



# Mackenzie North Quarterly Air and Noise Report April – June 2025

## JELLINBAH COAL MINE

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PREPARED FOR  
Jellinbah Mining Pty Ltd

16 July 2025



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# Table of Contents

<b>Executive Summary .....</b>	<b>iv</b>
<b>1 Introduction .....</b>	<b>1</b>
<b>1.1 Objectives .....</b>	<b>1</b>
<b>1.2 Project background .....</b>	<b>1</b>
<b>1.3 Sensitive receptors .....</b>	<b>2</b>
<b>2 Air quality monitoring .....</b>	<b>4</b>
<b>2.1 Beta-Attenuation Monitor (BAM).....</b>	<b>4</b>
2.1.1 Equipment and methodology.....	4
2.1.2 Meteorological station .....	5
2.1.3 PM <sub>10</sub> monitoring results .....	6
<b>2.2 Dust deposition monitoring.....</b>	<b>6</b>
2.2.1 Equipment and methodology.....	7
2.2.2 Dust deposition monitoring results.....	9
2.2.3 Investigation into dust monitoring exceedance.....	11
<b>3 Noise monitoring assessment.....</b>	<b>12</b>

## List of Figures

Figure 1:	Mackenzie North sensitive receptors .....	3
Figure 2:	Daily rainfall (mm) from April to June 2025 .....	5
Figure 3:	24-hr average PM <sub>10</sub> dust concentrations between April and June 2025 ....	<b>Error! Bookmark not defined.</b>
Figure 4:	Mackenzie North dust deposition monitoring sites.....	8
Figure 5:	Dust deposition data recorded between the 3 <sup>rd</sup> of March 2025 and 13 <sup>th</sup> of June 2025.....	10
Figure 6:	Wind rose graph from Jellinbah Mackenzie North station (May to June 2025). .....	11
Figure 7:	Mackenzie North noise monitoring site.....	13

## List of Tables

Table 1:	List of Mackenzie North Sensitive Receptors .....	2
Table 3:	Location of Mackenzie North dust deposition gauges .....	7
Table 4:	Investigation into dust deposition monitoring results with high levels .....	11
Table 5:	Noise Monitoring Locations for April-June 2024 review period .....	12

## Abbreviations

AARC	AARC Environmental Solutions Pty Ltd
AQMP	Air Quality Management Plan
AS	Australian Standard
AV	Adjustment Value
BAM	Beta-Attenuation Monitor
bg	background noise level
CV	Critical Value
dB(A), dB(A)	Decibel measurement according to the “A”- weighted scale.
EA	Environmental Authority
EMM	EMM Consulting Pty Limited (EMM)
GDA94	Geodetic Datum of Australia 1994
Hz	Hertz
Jellinbah	Jellinbah Mining Pty Ltd
L <sub>1</sub>	Noise level which is exceeded for 1% of the measurement period
L <sub>10</sub>	Noise level which is exceeded for 10% of the measurement period
L <sub>90</sub>	Noise level which is exceeded for 90% of the measurement period
L <sub>Aeq</sub>	Equivalent continuous ‘A-weighted’ sound
L <sub>Amin</sub>	Minimum ‘A-weighted’ noise level
L <sub>A1,adj,15min</sub>	‘A-weighted’ noise level which is exceeded for 1% of the 15-minute measurement period
L <sub>Aeq,adj,15min</sub>	Equivalent Continuous Sound Level recorded over the 15-minute measurement period
m/s	metres per second
mg/m <sup>2</sup> /day	milligrams per square metre per day
ML	Mining Lease
NATA	National Association of Testing Authorities
NMP	Noise Management Plan
PM <sub>10</sub>	Particulate Matter with an aerodynamic diameter less than 10 micrometres (µm)
TARP	Trigger Action Response Plan

## Executive Summary

This quarterly analysis report for the Mackenzie North mining operations assesses the air quality and noise monitoring data during the April to June 2025 monitoring period. Air quality data was collected between March 3rd and June 13th, 2025. Noise monitoring was not conducted for this monitoring program.

Jellinbah will continue to implement mitigation measures where required in response to elevated particulate matter, dust or noise levels, following the Air Quality and Noise management plans.

### **Air quality monitoring**

Jellinbah monitors PM<sub>10</sub> dust impacts at sensitive receptors in real-time via the BAM unit. During the monitoring period, the PM<sub>10</sub> dust data from the BAM unit did not indicate any exceedance, remaining below the EA limit of 50 µg/m<sup>3</sup>.

Dust deposition analysis was also completed via the dust deposition gauges set up at various locations surrounding Mackenzie North. The results showed dust levels for insoluble solids at sensitive receptor monitoring site J3 were below the EA limit, whereas an exceedance was observed at site J6.

### **Noise monitoring**

No noise monitoring occurred at the site during the April to June 2025 monitoring period. Monitoring is ongoing to investigate events where cumulative noise contribution from multiple surrounding mines exceeds the relevant limits for continuous periods. As part of the six-monthly assessment, the next attended monitoring is scheduled to take place in August 2025.

In accordance with EA Condition E5 and the NMP, Jellinbah will continue to implement noise abatement measures so that emissions of noise from the activity do not result in environmental nuisance.

# 1 Introduction

This report has been prepared by AARC Environmental Solutions Pty Ltd (AARC) on behalf of Jellinbah Mining Pty Ltd (Jellinbah). The purpose of this report is to present a regular (quarterly) review of all air quality monitoring results, and provide a summary of the noise assessment results when available, to ensure best practice management and compliance with the Environmental Authority (EA) EPML00516813 (effective 3 March 2025) conditions and associated management plans. Noise monitoring is conducted every six months, and when scheduled, this report will include the noise assessment report as an appendix.

The monitoring period for this quarterly assessment is from April to June 2025. The data collected will contribute to Jellinbah’s internal monitoring and reporting systems, as outlined in the Air Quality and Noise management plans. Should any complaint of environmental nuisance at any sensitive or commercial place be received, the report can be made available to the administering authority if an investigation is requested, potentially assisting with result contributions for EA Condition B2 and E2 when required.

## 1.1 Objectives

The objective of this report is to assess compliance with air quality (dust and particulate matter) and noise requirements contained in the EA, which reference the Air Quality Management Plan (AQMP) and Noise Management Plan (NMP). The report will also outline any recommendations, where required, for mitigation measures to prevent elevated dust and noise levels.

