# Donaldson and Abel Coal Mines

## Bi-Annual Noise Monitoring - Half-year Ending June 2024


### Donaldson Coal Pty Ltd

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## Revision Record

| Revision | Date | Prepared By | Checked By | Authorised By |
|---|---|---|---|---|
| v1.0 | 6 November 2024 | Patrick Marshall | Martin Davenport | Martin Davenport |
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# Basis of Report

This report has been prepared by SLR Consulting Australia (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Donaldson Coal Pty Ltd (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

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# 1.0 Introduction

## 1.1 Background

Donaldson Coal Pty Ltd has commissioned SLR Consulting Australia Pty Ltd (SLR) to conduct half-yearly noise monitoring surveys for the Donaldson Coal Mine and Abel Coal Mine during the June 2024 half in accordance with the *Donaldson Coal Mine and Abel Underground Coal Mine - Noise Management Plan Care and Maintenance* (the NMP) dated 3 June 2019.

## 1.2 Objectives of this Report

The objectives of the noise monitoring survey for this half-year were as follows:

- Measure the ambient noise levels at six focus receptor locations (potentially worst affected) surrounding Donaldson Coal Mine and Abel Coal Mine.
- Qualify all sources of noise within each of the attended surveys, including estimated contribution or maximum level of individual noise sources.
- Assess the noise emissions of Donaldson Coal Mine and Abel Coal Mine with respect to the limits contained in the Development Consent.

## 1.3 Acoustic Terminology

The following report uses specialist acoustic terminology. An explanation of common terms is provided in **Appendix A**.

# 2.0 Development Consent Project Approval

Development consent was obtained by Donaldson Coal Pty Ltd for the Donaldson Mine in October 1999 following a Commission of Inquiry. Development Consent number N97/00147 was issued by the Minister for Urban Affairs pursuant to Section 101 of the Environmental Planning and Assessment Act 1979 (EP&A Act).

Project Approval (Application No. 05_0136) granted by the Minister of Planning was obtained by Donaldson Coal Pty Ltd for Abel Coal Mine in 2007.

## 2.1 Donaldson Coal Mine Development Consent Conditions

The Development Consent nominates hours of operation and mine noise emission goals in the Sections entitled "*Operation of Development, Condition No. 3(1) and 3(2)"*, and *"Noise and Vibrational Noise Limits: Condition No. 15*" as follows:

*3.(1) Subject to (2) the approved hours of operation are as follows:*

| ***Works*** | ***Period*** | ***Hours*** |
|---|---|---|
| *Construction, including construction of any bunds* | *Monday to Friday*<br>*Saturday* | *7 am to 6 pm*<br>*8 am to 1 pm* |
| *Mining operations, including mining, haulage of waste to dumps and coal processing* | *Monday to Friday*<br>*Saturday, Sunday* | *24 hours per day*<br>*7 am to 6 pm* |
| *Road Transportation and stockpiling of coal* | *7 days per week* | *24 hours per day* |
| *Rail loading of coal* | *7 days per week* | *7 am to 10 pm* |

| Works | Period | Hours |
|---|---|---|
| *Maintenance of mobile and fixed plant* | *7 days per week* | *24 hours per day* |
| *Blasting, not involving closure of John Renshaw Drive* | *Monday to Saturday* | *7 am to 5 pm* |
| *Blasting, involving closure of John Renshaw Drive* | *Monday to Saturday* | *10 am to 2 pm* |
| *Notes: Restrictions on Public Holidays are the same as Sundays* | | |

*2. The Applicant shall submit a report to the Director-General's satisfaction demonstrating the noise limits in Condition 15 can be met while rail loading of coal is occurring during the period from 6 pm to 10 pm. If that report does not demonstrate that the noise limits can be met to the Director-General's satisfaction, then the hours of operation for rail loading of coal shall be restricted to 7 am to 6 pm."*

*15. Unless subject to a negotiated agreement in accordance with Condition 23, the Applicant shall ensure that the noise emission from construction or mining operations, when measured or computed at the boundary of any dwelling not owned by the applicant (or within 30 metres of the dwelling, if the boundary is more than 30 metres from the dwelling), shall not exceed the following noise limits:*

| Location | $L_{A10(15minute)}$ Noise Limits (dBA) | |
|---|---|---|
| | Daytime | Night-time |
| *Beresfield area (residential)* | *45* | *35* |
| *Steggles Poultry Farm* | *50* | *40* |
| *Ebenezer Park Area* | *46* | *41* |
| *Black Hill Area* | *40* | *38* |
| *Buchanan and Louth Park Area* | *38* | *36* |
| *Ashtonfield Area* | *41* | *35* |
| *Thornton Area* | *48* | *40* |
| *Notes: Daytime is 7 am to 10 pm Monday-Saturday, and 8 am to 10 pm Sundays and Public Holidays. Night-time is 10 pm to 7 am Monday-Saturday, and 10 pm to 8 am Sundays and Public Holidays.* | | |

*The noise limits apply for prevailing meteorological conditions (winds up to 3 m/s), except under conditions of temperature inversions."*

Other Conditions of Consent relevant to noise are as follows:

*18. The applicant shall survey and investigate noise reduction measures from plant and equipment and set targets for noise reduction in each Annual Environmental Management Report (AEMR), taking into consideration valid noise complaints received in the previous year. The Report shall also include remedial measures.*

*19. The Applicant shall revise the Noise Management Plan as necessary and provide an updated Plan five years after commencement of mining to the Director-General, the independent noise expert (Condition 48), EPA, Councils and the Community Consultative Committee.*

## 2.2 Abel Coal Mine – Project Approval

### Approved Operations

The following operations are approved under the Abel Coal Mine Project Approval:

- Extraction of up to 6.1 Mtpa of Run of Mine (ROM) coal from the Abel Underground Coal Mine.
- Transport coal to the existing Bloomfield Coal Handling and Preparation Plant (CHPP) by private haul roads, or by coal conveyor, or by a combination of both methods.
- Operate the CHPP to process coal extracted from the Abel Coal Mine and the Bloomfield and Donaldson Coal Mines.
- Transportation of product coal from the Bloomfield site by rail via the Bloomfield rail loading facility.

The Project Approval was modified in June 2010 (05_0136 MOD 1) allowing construction and operation of a downcast ventilation fan. In May 2011 the Project Approval was modified again (05_0136 MOD 2) to allow the construction and operation of an upcast ventilation fan (and associated facilities). In December 2013 the Project Approval was further modified (05_0136 MOD3) to account for the increase in coal extracted including the upgrade of the Bloomfield CHPP.

### Consent Conditions

The relevant conditions relating to noise from the Abel Coal Mine approval are reproduced below.

