannering Colliery operations and logger data for 5:15 am.	The complaint was acknowledged on 28/6 (complainant submitted 28/6) and the complainant was informed that: – Mannering Colliery was operational during the period of complaint. – At ~5:15 am the low-pass directional LAEQ noise level was 33.6 dB(A) and Mannering Colliery has a noise contribution limit of 40 dB(A) LAEQ at Macquarie Shoes Retirement Village. – All pass directional noise was 35.1 dB(A). – Available data indicated the site was compliant with noise limits.
27/06/2021	Noise	Resident of Macquarie Shoes Retirement Village lodged a noise complaint requesting a review of Mannering Colliery operations and logger data for 3:11 am.	The complaint was acknowledged on 28/6 (complainant submitted 28/6) and the complainant was informed that: – Mannering Colliery was operational during the period of complaint. – At ~3:11 am the low-pass directional LAEQ noise level was 26.1 dB(A) and Mannering Colliery has a noise contribution limit of 40 dB(A) LAeq at Macquarie Shoes Retirement Village. – All pass directional noise was 36.6 dB(A). – Available data indicated the site was compliant with noise limits.
28/06/2021	Noise	Resident of Macquarie Shoes Retirement Village lodged a noise complaint requesting a review of Mannering Colliery operations and logger data for 4:52 am.	The complaint was acknowledged on 28/6 (complainant submitted 28/6) and the complainant was informed that: – Mannering Colliery was operational during the period of complaint. – At ~4:52 am the low-pass directional LAEQ noise level was 28.8 dB(A) and Mannering Colliery has a noise contribution limit of 40 dB(A) LAeq at Macquarie Shoes Retirement Village. – All pass directional noise was 33.1 dB(A). – Available data indicated the site was compliant with noise limits.

Date	Nature of complaint	Description	Action taken
30/07/2021	Noise	Resident of Macquarie Shoes Retirement Village lodged a noise complaint on 30/07/2021 requesting a review of Mannering Colliery operations and data logger noting loud vibrating and thumping noises between the hours of 12:00 am and 7:00 am.	The complaint was acknowledged on 30/07/2021. A response was provided to the complainant outlining that: – The coal handling plant and Overland Conveyor were operational during the complaint period, however the loader was not. – The directional noise logger at Macquarie Shoes Retirement Village indicated a peak low frequency LAEQ (15 min) of 38dB(A) at 3:45 am. – The directional noise logger at Macquarie Shoes Retirement Village indicated a peak LAEQ (15 min) of 38dB(A) at 12:45 am and 3:45 am. – Met data indicated that meteorological conditions were likely to be noise enhancing hence why MC was more audible than in other meteorological condition. – Attended noise monitoring undertaken on 27 July 2021 during equivalent site operations did not identify exceedance of Mannering Colliery's consented noise limits (Project Approval 06_0311 as modified). – Available data did not indicate a probable exceedance of Mannering Colliery's noise limits at Macquarie Shoes Retirement Village.
31/07/2021	Noise	Resident of Macquarie Shoes Retirement Village lodged a noise complaint on 30/07/2021 requesting a review of Mannering Colliery operations and data logger noting loud vibrating and thumping noises between the hours of 12:00 am and 7:00 am.	The complaint was acknowledged on 30/07/2021. A response was provided to the complainant outlining that: – The coal handling plant and Overland Conveyor were operational during the complaint period; however, the loader was not. – The directional noise logger at Macquarie Shoes Retirement Village indicated a peak low frequency Laeq (15 min) of 38dB(A) at 3:45 am. – The directional noise logger at Macquarie Shoes Retirement Village indicated a peak Laeq (15 min) of 38dB(A) at 12:45 am and 3:45 am. – Met data indicated that meteorological conditions were likely to be noise enhancing hence why MC was more audible than in other meteorological condition. – Attended noise monitoring undertaken on 27 July 2021 during equivalent site operations did not identify exceedance of Mannering Colliery's consented noise limits (Project Approval 06_0311 as modified). – Available data did not indicate a probable exceedance of Mannering Colliery's noise limits at Macquarie Shoes Retirement Village.

Date	Nature of complaint	Description	Action taken
30/08/2021	Noise	Resident of Macquarie Shoes Retirement Village lodged a noise complaint on 30/08/2021 citing a continuous thumping noise.	The complaint was acknowledged on the 30/08/2021 and an investigation was undertaken by Delta Coal into the potential sources of noise and noise emissions from the site. Outcomes of the investigation were provided to DPIE and the complainant on 09/09/2021. Outcomes of the investigation were: – A review of the noise logger data (provided to the complainant) indicated that it was unlikely Mannering Colliery was exceeding its consented noise limits. – Attended monitoring undertaken at Macquarie Shoes Retirement Village at 3:00 am, 4:00 am, 5:00 am and 6:00 am indicated that while during some of the measurements the coal handling plant at Mannering Colliery were audible, they were not in exceedance of consented noise limits on 30 August 2021.
1/09/2021	Noise	Resident of Macquarie Shoes Retirement Village lodged a noise complaint on 01/09/2021 regarding noise experienced at 4:45 am.	The complaint was acknowledged on 01/09/2021 and an investigation was undertaken by Delta Coal into the potential sources of noise and noise emissions from the site. Outcomes of the investigation were provided to DPIE and the complainant on 09/09/2021. Outcomes of the investigation were: – A review of the noise logger data (provided to the complainant) indicated that it was unlikely Mannering Colliery was exceeding its consented noise limits.
20/09/2021	Noise	Resident of Macquarie Shoes Retirement Village lodged a noise complaint on 20/09/2021 regarding noise experienced at 2:20 am and 6:30 am, (20/09/2021).	A response was provided to the complainant and DPIE-Compliance on 20 September 2021. The response detailed site operations, which was noted to be usual coal handling activities at 2:20 am however no site operations at 6:30 am. Noting the mine loader was not operational during the complaint period.
23/09/2021	Noise	Resident of Macquarie Shoes Retirement Village lodged a noise complaint on 23/09/2021 regarding noise experienced at 12:05 am and 2:10 am - 2:30 am.	A response was provided to the complainant and DPIE-Compliance on 5 October 2021. The response detailed site operations and results from the directional noise logger as well as results taken from attended monitoring at 3:00 am - all available monitoring data indicated that Mannering Colliery was operating within compliance limits. Noise peaks from the logger during the complaint period indicated a peak of 34dB(A) $Laeq_{15min}$.
24/09/2021	Noise	Resident of Macquarie Shoes Retirement Village lodged a noise complaint on 24/09/2021 regarding low-frequency thumping noises during the night.	A response was provided to the complainant and DPIE-Compliance on 27 September 2021. The response detailed site operations and results from the directional noise logger - all available monitoring data indicated that Mannering Colliery was operating within compliance limits. Noise peaks identified by the logger during the complaint period was approximately $14_{dB(A)\ LAEQ\ 15\ min}$.
4/10/2021	Noise	Resident of Macquarie Shoes Retirement Village lodged a noise complaint on 4/10/2021 regarding noise heard from 1:58 am. The resident noted a thumping noise with strong impact coming from Mannering Colliery.	A response was provided to the complainant on 5 October 2021, directional noise logger graphs where provided to the resident and the DPIE-Compliance. Available data indicated the logger was operational, calibrated and did not indicate a potential exceedance of the Mannering Colliery Project Approval noise limits.

Date	Nature of complaint	Description	Action taken
5/10/2021	Noise	Resident of Macquarie Shoes Retirement Village lodged a noise complaint on 5/10/2021 regarding noise at 3:36 am and 5:25 am. The complainant noted a thumping noise that was loud and vibrating.	A response was provided to the complainant on 5 October 2021, directional noise logger graphs were provided to the resident and the DPIE-Compliance. Available data indicated the logger was operational, calibrated and did not indicate a potential exceedance of the Mannering Colliery Project Approval noise limits.
19/10/2021	Noise	Resident of Macquarie Shoes Retirement Village lodged a noise complaint on 19/10/2021. The complainant noted that the noise was loud at 5:05 am and was thumping, clanging and strong impact and vibrating noise through the resident's window. The resident noted the noise source to be Mannering Colliery.	A response was provided to the complainant on 19 October 2021, directional noise logger graphs were provided to the resident and the DPIE-Compliance. Available data indicated the logger was operational, calibrated and did not indicate a potential exceedance of the Mannering Colliery Project Approval noise limits. at the complaint time a noise peak of 37.8 dB(A) LAeq 15 min was recorded. The limit for Mannering Colliery noise contribution at the monitoring location is 40 dB(A).
15/11/2021	Noise	Resident of Macquarie Shoes Retirement Village lodged a noise complaint on 15/11/2021. Noted that some days noise had been good/tolerable however from 4:28 am on 15/11 the thumping noise came back.	Each complaint was immediately acknowledged to the complainant on the day of submission (15/11 and 16/11). Following notification of the complaints Delta Coal's Chief Executive Officer and Technical Services Manager met with the complainant the following week to discuss the impact of Mannering Colliery's noise emissions, Delta Coal committed to investigating and when reasonable and feasible, implementing proven noise mitigation measures. Investigations into the mitigation of noise sourcing from the site were commenced immediately and commitment was made to the complainant to continue to liaise regarding findings of the investigations and potential noise mitigation measures.
16/11/2021	Noise	Resident of Macquarie Shoes Retirement Village lodged a noise complaint on 16/11/2021. Noted that thumping and clanging noises were audible between 10:52 pm (15/11) and 2:15 am (16/11).	
8/12/2021	Noise	Resident of Macquarie Shoes Retirement Village lodged a noise complaint on 08/12/2021. Noted that thumping noises where audible throughout the night.	Delta Coal reviewed site operations, noise logger data and listened to hourly noise logger records in a review of the complaint period and potential noise emissions from Mannering Colliery. The investigation concluded Mannering Colliery, while operational during the complaint period, was not exceeding consented noise limits. Delta Coal environmental management team is meeting with the complainant in January following complaints made during December, to discuss the complaints and expectations of the complainant.
20/12/2021	Noise	Resident of Macquarie Shoes Retirement Village lodged a noise complaint on 20/12/2021. Noted that thumping noises where particularly audible at 4:20 am.	Delta Coal reviewed site operations, noise logger data and listened to hourly noise logger recordings in a review of the complaint period and potential noise emissions from Mannering Colliery. The investigation concluded Mannering Colliery, while operational during the complaint period, was not exceeding consented noise limits. Delta Coal environmental management team is meeting with the complainant in January following complaints made during December, to discuss the complaints and expectations of the complainant.

Date	Nature of complaint	Description	Action taken
30/12/2021	Noise	Resident of Macquarie Shoes Retirement Village lodged a noise complaint on 30/12/2021. Noted that thumping noises where particularly audible at 6:28 am.	Delta Coal reviewed site operations, noise logger data and listened to hourly noise logger records in a review of the complaint period and potential noise emissions from Mannering Colliery. The investigation concluded that Mannering Colliery Coal Handling Plant and Drift Belt were not operational, and the site was not generating or transporting product coal. A review of the hourly noise recording indicating the presence of industrial noise however was considered to be unrelated to Mannering Colliery due to the lack of operations and registered directional noise.
2022			
14/02/2022	Noise	Resident of Macquarie Shoes Retirement Village lodged a noise complaint on 14/02/2022. Noted that there had been an increase in ambient ‘thumbing’ from mid night, particularly 3:15 am.	Delta Coal investigated the site operations at Mannering Colliery for which the Coal Handling and Preparation Plant and overland conveyor to VPPS were operational during the complaint period and reviewed noise logger data (directional to MC, low Pass, <800Hz at 21 dB[A] at 3:15 am).

4.2.3 Incidents

Review of incidents records for Mannering Colliery identified incidents is summarise in Table 4.2 below.

Table 4.2 Summary of incidents during the audit period

Issue	Date(s)	Description
Water quality / discharge	21/03/2021	Exceedance of EPL 191 – Volumetric discharge limit. Deemed not to be a non-compliance as exceedances are permitted under certain circumstances under condition L3.2.
	18/09/2019	Exceedance of EPL 191 - TSS limit. The incident was reported to relevant authorities.
	04/11/2019	Exceedance of EPL 191 - pH limit. Water tested again for pH on 08/11/2019 and results were within the pH limit.
	31/12/2020	Non-compliance against EPL 191 - Missed analysis for conductivity in 6 samples. The incident was reported to relevant authorities.
	20/04/2021 24/11/2021	Exceedance of EPL 191 – Oil and grease limit. The incident was reported to relevant authorities.
Noise	05/05/2020	Exceedance of PA 06_0311 – noise limits. The incident was reported to relevant authorities.
Air quality	30/12/2019 30/09/2021	Exceedance of PA 06_0311 – Exceedance of criteria for monthly depositional dust increase. This exceedance was not reported at the time or within annual reviews. Refer to **Corrective action 7**.
	30/12/2020 13/06/2021	Exceedance of PA 06_0311 – Monthly criteria exceedance for depositional dust. The exceedance of monthly criteria was reported to relevant authorities.
	03/01/2022 06/01/2022 16/01/2022 18/01/2022 19/01/2022 20/01/2022 24/01/2022	Exceedance of PA 06_0311 – Monthly $PM_{2.5}$ limit. Investigation undertaken and operations at Mannering Colliery not determined to be contributing to exceedances.
Coal handling	31/12/2020	Exceedance of EPL 191 – Annual ROM Coal Handling. The incident was reported to relevant authorities. Subsequently, the EPL has been changed to be consistent with criteria in PA 06_0311.

4.2.4 Site inspection observations



Plate 4.1 Emergency spill kit and oily rags receptacles



Plate 4.2 Hydrocarbon storage



Plate 4.3 Inappropriate waste disposal, with general waste in an oil rags bin



Plate 4.4 Wash Bay



Plate 4.5 Dangerous goods storage



Plate 4.6 Sediment pond



Plate 4.7 Noise mitigation cladding on CHPP



Plate 4.8 CHPP in operation



Plate 4.9 Licensed discharge point for EPL 191



Plate 4.10 Sediment Pond adjacent to the CHPP



Plate 4.11 Former rotary breaker



Plate 4.12 Waste segregation

4.3 Compliance with PA 06_0311

4.3.1 Summary of non-compliances

The review of compliance with PA 06_0311 identified 12 non-compliances. Three non-compliances were deemed to represent a low risk, while nine were deemed administrative in nature.

A summary of non-compliances is detailed in Table 4.3.

Table 4.3 Summary of PA 06_0311non-compliances

Condition	Reason for non-compliance	Risk rating
Schedule 2 Condition 2	The following conditions of the consent were identified as being non-compliant over the reporting period: – Schedule 2, Condition 16 (administrative) – Schedule 3, Condition 2 (low-risk) – Schedule 3, Condition 11 (administrative) – Schedule 3, Condition 12 (administrative) – Schedule 3, Condition 16 (low risk) – Schedule 3, Condition 17 (administrative) – Schedule 5, Condition 3 (administrative) – Schedule 5, Condition 5 (administrative) – Schedule 5, Condition 7 (administrative) – Schedule 5, Condition 8 (administrative) – Schedule 5, Condition 13 (administrative) As these conditions of the consent have not been complied with, this condition is also non-compliant. Refer to corrective actions and recommendations on each condition.	Low
Schedule 2, Condition 16	Plans were generally updated following the 2019 IEA and modification of development consent and are within the review dates and frequency, except for the WMP which has not been updated to reflect modification 5. This is required as per Schedule 5, Condition 5 of PA 06_311, therefore constituting a non-compliance against the requirements of this condition. **Corrective action 4** has therefore been made to address the non-compliance. In addition, the LMP required under this consent has not been updated since the previous IEA period therefore constituting an administrative non-compliance with Schedule 5, Condition 5. The LMP is currently in the process of being updated, and therefore no corrective action is proposed.	Administrative
Schedule 3, Condition 2	A review of the noise monitoring and annual reviews identified the following noise exceedances over the reporting period: – Exceedance of the $LAeq_{(15min)}$ at R1 on 11 June 2019 – Exceedance of the $LAeq_{(15min)}$ and L_{A1},1 minute at R2 on 13 August 2019 – Exceedance of the $LAeq_{(15min)}$ at RA 3 on 5 May 2020 This therefore constitutes a non-compliance. Delta Coal have undertaken two projects at the CHPP to reduce noise impacts. Since then, noise mitigation works have been undertaken and no exceedances have been reported, therefore no corrective action is proposed. For further discussion see Section 4.2.1.2.	Low
Schedule 3, Condition 11	There is no presentation of baseline data for surface water quality, constituting an administrative non-compliance with condition 11(a). **Corrective action 4** has therefore been made to address the non-compliance.	Administrative
Schedule 3, Condition 12	Clause (a) of this condition is not satisfied due to there being no details of baseline data for groundwater monitoring. **Corrective action 4** has therefore been made to address the non-compliance.	Administrative

Condition	Reason for non-compliance	Risk rating
Schedule 3, Condition 16	Several non-compliances against dust criteria were recorded and reported during the reporting period: – Exceedance at DG004 in December 2020 which was attributed to contamination and not the development – Exceedance at DG003 in May 2021 attributed to contamination and not the development – Exceedance at DG003 in October 2021 attributed to contamination and not the development. Two increases of greater than 2 g/m2/month were observed over the reporting period: – An increase of 2.1 g/m2/month was recorded for depositional dust between November 2019 and December 2019 at DG001. – An increase of 2.4 g/m2/month was recorded for depositional dust between August 2021 and September 2021 at DG003. These exceedances were not reported as an incident and therefore a non-compliance (low risk) is recorded against this condition and **Corrective action 5** has been made.	Low
Schedule 3, Condition 17	The mitigation measures were generally compliant with the requirements of this condition. However no Trigger Action Response Plans (TARPs) were included in the AQGGMP. This constitutes a non-compliance with clause (a)(iii) of this condition **Corrective action 6** has therefore been made to address the non-compliance.	Administrative
Schedule 5, Condition 3	Two instances of non-compliance were found against this condition: – The LMP has not been updated over the reporting period and is non-compliant with the periodic review period in the plan developed under clause (j) of this condition. The auditor notes that the plan is currently being updated, and therefore no corrective action is proposed. – The WMP was updated on 3 February 2020. The WMP also does not outline the baseline water quality for surface and groundwater and is therefore non-compliant with clause (a) of this condition. **Corrective action 4** has been made to address this.	Administrative
Schedule 5, Condition 5	Two instances of non-compliance were found against this condition: – As discussed in Schedule 2 Condition 16, the WMP has not been updated following the issue of modification 5 of the development consent. This therefore constitutes an administrative non-compliance against clause (d) of this consent. **Corrective action 4** has been made to address this. – The LMP has not been updated over the reporting period, therefore constituting an administrative non-compliance against Clause (c) and (d) of this condition. The auditor notes that the plan is currently being updated, and therefore no corrective action is proposed.	Administrative
Schedule 5, Condition 7	There were exceedances of depositional dust criteria in November/December 2019 and August/September 2021. These non-compliances were not reported, and therefore a non-compliance is registered against this condition.	Administrative
Schedule 5, Condition 8	Non -compliances are identified in the Statement of Compliance and Section 11 for the 2019 and 2021 Annual Review where the exceedances of monthly dust criteria were not reported. Refer to Schedule 3 Condition 16. However, the inclusion of data trends for noise monitoring has not been included in the annual reviews, therefore constituting an administrative non-compliance against clause (e) of this condition. **Corrective action 7** has therefore been made to address the non-compliance.	Administrative
Schedule 5, Condition 13	Monthly noise monitoring reports for November 2021 and December 2021 are not on the website, therefore forming an administrative non-compliance. This was rectified following the site inspection and therefore no corrective is proposed. The complaints and incidents register provided by Delta Coal was missing incidents from May 2019 to December 2019. This therefore constitutes a non-compliance. **Corrective action 8** has therefore been made to address the non-compliance.	Administrative

4.4 Compliance with EPL 191

4.4.1 Summary of non-compliances

A review of compliance against EPL 191 identified eight non-compliances. Four non-compliances were deemed to represent a low risk, while four were deemed administrative in nature.

A summary of non-compliances are detailed in Table 4.4 below.

Table 4.4 Summary of EPL 191 Non-Compliances

Condition	Reason for non-compliance	Risk rating
A1.2	A non-compliance was reported for the 2020 reporting year as the premises was only permitted to handle up to 1.3 million tonnes per year (1.38 million tonnes was processed). The EPL was varied in April 2021, which increased handling capacity to 2.1 million tonnes per year. No corrective action is required.	Administrative
A3.1	The following conditions of this licence were identified as being non-compliant over the reporting period: – A1.2 (administrative) – L1.1 (low risk) – L2.4 (low risk) – L5 (low risk) – O1.1 (administrative) – M2.1 (administrative) – M2.3 (administrative) As these conditions of the licence have not been complied with, this condition is also non-compliant. Refer to corrective actions and recommendations on each condition.	Low
L1.1	There were several non-compliances relating to pollution of waters over the reporting period. These non-compliances were: – Exceedance of TSS limit for September 2019 – Exceedance of pH limit in October 2019 – Exceedance of oil and grease limit in April 2021 – Exceedance of oil and grease limit in November 2021 These exceedances constitute a 'pollution' of waterways under the POEO Act. The recommendation of the previous audit would be continued over into the next audit period. **Corrective action 1** has therefore been made to address the non-compliance.	Low
L2.4	Several non-compliances regarding water quality were identified over the reporting period: – Exceedance of TSS limit for September 2019 following a heavy rain event – Exceedance of pH limit in October 2019 – Exceedance of oil and grease limit in April 2021 – Exceedance of oil and grease limit in November 2021 This therefore constitutes a non-compliance against this condition. **Corrective action 2** has therefore been made to address the non-compliance.	Low
L5	A review of the noise monitoring and annual reviews identified the following noise exceedances over the reporting period: – Exceedance of the $LAeq_{(15min)}$ at R1 on 11 June 2019 – Exceedance of the $LAeq_{(15min)}$ and LA1,1 minute at R2 on 13 August 2019 – Exceedance of the $LAeq_{(15min)}$ at RA 3 on 5 May 2020 This therefore constitutes a non-compliance. As discussed in Section 4.2.1.2, Delta Coal has undertaken noise mitigation works on-site since the last exceedance in May 2020. Therefore, no corrective action is deemed necessary.	Low

Condition	Reason for non-compliance	Risk rating
O1.1	Waste systems were viewed on site during the site inspection. There were adequate, clearly marked receptacles placed around the site for waste; however, it was noticed that staff were not segregating waste appropriately. This therefore constitutes a non-compliance. Therefore, a low risk non-compliance has been identified and corrective action 3 has been identified.	Administrative
M2.1	While Delta Coal generally monitored the parameters in accordance with the requirements of this condition, six samples that were not analysed for conductivity as per the table in M2.3 from October to December 2020, constituting a non-compliance with this and condition M2.3. This was reported to the EPA and has not occurred since, therefore no corrective action is required.	Administrative
M2.3	Refer to discussion for Condition M2.1.	Administrative

4.5 Compliance with relevant leases

4.5.1 Summary of non-compliances

The review of compliance with the relevant leases (CCL 719 and 721) did not identify any non-compliances during the audit period.