Mitigation measures are recommended using a risk-based approach following the AQMP and the NMP. These measures are also based on the commitments made to landholders in Jellinbah’s signed 2014 affidavit<sup>1</sup>, which stem from noise and vibration assessments completed by ASK Consulting Engineers (2013 and 2014) and an air quality assessment report from Katestone (2013 and 2014).

The air and noise EA conditions are attached in Appendix A. EA Condition B3 states that the EA holder “*shall ensure that all reasonable and feasible avoidance and mitigation measures are employed so that the dust particulate emissions generated by the mining activities do not cause exceedances .... at any sensitive or commercial place. If the EA holder can provide evidence through monitoring that the following limits are not being exceeded then the holder is not in breach of condition B1*”. Additionally, EA Condition B6 requires an AQMP which addresses monitoring of particulate matter on a “*regular basis*”. The monitoring presented and assessed in this quarterly report is considered to satisfy these EA conditions.

EA Condition E7 requires an NMP that addresses noise monitoring on a regular basis (as defined in the NMP). The NMP defines a regular basis as every six months. No noise monitoring was conducted during this quarterly reporting period. Attended monitoring is scheduled for August 2025.

## 1.2 Project background

The Mackenzie North Mine is an extension of the Jellinbah Coal Mine project, north of the Mackenzie River. The Mackenzie North operational area consists of four mining leases (MLs): ML 70445, ML 70446, ML 70448, and ML 70449. The open-cut mine has replaced the production from the finished Jellinbah Plains pit, thus maintaining overall mine production rates at currently approved levels.

Activities that have occurred during the reporting period at the Mackenzie North Mine include:

- stripping and stockpiling of topsoil ahead of mining;
- overburden removal ahead of mining in the pit;
- mining of coal seams in pit;

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<sup>1</sup> Land Court of Queensland, Affidavit of Ian Alfred Cooper (GM and SSE of Jellinbah Central Mine) signed 15-9-2014

- crushing and hauling of coal material; and
- progressive rehabilitation activities.

### 1.3 Sensitive receptors

Sensitive receptors are residences or commercial locations that have the potential to be impacted by air quality or noise impacts arising from the activities at Jellinbah Coal Mine. The key sensitive receptors for potential dust and noise emissions from Mackenzie North are listed in Table 1 and shown in Figure 1.

Table 1: List of Mackenzie North Sensitive Receptors

Name	Approximate Distance to Mackenzie North Mining Lease Area (km)	Easting (GDA94 Z55)	Northing (GDA94 Z55)
Jellinbah 1 (Old Jellinbah Homestead)	6	688715	7429754
Jellinbah 2 (Jellinbah Homestead)	8	697280	7439294
Tarcoola	10	704858	7434955
Scrubee	5	701434	7428272

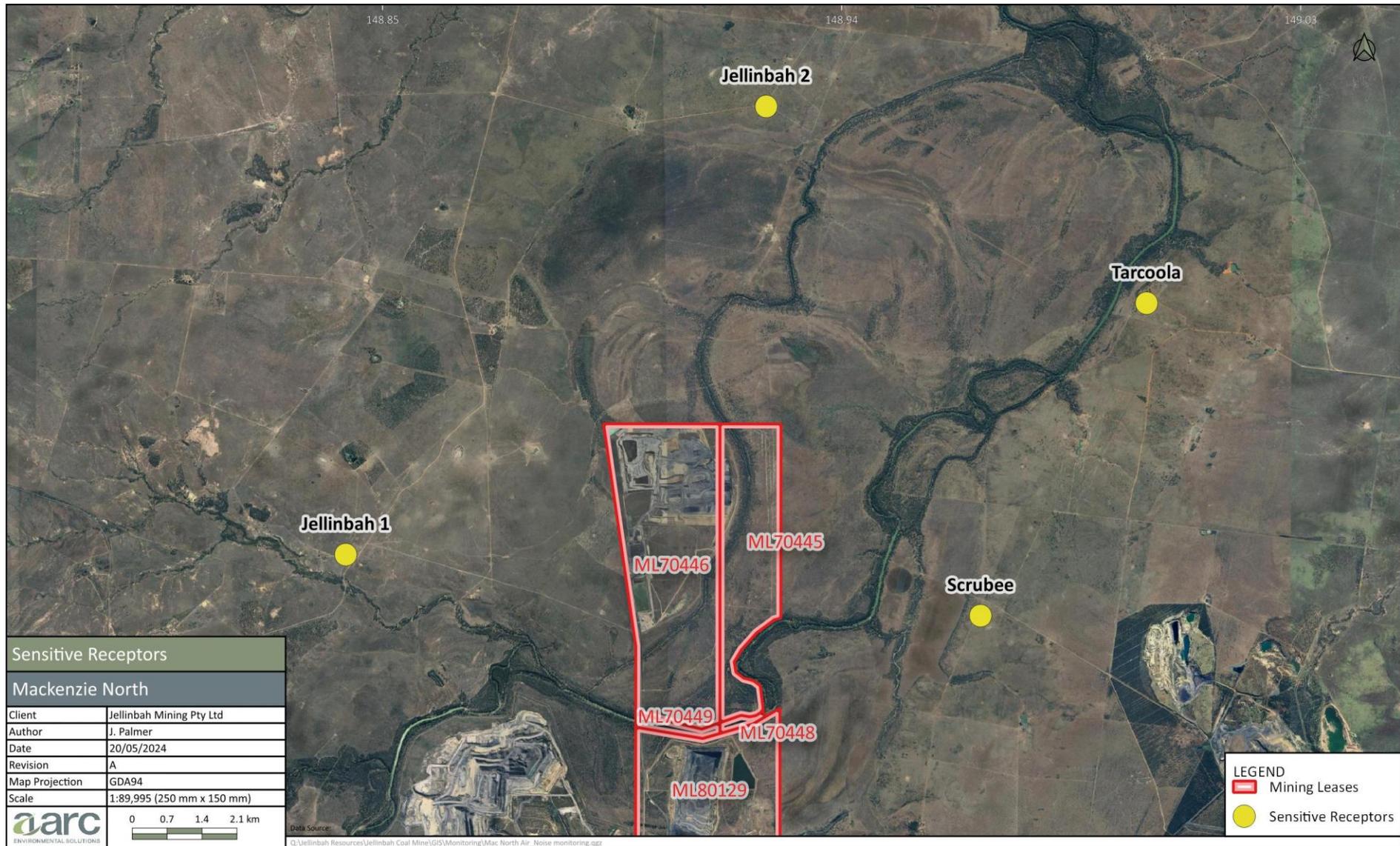


Figure 1: Mackenzie North sensitive receptors

## 2 Air quality monitoring

### 2.1 Beta-Attenuation Monitor (BAM)

#### 2.1.1 Equipment and methodology

In late July 2020 Jellinbah commissioned and installed a solar-powered Beta-Attenuation Monitor (BAM) to monitor PM<sub>10</sub> dust levels at sensitive receptors surrounding the Mackenzie North Mine. BAM units are considered a 'best-practice' methodology to undertake monitoring for PM<sub>10</sub> dust and are considered more reliable than DustTrak units.