*Schedule 4*

***NOISE***

***Operational Noise Criteria***

1. *The Proponent shall ensure that the noise generated by the Project does not exceed the criteria in Table 4 at any residence on privately-owned land.*

*Table 4: Operational Noise Criteria dB(A)*

| ***Location*** | ***Receiver Area*** | ***Day*** | ***Evening*** | ***Night*** | |
|---|---|---|---|---|---|
| | | $L_{Aeq(15minute)}$ | $L_{Aeq(15minute)}$ | $L_{Aeq(15minute)}$ | $L_{Aeq(15minute)}$ |
| *Location I* | *Lord Howe Drive, Ashtonfield* | *36* | *36* | *36* | *45* |
| *Location K* | *Catholic Diocese Land* | *37* | *37* | *37* | *45* |
| *Location L* | *Kilshanny Avenue, Ashtonfield* | *40* | *40* | *40* | *47* |
| *All other Locations* | *All other privately owned Residences* | *35* | *35* | *35* | *45* |

*Notes: To interpret the locations referred to in Table 4, see plan in Appendix 3.*

*Noise generated by the project is to be measured in accordance with the relevant requirements, and exemptions (including certain meteorological conditions), of the NSW Industrial Noise Policy. Appendix 4 sets out the meteorological conditions under which these criteria apply, and the requirements for evaluating compliance with these criteria.*

*These noise criteria do not apply if the Proponent has an Agreement with the relevant landowner to generate higher noise levels, and the proponent has advised the Department in writing of the terms of this agreement.*

***Construction Noise Criteria***

1. *The proponent shall ensure that the noise generated during the construction of the downcast ventilation shaft as described in EA (MOD3) does not exceed the criteria in Table 5.*

*Table 5: Construction Noise Criteria dB(A)*

| Location | Receiver | Day |
|---|---|---|
| | | $L_{Aeq(15minute)}$ |
| Location R | 281 Lings Road, Buttai | 50 |
| Location S | 189 Lings Road, Buttai | 43 |

Notes: *The criteria in Table 5 apply only whilst the downcast ventilation shaft is being constructed, and for a maximum of 12 weeks from the commencement of construction.*

*To interpret the locations referred to in Table 5, see plan in Appendix 3 (attached to this report as Appendix A).*

*Noise generated by the project is to be measured in accordance with the relevant requirements, and exemptions (including certain meteorological conditions), of the NSW Industrial Noise Policy.*

*However, these noise criteria do not apply if the Proponent has an Agreement with the relevant landowner to generate higher noise levels, and the proponent has advised the Department in writing of the terms of this agreement.*

***Rail Noise Criteria***

1. *The proponent shall ensure that the noise from rail movements on the Bloomfield Rail Spur does not exceed the limits in Table 6 at any residence on privately owned land.*

*Table 6: Rail Spur noise criteria dB (A)*

| Location | Day | Evening | Night |
|---|---|---|---|
| | $L_{Aeq(period)}$ | | |
| All privately owned land | 55 | 45 | 40 |

***Cumulative Noise Criteria***

1. *The proponent shall implement all reasonable and feasible measures to ensure that the noise generated by the project combined with noise generated by other mines does not exceed the criteria in Table 7 at any residence on privately-owned land.*

*Table 7: Cumulative noise criteria dB (A)*

| Location | Day | Evening | Night |
|---|---|---|---|
| | $L_{Aeq(period)}$ | | |
| All privately owned land | 55 | 45 | 40 |

Notes: *Cumulative noise is to be measured in accordance with the relevant requirements, and exemptions (including meteorological conditions), of the NSW Industrial Noise Policy. Appendix 4 sets out the metrological conditions under which these criteria apply and the requirements for evaluating compliance with these criteria.*

***Operating Conditions***

1. *The proponent shall:*
    a. *Implement best management practise to minimise the construction, operational, road and rail noise of the project;*
    b. *Operate an on-site noise management system to ensure compliance with the relevant conditions of this approval;*
    c. *Minimise the noise impacts of the project during meteorological conditions under which the noise limits in this consent do not apply (see Appendix 4);*
    d. *Only receive and/or dispatch locomotives and rolling stock either on or from the site that are approved to operate on the NSW rail network in accordance with the noise limits in ARTC's EPL (No. 3142);*
    e. *Carry out regular monitoring to determine whether the project is complying with the noise criteria and other relevant conditions of approval, to the satisfaction of the Director-General.*

***Noise Management Plan***

2. *The proponent shall prepare and implement a Noise Management Plan for the project to the satisfaction of the Director-General. This plan must:*
    a. *Be prepared in consultation with the EPA, and be submitted to the Director-General for approval within 6 months of the date of approval of MOD 3;*
    b. *Describe the measures that would be implemented to ensure compliance with the noise criteria and operating conditions in this approval; Describe the proposed noise management system in detail; and*
    c. *Include a monitoring program that:*
        - *Uses attended monitoring to evaluate the compliance of the project against the noise criteria in this approval;*
        - *Evaluates and reports on:*
            - *The effectiveness of the on-site noise management system; and*
            - *Compliance against the noise operating conditions; and*
            - *Defines what constitutes a noise incident, and includes protocol for identifying and notifying the Department and relevant stakeholders of any noise incidents.* Appendix 4

***Noise Compliance Assessment***

***Applicable Meteorological Conditions***

1. *The noise criteria in Tables 4 and 7 are to apply under all metrological conditions except the following:*
    a. *During periods of rain or hail.*
    b. *Average wind speed at microphone height exceeds 5 m/s;*
    c. *Wind speeds greater than 3 m/s measured at 10m above ground level; or*
    d. *Temperature inversion conditions greater than $3^{o}C$/100m.*

***Determination of Meteorological Conditions***

2. *Except for wind speed at microphone height, the data to be used for determining metrological conditions shall be that recorded by the meteorological station located on the site.*

***Compliance Monitoring***

3. *Attended monitoring is to be used to evaluate compliance with the relevant conditions of this approval.*
4. *Unless otherwise agreed with the director-general, this monitoring is to be carried out in accordance with the relevant requirements for reviewing performance set out in the NSW Industrial Noise Policy (as amended from time to time), in particular the requirements relating to:*
    a. *Monitoring locations for the collection of representative noise data;*
    b. *Metrological conditions during which collection of noise data is not appropriate;*
    c. *Equipment used to collect noise data, and conformity with Australian Standards relevant to such equipment; and*
    d. *Modification to noise data collected, including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration.*

***Appendix 5***

***Statement of Commitments***

**3. Noise**

***3.1 Construction Activities***

*The following noise control measures will be implemented prior to commencement of construction of the Abel Underground Mine or the upgrade of the Bloomfield CHPP.*

1. *Maintain all machinery and equipment in working order;*
    a. *No construction activities at the Abel pit top will take place on Sundays or Public Holidays;*
    b. *Where possible locate noisy site equipment behind structures that act as barriers or at the greatest distance from noise sensitive areas; and*
    c. *Orientate equipment so that noise emissions are directed away from noise sensitive areas.*

***3.2 Noise Control Measures***

a. *The following noise control measures will be implemented prior to the mining of coal from the Abel underground Mine:*
    i. *Orientation of the ventilation fans away from residential receivers and angle the output parallel to the ground.*
    ii. *The sound power level of the front end loader to be used near the portal should not exceed 113 dBA and will be fitted with a noise sensitive reversing alarm.*
b. *The following noise control measures will be implemented prior to the Bloomfield CHPP receiving any ROM coal from Able Underground Mine;*

*i. Noise mitigation works including partial enclosure and noise screening of drives and conveyors of the Bloomfield CHPP to screen residences to the north of the site.*

### 3.2 Monitoring

*The Company will implement a Noise Monitoring Program for the Abel Underground Mine and the Bloomfield CHPP, to the satisfaction of the Director-General. The Noise Monitoring Program shall include a combination of real-time and supplementary attended monitoring measures, and a noise monitoring protocol for evaluating compliance with the noise environmental assessment. This plan will be integrated with the monitoring plans for the Tasman, Donaldson and Bloomfield Mines to provide a single integrated Noise Monitoring Program for all 4 mines.*

### 3.4 Continuous Improvement

The Company shall:

*a. Report on these investigations and implementation of any new noise mitigation measures on site in the AEMR, to the satisfaction of the Director General.*

The operator of the Bloomfield CHPP shall:

*b. Investigate ways to reduce the noise generated by the Bloomfield CHPP, including maximum noise levels which may result in sleep disturbance;*

*c. Implement all reasonable and feasible best practice noise mitigation measures on the site; and*

*d. Report on these investigations and the implementation of any new noise mitigation measures on site in the AEMR, to the satisfaction of the Director-General*

# 3.0 Noise Monitoring Methodology

## 3.1 General Requirements

The operational noise monitoring program was conducted with reference to Development Consent N97/00147 (Donaldson Coal Mine), Project Approval 05_0136 (Abel Coal Mine), the NMP and AS 1055-2018 *Acoustics - Description and Measurement of Environmental Noise*.