4.6 Adequacy of any strategies/plans and programs

A number of strategies, plans and programs have been developed for the Mine in accordance with PA 06_0311 and EPL 191. Table 4.5 provides a summary of the key monitoring and management practices on site and areas recommended for improvement.

Table 4.5 Status of key monitoring and management

Environmental aspect	Reference	Implementation	Recommendation
General compliance	EMS Management plans listed in this table.	Management plans prepared for the site are generally compliant with the requirements of the project approval and the EPL. The EPL was varied in April 2021 to reflect current processing volumes. The EMS was updated in 2021, which incorporated the most recent project approval (MOD5) and the recommendations of the 2019 IEA. The EMS is compliant with the requirements of PA 06_0311.	None
Air quality	AQGGMP	The current AQGGMP (V2) has been prepared to be combined with Chain Valley Colliery. Approval from DPE was granted in March 2022. The AQGGMP was found to be generally compliant against the conditions of PA06_0311 and EPL 191. No TARPs were included in the plan, constituting a non-compliance with Schedule 3 Condition 17. During the site inspection, dust was not observed to be a problem.	**Corrective action 6**
Aboriginal Cultural Heritage	ACHMP	A review of the ACHMP (Rev 2.2) found it to be compliant with the requirements of PA 06_0311. No incidents involving Aboriginal Heritage have occurred on the site over the reporting period. It is of note that the heritage management system has been revised. A new Heritage Management Plan has been prepared to incorporate Aboriginal and Non-Aboriginal heritage, as well as the Chain Valley Colliery site. This plan was not approved by DPE at the time of the audit.	None
Noise management	NMP	The NMP is a combined plan between Chain Valley and Mannering. Review of relevant documentation indicated the NMP (Rev 1.5) found it to be consistent with the conditions of PA06_0311 and EPL 191. A review of the noise monitoring data identified three non-compliances in relation to noise. The most recent non-compliance recorded was in May 2020 prior to the removal of the rotary breaker and the enclosure of the CHPP. Criteria has not been exceeded since then. A review of the complaints register found several complaints was received over the reporting period. Complaints related to noise declined between 2020 and 2022.	None
Non-Indigenous Cultural Heritage Management	NICHMP	A review of the NICHMP (Rev 1.3) found it to be compliant with the requirements of PA 06_0311. No incidents involving non-Indigenous Cultural Heritage have occurred on the site over the reporting period. It is of note that the heritage management system has been revised. A new Heritage Management Plan has been prepared to incorporate Aboriginal and Non-Aboriginal heritage, as well as the Chain Valley Colliery site. This plan was not approved by DPE at the time of the audit.	None

Environmental aspect	Reference	Implementation	Recommendation
Rehabilitation	MOP	A review of the MOP found them compliant with the requirements of PA06_0311. Whilst not a non-compliance, it is recommended that the revision date for Amendment 2 be included in the document, and the approval letter from Resources Regulator appended to Section 17. Therefore Recommendation 2 has been made. There were no areas of the site under active rehabilitation over the reporting period. General maintenance vegetation maintenance and weed management have been undertaken. It is noted Delta Coal are in the process of preparing a Rehabilitation Management Plan (RMP) and Annual Rehabilitation Report and Forward Program (as now required by the NSW Resources Regulator instead of a MOP from 2 July 2022). This RMP is recommended to ensure to discuss topsoil storage and estimated volumes required for rehabilitation.	**Recommendation 2**
Water management	WMP	Review of the WMP indicates it generally addresses the requirements of PA06_0311 and EPL 191; however, it is noted baseline data for surface and groundwater are missing. The WMP also has not been updated since the issue of PA06_0311 MOD5. Therefore, **corrective action 4** has been made to address this administrative non-compliance. The implementation of the WMP on site was generally considered adequate. However, as discussed in Section 4.2.1.3, a number of non-compliances with the requirements of EPL 191 have occurred during the reporting period. **Corrective actions 2 and 3** have been made. Monitoring undertaken over the reporting period was generally undertaken as per the water monitoring program. However, there were instances between October and December 2020 where conductivity was not sampled constituting a non-compliance with EPL 191. This has not occurred again over the reporting period and therefore no corrective action is proposed.	**Corrective actions 2, 3 and 4,**
Pollution incident response	PIRMP	A review of the PIRMP found that the recommendations of the 2019 IEA have been incorporated and are closed out. The PIRMP was tested three times in the audit period: – 17 December 2019 – 22 December 2020 – 22 December 2021 The PIRMP was produced in the site inspection.	None

4.7 Auditor's response to any matters raised by agencies/stakeholders

4.7.1 DPE

A consultation letter was provided to the DPE Compliance Team on 23 March 2022, with a subsequent response received 28 March 2022 and is summarised in Table 4.6.

Table 4.6 DPE comments and auditor's response

NSW Resource Regulator comments	Auditor response
Implementation of approved management plans	Sections 4.2 and 4.6
Noise management and monitoring – in particular, is the current monitoring regime adequate for the surrounding receivers and are the monitoring locations most representative of the nearest residential receivers?	Section 4.2.1.2
Surface water management and discharge events	Section 4.2.1.3
Complaints management and responses	Section 4.2.2

4.7.2 NSW Resources Regulator

A consultation letter was provided to the NSW Resources Regulator on 23 March 2022, with a subsequent response received 23 March 2022 and is summarised in Table 4.7.

Table 4.7 NSW Resources Regulator comments and auditor's response

NSW Resource Regulator comments	Auditor response
Review relevant mining leases and exploration licences as agreed with Resources Regulator.	Noted
Undertake an assessment of compliance against the conditions of title related to environmental management.	Noted
Verify that there is a current Mining Operations Plan (MOP) in place and it has been approved by the Regulator – review compliance against any conditions of approval of the MOP.	The existing MOP which applies to Mannering is Amendment 2 dated 12 August 2021. However, it is noted while the current MOP period ends in 2023, the new RMP and Annual Report & Forward Program are in the process of being prepared for submission by 2 July 2022.
Undertake a critical review of the MOP, including an assessment of its compatibility with the description of operations contained in the planning approval. In particular.	Review of the existing MOP indicates consistency with the requirements of PA 06_0311 and the associated EA, including subsequent modification EAs. Review of these documents indicate relevant rehabilitation commitments and objectives for Mannering relate to addressing any potential subsidence impacts, for which relevant performance measures detailed under Schedule 3, Condition 4 PA 06_0311 have been met during the audit period. Otherwise, relevant rehabilitation committed to in the EA relates to rehabilitation to be undertaken at completion of mining activities, which is not relevant to the audit period. Review of relevant documentation for the audit period otherwise indicates compliance with the rehabilitation objectives and completion criteria identified in the existing MOP.
Review the rehabilitation strategy as outlined in the MOP to determine if it is consistent with the Project Approval in terms of progressive rehabilitation schedule; and proposed final land use(s).	
Review the rehabilitation objectives and completion criteria as outlined in the MOP to determine if they have been developed in accordance with the proposed final land use(s) as outlined in the Project Approval.	
Review the development and implementation of any rehabilitation monitoring programs to assess performance against the nominated objectives and completion criteria – verified by reviewing monitoring reports and rehabilitation inspection records.	As above

NSW Resource Regulator comments	Auditor response
Determine if a rehabilitation care and maintenance program has been developed and implemented based on the outcomes of monitoring program – verified by reviewing Annual Rehabilitation Programs or similar documentation.	A rehabilitation care and maintenance program has not been developed as part of the existing MOP. It has been recommended Delta Coal include a rehabilitation care and maintenance program as part of the RMP and Annual Rehabilitation Report and Forward Program currently being prepared (as now required by the NSW Resources Regulator instead of a MOP).
Confirm that mining operations are being conducted in accordance with the approved MOP (production, mining sequence etc.), including within the designated MOP approval boundary – to be verified by site plans and site inspection.	Review of relevant documentation and conduct of the site inspection on 2 May 2022 indicates operations at CVC are being undertaken in accordance with the existing MOP.
Confirm that rehabilitation progress is consistent with the approved MOP as verified by site plans and a site inspection. This should include an evaluation against rehabilitation targets and whether the final landform is being developed in accordance with conceptual final landform in the Project Approval.	As discussed, review of the existing MOP indicates minimal rehabilitation is proposed during the MOP period (noting that it will be superseded in July 2022), as an underground mine site there is minimal surface area requiring progressive rehabilitation. Subsidence issues would be the primary requirement for rehabilitation during the audit period, with no subsidence occurring during the audit period requiring rehabilitation.
Based on a visual inspection, determine if there are any rehabilitation areas that appear to have failed or that have incurred an issue that may result in a delay in achieving the successful rehabilitation outcomes.	

4.7.3 CCC Chair

A consultation letter was provided to the CCC Chair on 23 March 2022, with a response (including input of CCC members) received on 1 April 2022. This response indicated no one raised any matters of concern for the auditor to investigate.

The CCC Chair noted general consensus that Mannering Colliery operations and performance are in accordance with the relevant approvals.

4.7.4 EPA

A consultation letter was provided to the EPA on 23 March 2022, with a response received 25 March 2022 noting the EPA did not have any comments.

4.7.5 Other agencies

A consultation letter was provided to the BCD, DPI – Fisheries, Heritage NSW, DPI – Water, CC Council and LMCC on 23 March 2022, with no response received to date.

5. Corrective actions and recommendations

Table 5.1 summarises the recommendations made based on the findings of the audit.

Table 5.1 Corrective actions

Number	Condition	Corrective action
EPL 191		
1	L1.1	Continue to undertake mitigation measures to comply with section 120 of the *Protection of the Environment Operations Act 1997*.
2	L2.4	Continue to undertake water quality monitoring. If a water quality exceedance is detected undertake measures to improve water quality
3	O1.1	As bins are clearly labelled and adequate disposal facilities are available across the site, Delta Coal should investigate means to address the workforce culture in relation to inadequate disposal of waste that has persisted across this, and the previous, audit.
PA 06_0311		
4	Schedule 2 Condition 16 Schedule 3 Conditions 11 & 12 Schedule 5, Conditions 3 & 5	To ensure compliance with relevant conditions of PA 06_0311, undertake updates to the WMP to include: – Any relevant changes and requirements under modification 5 – Baseline data for surface water quality – Baseline data for groundwater quality
5	Schedule 3 Condition 16	Ensure that exceedances of criteria are reported.
6	Schedule 3 Condition 17	Update the AQGGMP to include TARPs.
7	Schedule 5 Condition 8	Include historical trends in noise monitoring data in the annual review.
8	Schedule 5 Condition 13	Ensure that incidents from May 2019 to December 2019 are included on the public complaints register.

Table 5.2 Recommendations

Number	Condition	Recommendation
PA 06_0311		
1	Schedule 3 Condition 14	Attach the Bushfire Management Plan to the Land Management Plan.
2	Schedule 3 Condition 15	Whilst not a non-compliance, it is recommended that the revision date for *Mine Operations Plan Amendment 2 Rehabilitation Management Plan 2020 – 2023* be included in the document, and the approval letter from Resources Regulator appended to Section 17.
3	Schedule 3 Condition 22	It is recommended that the standard be reviewed as the review date was 24 April 2021.
4	Schedule 3 Condition 3C	The outcomes of the noise mitigation study currently being completed should be captured in a revised noise management plan and reflect any changes to monitoring, as relevant.

Appendices

Appendix A

Audit team approval letter

Department of Planning and Environment

Mr Lachlan McWha
Environmental Compliance Coordinator
Great Southern Energy Pty Ltd (t/a Delta Coal)
Chain Valley Colliery
Awabakal Country
PO Box 7115
Mannering Park NSW 2259

23/02/2022

Dear Mr McWha

Chain Valley Extension - IEA Auditor Endorsement Request (SSD-5463 and MP 06_0311)

I refer to your request (SSD-5465-PA-70) submitted to the Department of Planning and Environment (the Department) on 17 February 2022 requesting the Secretary's endorsement of suitably qualified persons to prepare the Independent Environmental Audit (IEA) for the Chain Valley Colliery in accordance with Schedule 6 Condition 9 of SSD-5465, as modified and Schedule 5 Condition 9 of MP 06_0311, as modified (the consents).

The Department has reviewed the nominations and information you have provided and is satisfied that these experts are suitably qualified and experienced. Consequently, I can advise that the Secretary endorses the appointment of the following audit team to prepare the IEA for the Chain Valley Colliery:

- Mr Elliot Holland (Lead Auditor); and
- Ms Michelle Kiejda (Technical Review).

Please ensure this correspondence is appended to the Independent Audit Report.

The Independent Audit must be prepared, undertaken and finalised in accordance with the Department's *Independent Audit Guideline – Post approval requirements for state significant developments* (October 2016). Failure to meet these requirements will require revision and resubmission.

The Department reserves the right to request an alternate auditor or audit team for future audits.

Notwithstanding the agreement for the above listed audit team, each respective project approval or consent requires a request for the agreement to the auditor or audit team be submitted to the Department, for consideration of the Secretary. Each request is reviewed and depending on the complexity of future projects, the suitability of a proposed auditor or audit team will be considered.

Should you wish to discuss the matter further, please contact James Epstein, Senior Compliance Officer, on (02) 6575 3419 or via email compliance@planning.nsw.gov.au

Yours sincerely



Heidi Watters
Team Leader Northern
Compliance
As nominee of the Planning Secretary

Appendix B

Agency consultation

GHD Tower, Level 3, 24 Honeysuckle Drive
Newcastle, New South Wales 2300
Australia
www.ghd.com

Your ref: 0001
Our ref: 12572751

23 March 2022

James Epstein
Senior Compliance Officer
Locked Bag 5022
Parramatta, NSW, 2124

Chain Valley Colliery (SSD-5465) and Mannering Colliery (PA06_0311) Independent Environmental Audit

Dear James

Great Southern Energy Pty Ltd (trading as 'Delta Coal') has engaged GHD to undertake independent environmental audits of their underground operations Chain Valley Colliery (CVC) and Mannering Colliery. These audits would be prepared in accordance with Schedule 6, Condition 9 of SSD-5465 (as modified) and Schedule 5, Condition 9 of PA06_0311 (as modified, respectively. The scope of the audit is to:

– Assess the environmental performance of the development and whether it is complying with the relevant requirements of the consent and any relevant EPLs or Mining Leases (including any assessment, plan or program required under these approvals)
– Review the adequacy of strategies, plans or programs required under the Development Consent
– Recommend measures or actions to improve the environmental performance of the project and/or any assessment, plan or program required under the approval

I am writing to you to invite comment from yourself in regard to CVC operations (as they relate to SSD-5465 (as modified)) and Mannering Colliery operations (as they relate to PA06_0311)), as well as Delta Coal's performance with other requirements for each site, as you may deem appropriate.

It would be appreciated if you could provide your comments in regard to the performance of Delta Coal's in meeting these obligations under the following headings:

– Compliance with requirements
– Progress to meeting requirements
– Details of incidents of non-compliance
– Adequacy of actions taken
– Adequacy of the requirements of the licence

I also invite you to comment on Delta Coal's performance with other requirements, as you may deem appropriate.

The site visit for the audit is currently scheduled to be conducted the Thursday/Friday, 7 and 8 April 2022. We wish to invite you to provide comment on Delta Coal's compliance/performance so that we may adequately address any concerns during the audit.

It would be appreciated if you could submit your written comments by close of business Wednesday, 6 April 2022.

All correspondence in relation to this matter should be directed to Elliot Holland, GHD Lead Auditor on 02 4979 9923 or elliot.holland@ghd.com.

Regards



Elliot Holland
Exemplar Global – Lead Auditor: EMS

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elliot.holland@ghd.com

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Newcastle, New South Wales 2300
Australia
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Your ref: 0001
Our ref: 12572751

23 March 2022

Biodiversity Conservation Division
Locked Bag 1002
Dangar, NSW, 2259

Chain Valley Colliery (SSD-5465) and Mannering Colliery (PA06_0311) Independent Environmental Audit

To whom it may concern

Great Southern Energy Pty Ltd (trading as 'Delta Coal') has engaged GHD to undertake independent environmental audits of their underground operations Chain Valley Colliery (CVC) and Mannering Colliery. These audits would be prepared in accordance with Schedule 6, Condition 9 of SSD-5465 (as modified) and Schedule 5, Condition 9 of PA06_0311 (as modified, respectively. The scope of the audit is to:

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- Recommend measures or actions to improve the environmental performance of the project and/or any assessment, plan or program required under the approval.

I am writing to you to invite comment from the Biodiversity Conservation Division (BCD) in regard to CVC operations (as they relate to SSD-5465 (as modified)) and Mannering Colliery operations (as they relate to PA06_0311)), as well as Delta Coal's performance with other requirements for each site, as you may deem appropriate.

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Upon receipt of this letter, please advise GHD of the primary contact within your organisation that will be coordinating this request. It would be appreciated if you could submit your written comments by close of business Wednesday, 6 April 2022.

All correspondence in relation to this matter should be directed to Elliot Holland, GHD Lead Auditor on 02 4979 9923 or elliot.holland@ghd.com.

Regards



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Your ref: 0001
Our ref: 12572751

23 March 2022

Margaret MacDonald-Hill
Committee Independent Chair

Chain Valley Colliery (SSD-5465) and Mannering Colliery (PA06_0311) Independent Environmental Audit

Dear Margaret

Great Southern Energy Pty Ltd (trading as 'Delta Coal') has engaged GHD to undertake independent environmental audits of their underground operations Chain Valley Colliery (CVC) and Mannering Colliery. These audits would be prepared in accordance with Schedule 6, Condition 9 of SSD-5465 (as modified) and Schedule 5, Condition 9 of PA06_0311 (as modified, respectively. The scope of the audit is to:

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- Recommend measures or actions to improve the environmental performance of the project and/or any assessment, plan or program required under the approval.

I am writing to you to invite comment from yourself in regard to CVC operations (as they relate to SSD-5465 (as modified)) and Mannering Colliery operations (as they relate to PA06_0311), as well as Delta Coal's performance with other requirements for each site, as you may deem appropriate.

It would be appreciated if you could provide your comments in regard to the performance of Delta Coal's in meeting these obligations under the following headings:

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Your ref: 0001
Our ref: 12572751

23 March 2022

General Manager
Central Coast Council
PO Box 20
Wyong, NSW, 2259

Chain Valley Colliery (SSD-5465) and Mannering Colliery (PA06_0311) Independent Environmental Audit

To whom it may concern

Great Southern Energy Pty Ltd (trading as 'Delta Coal') has engaged GHD to undertake independent environmental audits of their underground operations Chain Valley Colliery (CVC) and Mannering Colliery. These audits would be prepared in accordance with Schedule 6, Condition 9 of SSD-5465 (as modified) and Schedule 5, Condition 9 of PA06_0311 (as modified, respectively. The scope of the audit is to:

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I am writing to you to invite comment from Central Coast Council in regard to CVC operations (as they relate to SSD-5465 (as modified)) and Mannering Colliery operations (as they relate to PA06_0311), as well as Delta Coal's performance with other requirements for each site, as you may deem appropriate.

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Our ref: 12572751

23 March 2022

James Epstein
Senior Compliance Officer
Locked Bag 5022
Parramatta, NSW, 2124

Chain Valley Colliery (SSD-5465) and Mannering Colliery (PA06_0311) Independent Environmental Audit

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23 March 2022

Department of Planning and Environment – Water
Locked Bag 5022
Parramatta, NSW, 2124

Chain Valley Colliery (SSD-5465) and Mannering Colliery (PA06_0311) Independent Environmental Audit

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www.ghd.com

Your ref: 0001
Our ref: 12572751

23 March 2022

Department of Primary Industries – Fisheries
Locked Bag 1
Nelson Bay, NSW, 2315

Chain Valley Colliery (SSD-5465) and Mannering Colliery (PA06_0311) Independent Environmental Audit

To whom it may concern

Great Southern Energy Pty Ltd (trading as 'Delta Coal') has engaged GHD to undertake independent environmental audits of their underground operations Chain Valley Colliery (CVC) and Mannering Colliery. These audits would be prepared in accordance with Schedule 6, Condition 9 of SSD-5465 (as modified) and Schedule 5, Condition 9 of PA06_0311 (as modified, respectively. The scope of the audit is to:

- Assess the environmental performance of the development and whether it is complying with the relevant requirements of the consent and any relevant EPLs or Mining Leases (including any assessment, plan or program required under these approvals)
- Review the adequacy of strategies, plans or programs required under the Development Consent
- Recommend measures or actions to improve the environmental performance of the project and/or any assessment, plan or program required under the approval.

I am writing to you to invite comment from DPI – Fisheries in regard to CVC operations (as they relate to SSD-5465 (as modified)) and Mannering Colliery operations (as they relate to PA06_0311)), as well as Delta Coal's performance with other requirements for each site, as you may deem appropriate.