The BAM unit is solar-powered and mounted on a trailer to enable it to be moved regularly between the sensitive receptors. Using the BAM unit, Jellinbah can monitor PM<sub>10</sub> dust levels in real-time via an online portal. The unit has alarms set up to notify key personnel when dust levels are approaching, or exceeding, the limits defined in the EA or when adverse meteorological conditions are encountered (i.e. high wind speeds and when the wind is blowing in the direction of a sensitive receptor).

During the monitoring period spanning between April to June 2025, the scheduled location of the BAM unit was at Jellinbah 2 in accordance with the monitoring schedule proposed in the AQMP. The AQMP (AARC 2024) includes a revised BAM location schedule based on a review of local prevailing wind directions, and historical onsite and regional PM<sub>10</sub> level monitoring. On the basis of the dominating easterly wind direction and the PM<sub>10</sub> results, the recommended schedule includes rotationally moving the BAM unit at Jellinbah 1 and Jellinbah 2 sites as they are expected to be most affected by the mine. The periods at each location are as follows:

- September to February (Spring, Summer): Jellinbah 1 (west of mine)
- March to August (Autumn, Winter): Jellinbah 2 (north of mine)

The monitoring location may be modified in the future based on data collected, complaints received, or a change in prevailing meteorological conditions. The proposed schedule may be considered for future quarterly monitoring periods.

### 2.1.2 Meteorological station

Jellinbah operates a meteorological station at Mackenzie North that records rainfall, temperature, wind direction, and wind speed to identify periods when nearby sensitive receivers are at risk of elevated dust levels. Access to frequent and real-time meteorological data, with alarms set on the BAM unit, means that Jellinbah can quickly alter operations (if required) to reduce the potential for impacts at sensitive receptors, in accordance with the dust management Trigger Action Response Plan (TARP). Rainfall recorded during the monitoring period is shown in Figure 2.

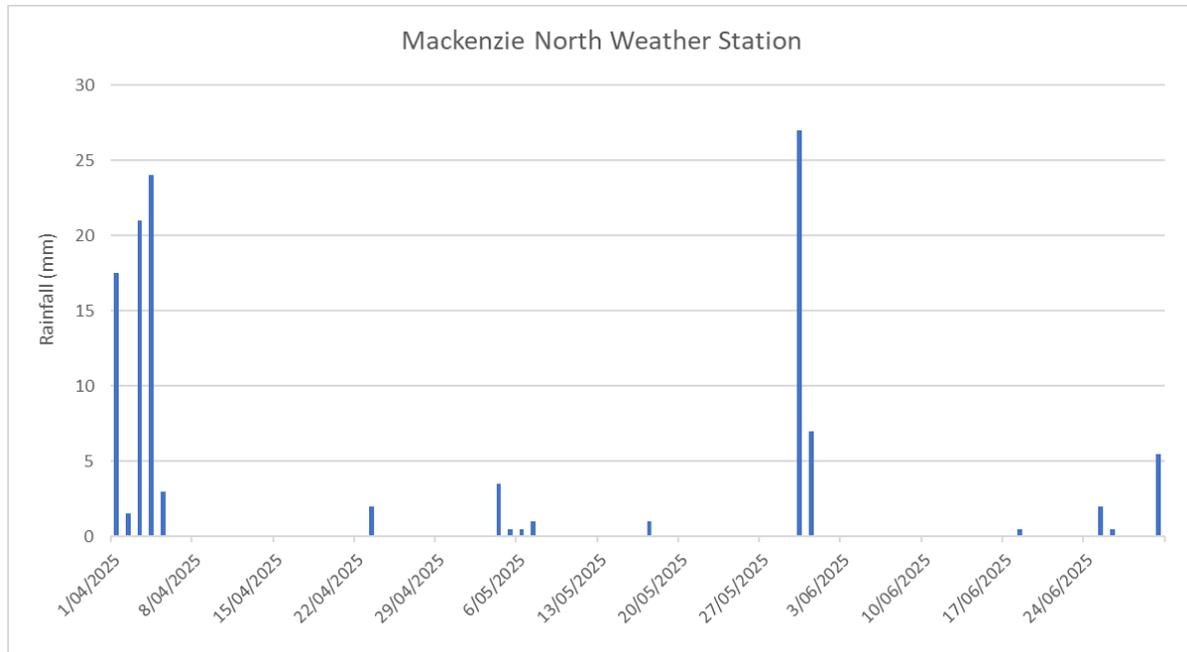


Figure 2: Daily rainfall (mm) from April to June 2025

### 2.1.3 PM<sub>10</sub> monitoring results

As per EA condition B3, the concentration of particulate matter with an aerodynamic diameter of less than 10 micrometres ( $\mu\text{m}$ ) (PM<sub>10</sub>) suspended in the atmosphere should not exceed 50 micrograms per cubic meter over a 24-hour averaging time at any sensitive receptor downwind of operations.

The monitoring data recorded from 1<sup>st</sup> April to 30<sup>th</sup> June is presented in **Error! Reference source not found..** The particulate matter concentrations ranged between 4.75 to 32.08  $\mu\text{g}/\text{m}^3$ . During the monitoring period, the recorded concentration levels have remained below the EA limit of 50  $\mu\text{g}/\text{m}^3$ . No data was recorded by the BAM unit on three occasions, specifically during the following periods:

- from 3:00 pm on 2 April to 5:00 pm on 10 April;
- from 5:00 pm on 25 May to 1:00 pm on 28 May; and
- from 6:00 pm on 18 June to 3:00 pm on 24 June. Dust deposition monitoring

### 2.1.4 Equipment and methodology

Dust deposition monitoring has been undertaken at various locations surrounding the Mackenzie North Mine since February 2018. The dust deposition monitoring program monitors Jellinbah's compliance with the EA, whereby Jellinbah must ensure that dust particulate emissions generated by mining activities do not exceed the limit specified in the EA (120 mg/m<sup>2</sup>/day, averaged over one month) at any sensitive receptor.