All acoustic instrumentation employed throughout the monitoring program has been designed to comply with the requirements of AS IEC 61672.1 – 2019 *Electroacoustics—Sound level meters*, AS IEC 60942 2017 *Electroacoustics – Sound calibrators* and carried current NATA or manufacturer calibration certificates. Certificates for acoustic instrumentation used during the June 2024 half is provided in **Appendix B**.

Instrument calibration was conducted before and after each measurement, with the variation in calibrated levels not exceeding ±0.5 dBA.

## 3.2 Monitoring Locations

Baseline and preceding operational half-yearly surveys have been conducted at 11 locations surrounding the Donaldson Mine and Abel Coal Mine sites. With the experience of these previous surveys, it was decided to concentrate noise monitoring at six focus locations that represent the potentially most noise affected areas from Donaldson Mine and Abel Coal Mine. The details of the monitoring locations are contained within **Table 1**.

It is relevant to note that Donaldson Open Cut Mine has ceased production and all major earthworks on the site have been finalised. Furthermore, Abel mine was placed in Care & Maintenance on 28th April 2016 and there were no operations onsite during the June 2024 noise monitoring period.

**Table 1 Monitoring Locations**

| Noise Monitoring Location | Description |
|---|---|
| D | Black Hill School, Black Hill |
| F | Lot 684 Black Hill Road, Black Hill |
| G | 156 Buchannan Road, Buchannan |
| I | 49 Magnetic Drive, Ashtonfield |
| L | 65 Tipperary Dr, Ashtonfield |
| J | 220 Parish Drive, Thornton |

A map giving the approximate location of the noise monitoring sites is contained within **Appendix C**.

## 3.3 Unattended Noise Monitoring

An environmental noise logger was deployed for a minimum of a seven day period between Tuesday 18 June 2024 to 6 July 2024 at each of the six (6) nominated locations given in **Table 1**.

All unattended monitoring equipment was programmed to continuously record statistical noise level indices in 15 minute intervals including the LAmax, $L_{A1}$, $L_{A10}$, $L_{A90}$, $L_{A99}$, $L_{Amin}$ and $L_{Aeq}$. The statistical noise exceedance levels ($L_{AN}$) are the levels exceeded for N% of the 15 minute interval. The $L_{A90}$ represents the level exceeded for 90% of the interval period and is referred to as the average minimum or background noise level. The $L_{A10}$ is the level exceeded for 10% of the time and is usually referred to as the average maximum noise level. The $L_{Aeq}$ is the equivalent continuous sound pressure level and represents the steady sound level which is equal in energy to the fluctuating level over the interval period. The LAmax is the maximum noise level recorded over the interval.

## 3.4 Operator Attended Noise Monitoring

Operator attended surveys were conducted at each of the six monitoring locations during the daytime, evening and night-time periods, to verify the unattended logging results and to determine the character and contribution of ambient noise sources.

# 4.0 Operator Attended Noise Monitoring

## 4.1 Results of Operator Attended Noise Monitoring

Operator attended noise measurements were conducted commencing during the daytime period on 26 June 2024 and finished during the night-time period on 27 June 2024. Operator attended noise surveys were conducted using a Brüel & Kjær Type 2250L (serial number 3003389) sound level meter.

Ambient noise levels given in the tables include all noise sources such as traffic, insects, birds, and mine operations as well as any other industrial operations.

The tables provide the following information:

- Monitoring location.
- Date and start time.
- Wind velocity (m/s) and Temperature (ºC) at the measurement location.
- Typical maximum ($L_{Amax}$) and contributed noise levels.

Mine contributions listed in the tables are from the Abel Coal Mine and are stated only when a contribution could be quantified.

**Table 2 Location D, Black Hill Public School, Black Hill**

| Period | Date/ Start time/ Weather | Primary Noise Descriptor (dBA re 20 μPa) | | | | | Description of Noise Emission, Typical Maximum Noise Levels ($L_{Amax}$ – dBA) |
|---|---|---|---|---|---|---|---|
| | | $L_{Amax}$ | $L_{A1}$ | $L_{A10}$ | $L_{A90}$ | $L_{Aeq}$ | |
| Day | 26/06/2024 13:10<br>21°C<br>2.0m/s NW | 82 | 67 | 56 | 37 | 56 | Road traffic 33-82<br>Birdsong 55-63<br>General school hum 50-56<br>Helicopter 45-58<br>Wind noise 38-39<br><br>**Bloomfield Colliery Contribution: Inaudible**<br>**Abel Coal Mine Contribution: Inaudible** |
| | | Estimated Bloomfield Colliery Noise Contribution: Inaudible<br>Estimated Abel Coal Mine Noise Contribution: Inaudible | | | | | |
| Evening | 26/06/2024 18:27<br>17°C<br>0.8m/s N | 82 | 68 | 50 | 38 | 56 | Insects 25-30<br>Road traffic 38-82<br><br>**Bloomfield Colliery Contribution: Inaudible**<br>**Abel Coal Mine Contribution: Inaudible** |
| | | Estimated Bloomfield Colliery Noise Contribution: Inaudible<br>Estimated Abel Coal Mine Noise Contribution: Inaudible | | | | | |
| Night | 26/06/2024 23:10<br>13°C<br>1.8m/s WSW | 76 | 58 | 41 | 34 | 48 | Insects 25-30<br>Road traffic 38-76<br><br>**Bloomfield Colliery Contribution: Inaudible**<br>**Abel Coal Mine Contribution: Inaudible** |
| | | Estimated Bloomfield Colliery Noise Contribution: Inaudible<br>Estimated Abel Coal Mine Noise Contribution: Inaudible | | | | | |

**Table 3 Location F, Black Hill Road, Black Hill**

| Period | Date/ Start time/ Weather | Primary Noise Descriptor (dBA re 20 μPa) | | | | | Description of Noise Emission, Typical Maximum Noise Levels ($L_{Amax}$ – dBA) |
|---|---|---|---|---|---|---|---|
| | | $L_{Amax}$ | $L_{A1}$ | $L_{A10}$ | $L_{A90}$ | $L_{Aeq}$ | |
| Day | 26/06/2024 13:40<br>21°C<br>2.0m/s NW | 62 | 54 | 50 | 43 | 47 | Road traffic 44-62<br>Birdsong 47-57<br>**Bloomfield Colliery Contribution: Inaudible**<br>**Abel Coal Mine Contribution: Inaudible** |
| | | Estimated Bloomfield Colliery Noise Contribution: Inaudible<br>Estimated Abel Coal Mine Noise Contribution: Inaudible | | | | | |
| Evening | 26/06/2024 18:48<br>17°C<br>0.9m/s WSW | 67 | 61 | 58 | 51 | 55 | Insects 49-58<br>Road traffic 45-67<br>**Bloomfield Colliery Contribution: Inaudible**<br>**Abel Coal Mine Contribution: Inaudible** |
| | | Estimated Bloomfield Colliery Noise Contribution: Inaudible<br>Estimated Abel Coal Mine Noise Contribution: Inaudible | | | | | |
| Night | 26/06/2024 23:32<br>13°C<br>1.8m/s WSW | 75 | 63 | 54 | 48 | 53 | Insects 48-54<br>Road traffic 53-75<br>**Bloomfield Colliery Contribution: Inaudible**<br>**Abel Coal Mine Contribution: Inaudible** |
| | | Estimated Bloomfield Colliery Noise Contribution: Inaudible<br>Estimated Abel Coal Mine Noise Contribution: Inaudible | | | | | |