It would be appreciated if you could provide your comments in regard to the performance of Delta Coal's in meeting these obligations under the following headings:

- Compliance with requirements
- Progress to meeting requirements
- Details of incidents of non-compliance
- Adequacy of actions taken
- Adequacy of the requirements of the licence.

I also invite you to comment on Delta Coal's performance with other requirements, as you may deem appropriate.

The site visit for the audit is currently scheduled to be conducted the week commencing Monday, 7 April 2022. We wish to invite you to provide comment on Delta Coal's compliance/performance so that we may adequately address any concerns during the audit.

Upon receipt of this letter, please advise GHD of the primary contact within your organisation that will be coordinating this request. It would be appreciated if you could submit your written comments by close of business Wednesday, 6 April 2022.

All correspondence in relation to this matter should be directed to Elliot Holland, GHD Lead Auditor on 02 4979 9923 or elliot.holland@ghd.com.

Regards



Elliot Holland
Exemplar Global – Lead Auditor: EMS

(02) 4979 9923
Elliot.holland@ghd.com

GHD Tower, Level 3, 24 Honeysuckle Drive
Newcastle, New South Wales 2300
Australia
www.ghd.com

Your ref: 0001
Our ref: 12572751

23 March 2022

Environment Protection Authority
Locked Bag 5022
Parramatta, NSW, 2124

Chain Valley Colliery (SSD-5465) and Mannering Colliery (PA06_0311) Independent Environmental Audit

To whom it may concern

Great Southern Energy Pty Ltd (trading as 'Delta Coal') has engaged GHD to undertake independent environmental audits of their underground operations Chain Valley Colliery (CVC) and Mannering Colliery. These audits would be prepared in accordance with Schedule 6, Condition 9 of SSD-5465 (as modified) and Schedule 5, Condition 9 of PA06_0311 (as modified, respectively. The scope of the audit is to:

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- Recommend measures or actions to improve the environmental performance of the project and/or any assessment, plan or program required under the approval.

I am writing to you to invite comment from the EPA in regard to CVC operations (as they relate to SSD-5465 (as modified)) and Mannering Colliery operations (as they relate to PA06_0311)), as well as Delta Coal's performance with other requirements for each site, as you may deem appropriate.

It would be appreciated if you could provide your comments in regard to the performance of Delta Coal's in meeting these obligations under the following headings:

- Compliance with requirements
- Progress to meeting requirements
- Details of incidents of non-compliance
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All correspondence in relation to this matter should be directed to Elliot Holland, GHD Lead Auditor on 02 4979 9923 or elliot.holland@ghd.com.

Regards



Elliot Holland
Exemplar Global – Lead Auditor: EMS

(02) 4979 9923
Elliot.holland@ghd.com

GHD Tower, Level 3, 24 Honeysuckle Drive
Newcastle, New South Wales 2300
Australia
www.ghd.com

Your ref: 0001
Our ref: 12572751

23 March 2022

General Manager
Lake Macquarie City Council
PO Box 1906
Hunter Regional Mail Centre, NSW, 2310

Chain Valley Colliery (SSD-5465) and Mannering Colliery (PA06_0311) Independent Environmental Audit

To whom it may concern

Great Southern Energy Pty Ltd (trading as 'Delta Coal') has engaged GHD to undertake independent environmental audits of their underground operations Chain Valley Colliery (CVC) and Mannering Colliery. These audits would be prepared in accordance with Schedule 6, Condition 9 of SSD-5465 (as modified) and Schedule 5, Condition 9 of PA06_0311 (as modified, respectively. The scope of the audit is to:

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- Review the adequacy of strategies, plans or programs required under the Development Consent
- Recommend measures or actions to improve the environmental performance of the project and/or any assessment, plan or program required under the approval.

I am writing to you to invite comment from Lake Macquarie City Council in regard to CVC operations (as they relate to SSD-5465 (as modified)) and Mannering Colliery operations (as they relate to PA06_0311), as well as Delta Coal's performance with other requirements for each site, as you may deem appropriate.

It would be appreciated if you could provide your comments in regard to the performance of Delta Coal's in meeting these obligations under the following headings:

- Compliance with requirements
- Progress to meeting requirements
- Details of incidents of non-compliance
- Adequacy of actions taken
- Adequacy of the requirements of the licence.

I also invite you to comment on Delta Coal's performance with other requirements, as you may deem appropriate.

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All correspondence in relation to this matter should be directed to Elliot Holland, GHD Lead Auditor on 02 4979 9923 or elliot.holland@ghd.com.

Regards



Elliot Holland
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Elliot.holland@ghd.com

GHD Tower, Level 3, 24 Honeysuckle Drive
Newcastle, New South Wales 2300
Australia
www.ghd.com

Your ref: 0001
Our ref: 12572751

23 March 2022

NSW Resource Regulator
516 High St,
Maitland, NSW, 2320

Chain Valley Colliery (SSD-5465) and Mannering Colliery (PA06_0311) Independent Environmental Audit

To whom it may concern

Great Southern Energy Pty Ltd (trading as 'Delta Coal') has engaged GHD to undertake independent environmental audits of their underground operations Chain Valley Colliery (CVC) and Mannering Colliery. These audits would be prepared in accordance with Schedule 6, Condition 9 of SSD-5465 (as modified) and Schedule 5, Condition 9 of PA06_0311 (as modified, respectively. The scope of the audit is to:

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- Review the adequacy of strategies, plans or programs required under the Development Consent
- Recommend measures or actions to improve the environmental performance of the project and/or any assessment, plan or program required under the approval.

I am writing to you to invite comment from the NSW Resources Regulator in regard to CVC operations (as they relate to SSD-5465 (as modified)) and Mannering Colliery operations (as they relate to PA06_0311)), as well as Delta Coal's performance with other requirements for each site, as you may deem appropriate.

It would be appreciated if you could provide your comments in regard to the performance of Delta Coal's in meeting these obligations under the following headings:

- Compliance with requirements
- Progress to meeting requirements
- Details of incidents of non-compliance
- Adequacy of actions taken
- Adequacy of the requirements of the licence.

I also invite you to comment on Delta Coal's performance with other requirements, as you may deem appropriate.

The site visit for the audit is currently scheduled to be conducted the week commencing Monday, 7 April 2022. We wish to invite you to provide comment on Delta Coal's compliance/performance so that we may adequately address any concerns during the audit.

Upon receipt of this letter, please advise GHD of the primary contact within your organisation that will be coordinating this request. It would be appreciated if you could submit your written comments by close of business Wednesday, 6 April 2022.

All correspondence in relation to this matter should be directed to Elliot Holland, GHD Lead Auditor on 02 4979 9923 or elliot.holland@ghd.com.

Regards



Elliot Holland
Exemplar Global – Lead Auditor: EMS

(02) 4979 9923
Elliot.holland@ghd.com

Jane Mackintosh

From: Heidi Watters <Heidi.Watters@Planning.nsw.gov.au> on behalf of DPE PSVC Compliance Mailbox <compliance@planning.nsw.gov.au>
Sent: Friday, 25 March 2022 9:27 AM
To: Elliot Holland
Subject: RE: 12572751 - Chain Valley Colliery (CVC) and Mannering Colliery Independent Environmental Audits

Dear Elliot

Thank you for the invitation to comment on the upcoming IEA for CVC and Mannering Colliery.

In addition to the requirements of the IEA conditions for both sites, the department would like the audit team to pay particular attention to the following:

- Implementation of approved management plans
- Noise management and monitoring – in particular, is the current monitoring regime adequate for the surrounding receivers and are the monitoring locations most representative of the nearest residential receivers?
- Surface water management and discharge events
- Complaints management and responses

Regards

Heidi Watters
Team Leader Compliance

Planning & Assessment | Department of Planning and Environment
T 02 6575 3401 | **M** 0472 820 374 | **E** heidi.watters@planning.nsw.gov.au
Suite 14, Level 1, 1 Civic Avenue, Singleton NSW 2333
www.dpie.nsw.gov.au

The Department of Planning and Environment acknowledges that it stands on Aboriginal land.
We acknowledge the traditional custodians of the land and we show our respect for elders past, present and emerging through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.

From: Elliot Holland <Elliot.Holland@ghd.com>
Sent: Wednesday, 23 March 2022 11:55 AM
To: DPE PSVC Compliance Mailbox <compliance@planning.nsw.gov.au>
Subject: 12572751 - Chain Valley Colliery (CVC) and Mannering Colliery Independent Environmental Audits

Hi,

As per the attached, GHD has been engaged by Great Southern Energy Pty Ltd (trading as 'Delta Coal') to undertake independent environmental audits of their underground operations Chain Valley Colliery (CVC) and Mannering Colliery, in accordance with relevant requirements of their consents.

I am writing to the Compliance team at Department of Planning and Environment (DPE) to invite comment in regard to CVC operations (as they relate to SSD-5465 (as modified)) and Mannering Colliery operations (as they relate to PA06_0311)), as well as Delta Coal's performance with other requirements for each site, as you may deem appropriate.

A copy of consolidated consent conditions for each site have been attached for your reference.

Regards

Elliot Holland
B Env. Sc. & Mgt.
Exemplar Global – Lead Auditor: EMS
Senior Environmental Scientist

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D +612 4979 9923 **E** elliot.holland@ghd.com

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Jane Mackintosh

From: Steven James <Steven.James@epa.nsw.gov.au>
Sent: Friday, 25 March 2022 1:23 PM
To: Elliot Holland
Subject: RE: 12572751 - Chain Valley Colliery (CVC) and Mannering Colliery Independent Environmental Audits

You don't often get email from steven.james@epa.nsw.gov.au. Learn why this is important

Hi Elliot,

Thanks for your email. The EPA does not have any comments at this time.

Regards,

Steve.

Steven James
Unit Head Regulatory Operations – Metro North
NSW Environment Protection Authority
+61 2 4908 6823 +61 413 450 328

www.epa.nsw.gov.au @NSW_EPA EPA YouTube
Report pollution and environmental incidents 131 555 (NSW only) or +61 2 9995 5555

From: Elliot Holland <Elliot.Holland@ghd.com>
Sent: Wednesday, 23 March 2022 10:26 AM
To: EPA RSD Hunter Region Mailbox <hunter.region@epa.nsw.gov.au>
Subject: 12572751 - Chain Valley Colliery (CVC) and Mannering Colliery Independent Environmental Audits

Hi,

As per the attached, GHD has been engaged by Great Southern Energy Pty Ltd (trading as 'Delta Coal') to undertake independent environmental audits of their underground operations Chain Valley Colliery (CVC) and Mannering Colliery, in accordance with relevant requirements of their consents.

I am writing to you to invite comment in regard to CVC operations (as they relate to SSD-5465 (as modified)) and Mannering Colliery operations (as they relate to PA06_0311)), as well as Delta Coal's performance with other requirements for each site, as you may deem appropriate.

A copy of consolidated consent conditions for each site have been attached for your reference.

Regards

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Any views expressed in this email are those of the individual sender except where the sender expressly and with authority states them to be the views of the Environment Protection Authority.

PLEASE CONSIDER THE ENVIRONMENT BEFORE PRINTING THIS EMAIL

Jane Mackintosh

From: mmacdonald-hill@bigpond.com
Sent: Friday, 1 April 2022 1:58 PM
To: Elliot Holland
Subject: RE: 12572751 - Chain Valley Colliery (CVC) and Mannering Colliery Independent Environmental Audits

Hi Elliot,

I have forwarded the information and scope of the IEA to the CCC members and as expected, no one has raised any matters of concern they wish you to investigate. The general consensus received is that the mine's operations and performance are in accordance with the relevant approvals.
All minutes and presentations of the Committee are available on the Delta Coal website.
Thank you for the opportunity to comment.

Margaret MacDonald-Hill
0448 414 888

From: Elliot Holland <Elliot.Holland@ghd.com>
Sent: Thursday, 24 March 2022 5:49 AM
To: mmacdonald-hill@bigpond.com
Subject: RE: 12572751 - Chain Valley Colliery (CVC) and Mannering Colliery Independent Environmental Audits

Hi Margaret,

Correct, audit period considered will be from 10 April 2019 to the site inspection date (7/8 April 2022)

Elliot Holland
B Env. Sc. & Mgt.
Exemplar Global – Lead Auditor: EMS
Senior Environmental Scientist

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24 Honeysuckle Drive Newcastle NSW 2300 Australia
D +612 4979 9923 **E** elliot.holland@ghd.com

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Please consider the environment before printing this email.

From: mmacdonald-hill@bigpond.com <mmacdonald-hill@bigpond.com>
Sent: Wednesday, 23 March 2022 5:09 PM
To: Elliot Holland <Elliot.Holland@ghd.com>
Subject: RE: 12572751 - Chain Valley Colliery (CVC) and Mannering Colliery Independent Environmental Audits

Hi Elliot,

Thanks for your email. Before I pass this on to the CCC members, I take it the audit period is from April 2019 to April 2022?

Margaret MacDonald-Hill
0448 414 888

From: Elliot Holland <Elliot.Holland@ghd.com>
Sent: Wednesday, 23 March 2022 11:04 AM
To: mmacdonald-hill@bigpond.com
Subject: 12572751 - Chain Valley Colliery (CVC) and Mannering Colliery Independent Environmental Audits

Hi Margaret

As per the attached, GHD has been engaged by Great Southern Energy Pty Ltd (trading as 'Delta Coal') to undertake independent environmental audits of their underground operations Chain Valley Colliery (CVC) and Mannering Colliery, in accordance with relevant requirements of their consents.

I am writing to you to invite you, and by extension CCC members, to comment in regard to CVC operations (as they relate to SSD-5465 (as modified)) and Mannering Colliery operations (as they relate to PA06_0311)), as well as Delta Coal's performance with other requirements for each site, as you may deem appropriate.

A copy of consolidated consent conditions for each site have been attached for your reference.

Regards,

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AREQ0026557

Mr Elliot Holland
GHD Pty Ltd
GHD Tower
Level 3, 24 Honeysuckle Drive
Newcastle NSW 2300

By email: elliot.holland@ghd.com

Dear Mr Holland

Subject: Chain Valley Colliery and Mannering Colliery – Independent Environmental Audit

Thank you for your email dated 23 March 2022 requesting consultation on the independent audits to be undertaken of the Chain Valley Colliery and Mannering Colliery which are covered by the following mining leases:

Chain Valley Colliery

- CCL706 (1973)
- CCL707 (1973)
- ML1051 (1906)
- ML1052 (1906)
- ML1308 (1906)
- ML1785 (1992)
- MPL1349 (1906)
- MPL1389 (1906)
- MPL1400 (1906)
- MPL337 (1973)

Mannering Colliery

- CCL719 (1973)
- CCL 721 (1973)

The Resources Regulator requires that the following issues be addressed in independent environmental audits undertaken in accordance with a planning consent condition.

- Review relevant mining leases and exploration licences as agreed with Resources Regulator
- Undertake an assessment of compliance against the conditions of title related to environmental management

- Verify that there is a current Mining Operations Plan (MOP) in place and it has been approved by the Regulator – review compliance against any conditions of approval of the MOP
- Undertake a critical review of the MOP, including an assessment of its compatibility with the description of operations contained in the planning approval. In particular:
    - Review the rehabilitation strategy as outlined in the MOP to determine if it is consistent with the Project Approval in terms of progressive rehabilitation schedule; and proposed final land use(s)
    - Review the rehabilitation objectives and completion criteria as outlined in the MOP to determine if they have been developed in accordance with the proposed final land use(s) as outlined in the Project Approval
- Review the development and implementation of any rehabilitation monitoring programs to assess performance against the nominated objectives and completion criteria – verified by reviewing monitoring reports and rehabilitation inspection records
- Determine if a rehabilitation care and maintenance program has been developed and implemented based on the outcomes of monitoring program – verified by reviewing Annual Rehabilitation Programs or similar documentation
- Confirm that mining operations are being conducted in accordance with the approved MOP (production, mining sequence etc.), including within the designated MOP approval boundary – to be verified by site plans and site inspection
- Confirm that rehabilitation progress is consistent with the approved MOP as verified by site plans and a site inspection. This should include an evaluation against rehabilitation targets and whether the final landform is being developed in accordance with conceptual final landform in the Project Approval
- Based on a visual inspection, determine if there are any rehabilitation areas that appear to have failed or that have incurred an issue that may result in a delay in achieving the successful rehabilitation outcomes.

In addition to the above, the audit should note observations where rehabilitation procedures, practices and outcomes represent best industry practice.

It would be appreciated if a copy of the final audit report could be sent to the Regulator at nswresourcesregulator@service-now.com upon completion of the audit.

Yours sincerely

Jenny Ehmsen
Principal Compliance Auditor

23 March 2022

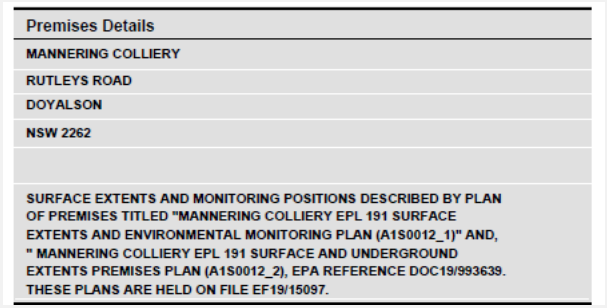
Appendix C

Compliance tables

1. Mannering

1.1 EPL 191

<table>
<tr><th>Condition</th><th>Details</th><th>Compliance status</th><th>Relevant evidence</th><th>Commentary</th></tr>
<tr><td>1</td><td>1 Administrative Conditions</td><td></td><td></td><td></td></tr>
<tr><td>A1</td><td>A1 What the licence authorises and regulates</td><td></td><td></td><td></td></tr>
<tr><td>A1.1</td><td>A1.1 This licence authorises the carrying out of the scheduled activities listed below at the premises specified in A2. The activities are listed according to their scheduled activity classification, fee-based activity classification and the scale of the operation.
Unless otherwise further restricted by a condition of this licence, the scale at which the activity is carried out must not exceed the maximum scale specified in this condition.
<table>
<tr><th>Scheduled Activity</th><th>Fee Based Activity</th><th>Scale</th></tr>
<tr><td>Coal works</td><td>Coal works</td><td>> 2000000 - 5000000 T annual handing capacity</td></tr>
<tr><td>Mining for coal</td><td>Mining for coal</td><td>> 500000 - 2000000 T annual production capacity</td></tr>
</table></td><td>Compliant</td><td>Annual Reviews for 2019, 2020 and 2021
Annual Returns for 2019, 2020 and 2021</td><td>A review of the EPL Annual returns for 2019, 2020 and 2021 found that they were compliant with this condition.</td></tr>
<tr><td>A.1.2</td><td>A1.2 The licensee must not:
(a) Produce by mining activities more than 1.1 million tonnes of coal within any 12 month period.
(b) Undertake coal works of more than 2.1 million tonnes within any 12 month period, where ROM coal handled on the premises may be made up of coal produced by mining activities from both the Mannering premises as defined in this licence or Chain Valley premises as defined in Environment Protection Licence number 1770.
Note: These limits on the scale of the fee based activities are based on project Approval 06_0311 MOD5 granted under the Environmental Planning and Assessment Act 1979 which limits extraction to 1.1 million tonnes of run of mine (ROM) coal per year and its modifications, the most recent of which is dated 5 June 2020.</td><td>Non-compliance (administrative)</td><td>Annual Reviews for 2019, 2020 and 2021
Annual Returns for 2019, 2020 and 2021</td><td>The following amounts of coal were transported to Vales Point Power Station from the colliery over the reporting period:
– 2019: 0.79 million tonnes
– 2020: 1.38 million tonnes
– 2021: 1.25 million tonnes
A non-compliance was reported for the 2020 reporting year as the premises was only permitted to handle up to 1.3 million tonnes per year. The EPL was varied in April 2021, which increased handling capacity to 2.1 million tonnes per year.
No corrective action is required.</td></tr>
</table>

Condition	Details	Compliance status	Relevant evidence	Commentary
A2	A2 Premises or plant to which this licence applies			
A2.1	A2.1 The licence applies to the following premises:  Premises Details MANNERING COLLIERY RUTLEYS ROAD DOYALSON NSW 2262 SURFACE EXTENTS AND MONITORING POSITIONS DESCRIBED BY PLAN OF PREMISES TITLED "MANNERING COLLIERY EPL 191 SURFACE EXTENTS AND ENVIRONMENTAL MONITORING PLAN (A1S0012_1)" AND, " MANNERING COLLIERY EPL 191 SURFACE AND UNDERGROUND EXTENTS PREMISES PLAN (A1S0012_2), EPA REFERENCE DOC19/993639. THESE PLANS ARE HELD ON FILE EF19/15097.	Note	SIX Maps/SEED Portal	Noted
A3	A3 Information supplied to the EPA			
A3.1	A3.1 Works and activities must be carried out in accordance with the proposal contained in the licence application, except as expressly provided by a condition of this licence. In this condition the reference to "the licence application" includes a reference to: a) the applications for any licences (including former pollution control approvals) which this licence replaces under the Protection of the Environment Operations (Savings and Transitional) Regulation 1998; and b) the licence information form provided by the licensee to the EPA to assist the EPA in connection with the issuing of this licence.	Non-compliance (low risk)	Site interviews conducted 2 May 2022 Site inspection conducted 2 May 2022	The following conditions of this licence were identified as being non-compliant over the reporting period: – A1.2 (administrative) – L1.1 (low risk) – L2.4 (low risk) – L5 (low risk) – O1.1 (administrative) – M2.1 (administrative) – M2.3 (administrative) As these conditions of the licence have not been complied with, this condition is also non-compliant. Refer to corrective actions and recommendations on each condition.