The dust deposition gauges/bottles are intended to collect larger dust fall out particles than what is collected with the BAM unit. The dust deposition bottles are collected approximately every 30 days and sent to a NATA accredited laboratory, where the samples are analysed for ash content, combustible matter, total soluble matter, total insoluble matter, and total solids, in order to assist in determining the potential source of dust emissions.

It is worth noting that as the dust deposition bottles are sent off and analysed on a monthly basis, it is difficult to implement immediate mitigation measures in response to a single elevated level of dust deposition. Jellinbah is able to implement mitigation measures if it becomes apparent that dust deposition levels are significantly elevated upon receiving the previous month's data. This includes a review of the associated meteorological factors (such as wind direction) which may have since changed, potentially reducing the need for additional mitigation measures or significant changes to the current level of mitigation measures being applied.

The dust deposition monitoring locations surrounding Mackenzie North are listed in Table 2 and can be seen in Figure 3.

Table 2: Location of Mackenzie North dust deposition gauges

Site ID	Sensitive Receptor	Easting (GDA94 Z55)	Northing (GDA94 Z55)	Description
J2	-	696930	7434336	Approximately 2km north of the Mackenzie North Mining Leases.
J3	Yes	688933	7429662	Old Jellinbah Homestead (Jellinbah 1).
J4	-	691714	7429806	Approximately 3km east of Old Jellinbah Homestead and J3.
J5	-	690525	7427550	Approximately 3km south-east of Old Jellinbah Homestead and J3. Approximately 1km north of Curragh mine.
J6	Yes	697497	7439274	Jellinbah Homestead (Jellinbah 2).
J7	-	699159	7429044	Approximately 3km west of Scrubee (across Mackenzie River).
J8	-	696412	7429438	Eastern side of Mackenzie River Anabranch (within the Mackenzie North Mining Leases (ML 70445)).

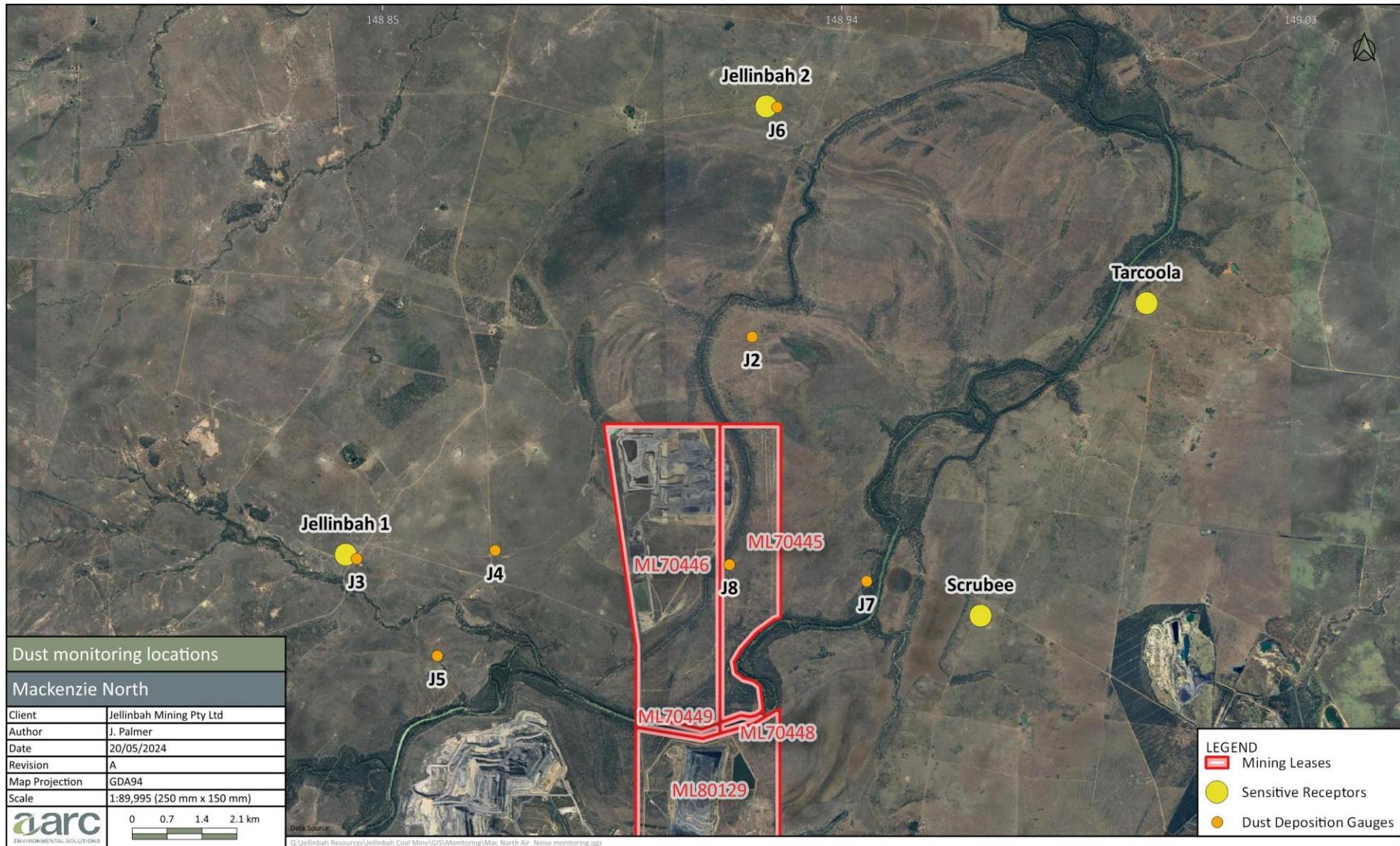


Figure 3: Mackenzie North dust deposition monitoring sites

### 2.1.5 Dust deposition monitoring results

Dust Deposition monitoring data collected for the locations in Table 2 during the reporting period can be seen in Figure 4 **Error! Reference source not found.**. During April, dust deposition samples were not collected due to wet weather. As shown in Figure 2, moderate to heavy rainfall occurred early in April which restricted access. However, the samples were then collected in May. As such, Figure 4 shows the results for the periods March-May and May-June, based on the dates sampled. No data was available for interpretation site J2, as the site could not be accessed during any of the sampling events due to an impassable track. Dust bottles are collected mid-month, and the last collection was on 13<sup>th</sup> of June 2025.