**Table 4 Location G, Buchanan Road, Buchanan**

| Period | Date/ Start time/ Weather | Primary Noise Descriptor (dBA re 20 μPa) | | | | | Description of Noise Emission, Typical Maximum Noise Levels ($L_{Amax}$ – dBA) |
|---|---|---|---|---|---|---|---|
| | | $L_{Amax}$ | $L_{A1}$ | $L_{A10}$ | $L_{A90}$ | $L_{Aeq}$ | |
| Day | 26/06/2024 14:55<br>19°C<br>0.9m/s NNE | 57 | 51 | 48 | 42 | 46 | Road traffic 43-57<br>Birdsong 41-49<br>**Bloomfield Colliery Contribution: Inaudible**<br>**Abel Coal Mine Contribution: Inaudible** |
| | | Estimated Bloomfield Colliery Noise Contribution: Inaudible<br>Estimated Abel Coal Mine Noise Contribution: Inaudible | | | | | |
| Evening | 26/06/2024 19:57<br>16°C<br>1.3m/s WNW | 53 | 50 | 48 | 41 | 46 | Insects 28-32<br>Road traffic 45-53<br>Extraneous 50-53<br>**Bloomfield Colliery Contribution: Barely audible in lulls**<br>Engine noise <30<br>**Abel Coal Mine Contribution: Inaudible** |
| | | Estimated Bloomfield Colliery Noise Contribution:<br>$L_{Aeq(15minute)}$ <30 dBA<br>Estimated Abel Coal Mine Noise Contribution: Inaudible | | | | | |
| Night | 27/06/2024 00:32<br>12°C<br>2.3m/s WNW | 65 | 52 | 43 | 32 | 41 | Insects 30-41<br>Road traffic 38-57<br>Extraneous 65<br>**Bloomfield Colliery Contribution: Inaudible**<br>**Abel Coal Mine Contribution: Inaudible** |
| | | Estimated Bloomfield Colliery Noise Contribution: Inaudible<br>Estimated Abel Coal Mine Noise Contribution: Inaudible | | | | | |

## Table 5 Location I, Magnetic Drive, Ashtonfield

| Period | Date/ Start time/ Weather | Primary Noise Descriptor (dBA re 20 μPa) | | | | | Description of Noise Emission, Typical Maximum Noise Levels ($L_{Amax}$ – dBA) |
|---|---|---|---|---|---|---|---|
| | | $L_{Amax}$ | $L_{A1}$ | $L_{A10}$ | $L_{A90}$ | $L_{Aeq}$ | |
| Day | 26/06/2024 16:17<br>17°C<br>0.5m/s ENE | 75 | 64 | 60 | 51 | 57 | Road traffic 55-75<br>Birdsong 55-61<br>General urban hum 50-63<br>Dogs barking 54-55<br><br>**Bloomfield Colliery Contribution: Inaudible**<br>**Abel Coal Mine Contribution: Inaudible** |
| | | Estimated Bloomfield Colliery Noise Contribution: Inaudible<br>Estimated Abel Coal Mine Noise Contribution: Inaudible | | | | | |
| Evening | 26/06/2024 20:44<br>16°C<br>1.3m/s WNW | 65 | 55 | 47 | 42 | 46 | Insects 34-39<br>Bats 48-52<br>Road traffic 40-65<br><br>**Bloomfield Colliery Contribution: Inaudible**<br>**Abel Coal Mine Contribution: Inaudible** |
| | | Estimated Bloomfield Colliery Noise Contribution: Inaudible<br>Estimated Abel Coal Mine Noise Contribution: Inaudible | | | | | |
| Night | 27/06/2024 01:22<br>12°C<br>2.3m/s WNW | 55 | 44 | 37 | 32 | 36 | Insects 28-38<br>Bats 38-51<br>Road traffic 37-39<br>Extraneous 55<br><br>**Bloomfield Colliery Contribution: Inaudible**<br>**Abel Coal Mine Contribution: Inaudible** |
| | | Estimated Bloomfield Colliery Noise Contribution: Inaudible<br>Estimated Abel Coal Mine Noise Contribution: Inaudible | | | | | |

## Table 6 Location L, Tipperary Drive, Ashtonfield

| Period | Date/ Start time/ Weather | Primary Noise Descriptor (dBA re 20 μPa) | | | | | Description of Noise Emission, Typical Maximum Noise Levels ($L_{Amax}$ – dBA) |
|---|---|---|---|---|---|---|---|
| | | $L_{Amax}$ | $L_{A1}$ | $L_{A10}$ | $L_{A90}$ | $L_{Aeq}$ | |
| Day | 26/06/2024 15:46<br>17°C<br>0.5m/s ENE | 79 | 71 | 61 | 38 | 59 | Insects 44-46<br>Road traffic 55-79<br>General urban hum 28-53<br>Lawnmower 59-68<br><br>**Bloomfield Colliery Contribution: Inaudible**<br>**Abel Coal Mine Contribution: Inaudible** |
| | | Estimated Bloomfield Colliery Noise Contribution: Inaudible<br>Estimated Abel Coal Mine Noise Contribution: Inaudible | | | | | |
| Evening | 26/06/2024 20:23<br>16°C<br>1.3m/s WNW | 51 | 37 | 34 | 31 | 33 | Insects 30-34<br>Dogs barking 33-51<br>Road traffic 25-38<br><br>**Bloomfield Colliery Contribution: Inaudible**<br>**Abel Coal Mine Contribution: Inaudible** |
| | | Estimated Bloomfield Colliery Noise Contribution: Inaudible<br>Estimated Abel Coal Mine Noise Contribution: Inaudible | | | | | |
| Night | 27/06/2024 01:01<br>12°C<br>2.3m/s WNW | 58 | 40 | 33 | 25 | 32 | Insects 25-31<br>Distant road and rail traffic 24-36<br>Cat 58<br><br>**Bloomfield Colliery Contribution: Inaudible**<br>**Abel Coal Mine Contribution: Inaudible** |
| | | Estimated Bloomfield Colliery Noise Contribution: Inaudible<br>Estimated Abel Coal Mine Noise Contribution: Inaudible | | | | | |

## Table 7 Location J, Parish Drive, Thornton

| Period | Date/ Start time/ Weather | Primary Noise Descriptor (dBA re 20 μPa) | | | | | Description of Noise Emission, Typical Maximum Noise Levels ($L_{Amax}$ – dBA) |
|---|---|---|---|---|---|---|---|
| | | $L_{Amax}$ | $L_{A1}$ | $L_{A10}$ | $L_{A90}$ | $L_{Aeq}$ | |
| Day | 26/06/2024 16:43<br>17°C<br>0.5m/s ENE | 63 | 57 | 53 | 48 | 51 | Birdsong 50-63<br>Road traffic 47-59<br>Dog barking 45-55<br>General residential hum 50-57<br><br>**Bloomfield Colliery Contribution: Inaudible**<br>**Abel Coal Mine Contribution: Inaudible** |
| | | Estimated Bloomfield Colliery Noise Contribution: Inaudible<br>Estimated Abel Coal Mine Noise Contribution: Inaudible | | | | | |
| Evening | 26/06/2024 21:06<br>14°C<br>1.3m/s W | 61 | 51 | 47 | 40 | 45 | Road traffic 41-54<br>Bats 53<br>Extraneous 61<br><br>**Bloomfield Colliery Contribution: Inaudible**<br>**Abel Coal Mine Contribution: Inaudible** |
| | | Estimated Bloomfield Colliery Noise Contribution: Inaudible<br>Estimated Abel Coal Mine Noise Contribution: Inaudible | | | | | |
| Night | 27/06/2024 01:45<br>10°C<br>1.3m/s SW | 55 | 45 | 39 | 31 | 36 | Wind in trees 35-44<br>Road traffic 35-51<br>Extraneous 50-55<br><br>**Bloomfield Colliery Contribution: Inaudible**<br>**Abel Coal Mine Contribution: Inaudible** |
| | | Estimated Bloomfield Colliery Noise Contribution: Inaudible<br>Estimated Abel Coal Mine Noise Contribution: Inaudible | | | | | |

## 4.2 Operator Attended Noise Monitoring Summary

### 4.2.1 Donaldson Mine

Donaldson Open Cut Mine has ceased production and all major earthworks on the site have been finalised. There were no operations onsite during the June 2024 noise monitoring period.