<table>
<tr><th>Condition</th><th>Details</th><th>Compliance status</th><th>Relevant evidence</th><th>Commentary</th></tr>
<tr><td>2</td><td>2 Discharges to Air and Water and Applications to Land</td><td></td><td></td><td></td></tr>
<tr><td>P1</td><td>P1 Location of monitoring/discharge points and areas</td><td></td><td></td><td></td></tr>
<tr><td>P1.1</td><td>P1.1 The following points referred to in the table below are identified in this licence for the purposes of monitoring and/or the setting of limits for the emission of pollutants to the air from the point.
Air
<table><tr><th>EPA identification no.</th><th>Type of Monitoring Point</th><th>Type of Discharge Point</th><th>Location Description</th></tr><tr><td>3</td><td>Dust monitoring</td><td></td><td>Dust deposition gauge identified as point 3 on plan titled "Delta Coal Mannering Colliery, EPL 191, Surface Extents & Environmental Monitoring Locations drawing No: A180012_02, Dated 1 November 2019" EPA Reference Doc 19/993639.</td></tr><tr><td>4</td><td>Dust monitoring</td><td></td><td>Dust deposition gauge identified as point 4 on plan titled "Delta Coal Mannering Colliery, EPL 191, Surface Extents & Environmental Monitoring Locations drawing No: A180012_02, Dated 1 November 2019" EPA Reference Doc 19/993639.</td></tr><tr><td>5</td><td>Dust monitoring</td><td></td><td>Dust deposition gauge identified as point 5 on plan titled "Delta Coal Mannering Colliery, EPL 191, Surface Extents & Environmental Monitoring Locations drawing No: A180012_02, Dated 1 November 2019" EPA Reference Doc 19/993639.</td></tr><tr><td>6</td><td>Dust monitoring</td><td></td><td>Dust deposition gauge identified as point 6 on plan titled "Delta Coal Mannering Colliery, EPL 191, Surface Extents & Environmental Monitoring Locations drawing No: A180012_02, Dated 1 November 2019" EPA Reference Doc 19/993639.</td></tr><tr><td>7</td><td>Dust monitoring</td><td></td><td>Dust deposition gauge identified as point 7 on plan titled "Delta Coal Mannering Colliery, EPL 191, Surface Extents & Environmental Monitoring Locations drawing No: A180012_02, Dated 1 November 2019" EPA Reference Doc 19/993639.</td></tr></table></td><td>Compliant</td><td>Air Quality and Greenhouse Gas Management Plan (V2 – dated 21 January 2022)
Annual Reviews for 2019, 2020 and 2021
Annual Returns for 2019, 2020 and 2021</td><td>Monitoring points are identified in the annual review documentation and the AQGGMP.</td></tr>
</table>

<table>
<tr><th>Condition</th><th>Details</th><th>Compliance status</th><th>Relevant evidence</th><th>Commentary</th></tr>
<tr><td>P1.2</td><td>P1.2 The following points referred to in the table are identified in this licence for the purposes of the monitoring and/or the setting of limits for discharges of pollutants to water from the point.
Water and land<table><tr><th>EPA Identification no.</th><th>Type of Monitoring Point</th><th>Type of Discharge Point</th><th>Location Description</th></tr><tr><td>1</td><td>Discharge to waters
Discharge quality monitoring</td><td>Discharge to waters
Discharge quality monitoring</td><td>Discharge Point 1 (surface and groundwater) identified as point 1 on plan titled "Delta Coal Mannering Colliery, EPL 191, Surface Extents & Environmental Monitoring Locations", Drawing No:A180012_02, dated 1 November 2019, EPA Reference Doc19/993639.</td></tr></table></td><td>Compliant</td><td>Water Management Plan (Rev 6.1 – dated 3 February 2020)
Annual Reviews for 2019, 2020 and 2021
Annual Returns for 2019, 2020 and 2021</td><td>The licenced discharge point is identified in the annual review documents and the WMP.</td></tr>
<tr><td>P1.3</td><td>P1.3 The following points referred to in the table below are identified in this licence for the purposes of weather and/or noise monitoring and/or setting limits for the emission of noise from the premises.
Noise/Weather<table><tr><th>EPA identification no.</th><th>Type of monitoring point</th><th>Location description</th></tr><tr><td>8</td><td>Meteorological Station</td><td>As identified as point 8 in "Delta Coal Mannering Colliery, EPL 191, Surface Extents & Environmental Monitoring Locations, Drawing No: A180012_02, Dated 1 November 2019" EPA Reference Doc19/993639.</td></tr></table></td><td>Compliant</td><td>Air Quality and Greenhouse Gas Management Plan (V2 – dated 21 January 2022)
Noise Management Plan (Rev 1 – dated 20 April 2022))
Annual Review for 2019, 2020 and 2021</td><td>The meteorological station is identified in the AQGGMP and the NMP. Weather data is presented in the annual review documents.</td></tr>
</table>

Condition	Details	Compliance status	Relevant evidence	Commentary
3	3 Limit Conditions			
L1	L1 Pollution of waters			
L1.1	L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.	Non-compliance (low-risk)	Annual Reviews for 2019, 2020 and 2021 Annual Return for 2019, 2020 and 2021 Monitoring data for 2019, 2020, 2021 and 2022.	*2019 IEA Recommendations: Continue to undertake mitigation measures to comply with section 120 of the Protection of the Environment Operations Act 1997 .* 2022 IEA Findings: There were several non-compliances relating to pollution of waters over the reporting period. These non-compliances were: – Exceedance of TSS limit for September 2019 – Exceedance of pH limit in October 2019 – Exceedance of oil and grease limit in April 2021 – Exceedance of oil and grease limit in November 2021 These exceedances constitute a 'pollution' of waterways under the POEO Act. The recommendation of the previous audit would be continued over into the next audit period. ***Corrective action 1: Continue to undertake mitigation measures to comply with section 120 of the Protection of the Environment Operations Act 1997.***
L2	L2 Concentration limits			
L2.1	L2.1 For each monitoring/discharge point or utilisation area specified in the table\s below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.	Note		Noted
L2.2	L2.2 Where a pH quality limit is specified in the table, the specified percentage of samples must be within the specified ranges.	Note		Noted
L2.3	L2.3 To avoid any doubt, this condition does not authorise the pollution of waters by any pollutant other than those specified in the table\s.	Note		Noted

<table>
<tr><th>Condition</th><th>Details</th><th>Compliance status</th><th>Relevant evidence</th><th>Commentary</th></tr>
<tr><td>L2.4</td><td>L2.4 Water and/or Land Concentration Limits

POINT 1<table><tr><th>Pollutant</th><th>Units of Measure</th><th>50 percentile concentration limit</th><th>90 percentile concentration limit</th><th>3DGM concentration limit</th><th>100 percentile concentration limit</th></tr><tr><td>Oil and Grease</td><td>milligrams per litre</td><td></td><td></td><td></td><td>10</td></tr><tr><td>pH</td><td>pH</td><td></td><td></td><td></td><td>6.5-8.5</td></tr><tr><td>Total suspended solids</td><td>milligrams per litre</td><td></td><td></td><td></td><td>50</td></tr></table></td><td>Non-compliance (low-risk)</td><td>Annual Reviews for 2019, 2020 and 2021
Annual Return for 2019, 2020 and 2021
Monitoring data for 2019, 2020, 2021 and 2022.</td><td>2019 IEA Recommendation: Continue to undertake water quality monitoring. If a water quality exceedance is detected undertake measures to improve water quality
2022 IEA Findings: Several non-compliances regarding water quality were identified over the reporting period:
– Exceedance of TSS limit for September 2019 following a heavy rain event
– Exceedance of pH limit in October 2019
– Exceedance of oil and grease limit in April 2021
– Exceedance of oil and grease limit in November 2021
This therefore constitutes a non-compliance against this condition. The recommendation of the previous audit would be continued over into the next audit period.
Corrective action 2:Continue to undertake water quality monitoring. If a water quality exceedance is detected undertake measures to improve water quality.</td></tr>
<tr><td>L3</td><td>L3 Volume and mass limits</td><td></td><td></td><td></td></tr>
<tr><td>L3.1</td><td>L3.1 For each discharge point or utilisation area specified below (by a point number), the volume/mass of:
a) liquids discharged to water; or;
b) solids or liquids applied to the area; must not exceed the volume/mass limit specified for that discharge point or area.<table><tr><th>Point</th><th>Unit of Measure</th><th>Volume/Mass Limit</th></tr><tr><td>1</td><td>kilolitres per day</td><td>4000</td></tr></table></td><td>Compliant</td><td>Annual Reviews for 2019, 2020 and 2021
Annual Return for 2019, 2020 and 2021
Monitoring data for 2019, 2020, 2021 and 2022.
Investigation report for incident</td><td>An exceedance of the volumetric discharge was recorded for 21 March 2021 following a period of heavy rain. This exceedance was reported to the EPA on 22 March 2021.
Whilst an exceedance against this condition was recorded, additional factors which are of relevance are discussed below in L3.2 and therefore Delta Coal are compliant with this condition.</td></tr>
</table>

<table>
<tr><th>Condition</th><th>Details</th><th>Compliance status</th><th>Relevant evidence</th><th>Commentary</th></tr>
<tr><td>L3.2</td><td>L3.2 Exceedance of the volume limit for Point 1 is permitted only if the discharge from Point 1 occurs solely as a result of rainfall at the premises exceeding 10mm during the 24 hours immediately prior to the commencement of discharge</td><td>Compliant</td><td>Investigation report for incident</td><td>As discussed above, there was an exceedance of volumetric discharge at the licenced discharge point on 21 March 2021. According to this condition, discharges are permitted if the water released is solely of rainfall origin and the rainfall at the premises exceeds 10mm in the 24 hours prior to discharge.
Groundwater extraction was suspended between 18 March and 22 March. Rainfall data from the meteorological station indicated that the site received 105.6 mm on 20 March, and 100.8mm on 21 March.
Due to these factors, the exceedance of criteria outlined in L3.1 is not considered a true exceedance.</td></tr>
<tr><td>L4</td><td>L4 Waste</td><td></td><td></td><td></td></tr>
<tr><td></td><td>L4.1 The licensee must not cause, permit or allow any waste to be received at the premises, except the wastes expressly referred to in the column titled “Waste” and meeting the definition, if any, in the column titled “Description” in the table below.
Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled “Activity” in the table below.
Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste contained in the column titled “Other Limits” in the table below. This condition does not limit any other conditions in this licence.
<table>
<tr><th>Code</th><th>Waste</th><th>Description</th><th>Activity</th><th>Other Limits</th></tr>
<tr><td>NA</td><td>Waste</td><td>Any other waste received on the premises for storage, treatment, processing, sorting or disposal and which receipt is not a scheduled activity under Schedule 1 of the POEO Act, as in force from time to time.</td><td></td><td></td></tr>
<tr><td>NA</td><td>General or Specific exempted waste</td><td>Waste that meets all the conditions of a resource recovery exemption under Clause 51A of the Protection of the Environment Operations (Waste) Regulation 2014</td><td>As specified in each particular resource recovery exemption</td><td>N/A</td></tr>
</table></td><td>Compliant</td><td>Annual Reviews for 2019, 2020 and 2021
Waste tracking documentation
Site interviews conducted 2 May 2022
Site inspection conducted 2 May 2022</td><td>Waste tracking documentation was provided in the site audit. The documentation was satisfactory and compliant with the requirements of this condition. During the site inspection, no wastes outside of those specified in this condition were being generated or received at the premises.</td></tr>
</table>

Condition	Details	Compliance status	Relevant evidence	Commentary
L4.2	L4.2 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.	Compliant	Annual Reviews for 2019, 2020 and 2021 Complaint and incident register (**https://www.deltacoal.com.au/community/complaint-and-incident-register**) Site interviews conducted 2 May 2022 Site inspection conducted 2 May 2022	Waste on site is being stored and processed in a sufficient way, in compliance with the requirements of this condition. No complaints regarding waste have been received for the site.
L4.3	L4.3 This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if it requires an environment protection licence.	Note		Noted
L5	L5 Noise limits Note: Noise limits are not specified as a condition of this licence. Noise limits are prescribed with the conditions of Project Approval 06_0311 granted under the Environmental Planning and Assessment Act 1979. Under the Environmental Planning and Assessment Act 1979 the Department of Planning is the appropriate authority in respect of the administration and regulation of the Project Approval.	Non-compliance (low risk)	Noise Management Plan (Rev 1 – dated 20 April 2022)) Monthly noise monitoring reports Annual Reviews for 2019, 2020 and 2021 Annual Returns for 2019, 2020 and 2021	A review of the noise monitoring and annual reviews identified the following noise exceedances over the reporting period: – Exceedance of the $L_{Aeq(15min)}$ at R1 on 11 June 2019 – Exceedance of the $L_{Aeq(15min)}$ and $L_{A1,1\ minute}$ at R2 on 13 August 2019. – Exceedance of the $L_{Aeq(15min)}$ at RA 3 on 5 May 2020. This therefore constitutes a non-compliance.

Condition	Details	Compliance status	Relevant evidence	Commentary
4	4 Operating Conditions			
O1	O1 Activities must be carried out in a competent manner	Compliant	Site interviews conducted 2 May 2022 Site inspection conducted 2 May 2022 Generic induction (Environmental Awareness Training) Servicing records (Ash Analyser, CCS001)	During the conduct of the audit, documentation reviewed, and the site inspection indicates general compliance with the requirements of this condition.
O1.1	O1.1 Licensed activities must be carried out in a competent manner. This includes: a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.	Non-compliance (administrative)	Site interviews conducted 2 May 2022 Site inspection conducted 2 May 2022	*2019 IEA Recommendation: Finish sorting out the piles of rubbish at the pit top area.* *Undertake contaminated sites/waste material assessment at the waste stockpile area.* *SLR recommends none of the waste from the stockpile material is removed from site for waste disposal until an assessment on the waste is undertaken.* *Install signage at the landfarm material at the pit top.* *2022 IEA Findings:* During the conduct of the audit, documentation reviewed, and the site inspection indicates that the site is being operated generally in compliance with the requirements of this condition. The auditors did notice that some inappropriate waste management occurred on site, such as general waste being placed in oily rag bins. ***Corrective action 3 As bins are clearly labelled and adequate disposal facilities are available across the site, Delta should investigate means to address the workforce culture in relation to inadequate disposal of waste that has persisted across this, and the previous, audit.***
O2	O2 Maintenance of plant and equipment			
O2.1	O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity: a) must be maintained in a proper and efficient condition; and	Compliant	Site interviews conducted 2 May 2022	A sample work order was produced on request for routine maintenance on the Ash Analyser. No issues regarding

Condition	Details	Compliance status	Relevant evidence	Commentary
	b) must be operated in a proper and efficient manner.		Site inspection conducted 2 May 2022 Servicing records (Ash Analyser, CCS001)	improper maintenance or operation were observed in the site inspection.
O3	O3 Dust			
O3.1	O3.1 The premises must be maintained in a condition which minimises or prevents the emission of dust from the premises.	Compliant	Annual Review for 2019, 2020 and 2021 Site inspection conducted 2 May 2022	The site has generally been maintained in a way that prevents the emission of dust. No complaints regarding dust have been received over the reporting period.
O3.2	O3.2 Activities occurring in or on the premises must be carried out in a manner that will minimise the generation, or emission from the premises, of wind-blown or traffic generated dust.	Compliant	Site inspection conducted 2 May 2022	Dust was not observed to be excessively generated during the site audit.
O3.3	O3.3 All trafficable areas, coal storage areas and vehicle manoeuvring areas in or on the premises must be maintained, at all times, in a condition that will minimise the generation, or emission from the premises, of wind-blown or traffic generated dust.	Compliant	Site inspection conducted 2 May 2022	Trafficable areas are generally sealed. Unsealed areas were not observed to be generating dust during the site inspection.
O3.4	O3.4 The tailgates of all haulage trucks leaving the premises must be securely fixed prior to loading or immediately after unloading to prevent loss of materials.	Compliant	Annual Review for 2019, 2020 and 2021	All coal processed at Mannering Colliery has been transported off the premises via conveyor. Haul trucks have not been used over the reporting period.
O3.5	O3.5 Coal stockpiles must be maintained in a condition that will minimise the generation and emission of dust on the premises.	Compliant	Site inspection conducted 2 May 2022	Coal is generally taken directly from the CHPP to Vales Point Power Station via overland conveyor. Temporary stockpiling of coal does occur at times. No dust was observed to be generated in the temporary stockpile area during the site inspection.

Condition	Details	Compliance status	Relevant evidence	Commentary
O4	O4 Emergency response Note: The licensee must maintain, and implement as necessary, a current Pollution Incident Response Management Plan (PIRMP) for the premises. The PIRMP must be developed in accordance with the requirements in Part 5.7A of the Protection of the Environment Operations (POEO) Act 1997 and POEO regulations. The licensee must keep the incident response plan on the premises at all times. The incident response plan must document systems and procedures to deal with all types of incidents (e.g. spills, explosions or fire) that may occur at the premises or that may be associated with activities that occur at the premises and which are likely to cause harm to the environment. The PIRMP must be tested at least annually or following a pollution incident.	Compliant	Pollution Incident Response Plan (Rev 2.4 - Dated15 December 2021) Site inspection conducted 2 May 2022 Annual Return for 2019, 2020 and 2021 PIRMP Test records	*2019 IEA Recommendation: Update the PIRMP to include:* – *Current site contacts;* – *Email details for government contacts; and* – *Figures that clearly show the location of hazardous substances and where pollution response equipment is stored.* 2022 IEA findings: A review of the PIRMP found that the recommendations of the 2019 IEA have been incorporated and are closed out. The PIRMP was tested 3 times in the reporting period: – 17 December 2019 – 22 December 2020 – 22 December 2021 The PIRMP was produced in the site inspection.
O5	O5 Processes and management			
O5.1	O5.1 All above ground tanks containing material that is likely to cause environmental harm must be bunded or have an alternative spill containment system in place.	Compliant	Site inspection conducted 2 May 2022	Above ground tanks and storage containers were located within bunded areas.
O5.2	O5.2 Bunds must: a) have walls and floors constructed of impervious materials; b) be of sufficient capacity to contain 110% of the volume of the tank (or 110% volume of the largest tank where a group of tanks are installed); c) have floors graded to a collection sump; and d) not have a drain valve incorporated in the bund structure, or be constructed and operated in a manner that achieves the same environmental outcome.	Compliant	Site inspection conducted 2 May 2022	Above ground tanks and storage containers were located within bunded areas. Collection sumps and oil/water separators were observed during the site inspection.

Condition	Details	Compliance status	Relevant evidence	Commentary
O6	O6 Other operating conditions			
O6.1	O6.1 The licensee must ensure that activities are conducted in an environmentally satisfactory manner. So as to minimise and prevent the pollution of air and water the licensee must: (a) Ensure that vehicles or containers prior to leaving the premises are clean and sealed in a manner that will not cause materials or wastes used in conducting the activities at the premises to be tracked, thrown from, blown, fall, or cast from any vehicle or container onto a public road. (b) The licensee must have in place and implement procedures to ensure that vehicles and containers exiting the premises are in a condition to ensure that materials are not tracked, thrown, blown, fall or cast onto a public road.	Compliant	Site inspection conducted 2 May 2022 Site interviews conducted 2 May 2022	Coal transport is undertaken by overland conveyor. Vehicles entering and exiting the site are limited to staff and contractor vehicles. No issues regarding air or water pollution generated by vehicle movements were observed in the site inspection.
5	5 Monitoring and Recording Conditions			
M1	M1 Monitoring records			
M1.1	M1.1 The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition.	Compliant	Monitoring data for 2019, 2020, 2021 and 2022 Annual Return for 2019, 2020 and 2021	Water monitoring and dust monitoring results are documented internally. These records were viewed during the site audit and were found to be compliant with the requirements of this condition. Water and dust monitoring results are reported externally in the monthly environmental reports. Noise monitoring is undertaken by an independent consultant, who reports data back to Delta Coal.
M1.2	M1.2 All records required to be kept by this licence must be: a) in a legible form, or in a form that can readily be reduced to a legible form; b) kept for at least 4 years after the monitoring or event to which they relate took place; and c) produced in a legible form to any authorised officer of the EPA who asks to see them.	Complaint	Monitoring data for2018, 2019, 2020, 2021 and 2022 Annual Return for 2019, 2020 and 2021	Monitoring results for the 2018 to 2022 are presented on the Delta Coal website.