Dust deposition gauges J3 and J6 monitor dust impacts at sensitive receptors. Dust deposition results greater than the EA specified limit identified at these locations may require a management action. Dust deposition gauges J2, J4, J5, J7 and J8 are for interpretational purposes only and are not located at sensitive receptors. Elevated dust levels (>120 mg/m<sup>2</sup>/day) at J2, J4, J5, J7 and J8 are not considered exceedance events.

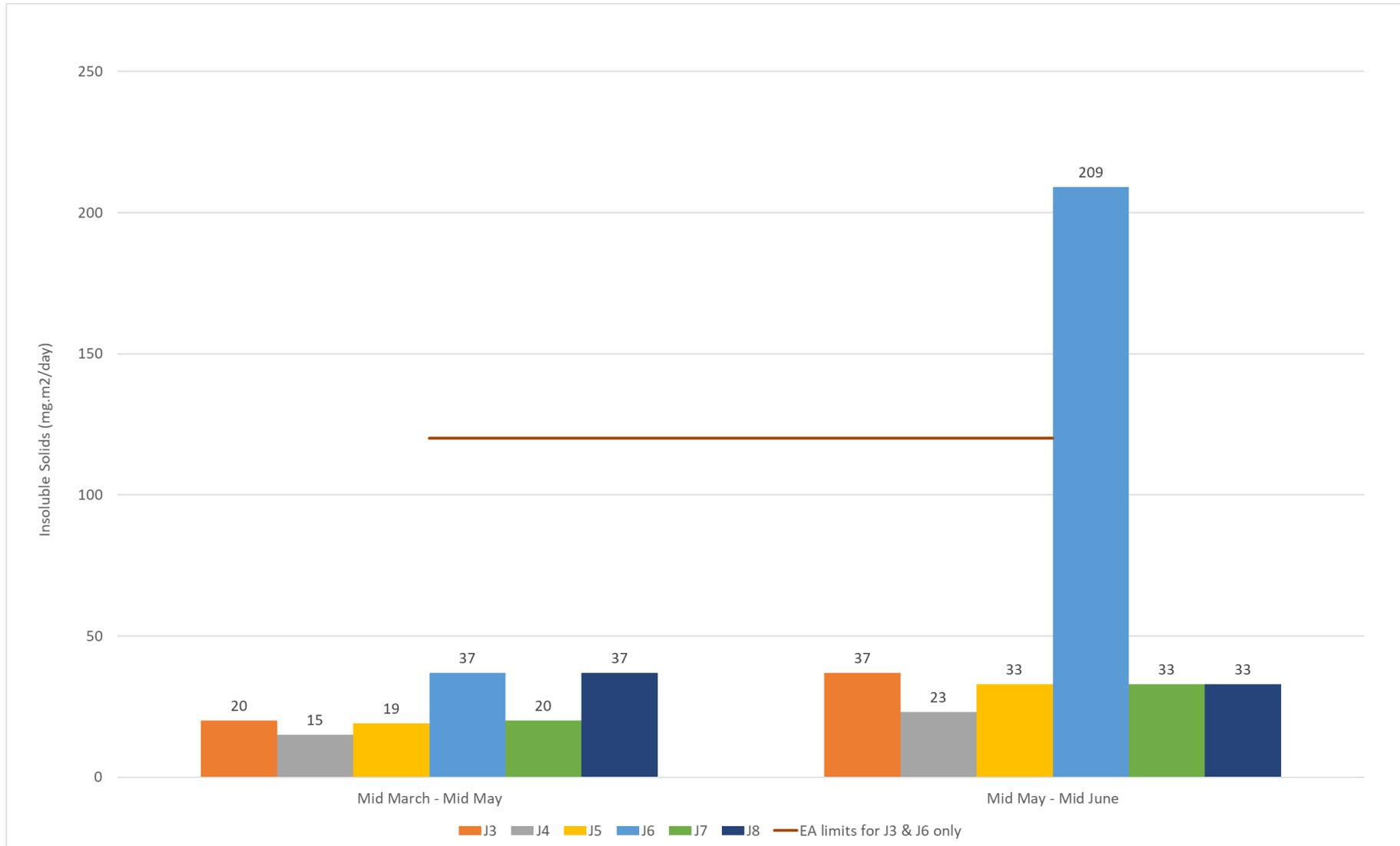


Figure 4: Dust deposition data recorded between the 3<sup>rd</sup> of March 2025 and 13<sup>th</sup> of June 2025

### 2.1.6 Investigation into dust monitoring exceedance

One exceedance of the EA limit (120 mg/m<sup>2</sup>/day) was recorded at J6 during the mid-May to mid-June sampling period. The level of insoluble solids recorded at J6 was 209 mg/m<sup>2</sup>/day. The data has been interpreted in Table 4 with respect to prevailing wind conditions and any potential contribution from activities at Mackenzie North.

Figure 5 shows the recurrence frequency, by cumulative percentage, in which the hourly wind direction at each velocity range repeatedly occurs over the analysed period of May to June 2025. During this period, the prevailing winds were from the east-southeast direction. Prevailing wind direction was obtained from the Mackenzie North Station.

Table 3: Investigation into dust deposition monitoring results with high levels

Month and Year	Site Exceeded	Prevailing Wind Direction	Explanation
1 <sup>st</sup> May 2025 to 13 <sup>th</sup> June 2025	J6	ESE (101° - 123°) and SE (123° - 146°)	<p>Site J6 is located north of the Mackenzie North mining operations as shown in Figure 3. Monitoring data for interpretation purposes was not obtainable from site J2, which is closer to Mackenzie North in the same direction. This limits the ability to provide evidence for potential contributions from mining activities.</p> <p>There is a possibility the dust deposition levels recorded at J6 were from an extraneous source, such as local disturbances around the Jellinbah 2 homestead or from the nearby land use activities. The prevailing winds were also not in the same direction as the sensitive receptor.</p> <p>It is recommended that Jellinbah continue to closely monitor conditions on site and implement dust abatement measures, particularly during periods of more intensive mining operations.</p>