### 4.2.2 Abel Coal Mine

Abel mine was placed in Care & Maintenance on 28th April 2016 and there were no operations onsite, excluding that from the Bloomfield CHPP which operates under the Abel Coal Mine project consent conditions.

The Bloomfield CHPP and Abel noise emissions were inaudible during all operator attended noise surveys. Noise generated by local and distant traffic was a significant contributor to ambient noise levels at all monitored locations as well as neighbourhood noise and 'natural' noises such as birds, insects, animals, and wind related noise.

## 4.3 Compliance Assessment and Discussion of Results

### 4.3.1 Operations

Results of the operational compliance assessment are given in **Table 8.**

**Table 8 Compliance Noise Assessment – Operations**

| Location | Estimated Abel Contribution $L_{Aeq(15min)}$ dBA | | | Consent Conditions $L_{Aeq(15min)}$ dBA | | | Compliance | | |
|---|---|---|---|---|---|---|---|---|---|
| | Day | Eve | Night | Day | Eve | Night | Day | Eve | Night |
| D – Black Hill School, Black Hill | I/A[2] | I/A[2] | I/A[2] | 35 | 35 | 35 | Yes | Yes | Yes |
| F – Black Hill Road, Black Hill[1] | I/A[2] | I/A[2] | I/A[2] | 35 | 35 | 35 | Yes | Yes | Yes |
| G – Buchanan Road, Buchanan | I/A[2] | I/A[2] | I/A[2] | 39 | 42 | 37 | Yes | Yes | Yes |
| I – Magnetic Drive, Ashtonfield | I/A[2] | I/A[2] | I/A[2] | 36 | 36 | 36 | Yes | Yes | Yes |
| L – Tipperary Dr, Ashtonfield | I/A[2] | I/A[2] | I/A[2] | 35 | 35 | 35 | Yes | Yes | Yes |
| J – Parish Drive, Thornton | I/A[2] | I/A[2] | I/A[2] | 35 | 35 | 35 | Yes | Yes | Yes |
| Note 1: Mine-owned property | | | | Note 2: I/A = Inaudible | | | | | |

Results presented in **Table 8** indicate that compliance with the relevant consent conditions was achieved at all noise monitoring locations during all periods.

### 4.3.2 Sleep Disturbance

Results of the sleep disturbance compliance assessment are given in **Table 9**.

**Table 9 Compliance Noise Assessment – Sleep Disturbance**

| Location | Estimated Abel Contribution $L_{A1(1minute)}$ dBA | Consent Conditions $L_{A1(1min)}$ dBA | Compliance |
|---|---|---|---|
| D – Black Hill School, Black Hill | I/A[2] | 45 | Yes |
| F – Black Hill Road, Black Hill[1] | I/A[2] | 45 | Yes |
| G – Buchanan Road, Buchanan | I/A[2] | 45 | Yes |
| I – Magnetic Drive, Ashtonfield | I/A[2] | 46 | Yes |
| L – Tipperary Dr, Ashtonfield | I/A[2] | 46 | Yes |
| J – Parish Drive, Thornton | I/A[2] | 45 | Yes |
| Note 1: Mine-owned property | | Note 2: I/A = Inaudible | |

Results presented in **Table 9** indicate that compliance with the sleep disturbance consent conditions was achieved at all noise monitoring locations during the night-time noise surveys.

# 5.0 Unattended Continuous Noise Monitoring

## 5.1 Results of Unattended Continuous Noise Monitoring

Unattended continuous noise monitoring was conducted between Tuesday 18 June 2024 and Saturday 6 July 2024 at each of the six monitoring locations given in **Table 10**.

**Table 10 Noise Logger and Noise Monitoring Locations**

| Location | Noise Logger Serial Number | Date of Logging |
|---|---|---|
| D – Black Hill School, Black Hill | SVAN 957 98070 | 26/06/2024 to 03/07/2024[1] |
| F – Black Hill Road, Black Hill | SVAN 957 23814 | 18/06/2024 to 25/06/2024 |
| G – Buchanan Road, Buchanan | SVAN 977 98070 | 18/06/2024 to 25/06/2024 |
| I – Magnetic Drive, Ashtonfield | SVAN 957 23814 | 26/06/2024 to 03/07/2024 |
| L – Tipperary Dr, Ashtonfield | SVAN 957 27522 | 26/06/2024 to 03/07/2024[1] |
| J – Parish Drive, Thornton | ARL EL-316 16-203-526 | 27/06/2024 to 06/07/2024 |
| Note 1: Due to technical error, no results were able to be analysed | | |

The unattended ambient noise logger data from each monitoring location are presented graphically on a daily basis and are attached as **Appendix C**. A summary of the results of the unattended continuous noise monitoring is given in **Table 11**.

The ambient noise level data quantifies the overall noise level at a given location independent of its source or character.

The measured ambient noise levels were divided into three periods representing day, evening and night as designated in the NSW Noise Policy for Industry (NPfI).

Precautions were taken to minimise influences from extraneous noise sources (eg optimum placement of the loggers away from creeks, trees, houses, etc), however, not all these sources or their effects can be eliminated. This is particularly the case during the warmer times of year when noise from insects, frogs, birds and other animals can become quite prevalent.

Weather data for the subject area during the noise monitoring period was provided by Bloomfield Colliery. Noise data during periods of any rainfall and/or wind speeds in excess of 5 m/s were discarded in accordance with NPfI weather affected data exclusion methodology.

**Table 11 Unattended Continuous Noise Monitoring Ambient Noise Levels**

| Location | Period | $L_{A1}$ | $L_{A10}$ | $L_{A90}$ | $L_{Aeq}$ |
|---|---|---|---|---|---|
| F – Black Hill Road, Black Hill | Day | 56 | 51 | 42 | 50 |
| | Evening | 55 | 50 | 39 | 48 |
| | Night | 50 | 46 | 34 | 46 |
| G – Buchanan Road, Buchanan | Day | 53 | 49 | 41 | 50 |
| | Evening | 50 | 47 | 37 | 45 |
| | Night | 48 | 44 | 30 | 43 |
| I – Magnetic Drive, Ashtonfield | Day | 61 | 50 | 37 | 52 |
| | Evening | 56 | 48 | 42 | 49 |
| | Night | 48 | 44 | 37 | 45 |
| J – Parish Drive, Thornton | Day | 53 | 48 | 39 | 52 |
| | Evening | 48 | 46 | 40 | 46 |
| | Night | 47 | 44 | 34 | 45 |

## 5.2 Long term Unattended Continuous Monitoring Summary

### 5.2.1 Ambient $L_{A90}$ Noise Levels

The long term ambient $L_{A90}$ noise levels collected from each monitoring location are presented graphically in **Figure 1**, **Figure 2** and **Figure 3** for the daytime, evening and night-time periods respectively.