<table>
<tr><th>Condition</th><th>Details</th><th>Compliance status</th><th>Relevant evidence</th><th>Commentary</th></tr>
<tr><td>M1.3</td><td>M1.3 The following records must be kept in respect of any samples required to be collected for the purposes of this licence:
a) the date(s) on which the sample was taken;
b) the time(s) at which the sample was collected;
c) the point at which the sample was taken; and
d) the name of the person who collected the sample.</td><td>Complaint</td><td>Sample receipts

Monitoring spreadsheet

Monitoring data for 2019, 2020, 2021 and 2022</td><td>Sample receipts for water and dust sampling were viewed during the site audit. The sample receipts had the information required to satisfy the requirements of this condition</td></tr>
<tr><td>M2</td><td>M2 Requirement to monitor concentration of pollutants discharged</td><td></td><td></td><td></td></tr>
<tr><td>M2.1</td><td>M2.1 For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:</td><td>Non-compliance (administrative)</td><td>Monitoring data for 2019, 2020, 2021 and 2022
Air Quality and Greenhouse Gas Management Plan (V2 – dated 21 January 2022)

Water Management Plan (Rev 6.1 – Dated 3 February 2020)</td><td>As described below in M2.2 and M2.3, Delta Coal monitored the parameters in accordance with the requirements of this condition.
Six samples in late 2020 that were not analysed for conductivity as per the table in M2.3, constituting a non-compliance. This is discussed further below.</td></tr>
<tr><td>M2.2</td><td>M2.2 Air Monitoring Requirements

POINT 3,4,5,6,7
<table><tr><th>Pollutant</th><th>Units of measure</th><th>Frequency</th><th>Sampling Method</th></tr><tr><td>Particulates - Deposited Matter</td><td>grams per square metre per month</td><td>Monthly</td><td>AM-19</td></tr></table></td><td>Compliant</td><td>Air Quality and Greenhouse Gas Management Plan (V2 – dated 21 January 2022).
Annual Review for 2019, 2020 and 2021</td><td>A review of the AQGGMP and the annual review documentation found that air monitoring was undertaken in accordance with this condition.
Sampling method is described in Section 3.3 of the AQGGMP.</td></tr>
</table>

M2.3	M2.3 Water and/ or Land Monitoring Requirements POINT 1 **Pollutant** / **Units of measure** / **Frequency** / **Sampling Method** Aluminium (dissolved) / micrograms per litre / Monthly during discharge / Grab sample Aluminium (total) / micrograms per litre / Monthly during discharge / Grab sample Antimony / micrograms per litre / Monthly during discharge / Grab sample Arsenic (dissolved) / micrograms per litre / Monthly during discharge / Grab sample Arsenic (total) / micrograms per litre / Monthly during discharge / Grab sample Barium / micrograms per litre / Monthly during discharge / Grab sample Beryllium (dissolved) / micrograms per litre / Monthly during discharge / Grab sample Beryllium (total) / micrograms per litre / Monthly during discharge / Grab sample Boron / micrograms per litre / Monthly during discharge / Grab sample Cadmium (dissolved) / micrograms per litre / Monthly during discharge / Grab sample Cadmium (total) / micrograms per litre / Monthly during discharge / Grab sample Calcium / micrograms per litre / Monthly during discharge / Grab sample Chromium (dissolved) / micrograms per litre / Monthly during discharge / Grab sample Chromium (total) / micrograms per litre / Monthly during discharge / Grab sample Cobalt (dissolved) / micrograms per litre / Monthly during discharge / Grab sample Cobalt (total) / micrograms per litre / Monthly during discharge / Grab sample Conductivity / microsiemens per centimetre / Weekly during any discharge / Grab sample Copper (dissolved) / micrograms per litre / Monthly during discharge / Grab sample	Non-compliance (administrative)	Water Management Plan (Rev 6.1 – Dated 3 February 2020) Land Management Plan (Rev 1 – Dated 30 April 2016) Annual Reviews for 2019, 2020 and 2021 Annual Returns for 2019, 2020 and 2021	A review of the WMP, monitoring data and annual review documentation identified that monitoring of surface water was being undertaken generally in compliance with the requirements of this condition. Surface water monitoring is described in Section 6.2 of the WMP. During the period of October to December 2020, conductivity was not sampled as per the requirement of this condition. This was reported to the EPA and has not occurred since, therefore no corrective action is required,

Condition	Details	Compliance status	Relevant evidence	Commentary
	Copper (total) micrograms per litre Monthly during discharge Grab sample Iron micrograms per litre Monthly during discharge Grab sample Lead (dissolved) micrograms per litre Monthly during discharge Grab sample Lead (total) micrograms per litre Monthly during discharge Grab sample Lithium micrograms per litre Monthly during discharge Grab sample Magnesium micrograms per litre Monthly during discharge Grab sample Manganese (dissolved) micrograms per litre Monthly during discharge Grab sample Mercury (dissolved) micrograms per litre Monthly during discharge Grab sample Mercury (total) micrograms per litre Monthly during discharge Grab sample Molybdenum (dissolved) micrograms per litre Monthly during discharge Grab sample Molybdenum (total) micrograms per litre Monthly during discharge Grab sample Nickel (dissolved) micrograms per litre Monthly during discharge Grab sample Nickel (total) micrograms per litre Monthly during discharge Grab sample Nitrogen (ammonia) micrograms per litre Monthly during discharge Grab sample Oil and Grease milligrams per litre Weekly during any discharge Grab sample pH pH Weekly during any discharge Grab sample Phosphorus micrograms per litre Monthly during discharge Grab sample Potassium micrograms per litre Monthly during discharge Grab sample Selenium (dissolved) micrograms per litre Monthly during discharge Grab sample Selenium (total) micrograms per litre Monthly during discharge Grab sample Silica micrograms per litre Monthly during discharge Grab sample Silver (dissolved) micrograms per litre Monthly during discharge Grab sample Silver (total) micrograms per litre Monthly during discharge Grab sample Sulfur micrograms per litre Monthly during discharge Grab sample Tin micrograms per litre Monthly during discharge Grab sample Titanium micrograms per litre Monthly during discharge Grab sample Total suspended solids milligrams per litre Weekly during any discharge Grab sample Vanadium (dissolved) micrograms per litre Monthly during discharge Grab sample Vanadium (total) micrograms per litre Monthly during discharge Grab sample Zinc (dissolved) micrograms per litre Monthly during discharge Grab sample Zinc (total) micrograms per litre Monthly during discharge Grab sample			
M5	M5 Recording of pollution complaints			
M5.1	M5.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.	Compliant	Complaint and incident register (**https://www.deltacoal.com.au/community/complaint-and-incident-register**)	The complaints register is available on the project website, and is up to date.

Condition	Details	Compliance status	Relevant evidence	Commentary
M5.2	M5.2 The record must include details of the following: a) the date and time of the complaint; b) the method by which the complaint was made; c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect; d) the nature of the complaint; e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and f) if no action was taken by the licensee, the reasons why no action was taken.	Compliant	Complaint and incident register (**https://www.deltacoal.com.au/community/complaint-and-incident-register**) Internal complaints register	*2019 IEA Recommendation: Include in the Complaints Register:* *-Time of the complaint;* *-Personal details of the complainant; and* *-Method by which the complaint was made.* 2022 Audit Findings: The internal and website published complaints and incident registered were viewed during the site audit. Whilst the website published register did not contain all the requirements of this condition, the internal register contained the full details required.
M5.3	M5.3 The record of a complaint must be kept for at least 4 years after the complaint was made	Compliant	Internal complaints register)	The complaints register goes back to 2014.
M5.4	M5.4 The record must be produced to any authorised officer of the EPA who asks to see them.	Not triggered		No requests from the EPA have been received to view the complaints register. This condition remains not triggered.
M6	M6 Telephone complaints line			
M6.1	M6.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence	Compliant	Community information line web page **https://www.deltacoal.com.au/media/community-information-line**	The community information line functions as the complaints line. The number is 1800 115 277.
M6.2	M6.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.	Compliant	July 2019 Community Newsletter Community information line web page **https://www.deltacoal.com.au/media/community-information-line**	*2019 IEA Recommendation: With the new ownership an advertisement should be placed in the paper providing a link to the Delta Coal website and outlining the complaint management details.* 2022 IEA Findings: The community information line is advertised on the website in an easy to find location. The Community Newsletter from July 2019 fulfilled the 2019 IEA recommendation.
M6.3	M6.3 The preceding two conditions do not apply until 3 months after: the date of the issue of this licence.	Not triggered		Not triggered

Condition	Details	Compliance status	Relevant evidence	Commentary
M6.4	M6.4 The licensee must nominate a representative of the company that is available at all times and is capable of providing immediate assistance or response during emergencies or any other incidents at the premises. The name of the nominated representative and their contact details, including a telephone number, must be current at all times.	Compliant	Pollution Incident Response Plan (Rev 2.4 – Dated 15 December 2021)	*2019 IEA Recommendation: Update the details of designated representatives of the company in the PIRMP* 2022 IEA Findings: The PIRMP has been updated since the previous audit and contains the contact details of the current representees of the company.
M7	M7 Requirement to monitor volume or mass			
M7.1	M7.1 For each discharge point or utilisation area specified below, the licensee must monitor: a) the volume of liquids discharged to water or applied to the area; b) the mass of solids applied to the area; c) the mass of pollutants emitted to the air; at the frequency and using the method and units of measure, specified below. POINT 1 **Frequency** / **Unit of Measure** / **Sampling Method** Continuous during discharge / kilolitres per day / In line instrumentation	Compliant	Annual Return for 2019, 2020 and 2021 Monitoring data for 2019, 2020, 2021 and 2022	Discharge at LDP1 has been monitored over the reporting period. Clauses b) and c) of this condition are not applicable to Point 1 (LDP1).
6	6 Reporting Conditions			
R1	R1 Annual return documents			
R1.1	R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising: 1. a Statement of Compliance, 2. a Monitoring and Complaints Summary, 3. a Statement of Compliance - Licence Conditions, 4. a Statement of Compliance - Load based Fee, 5. a Statement of Compliance - Requirement to Prepare Pollution Incident Response Management Plan, 6. a Statement of Compliance - Requirement to Publish Pollution Monitoring Data; and 7. a Statement of Compliance - Environmental Management Systems and Practices. At the end of each reporting period, the EPA will provide to the licensee notification that the Annual Return is due.	Compliant	Annual Return for 2019, 2020 and 2021	The annual return documentation was prepared in accordance with the requirements of this condition.

Condition	Details	Compliance status	Relevant evidence	Commentary
R1.2	R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below. Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.	Compliant	Annual Return for 2019, 2020 and 2021	Annual returns were completed for 2019, 2020 and 2021 over the reporting period. Reporting for 2019 was between April and December which is discussed further below.
R1.3	R1.3 Where this licence is transferred from the licensee to a new licensee: a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period. Note: An application to transfer a licence must be made in the approved form for this purpose.	Compliant	Annual Return for 2019	*2019 IEA Recommendation: LakeCoal prepare an Annual Return for the period commencing on the first day of the reporting period (1 January 2019) and ending on the date the application for the transfer of the licence to the new licensee is granted (1 April 2019).* *Delta Coal prepare an Annual Return for the period commencing on the date the application for the transfer of EPL191 is granted (1 April 2019) and ending on the last day of the reporting period (31 December 2019).* 2022 IEA findings: The EPL was transferred from LakeCoal to Delta Coal on 1 April 2019, outside the scope of the reporting period. Delta Coal produced an Annual return for the 2019 reporting year for the months of April to December.
R1.4	R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on: a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.	Not triggered		No licences have been surrendered during the reporting period. This condition remains not triggered.
R1.5	R1.5 The Annual Return for the reporting period must be supplied to the EPA via eConnect EPA or by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').	Compliant	Annual Return for 2019, 2020 and 2021	Review of relevant documentation indicates compliance with the requirements of this condition
R1.6	R1.6 The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA.	Compliant	Annual Return for 2018, 2019, 2020 and 2021	Review of relevant documentation indicates compliance with the requirements of this condition.

Condition	Details	Compliance status	Relevant evidence	Commentary
R1.7	R1.7 Within the Annual Return, the Statements of Compliance must be certified and the Monitoring and Complaints Summary must be signed by: a) the licence holder; or b) by a person approved in writing by the EPA to sign on behalf of the licence holder.	Compliant	Annual Return for 2018, 2019, 2020 and 2021	Review of relevant documentation indicates compliance with the requirements of this condition.
R2	R2 Notification of environmental harm Note: The licensee or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.	Note		Noted
R2.1	R2.1 Notifications must be made by telephoning the Environment Line service on 131 555.	Compliant	Incident reports	Whilst there were environmental incidents occurring the audit period, none of these incidents required the PIRMP to be enacted or considered likely to cause or threaten to cause material harm to the environment.
R2.2	R2.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.	Compliant	Incident reports	As per condition R2.1 there have been no incidents causing or threatening material harm occurring over the reporting period. This condition remains not triggered.
R3	R3 Written report			
R3.1	R3.1 Where an authorised officer of the EPA suspects on reasonable grounds that: a) where this licence applies to premises, an event has occurred at the premises; or b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence, and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.	Not triggered		No requests of this nature have been made over the reporting period. This condition remains not triggered.
R3.2	R3.2 The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.	Not triggered		As above

Condition	Details	Compliance status	Relevant evidence	Commentary
R3.3	R3.3 The request may require a report which includes any or all of the following information: a) the cause, time and duration of the event; b) the type, volume and concentration of every pollutant discharged as a result of the event; c) the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event; d) the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort; e) action taken by the licensee in relation to the event, including any follow-up contact with any complainants; f) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and g) any other relevant matters.	Not triggered		As above
R3.4	R3.4 The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.	Not triggered		As above
7	7 General Conditions			
G1	G1 Copy of licence kept at the premises or plant	Compliant	Site inspection conducted 2 May 2022	A copy of the EPL was produced in the site inspection.
G1.1	G1.1 A copy of this licence must be kept at the premises to which the licence applies.	Compliant	Site inspection conducted 2 May 2022	A copy of A copy of the EPL was produced in the site inspection.
G1.2	G1.2 The licence must be produced to any authorised officer of the EPA who asks to see it.	Not triggered		An EPA officer has not asked to see the licence over the reporting period. This condition remains not triggered.
G1.3	G1.3 The licence must be available for inspection by any employee or agent of the licensee working at the premises.	Compliant	Site inspection conducted 2 May 2022	A copy of the EPL was produced in the site inspection.

<table>
<tr><th>Condition</th><th>Details</th><th>Compliance status</th><th>Relevant evidence</th><th>Commentary</th></tr>
<tr><td>G2</td><td>G2 Other general conditions</td><td></td><td></td><td></td></tr>
<tr><td>G2.1</td><td>G2.1 Completed Programs

<table><tr><th>Program</th><th>Description</th><th>Completed Date</th></tr><tr><td>PRP 1 - Assessment of Potential Impacts of Metals</td><td>The licensee must conduct an assessment of metals detected in wastewater discharges from the mine in accordance with the ANZECC water quality guidelines.. To obtain a greater understanding of the type and concentration of metals discharged in mine water and entering the receiving waters. To limit the concentration of metals discharged in mine water within ANZECC guidelines.</td><td>26-June-2013</td></tr><tr><td>Coal Mine Particulate Matter Control Best Practice</td><td>Requires licensee to conduct a site specific Best Management Practice (BMP) determination to identify ways to reduce particle emissions.</td><td>19-September-2012</td></tr><tr><td>Coal Handling and Preparation Plant Commissioning Water Quality Monitoring Study</td><td>CHPP commissioning water quality monitoring study</td><td>12-October-2016</td></tr></table></td><td>Compliant</td><td>Site interviews conducted 2 May 2022</td><td>Following the issue of MOD5 PA 05_0311, the Rotary Breaker was removed in July 2020, following a commitment made in the statement of commitments. This was done to reduce the noise generated by the site.</td></tr>
</table>

1.2 PA 06_0311

Condition	Details	Compliance status	Relevant evidence	Commentary
	SCHEDULE 2 **ADMINISTRATIVE CONDITIONS**			
	OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT			
1	1. In addition to meeting the specific performance measures and criteria established under this development, the Applicant must 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 this consent.	Compliant	Site inspection conducted 2 May 2022 Site interview conducted 2 May 2022	No occurrences of an incident causing material harm to the environment have occurred over the reporting period.
	TERMS OF APPROVAL			
2	2. The development may only be carried out: (a) in compliance with the conditions of this consent; (b) in accordance with the statement of commitments in Appendix 3; (c) in accordance with the approved mine plan in Appendix 2; (d) in accordance with all written directions of the Planning Secretary; and (e) generally in accordance with the EA, EA (Mod 1), EA (Mod 2), EA (Mod 3), EA (Mod 4) and SEE (Mod 5).	Non-compliance (low risk)	Site inspection conducted 2 May 2022 Site interview conducted 2 May 2022	The following conditions of the consent were identified as being non-compliant over the reporting period: – Schedule 2, Condition 16 (administrative) – Schedule 3, Condition 2 (low-risk) – Schedule 3, Condition 11 (administrative) – Schedule 3, Condition 12 (administrative) – Schedule 3, Condition 16 (low risk) – Schedule 3, Condition 17 (administrative) – Schedule 5, Condition 3 (administrative) – Schedule 5, Condition 5 (administrative) – Schedule 5, Condition 7 (administrative) – Schedule 5, Condition 8 (administrative) – Schedule 5, Condition 13 (administrative) As these conditions of consent have not been complied with, this condition is also non-compliant. Refer to corrective actions and recommendations on each condition.

Condition	Details	Compliance status	Relevant evidence	Commentary
3	3. Consistent with the requirements in this consent, the Planning Secretary may make written directions to the Applicant in relation to: (a) the content of any strategy, study, system, plan, program, review, audit, notification, report or correspondence submitted under or otherwise made in relation to this consent, including those that are required to be, and have been, approved by the Planning Secretary; and (b) the implementation of any actions or measures contained in any such document referred to in condition 3(a).	Not triggered	Annual Review for 2019, 2020 and 2021 Site interview conducted 2 May 2022	No directions have been given to Delta Coal over the reporting period.
4	4. The conditions of this consent and directions of the Planning Secretary prevail to the extent of any inconsistency, ambiguity or conflict between them and a document/s listed in condition 2(e). In the event of an inconsistency, ambiguity or conflict between any of the document/s listed in condition 2(e), the most recent document prevails to the extent of the inconsistency, ambiguity or conflict.	Note		Noted
	Limits on Consent			
5	5. Mining operations may take place until 31 December 2027. Note: Under this consent, the Applicant is required to rehabilitate the site to the satisfaction of the Planning Secretary and RR. Consequently, this consent will continue to apply in all other respects other than the right to conduct mining operations until the site has been rehabilitated to a satisfactory standard.	Compliant	Annual Review for 2019, 2020 and 2021	No coal has been produced from the site over the reporting period.
6	6. The Applicant must not extract more than 1.1 million tonnes of ROM coal a year from the site.	Compliant	Annual Review for 2019, 2020 and 2021	No coal has been produced over the reporting period.
6A	6A. The Applicant must not transport more than 2.1 million tonnes of ROM coal a year from the site.	Compliant	Annual Review for 2019, 2020 and 2021	The following amounts of coal were transported to Vales Point Power Station from the colliery over the reporting period: – 2019: 0.79 million tonnes – 2020: 1.38 million tonnes – 2021: 1.25 million tonnes Tonnages were compliant with the requirements of this condition.

Condition	Details	Compliance status	Relevant evidence	Commentary
7	7. The Applicant must ensure all coal produced and/or received on the site is transported by overland conveyor to Vales Point Power Station.	Compliant	Annual Review for 2019, 2020 and 2021 Site inspection conducted 2 May 2022 Site interview conducted 2 May 2022	A review of the annual review documentation and the site inspection identified that coal is being transported to Vales Point Power Station via overland conveyor.
8	Deleted			
	Structural Adequacy			
9	9. The Applicant must ensure that all new buildings and structures, and any alterations or additions to existing buildings and structures, are constructed in accordance with the relevant requirements of the BCA. Notes: • Under Part 6 of the EP&A Act, the Applicant is required to obtain construction and occupation certificates for any proposed building works. • Part 8 of the EP&A Regulation sets out the requirements for the certification of the development. • Under section 21 of the Coal Mine Subsidence Compensation Act 2017, the Applicant is required to obtain the Chief Executive of SANSW's approval before carrying out certain development in a Mine Subsidence District.	Not triggered	Site interview conducted 2 May 2022	Not new buildings have been constructed over the reporting period and therefore this condition remains not triggered.
	Demolition			
10	10. The Applicant must ensure that all demolition work is carried out in accordance with Australian Standard AS 2601-2001: The Demolition of Structures, or its latest version.	Not triggered	Site interview conducted 2 May 2022	No demolition activity has occurred over the reporting period and therefore this condition remains not triggered.
	Operation of Plant and Equipment			
11	11. All plant and equipment used on site, or to monitor the performance of the development must be: (a) maintained in a proper and efficient condition; and (b) operated in a proper and efficient manner.	Compliant	Site inspection conducted 2 May 2022 Site interview conducted 2 May 2022 Servicing records (Ash Analyser, CCS001)	*2019 IEA Recommendation: Ensure that all plant and equipment used on site is operated in a proper and efficient manner.* 2022 IEA Findings: Workorders for routine maintenance on the Ash Analyser were produced upon request during the site inspection. The workorder tracking system, PULSE, was also viewed.
	Community Enhancement Program			

Condition	Details	Compliance status	Relevant evidence	Commentary
12	12. The Applicant must pay the affected councils $0.02 for each tonne of ROM coal produced by the development for the purpose of improving water quality in the Lake Macquarie catchment. This payment must be: (a) shared equally by the affected councils; (b) made by the end of March 2009, and at yearly intervals thereafter; (c) calculated on the ROM coal produced in the previous calendar year; and (d) subject to indexation by the Implicit Price Deflator, as published by the Australian Bureau of Statistics.	Not triggered	Annual Review for 2019, 2020 and 2021	*2019 IEA Recommendation: Ensure VPA payments are made prior to the due date.* 2022 IEA Findings: no coal has been produced by the site over the reporting period, and therefore VPA payments are not required.
	Community Consultative Committee			
13	13. A Community Consultative Committee (CCC) must be established for the development in accordance with the Department's Community Consultative Committee Guidelines: State Significant Developments (2019). The CCC must continue to operate during the life of the development, or other timeframe agreed by the Planning Secretary. Notes: • The CCC is an advisory committee only. • In accordance with the Guidelines, the Committee should comprise an independent chair and appropriate representation from the Applicant, affected Councils and the local community.	Compliant	Community Consultative Committee (CCC) Meeting Minutes CCC Annual reports for 2019, 2020 and 2021	The Community Consultative Committee (CCC) were held quarterly over the reporting period and in compliance with the requirements of this condition.
14	14. With the approval of the Planning Secretary, the Applicant may combine the CCC required by this development with any similar CCC required by a consent or approval for any adjoining mine subject to common, shared or related ownership or management.	Compliant	Community Consultative Committee (CCC) Meeting Minutes CCC Annual reports for 2019, 2020 and 2021	The CCC for the Mannering Colliery is combined with Chain Valley Colliery

Condition	Details	Compliance status	Relevant evidence	Commentary
	Evidence of Consultation			
15	15. Where conditions of this consent require consultation with an identified party, the Applicant must: (a) consult with the relevant party prior to submitting the subject document; (b) provide details of the consultation undertaken including: i. the outcome of that consultation, matters resolved and unresolved; and ii. details of any disagreement remaining between the party consulted and the Applicant and how the Applicant has addressed the matters not resolved	Compliant	Aboriginal Cultural Heritage Management Plan (Rev 2.2 – 4 December 2019). Air Quality and Greenhouse Gas Management Plan (V2 – dated 21 January 2022). Land Management Plan (Rev 1 – Dated 30 April 2016). Mine Operations Plan Amendment 2 Rehabilitation Management Plan 2020 – 2023 (Rev 2) Water Management Plan (Rev 6.1 – 3 February 2020)	A review of the management plans prepared under this consent have found that consultation with relevant parties have occurred during their preparation.
	Staging, Combining and Updating Strategies, Plans or Programs			