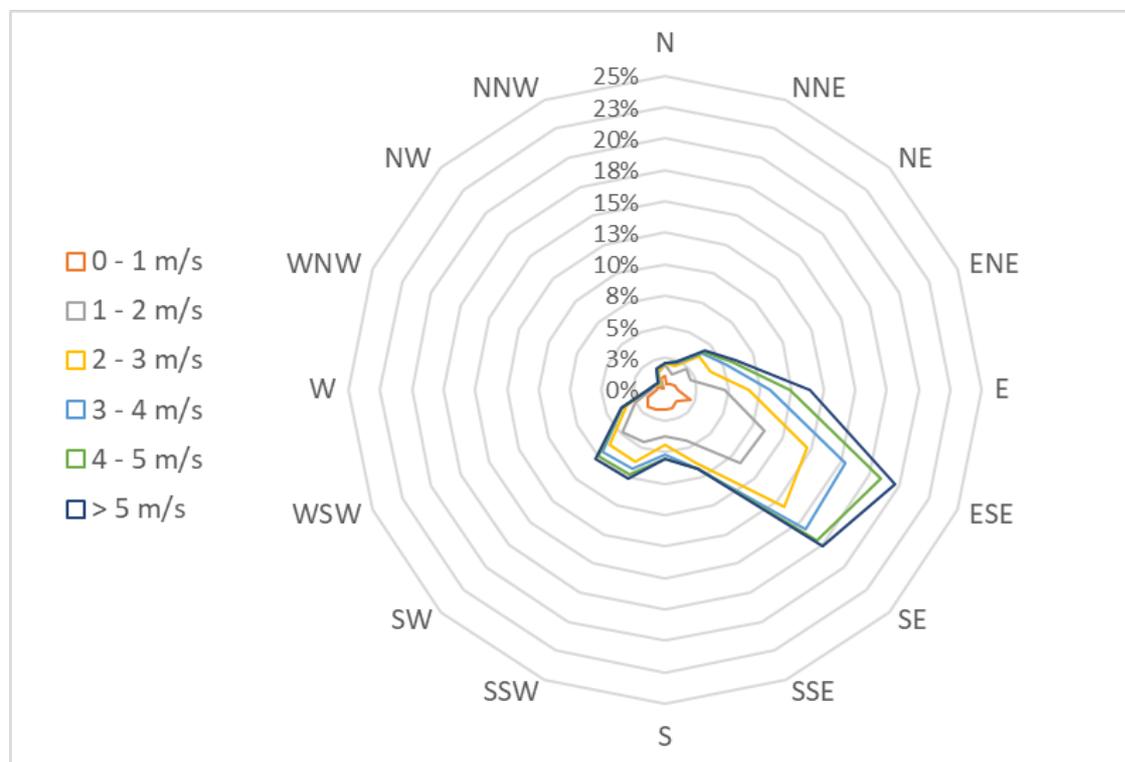


Figure 5: Wind rose graph from Jellinbah Mackenzie North station (May to June 2025).

### 3 Noise monitoring assessment

Noise monitoring was not conducted for the monitoring period April to June 2025 as it is a six-monthly exercise. The last noise monitoring was conducted on the night of 20<sup>th</sup> to 21<sup>st</sup> February 2025 by AARC on behalf of Jellinbah for the January to March 2025 monitoring period. The purpose of this noise assessment was to investigate any exceedances of the EA noise limits in relation to the Mackenzie North mine. The assessment also considers the extent to which the mine operations contribute to noise levels in comparison to surrounding mines such as Curragh and Yarrabee.

Attended noise monitoring is next scheduled to be conducted in August 2025. As per the February 2025 measurements, it is considered that the upcoming monitoring period will consist of attended night-time noise monitoring at four (4) sensitive receptors, and simultaneous unattended noise logging at two (2) locations near the neighbouring mines to assist with noise source identification (as shown in Table 4 and Figure 6).

Table 4: Noise Monitoring Locations for April-June 2024 review period

#	Nearest receptor	Monitoring location	Coordinates (UTM) <sup>1</sup>	
			Easting (m)	Northing (m)
<b>Sensitive locations</b>				
A	Jellinbah 1 (Old Jellinbah Homestead)	Located beside the dirt track which merges with the dirt track between Jellinbah 1 and 2 sites. This site was chosen as representative of the homestead but removed from mechanical noise occurring at the homestead itself. Approximately 250 metres east of the homestead.	689016	7429800
B	Jellinbah 2 (Jellinbah Homestead)	Located beside the dirt track on the western side of the property, approximately 200 metres west of the nearest residence.	696996	7439286
C	Scrubee	Located on the northern side of an intersection of dirt tracks, approximately 400 metres east of the homestead.	701877	7428401
D	Tarcoola	Located on the southern side of an intersection of dirt tracks, approximately 850 metres south-east of the homestead.	705637	7434470
<b>Additional monitoring locations</b>				
L1	Curragh North Mine	Located in a triangular fenced site beside a dirt track, approximately 700 metres north of the Curragh North mine disturbance area. This site is accessed via a north-south track on the southern side of the dirt track between Mackenzie North mine and Jellinbah 1.	691165	7426631
L2	Yarrabee Mine	Located beside a bend in the dirt track leading to Scrubee homestead, approximately 900 metres west of the Yarrabee mine disturbance area.	703972	7426930

Note: 1: Recorded coordinates were indicated to be +/- 5 metres accuracy according to the phone GPS application