**Figure 1 Long Term Daytime $L_{A90}$ Noise Levels**

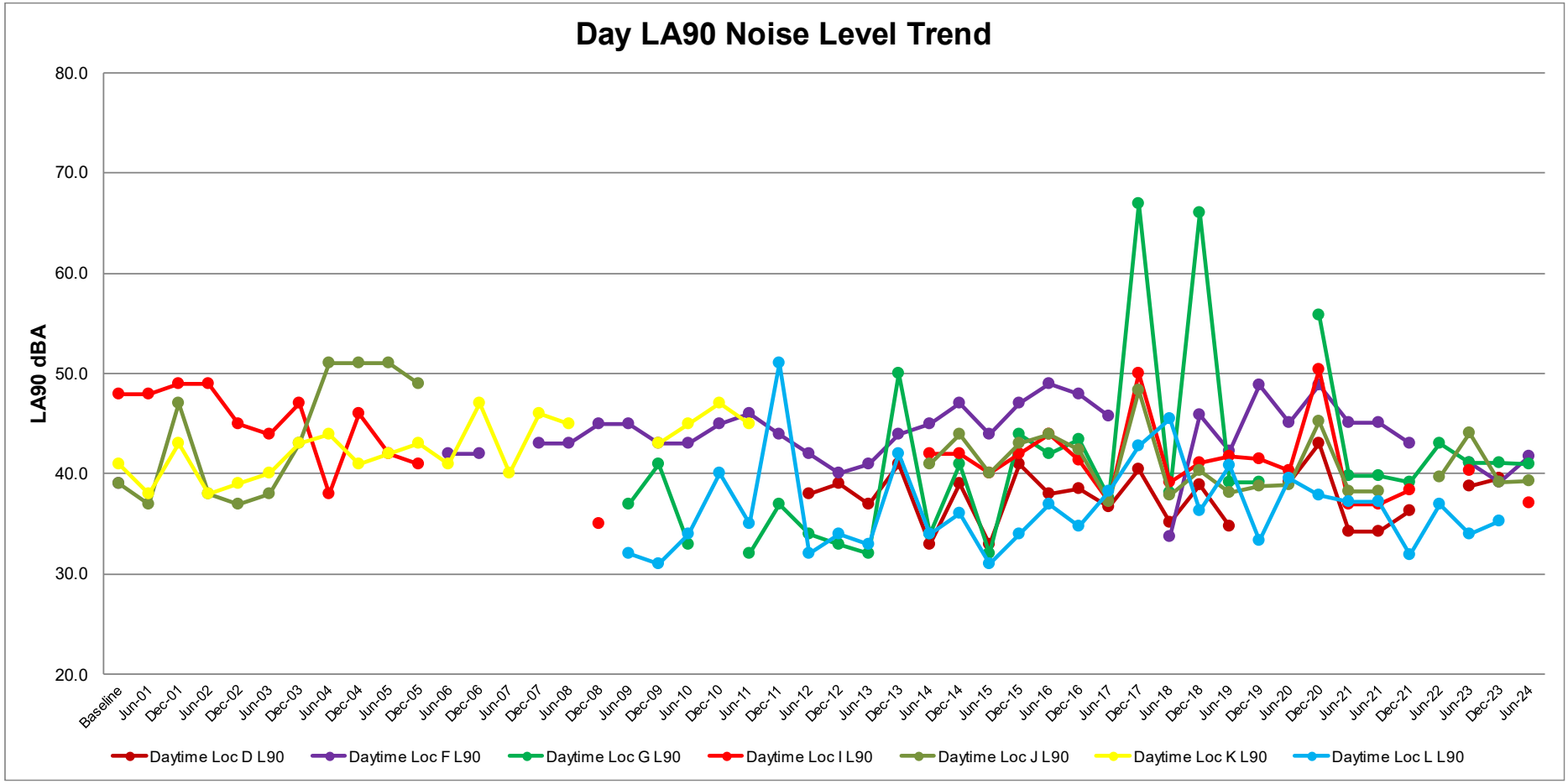


**Figure 2 Long Term Evening $L_{A90}$ Noise Levels**

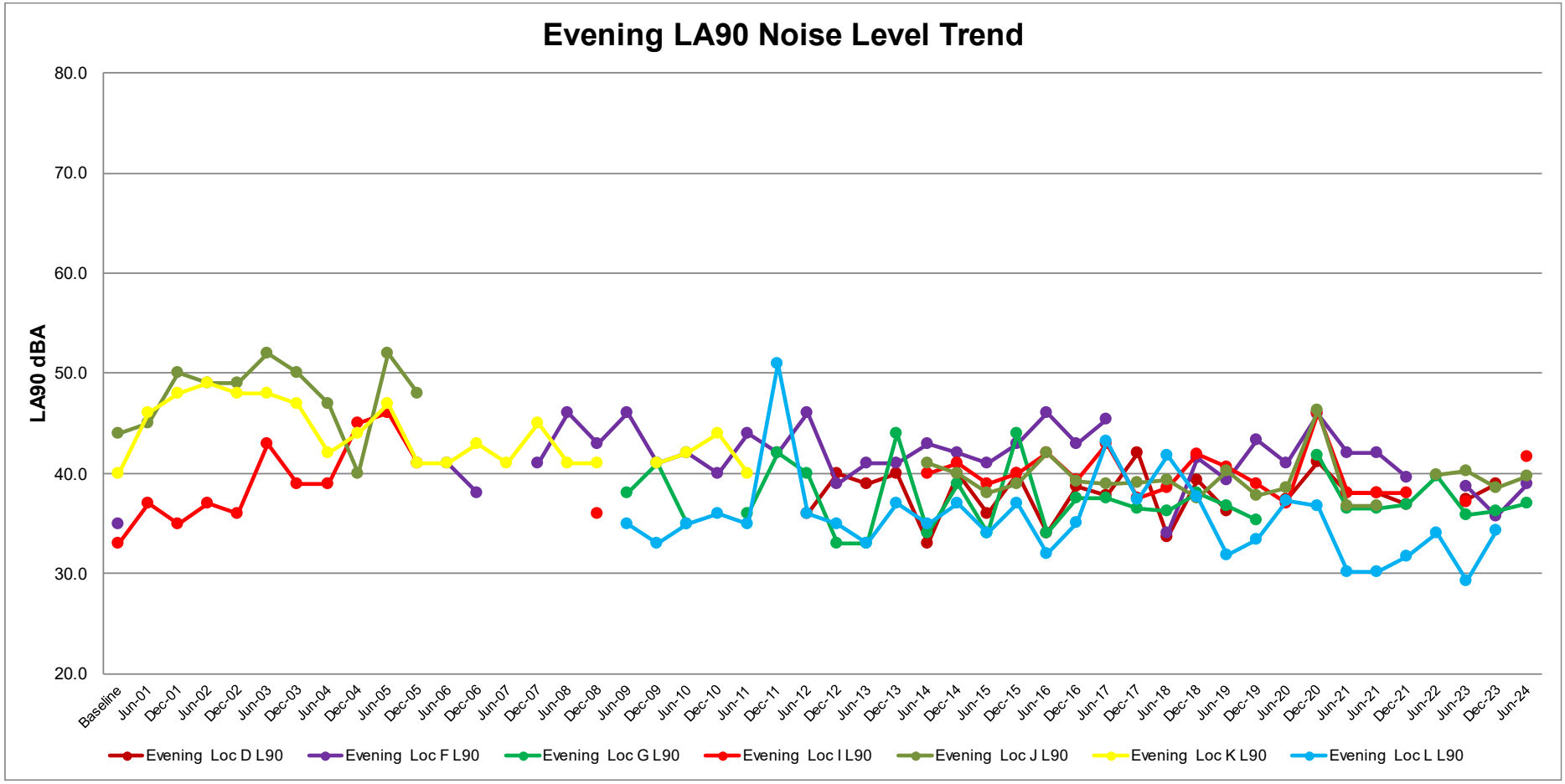
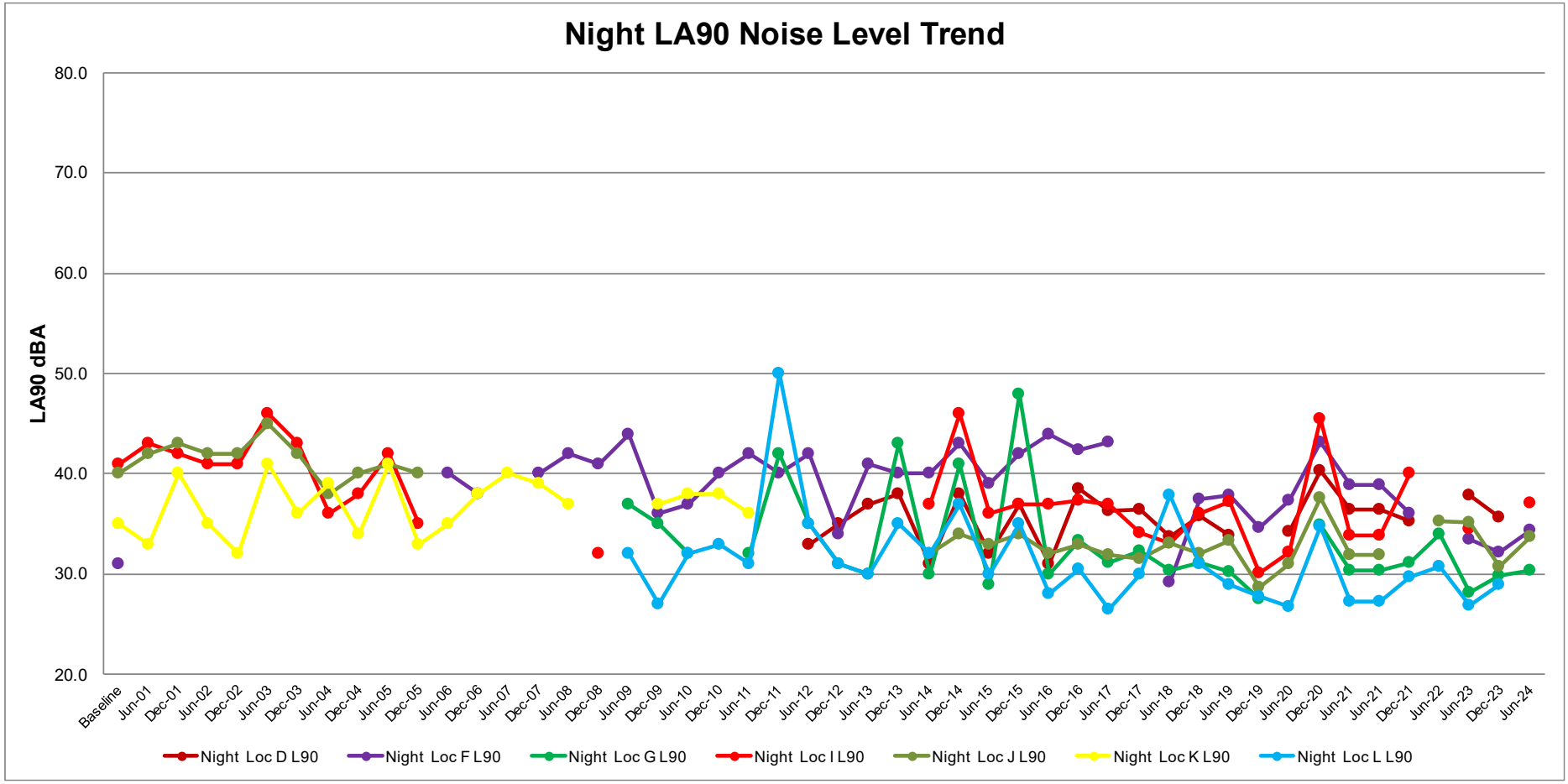


**Figure 3 Long Term Night-time $L_{A90}$ Noise Levels**



#### 5.2.1.1 Baseline

The summary of results in **Table 12** shows the ambient $L_{A90}$ noise levels recorded for the current monitoring period compared to the levels recorded during the baseline monitoring process (ie. prior to commencement of mining operation at Donaldson).

**Table 12 $L_{A90}$ Results Comparison – Baseline**

| Monitoring Location | Period[1] | Long term Night-time $L_{A90}$ Noise Levels | | |
|---|---|---|---|---|
| | | Baseline | June/July 2024 | Difference dB[3] |
| D – Black Hill School, Black Hill | Day | N/A[2] | N/A[2] | N/A[2] |
| | Evening | N/A[2] | N/A[2] | N/A[2] |
| | Night | N/A[2] | N/A[2] | N/A[2] |
| F – Black Hill Road, Black Hill | Day | 39 | 42 | 3 |
| | Evening | 35 | 39 | 4 |
| | Night | 31 | 34 | 3 |