Condition	Details	Compliance status	Relevant evidence	Commentary
16	16. With the approval of the Planning Secretary, the Applicant may: (a) prepare and submit any strategy, plan or program required by this consent on a staged basis (if a clear description is provided as to the specific stage and scope of the development to which the strategy, plan or program applies, the relationship of the stage to any future stages and the trigger for updating the strategy, plan or program); (b) combine any strategy, plan or program required by this consent (if a clear relationship is demonstrated between the strategies, plans or programs that are proposed to be combined); (c) update any strategy, plan or program required by this consent (to ensure the strategies, plans and programs required under this consent are updated on a regular basis and incorporate additional measures or amendments to improve the environmental performance of the development); and (d) combine any strategy, plan or program required by this consent with any similar strategy, plan or program required by an adjoining mining consent or approval, in common ownership or management.	Non-compliance (administrative)	Aboriginal Cultural Heritage Management Plan (Rev 2.2 – 4 December 2019). Air Quality and Greenhouse Gas Management Plan (V2 – dated 21 January 2022). Land Management Plan (Rev 1 – Dated 30 April 2016). Noise Management Plan (Rev 1 dated 20 April 2022) Non-indigenous Cultural Heritage Management Plan (Rev 1.3 – 4 December 2019). Mine Operations Plan Amendment 2 Rehabilitation Management Plan 2020 – 2023 (Rev 2) Water Management Plan (Rev 6.1 – 3 February 2020)	A review of the management plans prepared under the condition found that the implementation of plans would not be staged. The revised AQGGMP has been prepared to be combined with Chain Valley Colliery. Approval from DPE was granted in October 2020. The following plans were also approved to be combined plans between Mannering Colliery and Chain Valley Colliery, however, have not been produced during the reporting period: – Heritage Management Plan – Land Management Plan Plans were generally updated following the 2019 IEA and modification of development consent and are within the review dates and frequency, except for the WMP which has not been updated to reflect MOD5. This is required as per Schedule 5, Condition 5, therefore constituting a non-compliance against the requirements of this condition. ***Corrective Action 4: To ensure compliance with relevant conditions of PA 06_0311, undertake updates to the WMP to ensure:*** – ***The requirements under modification 5 are captured.*** – ***Baseline data for surface water quality is included*** – ***Baseline data for groundwater quality is included.*** At the time of Audit, the Land Management Plan required under this consent has not been updated since the previous IEA period therefore constituting an administrative non-compliance with Schedule 5, Condition 5. The auditor notes that the Land Management Plan is currently being updated, and therefore no corrective action is proposed.
17	17. If the Planning Secretary agrees, a strategy, plan or program may be staged or updated without consultation being undertaken with all parties required to be consulted in the relevant condition in this consent.	Not triggered		No direction has been received from the planning secretary over the reporting period.
18	18. If the Planning Secretary agrees, a strategy, plan or program may be staged without addressing particular requirements of the relevant condition of this consent if those requirements are not applicable to the particular stage.	Not triggered		No direction has been received from the planning secretary over the reporting period.

Condition	Details	Compliance status	Relevant evidence	Commentary
	Application of Existing Strategies, Plans or Programs			
19	19. The Applicant must continue to apply existing management strategies, plans or monitoring programs approved prior to the approval of Modification 5, until the approval of a similar plan, strategy or program following the approval of Modification 5.	Compliant	Aboriginal Cultural Heritage Management Plan (Rev 2.2 – 4 December 2019). Air Quality and Greenhouse Gas Management Plan (V2 – dated 21 January 2022). Land Management Plan (Rev 1 – Dated 30 April 2016). Noise Management Plan (Rev 1 dated 20 April 2022) Non-indigenous Cultural Heritage Management Plan (Rev 1.3 – 4 December 2019). Mine Operations Plan Amendment 2 Rehabilitation Management Plan 2020 – 2023 (Rev 2) Water Management Plan (Rev 6.1 – 3 February 2020)	MOD 5 was issued on the 5th of June 2020. The following management plans have been updated since the issue of MOD 5: – ACHMP – AQGGMP – NMP – NICHMP – MOP The following plans that are still being applied that were approved prior to the issue of MOD 5: – LMP – WMP The auditor notes that the LMP is currently in the process of being updated. Refer to Schedule 2 Condition 16 regarding discussion of the WMP.

Condition	Details	Compliance status	Relevant evidence	Commentary
	Protection of Public Infrastructure			
20	20. Unless the Applicant and the applicable authority agree otherwise, the Applicant must: (a) repair, or pay the full costs associated with repairing, any public infrastructure that is damaged by carrying out the development; and (b) relocate, or pay the full costs associated with relocating, any public infrastructure that needs to be relocated as a result of the development. a This condition does not apply to any damage to roads caused as a result of general road usage or to damage that has been compensated under the Mining Act 1992.	Not triggered		No damage to public infrastructure has occurred over the reporting period. This condition remains not triggered.
	Compliance			
21	21. The Applicant must ensure that all of its employees, contractors (and their sub-contractors) are made aware of, and are instructed to comply with, the conditions of this consent relevant to activities they carry out in respect of the development	Compliant	Site interview conducted 2 May 2022 Generic induction (Environmental Awareness Training)	The generic environmental induction was produced in the site audit, which was satisfactory with the requirements of this condition.
	Applicability of Guidelines			
22	22. References in the conditions of this consent to any guideline, protocol, Australian Standard or policy are to such guidelines, protocols, Standards or policies in the form they are in as at the date of inclusion (or later update) in the condition.	Note		Noted
23	23. However, consistent with the conditions of this consent and without altering any limits or criteria in this consent, the Planning Secretary may, in respect of ongoing monitoring and management obligations, agree to or require compliance with an updated or revised version of such a guideline, protocol, Standard or policy, or a replacement of them	Not triggered		No agreement with the Planning Secretary of this nature have occurred over the reporting period. This condition is therefore not triggered.
	SCHEDULE 3 **SPECIFIC ENVIRONMENTAL CONDITIONS**			
	NOISE			
	Construction Noise			

<table>
<tr><th>Condition</th><th>Details</th><th>Compliance status</th><th>Relevant evidence</th><th>Commentary</th></tr>
<tr><td>1</td><td>1. The Applicant must ensure that the noise generated by any construction work is managed in accordance with the requirements outlined in the Interim Construction Noise Guideline (DECC, 2009).</td><td>Not triggered</td><td></td><td>No construction work has been undertaken over the audit period.</td></tr>
<tr><td></td><td>Operational Noise Criteria</td><td></td><td></td><td></td></tr>
<tr><td>2</td><td>2. Except for the carrying out of construction works, the Applicant must ensure that the noise generated by the development does not exceed the criteria in Table 1 at any residence a on privately-owned land.
Table 1: Operational noise criteria dB(A)
<table><tr><th>Noise Assessment Location</th><th>Day
$L_{Aeq\ (15\ min)}$</th><th>Evening
$L_{Aeq\ (15\ min)}$</th><th>Night
$L_{Aeq\ (15\ min)}$</th><th>Night
$L_{A1\ (1\ min)}$</th></tr><tr><td>4 – di Rocco</td><td>40</td><td>36</td><td>36</td><td>46</td></tr><tr><td>5 - Keighran</td><td>40</td><td>39</td><td>39</td><td>49</td></tr><tr><td>6 – Swan</td><td>40</td><td>37</td><td>37</td><td>47</td></tr><tr><td>7 – Druitt</td><td>40</td><td>35</td><td>35</td><td>45</td></tr><tr><td>8 – Macquarie Shores Home Village</td><td>42</td><td>42</td><td>42</td><td>47</td></tr><tr><td>9 - Jeans</td><td>40</td><td>37</td><td>37</td><td>47</td></tr><tr><td>11 - Jeans</td><td>40</td><td>36</td><td>36</td><td>46</td></tr><tr><td>18 - Jeans</td><td>40</td><td>36</td><td>36</td><td>46</td></tr><tr><td>20 – Knight and all other privately-owned residences</td><td>40</td><td>36</td><td>36</td><td>46</td></tr></table>[4] The Noise Assessment Locations referred to in Table 1 are shown in Appendix 4.
Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Noise Policy for Industry (EPA, 2017).</td><td>Non-compliance (low risk)</td><td>Noise Management Plan (Rev 1 dated 20 April 2022)
Annual Review for 2019, 2020 and 2021
Monthly noise monitoring reports for 2019, 2020, 2021 and 2022.
Noise Complaint Response dated 2 October 2020</td><td>2019 IEA Recommendation:
Continue to undertake noise monitoring.
Undertake follow-up actions if noise exceedances occur.
Continue to manage noise complaints.
Provide DPE with EMM Noise Mitigation Study dated March 2019.
2022 Audit findings:
The 2019 IEA recommended several items to be addressed over the reporting period.
– Continue to undertake noise monitoring: Noise monitoring continued over the reporting period. Frequency was increased from quarterly monitoring to monthly reporting in Q4 2019.
– Undertake follow-up actions if noise exceedances occur: Noise mitigation projects have been undertaken
– Continue to manage noise complaints: A response to community complaints dated 2 October 2020 was viewed. The response from Delta Coal was adequate and thorough. DPIE were also informed of the response.
– Provide DPE with EMM Noise Mitigation Study dated March 2019, which was included as an Appendix to the 2019 Annual Review.
A review of the noise monitoring and annual reviews identified the following noise exceedances over the reporting period:
– Exceedance of the $L_{Aeq(15min)}$ at R1 on 11 June 2019
– Exceedance of the $L_{Aeq(15min)}$ and $L_{A1,1\ minute}$ at R2 on 13 August 2019.
– Exceedance of the $L_{Aeq(15min)}$ at RA 3 on 5 May 2020.
This therefore constitutes a non-compliance. As discussed in Schedule 3 Condition 3A, Delta Coal have undertaken two projects at the CHPP to reduce noise impacts. Since then, no exceedances have been reported, therefore no corrective action is proposed.</td></tr>
</table>

Condition	Details	Compliance status	Relevant evidence	Commentary
3	3. The noise criteria in Table 1 do not apply if the Applicant has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.	Not triggered		No agreements with landholders have been made over the reporting period. This condition remains not triggered.
	Noise Operating Conditions			
3A	3A. The Applicant must: (a) take all reasonable steps to minimise noise from construction and operational activities, including low frequency noise and other audible characteristics, associated with the development; (b) implement reasonable and feasible noise attenuation measures on all plant and equipment that will operate in noise sensitive areas; (c) operate a comprehensive noise management system commensurate with the risk of impact; (d) take all reasonable steps to minimise the noise impacts of the development during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI); (e) carry out regular attended noise monitoring (at least once a month, unless otherwise agreed by the Planning Secretary) to determine whether the development is complying with the relevant conditions of this consent; (f) regularly assess the noise monitoring data and modify or stop operations on the site to ensure compliance with the relevant conditions of this consent; and (g) implement reasonable and feasible measures to further enclose the structure housing the coal crusher in order to further mitigate noise from operational activities.	Compliant	Noise Management Plan (Rev 1 dated 20 April 2022) Annual Review for 2019, 2020 and 2021 Noise monitoring reports for 2019, 2020, 2021 and 2022. Complaints register	The site has been generally managed within compliance with the requirements of this condition. Noise impacts are still being felt at residences given the number of complaints received over the reporting period: – 36 Community Complaints in 2019 – 40 Community Complaints in 2020 – 38 Community Complaints in 2021 – 1 Complaint in 2022 to the date of the site audit. Whilst the site has received these complaints, a review of the complaints register has found that Delta Coal investigated the source of the complaints and made adjustments to practices. Delta Coal have undertaken three project to mitigate noise impacts generated by the site over the reporting period: – Removal of the rotary breaker at the CHPP in July 2020 – Installation of doors and enclosure of the CHP completed July 2020 – Additional noise monitoring in response to complaints undertaken between 22 to 28 September 2020
Rere	3B. The Applicant must decommission the surface rotary breaker identified in the Statement of Commitments at Appendix 3, within 3 months of approval of Modification 5.	Compliant	Annual review for 2020 Site inspection on 2 May 2022	The rotary breaker was decommissioned in July 2020, one month after the approval of MOD 5.

Condition	Details	Compliance status	Relevant evidence	Commentary
	Noise Management Plan			
3C	3C. The Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Planning Secretary. This plan must: (a) be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary; (b) describe the measures to be implemented to ensure: i. compliance with the noise criteria and operating conditions in this consent; ii. best practice management is being employed; and iii. noise impacts of the development are minimised during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see NPfI); (c) describe the noise management system in detail; and (d) include a monitoring program that: i. uses a combination of real-time and supplementary attended monitoring to evaluate the performance of the development; ii. monitors noise at the nearest and/or most affected residences; iii. includes a program to calibrate and validate the real-time noise monitoring results with the attended monitoring results over time; iv. adequately supports the noise management system; v. includes a protocol for distinguishing noise emissions of the development from any neighbouring developments; and vi. includes a protocol for identifying any noise-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of any such event. The Applicant must implement the Noise Management Plan as approved by the Planning Secretary.	Compliant	Noise Management Plan (Rev 1 dated 20 April 2022) Noise monitoring reports for 2019, 2020, 2021 and 2022.	A review of the NMP (Rev 1) against the requirements of these conditions and monitoring data collected on site. The NMP was found to be compliant with clauses (a), (b), (c) and (d) of this condition.
	SUBSIDENCE			
4	4. The Applicant must limit its coal extraction methods on the site to first workings only, and must not undertake second workings.	Not triggered	Annual Reviews for 2019, 2020 and 2021 Site interviews conducted 2 May 2022.	No coal has been extracted over the reporting period.
5	Deleted			

Condition	Details	Compliance status	Relevant evidence	Commentary
	SOIL AND WATER			
	Discharge			
6	6. The Applicant must only discharge water from the site as expressly provided for by its EPL.	Compliant	Water Management Plan (Rev 6.1 – 3 February 2020) Monitoring data from 2019, 2020, 2021 and 2022 Site inspection conducted 2 May 2022.	Discharges of water from the site occurred at the licenced discharge point during the audit period. The discharge point was observed during the site inspection
7	7. The Applicant must investigate, assess and report on the ecological interactions of minewater discharged from the site with the aquatic ecology of the unnamed creek and wetlands (and associated vegetation) between the minewater discharge point/s and Lake Macquarie. This report must: (a) be prepared in consultation with EPA by suitably qualified expert/s whose appointment/s have been approved by the Planning Secretary; (b) be submitted to the Planning Secretary by the end of March 2009; and (c) assess the probable alterations in the local ecology attributable to previous and proposed minewater discharges and any future cessation of minewater discharge flows.	Not triggered		This condition is not triggered as it was completed prior to the audit period.
	Water Management Plan			
8	8. The Applicant must prepare a Water Management Plan for the development to the satisfaction of the Planning Secretary. This plan must: (a) be prepared in consultation with DPIE Water by suitably qualified expert/s whose appointment/s have been approved by the Planning Secretary; (b) be submitted the Planning Secretary by the end of March 2009; and (c) include a: • Site Water Balance; • Erosion and Sediment Control Plan; • Surface Water Monitoring Plan; and • Groundwater Monitoring Program. The Applicant must implement the Water Management Plan approved by the Planning Secretary.	Compliant	Water Management Plan (Rev 6.1 – 3 February 2020)	*2019 IEA Recommendation:* *The WMP needs to be updated.* *Replace Figure 1 in the WMP with clear figures showing clean and dirty water management (i.e. replace with Figures 2.10 & Figure 2.11 from the 2018 Annual Review* **2022 IEA Finding**: The Water Management Plan was (rev 6.1) was updated on 3 February 2020. The plan was approved by DPI Water on 13 December 2019. The plan was compliant with the requirements of this condition and the recommendation of the previous audit. The plan requires an update following the issue of MOD5 as described in Schedule 2 Condition 16. This does not constitute a non-compliance against the requirements of this condition.

Condition	Details	Compliance status	Relevant evidence	Commentary
	Site Water Balance			
9	9. The Site Water Balance must: (a) include details of: • sources and security of water supply; • water use on site; • water management on site; and (b) investigate, assess and report on measures to minimise water use by the development, particularly potable water from the Wyong Shire town water supply.	Compliant	Water Management Plan (Rev 6.1 – Dated 3 February 2020)	*2019 IEA Recommendation: The Water Balance in the WMP needs to be reviewed as its out of date* **2022 IEA Finding**: The WMP is compliant with the requirements of this condition and addresses the 2019 IEA Recommendations.
	Erosion and Sediment Control			
10	10. The Erosion and Sediment Control Plan must: (a) be consistent with the requirements of Managing Urban Stormwater: Soils and Construction (Landcom 2004, or its latest version); (b) identify activities that could cause soil erosion and generate sediment; (c) describe measures to minimise soil erosion and the potential for transport of sediment from the site; (d) describe the location, function, and capacity of erosion and sediment control structures; and (e) describe what measures would be implemented to monitor and maintain the structures over time.	Compliant	Water Management Plan (Rev 6.1 – Dated 3 February 2020)	The erosion and sediment control measures are discussed in Section 5 and 6.5 of the WMP. Standard erosion controls are also presented in Appendix 4. The capacity of the dirty water system is presented in Section 3.5 and Table 2. The WMP is compliant with the requirements of this condition.

Condition	Details	Compliance status	Relevant evidence	Commentary
	Surface Water Monitoring Program			
11	11. The Surface Water Monitoring Plan must include: (a) detailed baseline data on surface water flows and quality in creeks and other waterbodies that could be affected by the development; (b) surface water impact assessment criteria; (c) a program to monitor the impact of the development on surface water flows and quality; and (d) procedures for reporting the results of this monitoring.	Non-compliance (administrative)	Water Management Plan (Rev 6.1 – Dated 3 February 2020) Annual Review for 2019, 2020 and 2021. Monthly data reports	*2019 IEA Recommendation: Undertake visual assessment of the unnamed creek every 6 months, to monitor stability and erosion. A TARP should be developed in the next review of the WMP which outlines quantitative and qualitative triggers for the creek and erosion. Include results of the visual assessment of the unnamed creek in Annual Reviews. Include a reference again previous results.* *Ensure monitoring undertaken at the "Downstream" monitoring location is undertaken every 12 months. Include analysis results from monitoring undertaken at the "Downstream" monitoring location in Annual Reviews.* 2022 IEA findings: The surface water monitoring program is generally satisfied in Section 6.1 and 6.2 of the WMP. Reporting procedures are documented in Section 7. There is no presentation of baseline data for water quality, constituting an administrative non-compliance with condition 11(a) ***See Corrective Action 4.*** Chemical analysis data is presented in the monthly environmental reports. The recommendation of the previous audit to undertake visual assessment of the unnamed creek has been completed and is reported in the annual reviews. Monitoring has been undertaken at the Downstream location.
	Groundwater Monitoring Program			
12	12. The Groundwater Monitoring Program must include: (a) detailed baseline data to benchmark the natural variation in groundwater levels, yield and quality; (b) groundwater impact assessment criteria; (c) a program to monitor the impact of the development on groundwater levels, yield and quality; and (d) procedures for reporting the results of this monitoring.	Non-compliance (administrative)	Water Management Plan (Rev 6.1 – Dated 3 February 2020) Annual Review for 2019, 2020 and 2021.	*2019 IEA Recommendation: Include in Section 9.4 of the Water Management Plan reporting of ground water results in Annual Reviews* 2022 Finding: Groundwater volumes as discharge are reported in section 8 of the annual review. Section 6.1, 6.3 and 6.7 of the WMP satisfy the requirements of clause (b) to (d) condition. Clause (a) is not satisfied due to there being no details of baseline data for groundwater monitoring. ***See Corrective Action 4.***

<table>
<tr><th>Condition</th><th>Details</th><th>Compliance status</th><th>Relevant evidence</th><th>Commentary</th></tr>
<tr><td></td><td>REHABILITATION</td><td></td><td></td><td></td></tr>
<tr><td></td><td>13. The Applicant must rehabilitate the site in accordance with the conditions imposed on the mining lease(s) associated with the development under the Mining Act 1992. Rehabilitation must be generally consistent with the proposed rehabilitation described in the EA and the Statement of Commitments, and comply with the objectives in Table 2.