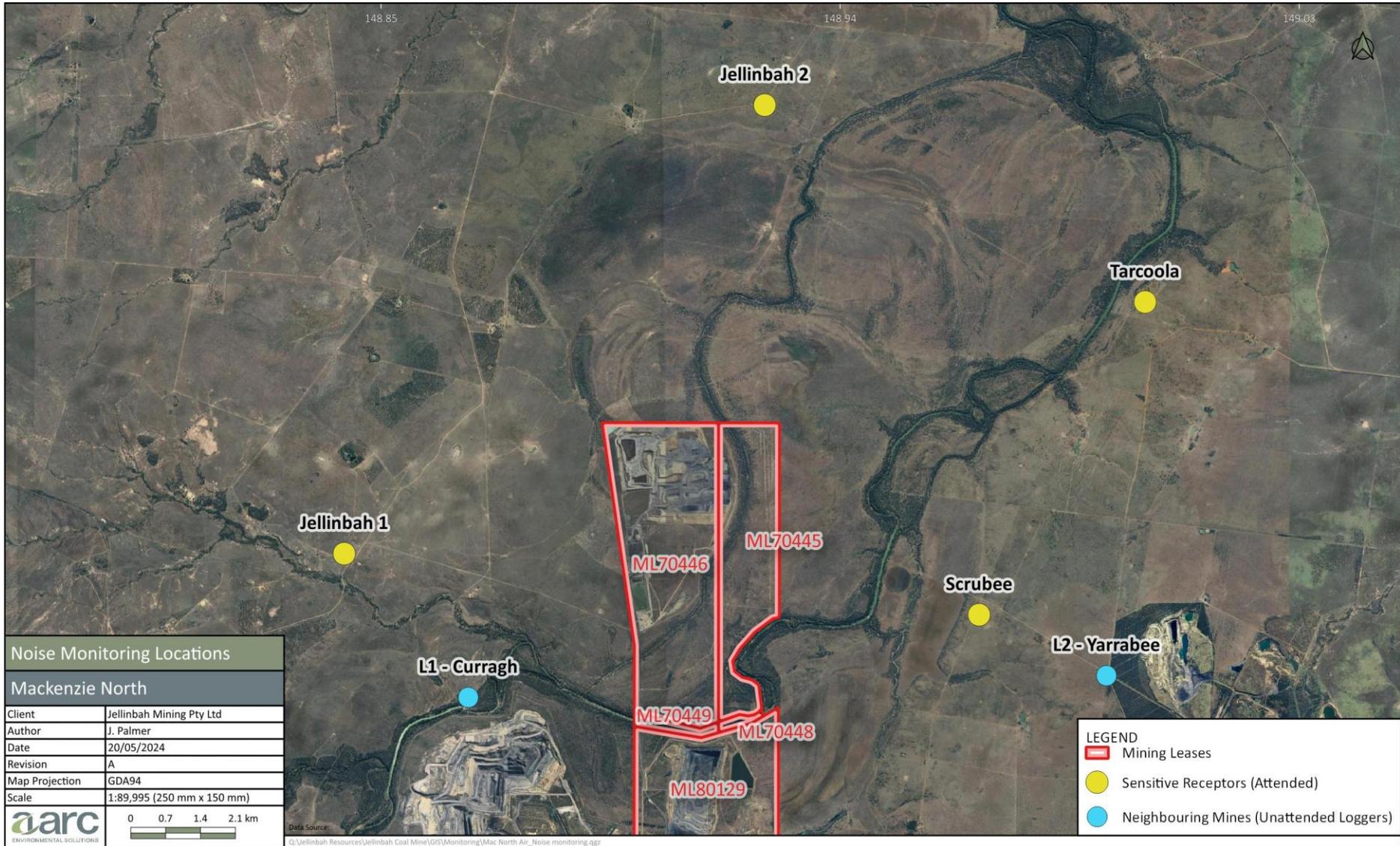


Figure 6: Mackenzie North noise monitoring site

## **Appendix A. Air, Noise and Vibration EA conditions**

Schedule B: Air	
Condition number	Condition
<b>B1</b>	Subject to conditions <b>B2</b> and <b>B3</b> the release of dust or particulate matter or both resulting from the mining activity must not cause an environmental nuisance, at any sensitive or commercial place.
<b>B2</b>	When requested by the administering authority, dust and particulate monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any sensitive or commercial place, and the results must be notified within <b>fourteen (14) days</b> to the administering authority following completion of monitoring.
<b>B3</b>	<p><b>Dust and Particulate Matter Monitoring</b></p> <p>The environmental authority holder shall ensure that all reasonable and feasible avoidance and mitigation measures are employed so that the dust particulate emissions generated by the mining activities do not cause exceedances of the following levels when measured at any sensitive or commercial place. If the environmental authority holder can provide evidence through monitoring that the following limits are not being exceeded then the holder is not in breach of condition <b>B1</b>:</p> <ul style="list-style-type: none"> <li>(a) dust deposition of one-hundred and twenty (120) milligrams per square metre per day, averaged over <b>one (1) month</b>, when monitored in accordance with <i>AS 3580.10.1 Methods for sampling and analysis of ambient air - Determination of particulates - Deposited matter - Gravimetric method</i>;</li> <li>(b) a concentration of particulate matter with an aerodynamic diameter of less than 10 micrometre (<math>\mu\text{m}</math>) (<math>\text{PM}_{10}</math>) suspended in the atmosphere of one-hundred and fifty (50) micrograms per cubic metre over a twenty four (24) hour averaging time, at a sensitive or commercial place downwind of the operational land, when monitored in accordance with:           <ul style="list-style-type: none"> <li>(i) particulate matter - Determination of suspended particulate <math>\text{PM}_{10}</math> high-volume sampler with size-selective inlet - Gravimetric method, when monitored in accordance with <i>AS 3580.9.6 Methods for sampling and analysis of ambient air - Determination of suspended particulate matter - <math>\text{PM}(\text{sub})10</math> high volume sampler with size-selective inlet - Gravimetric method of 1990</i>; or</li> <li>(ii) Australian Standard <i>AS3580.9.9 Methods for sampling and analysis of ambient air - Determination of suspended particulate matter - <math>\text{PM}_{10}</math> low volume sampler - Gravimetric method</i>.</li> </ul> </li> </ul>
<b>B4</b>	<p>If monitoring indicates exceedance of the relevant limits in condition <b>B3</b>, then the environmental authority holder must:</p> <ul style="list-style-type: none"> <li>(a) address the complaint including the use of appropriate dispute resolution if required; and</li> <li>(b) immediately implement dust abatement measures so that emissions of dust from the activity do not result in further environmental nuisance.</li> </ul>
<b>B5</b>	The holder of the environmental authority must develop and implement an Air Quality Management Plan prior to the commencement of mining activities within ML70445, ML70446, ML70448 and ML70449.

<b>B6</b>	<p>The Air Quality Management Plan (as required under condition <b>B5</b>) must address, as a minimum, the following:</p> <ul style="list-style-type: none"> <li>(a) a procedure for routine monitoring of real time meteorological conditions (rainfall, temperature, wind direction and wind speed) at Mackenzie North to identify periods when nearby sensitive receivers are at risk of elevated dust levels;</li> <li>(b) implementation of a Trigger Action Response Plan, which will identify and initiate appropriate air quality mitigation measures, for periods when adverse meteorological conditions combine with high mining intensity at Mackenzie North;</li> <li>(c) monitoring of particular matter with an aerodynamic diameter of less than 10 micrometre (<math>\mu\text{m}</math>) (<math>\text{PM}_{10}</math>) suspended in the atmosphere on a regular basis (as defined within the Air Quality Management Plan) to be undertaken in accordance with either:             <ul style="list-style-type: none"> <li>(i) Australian Standard <i>AS 3580.9.6 Methods for sampling and analysis of ambient air - Determination of suspended particulate matter - PM(sub)10 high volume sampler with size-selective inlet - Gravimetric method of 1990</i>; or</li> <li>(ii) any alternative method of sampling <math>\text{PM}_{10}</math>, which may be permitted by the <i>Air Quality Sampling Manual</i> as published from time to time by the administering authority.</li> </ul> </li> </ul>
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**Schedule E: Noise and Vibration**