| G – Buchanan Road, Buchanan | Day | N/A[2] | 41 | N/A[2] |
| | Evening | N/A[2] | 37 | N/A[2] |
| | Night | N/A[2] | 30 | N/A[2] |
| I – Magnetic Drive, Ashtonfield | Day | 48 | 37 | -11 |
| | Evening | 33 | 42 | 9 |
| | Night | 41 | 37 | -4 |
| L – Tipperary Dr, Ashtonfield | Day | N/A[2] | N/A[2] | N/A[2] |
| | Evening | N/A[2] | N/A[2] | N/A[2] |
| | Night | N/A[2] | N/A[2] | N/A[2] |
| J – Parish Drive, Thornton | Day | 39 | 39 | 0 |
| | Evening | 44 | 40 | -4 |
| | Night | 40 | 34 | -6 |

Note 1: Periods are as detailed the NPfI and are Daytime - 7.00 am to 6.00 pm Monday to Saturday, 8.00 am to 6.00 pm Sunday; Evening - 6.00 pm 10.00 pm; Night - 10.00 pm to 7.00 am pm Monday to Saturday, 10.00 pm to 8.00 am Sunday.

Note 2: No data was available, therefore no comparisons can be made.

Note 3: Rounded to the nearest whole dB.

#### 5.2.1.2 Previous Half-year

**Table 13** presents the ambient $L_{A90}$ noise levels recorded for the current monitoring period compared to those measured during the previous monitoring period.