Table 2: Rehabilitation Objectives<table><tr><th>Feature</th><th>Objective</th></tr><tr><td>Mine site (as a whole of the disturbed land and water)</td><td>Safe, stable and non-polluting, fit for the purpose of the intended post-mining land use(s).</td></tr><tr><td>Surface Infrastructure</td><td>To be decommissioned and removed, unless the RR agrees otherwise.</td></tr><tr><td>Portals and ventilation shafts</td><td>To be decommissioned and made safe and stable.</td></tr><tr><td>Other land affected by the development</td><td>Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of:
• local native plant species (unless the RR agrees otherwise); and
• a landform consistent with the surrounding environment.</td></tr><tr><td>Built features damaged by mining operations</td><td>Repair to pre-mining condition or equivalent unless:
• the owner agrees otherwise; or</td></tr><tr><td></td><td>• the damage is fully restored, repaired or compensated under the Mine Subsidence Compensation Act 1961.</td></tr><tr><td>Community</td><td>Ensure public safety.</td></tr></table></td><td>Not triggered</td><td></td><td>No rehabilitation has been undertaken during the reporting period and therefore this condition remain not triggered.</td></tr>
<tr><td>13A</td><td>13A. The Applicant must carry out all surface disturbing activities in a manner that, as far as practicable, minimises potential for dust emissions and must carry out rehabilitation of disturbed areas progressively, that is, as soon as reasonably practicable following disturbance.</td><td>Compliant</td><td>Site inspection conducted 2 May 2022</td><td>The site inspection undertaken on 2 May 2022 found that the site was being operated in a way that minimises dust emissions.
No rehabilitation has been undertaken on site.</td></tr>
<tr><td></td><td>Land Management Plan</td><td></td><td></td><td></td></tr>
<tr><td>14</td><td>14. The Applicant must prepare a detailed Land Management Plan for the site to the satisfaction of the Planning Secretary. This plan must:
(a) be submitted to the Planning Secretary by the end of September 2008;
(b) be prepared by suitably qualified expert/s whose appointment/s have been endorsed by the Planning Secretary;
(c) be prepared in consultation with RR, BCD and affected councils; and
(d) include measures to:
• minimise visual impacts;
• control weeds, feral pests and access; and
• manage bushfires; and</td><td>Compliant</td><td>Land Management Plan (Rev 1 – Dated 30 April 2016).</td><td>2019 IEA Recommendation: Attach the Bushfire Management Plan to the Land Management Plan

2022 IEA Findings: The LMP satisfies the requirements of this condition in Section 1.2, 3.1, 3.2, 4,5, 6 and 8.
The recommendation from the previous audit to attach the bushfire management plan to the Appendix of the LMP has not been carried though.
Recommendation 1: Attach the Bushfire Management Plan to the Land Management Plan</td></tr>
</table>

Condition	Details	Compliance status	Relevant evidence	Commentary
	(e) provide details of who is responsible for monitoring, reviewing and implementing the plan. Prior to the end of April 2016, the Applicant must revise the Land Management Plan to incorporate the measures required to implement its commitments described in new row 2 of the Terrestrial Ecology section of its Statement of Commitments, and submit it to the Planning Secretary for approval. The Applicant must implement the Land Management Plan approved by the Planning Secretary.			
14A	14A. The Applicant must implement its preferred option of the three options set out in new row 2 of the Terrestrial Ecology section of its Statement of Commitments by 1 December 2016, following consultation with BCD and to the satisfaction of the Planning Secretary.	Not triggered		This condition is not relevant to the reporting period and remains not triggered.
	Rehabilitation Management Plan			
15	15. The Applicant must prepare a Rehabilitation Management Plan for the site in accordance with the conditions imposed on the mining lease(s) associated with the development under the Mining Act 1992. This plan must: (a) be submitted within 3 months of approval of Modification 2 to the RR prior to carrying out any disturbing activities of the development, unless otherwise agreed by the Planning Secretary; (b) be prepared in accordance with RR guidelines and in consultation with the Department, BCD, EPA, DPIE Water, affected councils and the mine's CCC; (c) incorporate and be consistent with the rehabilitation objectives in the EA, Statement of Commitments and Table 2 above; (d) integrate and build on, to the maximum extent practicable, the other management plans required under this consent; and (e) address all aspects of mine closure and rehabilitation, including post-mining land use domains, rehabilitation objectives, completion criteria and rehabilitation monitoring and management. Note: The approved Mining Operations Plan (which will become the REMP once the Mining Act Amendments have commenced) required as a condition of the Mining Lease(s) issued in relation to this development, will satisfy the requirements of this condition for a Rehabilitation Plan.	Compliant	Mine Operations Plan Amendment 2 Rehabilitation Management Plan 2020 – 2023 (Rev 2)	The Mining Operations Plan (MOP) for the site fulfils the same role as the Rehabilitation Management Plan under this condition. A review of the MOP (Amendment 2) against the requirements of this condition found it generally compliant. Clause (a) is not applicable to this reporting period as this was satisfied during a previous reporting period. A review of the MOP against Clauses (b) to (e) of this condition found it satisfactory and compliant. ***Recommendation 2 Whilst not a non-compliance, it is recommended that the revision date for Amendment 2 be included in the document, and the approval letter from Resources Regulator appended to Section 17.***

Condition	Details	Compliance status	Relevant evidence	Commentary
	AIR QUALITY **Impact Assessment Criteria**			
16	16. 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* Pollutant / Averaging period / Criterion Particulate matter < 2.5 µm ($PM_{2.5}$) — Annual — [a,c] 8 µg/m³ Particulate matter < 2.5 µm ($PM_{2.5}$) — 24 hour — [b] 25 µg/m³ Particulate matter < 10 µm (PM_{10}) — Annual — [a,c] 25 µg/m³ Particulate matter < 10 µm (PM_{10}) — 24 hour — [b] 50 µg/m³ Total suspended particulate (TSP) matter — Annual — [a,c] 90 µg/m³ [d] Deposited dust — Annual — [b] 2 g/m²/month — [a] 4 g/m²/month Notes: a Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources). b Incremental impact (i.e. incremental increase in concentrations due to the development on its own). c Excludes extraordinary events such as bushfires, prescribed burning, dust storms, fire incidents or any other activity agreed by the Planning Secretary. d Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method.	Non-compliance (low risk)	Air Quality and Greenhouse Gas Management Plan (V2 – dated 21 January 2022). Monitoring data for 2019, 2020, 2021 and 2022 Site interviews on 2 May 2022 Site inspection on 2 May 2022	*2019 IEA Recommendations: Update the AQGGMP* *Include in the updated AQGGMP a plan showing dust monitoring locations and the location of the weather station.* 2022 IEA findings: The AQGGMP was updated in December 2019, with dust monitoring points and the meteorological monitoring station shown in Figure 2. Several non-compliances against dust criteria were recorded and reported during the reporting period: – Exceedance at DG004 in December 2020 which was attributed to contamination and not the development – Exceedance at DG003 in May 2021 attributed to contamination and not the development – Exceedance at DG003 in October 2021 attributed to contamination and not the development. Two increases of greater than 2 g/m^2/month were observed over the reporting period: – An increase of 2.1 g/m^2/month was recorded for depositional dust between November 2019 and December 2019 at DG001. – An increase of 2.4 g/m^2/month was recorded for depositional dust between August 2021 and September 2021 at DG003. These exceedances were not reported as an incident and therefore a non-compliance (low risk) is recorded against this condition. ***Corrective Action 5: Ensure that exceedances of criteria are reported*** There were four exceedances of PM_{10} criteria during the 2020 annual reporting period. These exceedances were attributed to local bushfire events and were not representative of dust being generated by the site. All other criteria was complied with over the reporting period.

Condition	Details	Compliance status	Relevant evidence	Commentary
16A	16A. 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	Not triggered		No agreement of this nature has been made with landowners around air quality monitoring.
	Air Quality and Greenhouse Gas Management Plan			
17	17. The Applicant must prepare an Air Quality and Greenhouse Gas Management Plan for the development to the satisfaction of the Planning Secretary. This plan must: (a) be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary; (b) describe the measures to be implemented to ensure: i. capture and flaring of methane produced by underground coal mining; ii. compliance with the air quality criteria and operating conditions in this consent; iii. best practice management is being employed (including in respect of minimisation of greenhouse gas emissions from the site and energy efficiency); and iv. the air quality impacts of the development are minimised during adverse meteorological conditions and extraordinary events; (c) describe the air quality management system in detail; and (d) include an air quality monitoring program, undertaken in accordance with the Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales (DEC, 2007), that: i. uses monitors to evaluate the performance of the development against the air quality criteria in this consent and to guide day to day planning of operations; ii. adequately supports the air quality management system; and iii. includes a protocol for identifying an air quality incident and notifying the Department and relevant stakeholders of any such incident. Note: "Methane produced by underground coal mining" does not include methane within mine ventilation air.	Non-compliance (administrative)	Air Quality and Greenhouse Gas Management Plan (V2 – dated 21 January 2022).	The AQGGMP was updated in January 2022. This plan was granted approval from DPIE on 21 March 2022. The AQGGMP was reviewed against the requirements of this condition and it was found to be satisfactory. The plan was prepared by a suitably qualified person. Mitigation measures are described Section 3, as is the Air Quality Management System. The mitigation measures were generally compliant with the requirements of this condition, however no Trigger Action Response Tables (TARPs) were included in the plan. This constitutes a non-compliance with clause (a)(iii) of this condition. ***Corrective Action 6 Update the AQGGMP to include TARPs.*** The air quality monitoring program is adequate and outlined in Section 4.
17A	17A. The Applicant must implement the Air Quality and Greenhouse Gas Management Plan as approved by the Planning Secretary.	Compliant	Air Quality and Greenhouse Gas Management Plan (V2 – dated 21 January 2022).	Delta Coal are implementing the approved AQGGMP.

Condition	Details	Compliance status	Relevant evidence	Commentary
	METEOROLOGICAL MONITORING			
17B	17B. For the life of the development, the Applicant must ensure that there is a suitable meteorological station operating in the vicinity of the site that: (a) complies with the requirements in the Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales (DEC, 2007); and (b) is capable of measuring meteorological conditions in accordance with the NSW Noise Policy for Industry (EPA, 2017), unless a suitable alternative is approved by the Planning Secretary following consultation with the EPA.	Compliant	Air Quality and Greenhouse Gas Management Plan (V2 – dated 21 January 2022).	The meteorological station on the site is compliant with the requirements of this condition.
	HERITAGE			
	Protection of Aboriginal Heritage			
18	18. The Applicant must ensure that the development does not cause any direct or indirect impact on any identified heritage item located outside the approved disturbance area, beyond those predicted in the documents listed in condition 2(e) of Schedule 2.	Not triggered		No incidents involving Aboriginal Heritage have occurred on the site over the reporting period, therefore this condition remains not triggered.
	Heritage Management Plan			
18A	18A. The Applicant must prepare a Heritage Management Plan for the development to the satisfaction of the Planning Secretary. This Plan must: (a) be prepared by suitably qualified and experienced persons whose appointment has been endorsed by the Planning Secretary; (b) be prepared in consultation with BCD and Registered Aboriginal Parties; (c) include consideration of the Aboriginal and non-Aboriginal cultural context and significance of the site; (d) describe the procedures and management measures to be implemented on the site or within any offset area to: i. ensure all workers receive suitable Aboriginal cultural heritage inductions prior to carrying out any activities which may cause impacts to Aboriginal objects or Aboriginal places, and that suitable records are kept of these inductions; ii. protect, monitor and manage identified non-Aboriginal heritage, Aboriginal objects and Aboriginal places (including any proposed archaeological investigations of potential subsurface objects and salvage of objects within the approved disturbance area) in accordance with the commitments made in the document/s listed in condition 2(e) of Schedule 2; iii. protect non-Aboriginal heritage, Aboriginal objects and Aboriginal places located outside the approved disturbance area from impacts of the development;	Compliant	Aboriginal Cultural Heritage Management Plan (Rev 2.2 – 4 December 2019). Non-indigenous Cultural Heritage Management Plan (Rev 1.3 – 4 December 2019).	*2019 IEA Recommendations:* *Update the ACHMP to make it reflective of the Mannering site only.* *Update the Non-Indigenous Heritage Management Plan* 2022 IEA Findings: The ACHMP was updated on 4 December 2019. RAPs were consulted during the preparation of the plan and provided no comment. The plan satisfied the requirements of this condition. Non-Indigenous Cultural Heritage Management Plan were updated on 4 December 2019, satisfying the recommendation of the previous audit.

Condition	Details	Compliance status	Relevant evidence	Commentary
	iv. manage the discovery of suspected human remains and any new Aboriginal objects or Aboriginal places, including provisions for burials, over the life of the development; v. maintain and manage reasonable access for relevant Aboriginal stakeholders to Aboriginal objects and Aboriginal places (outside of the approved disturbance area); and vi. facilitate ongoing consultation and involvement of Registered Aboriginal Parties in the conservation and management of Aboriginal cultural heritage on the site; and (e) include a strategy for the care, control and storage of Aboriginal objects salvaged on site, both during the life of the development and in the long term. The Applicant must implement the Heritage Management Plan approved by the Planning Secretary.			
	VISUAL			
19	19. The Applicant must: (a) ensure no outdoor lights shine above the horizontal; (b) ensure that all external lighting associated with the development complies with Australian Standard AS4282 (INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting; (c) take all practicable measures to mitigate off-site lighting impacts from the development; and (d) minimise the visual impacts of the development, to the satisfaction of the Planning Secretary.	Compliant	Complaints and Incidents Register	No lighting audits have been undertaken within the reporting period. No complaints have been received regarding lighting at the site.
	TRANSPORT			
	Monitoring of Coal Transport			
20	20. The Applicant must keep records of the amount of coal transported from the site each year, and include these records in the Annual Review.	Compliant	Annual Reviews for 2019, 2020 and 2021.	Coal transport is presented in the annual review. The following amounts of coal were transported to Vales Point Power Station from the colliery over the reporting period: – 2019: 0.79 million tonnes – 2020: 1.38 million tonnes – 2021: 1.25 million tonnes

Condition	Details	Compliance status	Relevant evidence	Commentary
	Ruttleys Road Intersection			
21	21. The Applicant must: (a) complete a road safety audit of the intersection of Ruttleys Road and Mannering Colliery Access Road by the end of March 2009; (b) provide copies of this audit to TfNSW, Central Coast Council and the Planning Secretary within one month of its completion; and (c) within 3 months of approval of Modification 2, install additional sections of guardrail (safety barrier) on the eastern side of Ruttleys Road between the Mannering Colliery access road and existing sections of guardrail further to the north; (d) be responsible for the maintenance and upkeep of the pavement of the Ruttleys Road/Mannering Colliery access road intersection whilst the site is used for mining purposes or until the intersection is upgraded to a Type CHR intersection treatment; and (e) prior to the number of workers (direct employees and contractors) at Mannering Colliery exceeding 70, the Applicant must upgrade the Ruttleys Road/Mannering Colliery access road intersection to a Type CHR treatment in accordance with Construction Certificate SCC/69/2011 issued by Central Coast Council, or later updated versions of this Construction Certificate; to the satisfaction of the Planning Secretary.	Not triggered		Clauses (a) to (c) of this condition are outside of the scope of the reporting period, while Clause (d) and (e) have not been triggered.
	BUSHFIRE MANAGEMENT			
22	22. The Applicant must: (a) ensure that the development: • provides for asset protection in accordance with the relevant requirements in the Planning for Bushfire Protection (RFS, 2006) guideline; and • ensure that there is suitable equipment to respond to any fires on the site; and (b) assist the RFS and emergency services to the extent practicable if there is a fire in the vicinity of the site.	Compliant	Site interviews conducted 2 May 2022 Site inspection conducted 2 May 2022 STD 00110 – Standards Template – Fire Water Reticulation and Bushfire Fighting (Rev 1) – Dated 23 April 2018	STD 00110 – Standards Template – Fire Water Reticulation and Bushfire Fighting (Rev 1) outlines the procedure for bushfire fighting and water reticulation for the site. Over the reporting period Delta Coal have provided the RFS with access during times of need. ***Recommendation 3: It is recommended that the standard be reviewed as the review date was 24 April 2021***

Condition	Details	Compliance status	Relevant evidence	Commentary
	WASTE			
23	23. The Applicant must: (a) monitor the amount of waste generated by the development; (b) investigate ways to minimise waste generated by the development; (c) implement reasonable and feasible measures to minimise waste generated by the development; and (d) report on waste management and minimisation in the Annual Review, to the satisfaction of the Planning Secretary.	Compliant	Annual Review for 2019, 2020 and 2021 Waste tracking spreadsheets	Waste tracking and receipts were viewed prior to the site audit. Delta Coal were found to be in compliance with the requirements of this condition. Waste is reported upon in Section 5.6 of the Annual Reviews.
	EXPLORATION ACTIVITIES AND SURFACE INFRASTRUCTURE			
	Exploration Activities and Minor Surface Infrastructure Management Plan			
24	24. Prior to carrying out exploration activities on the site under this consent that would cause temporary surface disturbance, or exploration activities within the waters or lake bed of Lake Macquarie, or the construction and/or upgrade of minor surface infrastructure on the site, the Applicant must prepare an Exploration Activities and Minor Surface Infrastructure Management Plan for the development to the satisfaction of the Planning Secretary. This Plan must: (a) be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary; (b) be prepared in consultation with RR, NSW Maritime Division of TfNSW, NSW Fisheries and BCD; (c) include a description of the measures to be implemented for: i. managing exploration activities; ii. managing construction and operation of minor surface infrastructure and associated access tracks; iii. consulting with and if necessary compensating affected landowners; iv. assessing noise, air quality, traffic, biodiversity, heritage, public safety and other impacts; v. beneficial re-use or flaring of drained hydrocarbon gases, wherever practicable; vi. avoiding significant impacts and minimisation of impacts generally; vii. avoiding or minimising impacts on threatened species, populations or their habitats and EECs; viii. minimising clearance and disturbance of native vegetation (including seagrasses); ix. minimising and managing erosion and sedimentation; and	Not triggered	Annual Review for 2019, 2020 and 2021 Site interviews conducted 2 May 2022	No exploration has occurred over the reporting period, therefore this condition remains not triggered.

Condition	Details	Compliance status	Relevant evidence	Commentary
	x. rehabilitating disturbed areas. Note: Consultation with NSW Maritime Division of TfNSW and NSW Fisheries is not required for land-based exploration activities and minor surface infrastructure. The Applicant must implement the Exploration Activities and Minor Surface Infrastructure Management Plan as approved by the Planning Secretary.			
	SCHEDULE 4 **ADDITIONAL PROCEDURES**			
	INDEPENDENT REVIEW			
1	1. If a landowner considers the development to be exceeding the impact assessment criteria in schedule 3, then he/she may ask the Planning Secretary in writing for an independent review of the impacts of the development on his/her land. If the Planning Secretary is satisfied that an independent review is warranted, the Applicant must within 2 months of the Planning Secretary's decision: (a) consult with the landowner to determine his/her concerns; (b) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Planning Secretary, to conduct monitoring on the land, to: • determine whether the development is complying with the relevant impact assessment criteria in schedule 3; and • identify the source(s) and scale of any impact on the land, and the development's contribution to this impact; and • give the Planning Secretary and landowner a copy of the independent review.	Compliant	Noise Compliance Report (September 2019)	Delta Coal completed a Noise Compliance study during September 2019 upon the request of DPE dated 20 June 2019. The Noise Compliance Study was undertaken over July and August by an endorsed independent consultant. Results of the operator-attended noise monitoring program determined that noise emissions from the site generally comply with the relevant noise limits at the nearest residential areas to the MC. The exception to this was for two 15-minute, operator-attended noise surveys conducted at Macquarie Shores Village (RA2) on 13 August when a mechanical failure on site generated elevated noise emission levels from the rotary-breaker. The equipment was subsequently repaired, and results of operator-attended noise surveys undertaken after the equipment was reinstalled indicated compliance with the relevant noise limits. Subsequently, the rotary-breaker has been removed. CHPP enclosure undertaken, which has resulted in a reduction in observed noise exceedances.
2	2. If the independent review determines that the development is complying with the relevant impact assessment criteria in schedule 3, then the Applicant may discontinue the independent review with the approval of the Planning Secretary.	Compliant		The independent review was undertaken to its extent. No further independent reviews have been undertaken since over the reporting period.

Condition	Details	Compliance status	Relevant evidence	Commentary
3	3. If the independent review determines that the development is not complying with the relevant impact assessment criteria in schedule 3, and that the development is primarily responsible for this non-compliance, then the Applicant must: (a) take all reasonable and feasible measures, in consultation with the landowner, to ensure that the development complies with the relevant criteria; and (b) conduct further monitoring to determine whether these measures ensure compliance. If the additional monitoring referred to above subsequently determines that the development is complying with the relevant criteria in schedule 3, or the Applicant and landowner enter into a negotiated agreement to allow these exceedances, then the Applicant may discontinue the independent review with the approval of the Planning Secretary	Not triggered		As discussed, the non-compliances identified in the independent review were attributed to a mechanical failure which was repaired and confirmed compliant during the study. Therefore this condition remains not triggered.
4	4. If the independent review determines that the relevant criteria in schedule 3 are being exceeded, but that more than one development is responsible for this non-compliance, then the Applicant must, together with the relevant development/s: (a) take all reasonable and feasible measures, in consultation with the landowner, to ensure that the relevant criteria are complied with; and (b) conduct further monitoring to determine whether these measures ensure compliance; or (c) secure a written agreement with the landowner and other relevant developments to allow exceedances of the criteria in schedule 3, to the satisfaction of the Planning Secretary. If the additional monitoring referred to above subsequently determines that the developments are complying with the relevant criteria in schedule 3, then the Applicant may discontinue the independent review with the approval of the Planning Secretary.	Not triggered		Not triggered
5	5. If the landowner disputes the results of the independent review, either the Applicant or the landowner may refer the matter to the Planning Secretary for resolution. If the matter cannot be resolved within 21 days, the Planning Secretary shall refer the matter to an Independent Dispute Resolution Process	Not triggered		There have been no landowner disputes over the results of the independent review, this condition is therefore not triggered.

Condition	Details	Compliance status	Relevant evidence	Commentary
	SCHEDULE 5 **ENVIRONMENTAL MANAGEMENT, MONITORING, AUDITING AND REPORTING**			
	ENVIRONMENTAL MANAGEMENT			
	Environmental Management Strategy			
1	1. The Applicant must prepare an Environmental Management Strategy for the development to the satisfaction of the Planning Secretary. This strategy must: (a) provide the strategic framework for environmental management of the development; (b) identify the statutory approvals that apply to the development; (c) set out the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the development; (d) set out the procedures to be implemented to: • keep the local community and relevant agencies informed about the operation and environmental performance of the development; • receive record, handle and respond to complaints; • resolve any disputes that may arise during the course of the development; • respond to any non-compliance and any incident; and • respond to emergencies; and (e) include: • references to any strategies, plans and programs approved under the conditions of this consent; and • a clear plan depicting all the monitoring to be carried out under the conditions of this consent. The Applicant must implement the Environmental Management Strategy as approved by the Planning Secretary.	Compliant	Environmental Management Strategy – Chain Valley Colliery and Mannering Colliery (Rev 1 – Dated 16 March 2021)	2019 IEA Recommendations: Review the Environmental Management Strategy (EMS). Include in the reviewed EMS the incorrect monitoring frequency for conductivity, TSS, pH and Oil & Grease 2022 IEA Findings: The EMS was updated in 2021, which incorporated the most recent project approval (MOD5) and the recommendations of the 2019 IEA. The EMS is compliant with the requirements of this condition.