Condition number	Condition
<b>E1</b>	<p><b>Noise Nuisance</b></p> <p>The holder of this environmental authority must ensure that noise generated by the mining activities does not cause the criteria in <b>Table E1 Noise limits at a noise sensitive place</b> to be exceeded at a sensitive place or commercial place.</p>
<b>E2</b>	<p>When requested by the administering authority, noise monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any sensitive or commercial place, and the results must be notified within <b>fourteen (14) days</b> to the administering authority following completion of monitoring.</p>
<b>E3</b>	<p>The method of measurement and reporting of noise levels must comply with the latest edition of the administering authority's <i>Noise Measurement Manual</i>.</p>
<b>E4</b>	<p>If the environmental authority holder can provide evidence through monitoring that the limits defined in <b>Table E1 Noise limits at a noise sensitive place</b>, are not being exceeded then the holder is not in breach of condition <b>E1</b>. Monitoring must include:</p> <ul style="list-style-type: none"> <li>(a) <math>L_{A1, \text{adj, 15 mins}}</math>;</li> <li>(b) <math>L_{Aeq, \text{adj, 15 mins}}</math>; and</li> <li>(c) the level and frequency of occurrence of impulsive or tonal noise.</li> </ul>
<b>E5</b>	<p>If monitoring indicates exceedance of the limits in <b>Table E1 Noise limits at a noise sensitive place</b>, then the environmental authority holder must:</p> <ul style="list-style-type: none"> <li>(a) address the complaint including the use of appropriate dispute resolution if required; and</li> <li>(b) immediately implement noise abatement measures so that emissions of noise from the activity do not result in further environmental nuisance.</li> </ul>
<b>E6</b>	<p>The holder of this environmental authority must develop a Noise Management Plan prior to the commencement of mining activities within ML70445, ML70448 and ML70449.</p>

<p><b>E7</b></p>	<p>The Noise Management Plan (as required under condition <b>E6</b>) must address, as a minimum, the following:</p> <ul style="list-style-type: none"> <li>(a) a procedure for routine monitoring of real time meteorological conditions (rainfall, temperature, wind direction and wind speed) at Mackenzie North to identify periods when nearby sensitive receivers are at risk of elevated noise levels;</li> <li>(b) implementation of a Trigger Action Response Plan, which will identify and initiate appropriate noise mitigation measures, for periods when adverse meteorological conditions combine with high mining intensity at Mackenzie North;</li> <li>(c) noise monitoring and recording on a regular basis (as defined within the Noise Management Plan) must include the following descriptor characteristics and matters: <ul style="list-style-type: none"> <li>(i) LA1, adj, 15 mins;</li> <li>(ii) LAeq, adj, 15 mins;</li> <li>(iii) the level and frequency of occurrence of impulsive or tonal noise; and</li> <li>(iv) atmospheric conditions including wind speed and direction, location, date and time of recording.</li> </ul> </li> </ul>
<p><b>E8</b></p>	<p><b>Vibration Nuisance</b></p> <p>Subject to conditions E9 and E10, vibration from the mining activity must not cause an environmental nuisance, at any sensitive or commercial place.</p>
<p><b>E9</b></p>	<p>When requested by the administering authority, vibration monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any sensitive or commercial place, and the results must be notified within <b>fourteen (14) days</b> to the administering authority following completion of monitoring.</p>
<p><b>E10</b></p>	<p>If the environmental authority holder can provide evidence through monitoring that the limits defined in <b>Table E2 Vibration limits at a noise sensitive place</b> are not being exceeded then the holder is not in breach of condition <b>E8</b>. Monitoring must include:</p> <ul style="list-style-type: none"> <li>(a) location of the blast(s) within the mining area (including which bench level);</li> <li>(b) atmospheric conditions including temperature, relative humidity and wind speed and direction; and</li> <li>(c) location, date and time of recording.</li> </ul>
<p><b>E11</b></p>	<p>If monitoring indicates exceedance of the relevant limits in <b>Table E2 Vibration limits at a noise sensitive place</b>, then the environmental authority holder must:</p> <ul style="list-style-type: none"> <li>(a) address the complaint including the use of appropriate dispute resolution if required</li> <li>(b) immediately implement vibration abatement measures so that vibration from the activity does not result in further environmental nuisance.</li> </ul>

**Table E1: Noise limits at a noise sensitive place**

Sensitive Place						
Noise level dB(A) measured as:	Monday to Saturday			Sunday and Public Holidays		
	7am – 6pm	6pm – 10pm	10pm – 7am	9am – 6pm	6pm – 10pm	10pm – 9am
<b>L<sub>Aeq, adj, 15 mins</sub></b>	CV = 50 AV = 5	CV = 45 AV = 5	CV = 40 AV = 0	CV = 45 AV = 5	CV = 40 AV = 5	CV = 35 AV = 5
<b>L<sub>A1, adj, 15 mins</sub></b>	CV = 55 AV = 10	CV = 50 AV = 10	CV = 45 AV = 5	CV = 50 AV = 10	CV = 45 AV = 10	CV = 40 AV = 5

**Note:**

- a) CV = Critical Value.
- b) AV = Adjustment Value.
- c) To calculate noise limits in Table E1:
  - i) If  $bg \leq (CV - AV)$ : Noise limit =  $bg + AV$ .
  - ii) If  $(CV - AV) < bg < CV$ : Noise limit = CV.
  - iii) If  $bg > CV$ : Noise limit =  $bg = 0$ .
- d) In the event that measurement  $bg$  ( $L_{A90, adj, 15 mins}$ ) is less than 30 dB(A), then 30 dB(A) can be substituted for the measured background level.
- e)  $Bg$  = background noise level ( $L_{A90, adj, 15 mins}$ ) measured over 3 – 5 days at the nearest sensitive receptor.

**Table E2: Vibration limits at a noise sensitive place**

Blasting noise limits	Sensitive or commercial place blasting noise limits	
	7am to 6pm Monday to Friday* and 9am to 5pm Saturdays, Sundays and Public Holidays*	All other times
<b>Airblast overpressure</b>	115 dB (Linear) Peak for 9 out of 10 consecutive blasts initiated and not greater than 120 dB (Linear) Peak at any time.	No blasting
<b>Ground vibration peak particle velocity</b>	5mm/second peak particle velocity for 9 out of 10 consecutive blasts and not greater than 10mm/second peak particle velocity at any time.	No blasting

\*Except in cases where measures need to be taken to ensure the mine area is safe and stable.