Condition	Details	Compliance status	Relevant evidence	Commentary
	Adaptive Management			
2	2. The Applicant must assess and manage development-related risks to ensure that there are no exceedances of the criteria and performance measures in this consent. Any exceedance of these criteria or performance measures constitutes a breach of this consent and may be subject to penalty or offence provisions under the EP&A Act or EP&A Regulation. Where any exceedance of these criteria or performance measures has occurred, the Applicant must, at the earliest opportunity: (a) take all reasonable and feasible steps to ensure that the exceedance ceases and does not recur; (b) consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and (c) implement reasonable remediation measures as directed by the Planning Secretary.		Various incident reports provided for the audit period. Noise Compliance Report (September 2019)	A review of the incident reports provided by Delta Coal for the audit period showed general compliance with the requirements of this condition. Noise complaints have been prevalent over the reporting period. Delta Coal have provided examples of adaptive management such as removal of the rotary breaker and the enclosure of the CHPP during the reporting period to reduce noise impacts.
	Management Plan Requirements			
3	3. Management plans required under this consent must be prepared in accordance with relevant guidelines, and include: (a) a summary of relevant background or baseline data; (b) details of: • the relevant statutory requirements (including any relevant approval, licence or lease conditions); • any relevant limits or performance measures and criteria; and • the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures; (c) any relevant commitments or recommendations identified in the document/s listed in condition 2(e) of Schedule 2; (d) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria; (e) a program to monitor and report on the: • impacts and environmental performance of the development; and • effectiveness of the management measures set out pursuant to condition 2(e) of Schedule 2;	Non-compliance (Administrative)	Aboriginal Cultural Heritage Management Plan (Rev 2.2 – 4 December 2019). Air Quality and Greenhouse Gas Management Plan (V2 – dated 21 January 2022). Land Management Plan (Rev 1 – Dated 30 April 2016). Noise Management Plan (Rev 1.5 dated 4 December 2019)	*2019 IEA Actions: All management plans require updating due to the length of time since the previous reviews.* *Ensure there is a cross referencing table covering this condition in management plans.* *Additional detail including Trigger, Action, Response Tables (contingency plan) should be developed in the next round of management plan updates.* *Include in the LMP and ACHMP reporting mechanisms (i.e. Annual Review)* *Include in the WMP 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* *Include in the WMP a protocol for managing and reporting any incidents, complaints, non-compliances with statutory requirements; and exceedances of the impact assessment criteria and/or performance criteria* *Include a complaints handling procedure in the include ACHMP* *Include a protocol for periodic review of the ACHMP*

Condition	Details	Compliance status	Relevant evidence	Commentary
	(f) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible; (g) a program to investigate and implement ways to improve the environmental performance of the development over time; (h) a protocol for managing and reporting any: • incident, non-compliance or exceedance of any impact assessment criterion or performance criterion; • complaint; or • failure to comply with other statutory requirements; (i) public sources of information and data to assist stakeholders in understanding environmental impacts of the development; and (j) a protocol for periodic review of the plan. Note: The Planning Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.		Non-indigenous Cultural Heritage Management Plan (Rev 1.3 – 4 December 2019). Water Management Plan (Rev 6.1 – 3 February 2020)	*Ensure all management plans required under PA 06_0311 detail and consider the management condition.* 2022 IEA Findings: Each management plan required in this consent was assessed for compliance against this condition: – ACHMP: The ACHMP was updated on 4 December 2019 and found to be compliant with this condition and Schedule 3 Condition 18A. The recommendations of the 2019 IEA were also adequately closed out in the update of the ACHMP. – AQGGMP: The AQGGMP was updated on 4 December (Rev 2.2) and then updated again in January 2022 (V2) over the reporting period. The AQGGMP was found to be compliant with the requirements of this condition and Schedule 3 Condition 17. The recommendation of the previous audit to incorporate Trigger Action Response Tables has not been incorporated into the plan. Refer to Schedule 3 Condition 17 for corrective actions. – LMP: The LMP has not been updated over the reporting period and is non-compliant with the periodic review period in the plan developed under clause (j) of this condition. The auditor notes that the plan is currently being updated, and therefore no corrective action is proposed. – NMP: The NMP was updated on 4 December 2019. As discussed in Schedule 3 Condition 3C, the plan is consistent with the requirements of the conditions and the current monitoring program being implemented on site. – NICHMP: The NICHMP was updated on 4 December 2019. A review of this condition and Schedule 3 Condition 18A found it compliant with the requirements of the consent. – WMP: The WMP was updated on 3 February 2020. The recommendation of the previous IEA to include a contingency plan for unpredicted impacts has not been followed though, and therefore is required to be addressed in the next round of reviews. The WMP also does not outline the baseline water quality for surface and groundwater and is therefore non-compliant with clause (a) of this condition. Refer to Schedule 3 Condition 11 and Schedule 3 Condition 12 for corrective actions.

Condition	Details	Compliance status	Relevant evidence	Commentary
4	4. The Applicant must ensure that management plans prepared for the development are consistent with the conditions of this consent and any EPL issued for the site.	Compliant	Air Quality and Greenhouse Gas Management Plan (V2 – dated 21 January 2022). Noise Management Plan (Rev 1 - 20 April 2022) Water Management Plan (Rev 6.1 – 3 February 2020)	The AQGGMP, NMP and WMP are consistent with EPL 191. Inconsistencies with the requirements of this consent are documented within this table.
	REVISION OF STRATEGIES, PLANS AND PROGRAMS			
5	5. Within three months of: (a) the submission of an incident report under condition 6; (b) the submission of an Annual Review under condition 8; (c) the submission of an Independent Environmental Audit under condition 9; or (d) the approval of any modification of the conditions of this consent (unless the conditions require otherwise), the suitability of existing strategies, plans and programs required under this consent must be reviewed by the Applicant. If necessary, to either improve the environmental performance of the development, cater for a modification or comply with a direction, the strategies, plans and programs required under this consent must be revised, to the satisfaction of the Planning Secretary. Where revisions are required, the revised document must be submitted to the Planning Secretary for approval within six weeks of the review. Note: 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.:	Non-compliance (Administrative)	Annual Review for 2021.	*2019 IEA Recommendations : Include statement in future Annual Reviews stating that Management Plans have been reviewed and state which management plans will or will not be updated within 3 months.* *Develop and implement a plan to update Mannering's Strategies, Plans and Programs* 2022 IEA Findings: Revision planning, and tracking is included in the 2021 Annual review, therefore closing out the recommendations of the previous IEA. As discussed in Schedule 2 Condition 16, the WMP has not been updated following the issue of MOD5 of the development consent. This therefore constitutes an administrative non-compliance against clause (d) of this consent. Refer to Schedule 2 Condition 16 for Corrective Actions. The LMP has not been updated over the reporting period, therefore constituting an administrative non-compliance against Clause (c) and (d) of this condition. The auditor notes that the plan is currently being updated, and therefore no corrective action is proposed.

Condition	Details	Compliance status	Relevant evidence	Commentary
	REPORTING AND AUDITING			
	Incident Notification			
6	6. The Applicant must immediately notify the Department and any other relevant agencies immediately after it becomes aware of an incident. The notification must be in writing to compliance@planning.nsw.gov.au and identify the development (including the development application number and name) and set out the location and nature of the incident.	Compliant	Various incident reports provided for the audit period.	*2019 IEA Recommendation: Ensure all incidents are reported within the required timeframe.* *Ensure the complaints/incidents register includes all incidents.* A review of incident reports provided by Delta Coal have found that appropriate action was where the EPA and DPIE (where relevant) were notified upon discovery of the incident. Whilst not a non-compliance against this condition, the complaints and incidents register provided by Delta Coal was missing incidents from May 2019 to December 2019. The recommendation of the previous IEA has therefore not been followed though. Refer to Schedule 5 Condition 13 for Corrective Actions.
	Non-Compliance Notification			
7	7. Within seven days of becoming aware of a non-compliance, the Applicant must notify the Department of the non-compliance. The notification must be in writing to compliance@planning.nsw.gov.au and identify the development (including the development application number and name), set out the condition of this consent that the development is non-compliant with, why it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance. Note: A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.	Non-compliance (administrative)	Complaints and incidents register Various incident reports provided for the audit period. Monitoring data for 2019, 2020, 2021 and 2022	A review of incident reports provided by Delta Coal found that non-compliances were generally reported to DPE consistent with the requirements of this condition. As discussed in Schedule 3 Condition 16, there were two exceedances of depositional dust criteria in November/December 2019 and August/September 2021. These non-compliances were not reported, and therefore a non-compliance is registered against this condition. Refer to Schedule 3 Condition 16 for Corrective Actions.
	Annual Review			
8	8. By the end of March in each year after the commencement of the development, or other timeframe agreed by the Planning Secretary, a report must be submitted to the Department reviewing the environmental performance of the development, to the satisfaction of the Planning Secretary. This review must:	Non-compliance (administrative)	Annual Review for 2019, 2020 and 2021	*2019 IEA Recommendation Ensure Annual Reviews are submitted to DPE by 31 March.* *Future Annual Reviews should clearly state noise and water quality performance criteria, and provide monitoring results against these.* *Include in future Annual Reviews:*

Condition	Details	Compliance status	Relevant evidence	Commentary
	(a) 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 financial/calendar year; (b) include a comprehensive review of the monitoring results and complaints records of the development over the previous calendar year, including a comparison of these results against the: • relevant statutory requirements, limits or performance measures/criteria; • requirements of any plan or program required under this consent; • monitoring results of previous years; and • relevant predictions in the document/s listed in condition 2(e) of Schedule 2; (c) 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; (d) evaluate and report on: • the effectiveness of the noise and air quality management systems; and • compliance with the performance measures, criteria and operating conditions of this consent; (e) identify any trends in the monitoring data over the life of the development; (f) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and (g) describe what measures will be implemented over the next calendar year to improve the environmental performance of the development. Copies of the Annual Review must be submitted to the affected Councils and made available to the CCC and any interested person upon request.			*- Requirements of plans/programs required under PA 06_0311 for noise and water quality;* *- The monitoring results of previous years, for noise and water;* *- The relevant predictions in environmental assessments for air quality, noise and water;* *- Trends in the monitoring data for air quality, noise and water, over the life of the project; and* *- Discrepancies between the predicted impacts in the EAs for air quality, noise and water, and actual impacts of the project.* ** The Annual Reviews are set out differently to the DPE Annual Review Guidelines (2015). Ensure table of contents matches the guidelines.* ** IEA Actions Plans should be included in every Annual Review going forward.* 2022 IEA findings: A review of the 2019, 2020 and 2021 Annual Review documents identified that they were generally prepared in compliance with the requirements of this condition. The annual review documents adequately describe the events at the development over the reporting period. Non -compliances are identified in the Statement of Compliance and Section 11 for the 2019 and 2021 Annual Review where the exceedances of monthly dust criteria were not reported. Refer to Schedule 3 Condition 16. Environmental performance is reported upon in Section 6 and Section 7. Measures to be implemented over the next reporting period are described in Section 12. The Annual reviews were found to be generally compliant with the requirements of this condition. In regard to the 2019 IEA recommendations, Delta Coal have incorporated suggestions of the previous audit into the annual review documentation for 2019, 2020 and 2021. However, the inclusion of data trends for noise monitoring has not been included in the annual reviews, therefore constituting an administrative non-compliance against clause (e) of this condition.. ***Corrective Action 7 Include historical trends in noise monitoring data in the annual review***

Condition	Details	Compliance status	Relevant evidence	Commentary
	Independent Environmental Audit			
9	9. By the end of February 2022, and every three years after, unless the Planning Secretary directs otherwise, the Applicant must commission and pay the full cost of an Independent Environmental Audit of the development. The audit must: (a) led by a suitably qualified, experienced and independent auditor whose appointment has been endorsed by the Planning Secretary; (b) be led and conducted by a suitably qualified, experienced and independent team of experts (including any be expert in field/s specified by the Planning Secretary) whose appointment has been endorsed by the Planning Secretary; (c) be carried out in consultation with the relevant agencies and the CCC; (d) assess the environmental performance of the development and whether it is complying with the relevant requirements in this consent, water licences and mining leases for the development (including any assessment, strategy, plan or program required under these approvals); (e) review the adequacy of any approved strategy, plan or program required under the abovementioned approvals and this consent; (f) recommend appropriate measures or actions to improve the environmental performance of the development and any assessment, strategy, plan or program required under the abovementioned approvals and this consent; and (g) be conducted and reported to the satisfaction of the Planning Secretary.	Compliant	This audit	This audit was commissioned and undertaken in accordance with the requirements of this condition.
10	10. Within three months of commencing an Independent Environmental Audit, or other timeframe agreed by the Planning Secretary, the Applicant must submit a copy of the audit report to the Planning Secretary, and any other NSW agency that requests it, together with its response to any recommendations contained in the audit report, and a timetable for the implementation of the recommendations. The recommendations must be implemented to the satisfaction of the Planning Secretary.	Compliant	Email from Delta Coal to DPIE (dated 28 March 2019)	*2019 IEA Recommendation: Ensure future IEA reports are submitted within the required timeframe.* 2022 IEA findings: The 2019 IEA was submitted within 3 months of the audit being undertaken.
	Monitoring and Environmental Audits			
	11. Any condition of this consent that requires the carrying out of monitoring or an environmental audit, whether directly or by way of a plan, strategy or program, is taken to be a condition requiring monitoring or an environmental audit under Division 9.4 of Part 9 of the EP&A Act. This includes conditions in respect of incident notification, reporting and response, non-compliance notification, compliance report and independent audit. For the purposes of the condition, as set out in the EP&A Act, “monitoring” is monitoring of the development to provide data on compliance with the consent or on the environmental impact of the development, and an “environmental audit” is a periodic or particular documented evaluation of the development to provide information on compliance with the consent or the environmental management or impact of the development	Note		Noted

Condition	Details	Compliance status	Relevant evidence	Commentary
12	12. Noise and/or air quality monitoring under this consent may be undertaken at suitable representative monitoring locations instead of at privately-owned residences or other locations listed in Schedule 3, providing that these representative monitoring locations are set out in the respective management plan/s.	Compliant	Noise Management Plan (Rev 1 - 20 April 2022)	Noise monitoring has been undertaken at representative locations as detailed in the NMP.
	ACCESS TO INFORMATION			
13	13. Until the completion of all rehabilitation required under this consent, the Applicant must: (a) make the following information and documents (as they are obtained, approved or as otherwise stipulated within the conditions of this consent) publicly available on its website: • the documents referred to in condition 2(e) of Schedule 2 of this consent; • all current statutory approvals for the development; • all approved strategies, plans and programs required under the conditions of this consent; • the proposed staging plans for the development if the construction, operation or decommissioning of the development is to be staged; • minutes of CCC meetings; • regular reporting on the environmental performance of the development in accordance with the reporting requirements in any plans or programs approved under the conditions of this consent; • a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs; • a summary of the current 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 Independent Environmental Audit of the development and the Applicant's response to the recommendations in any audit report; and • any other matter required by the Planning Secretary; and (b) keep such information up to date, to the satisfaction of the Planning Secretary.	Non-compliance (administrative)	Delta Coal Website (https://www.deltacoal.com.au/)	*2019 IEA Recommendation: Include the following documentation on the project website:* *The documents referred to in condition 2 of Schedule 2 (EAs for the original project and Mod 1 - Mod 4);* *Up-to-date Complaints Register. The Register only includes complaints up to February 2019;* *CCC minutes for 2017, 2018 and 2019;* *2016 Audit Action Plan;* *Noise monitoring data not included in the Monthly Website Report; and 2018 - 2020 MOP.* 2022 IEA findings: A review of the website for the site found that monitoring plans, approvals and community related items are on the website and up to date. The recommendations of the 2019 IEA have been addressed, except for the recommendation that noise monitoring be included in the monthly environmental reports. Noise monitoring is presented in a separate report located beneath the monthly environmental reports which is considered satisfactory to close out the 2019 IEA recommendations. Monthly noise monitoring reports for November 2021 and December 2021 are not on the website, therefore forming an administrative non-compliance. This was rectified following the site inspection and therefore no corrective is proposed. The complaints and incidents register provided by Delta Coal was missing incidents from May 2019 to December 2019. This therefore constitutes a non-compliance. ***Corrective Action 8 Ensure that incidents from May 2019 to December 2019 are included on the public complaints register***.

Appendix D

Independent audit submission form

Independent Audit Declaration Form	
Project name	Mannering Colliery – Continuation of Mining Project
Consent Number	PA 06_0311
Description of project	Refer to Section 1.1
Project address	Off Rutleys Road, Doyalson, NSW, 2262
Proponent	Great Southern Energy Pty Ltd (trading as 'Delta Coal')
Title of audit	Independent Environmental Audit for PA 06_0311
Date	20 June 2022

I certify that I have undertaken the independent audit and prepared the contents of the attached independent audit report and to the best of my knowledge:

– The audit has been undertaken in accordance with relevant approval condition(s) and in accordance with the auditing standard AS/NZS ISO 19011:2014 and Post Approval Guidelines – Independent Audits.

– The findings of the audit are reported truthfully, accurately and completely.

– I have exercised due diligence and professional judgement in conducting the audit.

– I have acted professionally, in an unbiased manner and did not allow undue influence to limit or over-ride objectivity in conducting the audit.

– I am not related to any owner or operator of the development as an employer, business partner, employee, sharing a common employer, having a contractual arrangement outside the audit, spouse, partner, sibling, parent, or child.

– I do not have any pecuniary interest in the audited development, including where there is a reasonable likelihood or expectation of financial gain or loss to me or to a person to whom I am closely related (i.e. immediate family).

– Neither I nor my employer have provided consultancy services for the audited development that were subject to this audit except as otherwise declared to the lead regulator prior to the audit.

– I have not accepted, nor intend to accept any inducement, commission, gift or any other benefit (apart from fair payment) from any owner or operator of the development, their employees or any interested party. I have not knowingly allowed, nor intend to allow my colleagues to do so.

Notes:

a. The Independent Audit is an 'environmental audit' for the purposes of section 122B(2) of the *Environmental Planning and Assessment Act 1979*. Section 122E provides that a person must not include false or misleading information (or provide information for inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person knows that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, $1 million and for an individual, $250,000.

b. The *Crimes Act 1900* contains other offences relating to false and misleading information: section 192G (Intention to defraud by false or misleading statement—maximum penalty 5 years imprisonment); sections 307A, 307B and 307C (False or misleading applications/information/documents—maximum penalty 2 years imprisonment or $22,000, or both).

Name of Lead auditor	Elliot Holland
Signature	
Qualification	Lead Auditor – Environmental Management Systems
Email address	Elliot.holland@ghd.com
Company and address	GHD Pty Ltd (GHD) GHD Tower, Level 3, 24 Honeysuckle Drive Newcastle NSW 2300
Date	20 June 2022



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Appendix 8: Independent Environmental Audit Action Plan

Chain Valley Colliery Independent Environmental Audit 2022 - Action Tracker.

Last Update 25 March 2025

Action/Rec #	Requirement	Proposed Completion Date	Person Responsible	Percentage Complete	Comments
MC A1	continue to undertake mitigation measures to comply with S120 of POEO Act 1997. Actions taken to address non-compliances have been detailed in incident reports with preventative/corrective action undertaken each incident. Where practicable, all incidents will have proposed corrective actions to prevent re-occurrence.	Completed - License requirement	Environmental Compliance Coordinator	100%	
MC A2	Corrective and preventative actions proposed/undertaken are presented in incident investigation reports to stakeholders following an incident.	Completed - License requirement	Environmental Compliance Coordinator	100%	
MC A3	Delta Coal will implement a waste management system to address this non-compliance.	30-Jun-23	Environmental Compliance Coordinator.	100%	Implemented in 2024
MC A4	Delta Coal will update the: · Mannering Colliery Water Management Plan · Land Management Plan.	23-Nov-22	Environmental Compliance Coordinator	100%	MC WMP revised and approved 10/01/2023. LMP revised and pending approval and stakeholder consultation (meeting with RFS on 22/03/2023).
MC A5	Delta Coal has revised procedures and requirements with the sampling contractor and analytical laboratory to prevent recurrence.	Completed	Environmental Compliance Coordinator	100%	
MC A6	Delta Coal will revise the AQGHGMP to include TARPs	23-Nov-22	Environmental Compliance Coordinator	100%	DC AQGHGMP revised and pending DPE approval.
MC A7	Noise trends will be included in future Annual Reviews.	31-Mar-23	Environmental Compliance Coordinator	100%	Included in AR.
MC A8	Delta Coal has reviewed the 2019 incident register to include identified incidents. Delta Coal has uploaded monthly noise monitoring reports for November 2021 and December 2021 on the website.	Completed	Environmental Compliance Coordinator	100%	
MC R1	Delta Coal will update the LMP to include the bushfire management plan requirements.	23-Nov-22	Environmental Compliance Coordinator	100%	LMP revised and pending stakeholder consultation.
MC R2	Considering the recent Rehabilitation Reform requirements and changes to the Mining Act being enforced as of 2 July 2022. Delta Coal will comply with the Resource Regulator's requirements under the Mining Act, and new Mining Lease conditions.	Completed	Environmental Compliance Coordinator	100%	
MC R3	Delta Coal will revise STD 00110 – Fire Water Reticulation Fighting	23-Nov-22	Health and Safety Manager	100%	completed, revised on 2/06/2022
MC R4	The noise mitigation study is not relevant to Mannering Colliery.	N/A	N/A	100%	

Appendix 9: DPIE Letter – 2024 Annual Review

To be provided following receipt and acceptance of the Mannering Colliery 2024 Annual Review.