**Table 13 $L_{A90}$ Results Comparison – Previous Half-year**

| Monitoring Location | Period[1] | Long term Night-time $L_{A90}$ Noise Levels | | |
|---|---|---|---|---|
| | | December 2023 | June/July 2024 | Difference dB[3] |
| D – Black Hill School, Black Hill | Day | 40 | N/A[2] | N/A[2] |
| | Evening | 39 | N/A[2] | N/A[2] |
| | Night | 36 | N/A[2] | N/A[2] |
| F – Black Hill Road, Black Hill | Day | 39 | 42 | 3 |
| | Evening | 36 | 39 | 4 |
| | Night | 32 | 34 | 3 |
| G – Buchanan Road, Buchanan | Day | 41 | 41 | N/A[2] |
| | Evening | 36 | 37 | N/A[2] |
| | Night | 30 | 30 | N/A[2] |
| I – Magnetic Drive, Ashtonfield | Day | N/A[2] | 37 | -11 |
| | Evening | N/A[2] | 42 | 9 |
| | Night | N/A[2] | 37 | -4 |
| L – Tipperary Dr, Ashtonfield | Day | 35 | N/A[2] | N/A[2] |
| | Evening | 34 | N/A[2] | N/A[2] |
| | Night | 29 | N/A[2] | N/A[2] |
| J – Parish Drive, Thornton | Day | 39 | 39 | 0 |
| | Evening | 39 | 40 | -4 |
| | Night | 31 | 34 | -6 |

Note 1: Periods are as detailed the NPfI and are Daytime - 7.00 am to 6.00 pm Monday to Saturday, 8.00 am to 6.00 pm Sunday; Evening - 6.00 pm 10.00 pm; Night - 10.00 pm to 7.00 am pm Monday to Saturday, 10.00 pm to 8.00 am Sunday.

Note 2: No data was available, therefore no comparisons can be made.

Note 3: Rounded to the nearest whole dB.

#### 5.2.1.3 Coinciding Period last Year

**Table 14** presents the ambient $L_{A90}$ noise levels recorded for the current monitoring period compared to those measured during the coinciding monitoring period last year.

**Table 14 $L_{A90}$ Results Comparison – Coinciding Period Last Year**

| Monitoring Location | Period[1] | Long term Night-time $L_{A90}$ Noise Levels | | |
|---|---|---|---|---|
| | | June/July 2023 | June/July 2024 | Difference dB[3] |
| D – Black Hill School, Black Hill | Day | 39 | N/A[2] | N/A[2] |
| | Evening | 37 | N/A[2] | N/A[2] |
| | Night | 38 | N/A[2] | N/A[2] |
| F – Black Hill Road, Black Hill | Day | 41 | 42 | 1 |
| | Evening | 39 | 39 | 0 |
| | Night | 34 | 34 | 1 |
| G – Buchanan Road, Buchanan | Day | 41 | 41 | 0 |
| | Evening | 36 | 37 | 1 |
| | Night | 28 | 30 | 2 |
| I – Magnetic Drive, Ashtonfield | Day | 40 | 37 | -3 |
| | Evening | 37 | 42 | 5 |
| | Night | 35 | 37 | 3 |
| L – Tipperary Dr, Ashtonfield | Day | 34 | N/A[2] | N/A[2] |
| | Evening | 29 | N/A[2] | N/A[2] |
| | Night | 27 | N/A[2] | N/A[2] |
| J – Parish Drive, Thornton | Day | 44 | 39 | -5 |
| | Evening | 40 | 40 | -1 |
| | Night | 35 | 34 | -1 |

Note 1: Periods are as detailed the NPfI and are Daytime - 7.00 am to 6.00 pm Monday to Saturday, 8.00 am to 6.00 pm Sunday; Evening - 6.00 pm 10.00 pm; Night - 10.00 pm to 7.00 am pm Monday to Saturday, 10.00 pm to 8.00 am Sunday.

Note 2: No data was available, therefore no comparisons can be made.

Note 3: Rounded to the nearest whole dB.

### 5.2.2 Ambient $L_{A10}$ Noise Comparison

The long term ambient $L_{A10}$ noise levels collected from each monitoring location are presented graphically in **Figure 4**, **Figure 5** and **Figure 6** for the daytime, evening and night-time respectively.

**Figure 4 Long Term Daytime $L_{A10}$ Noise Levels**

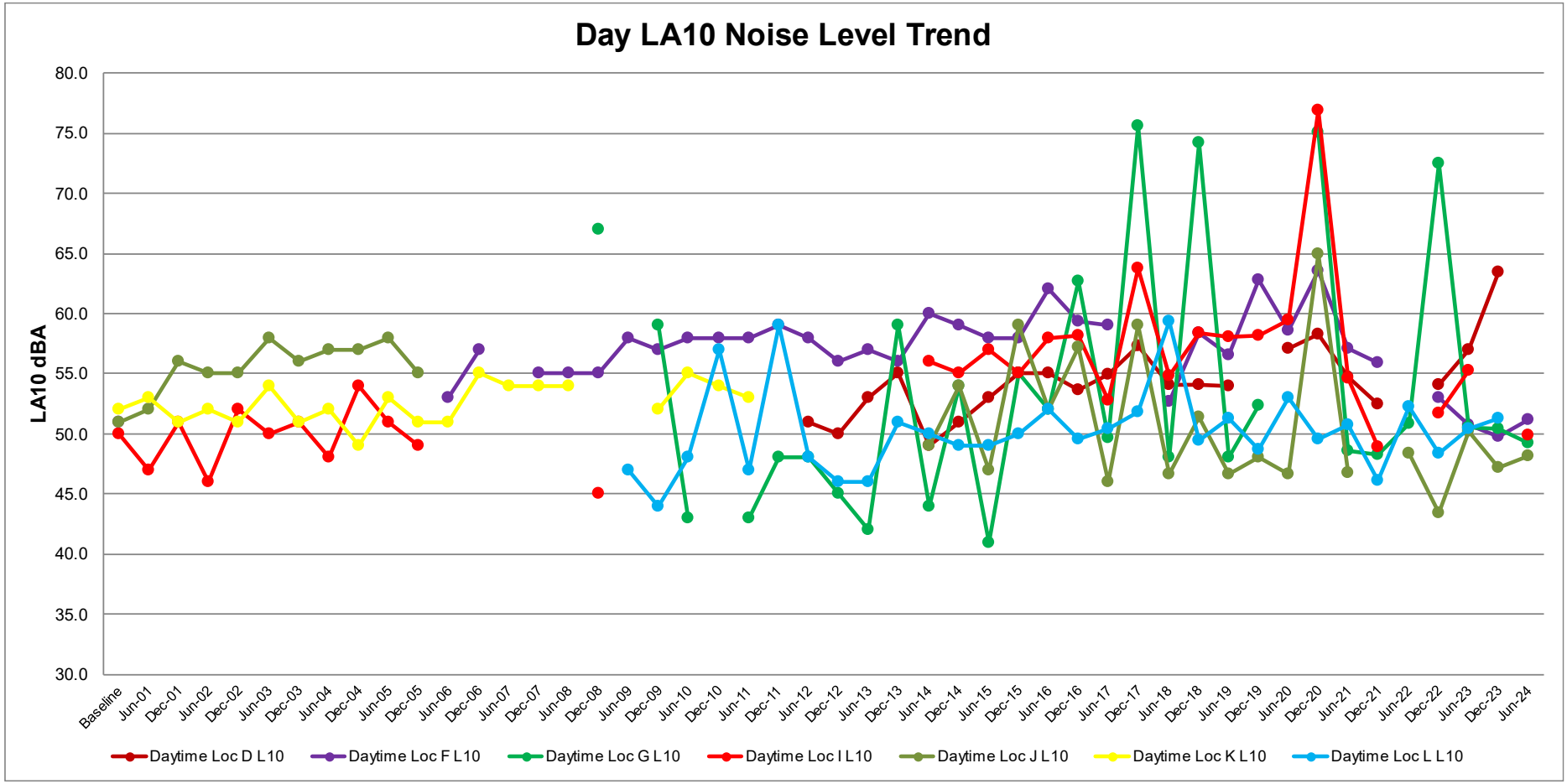


**Figure 5 Long term Evening $L_{A10}$ Noise Levels**

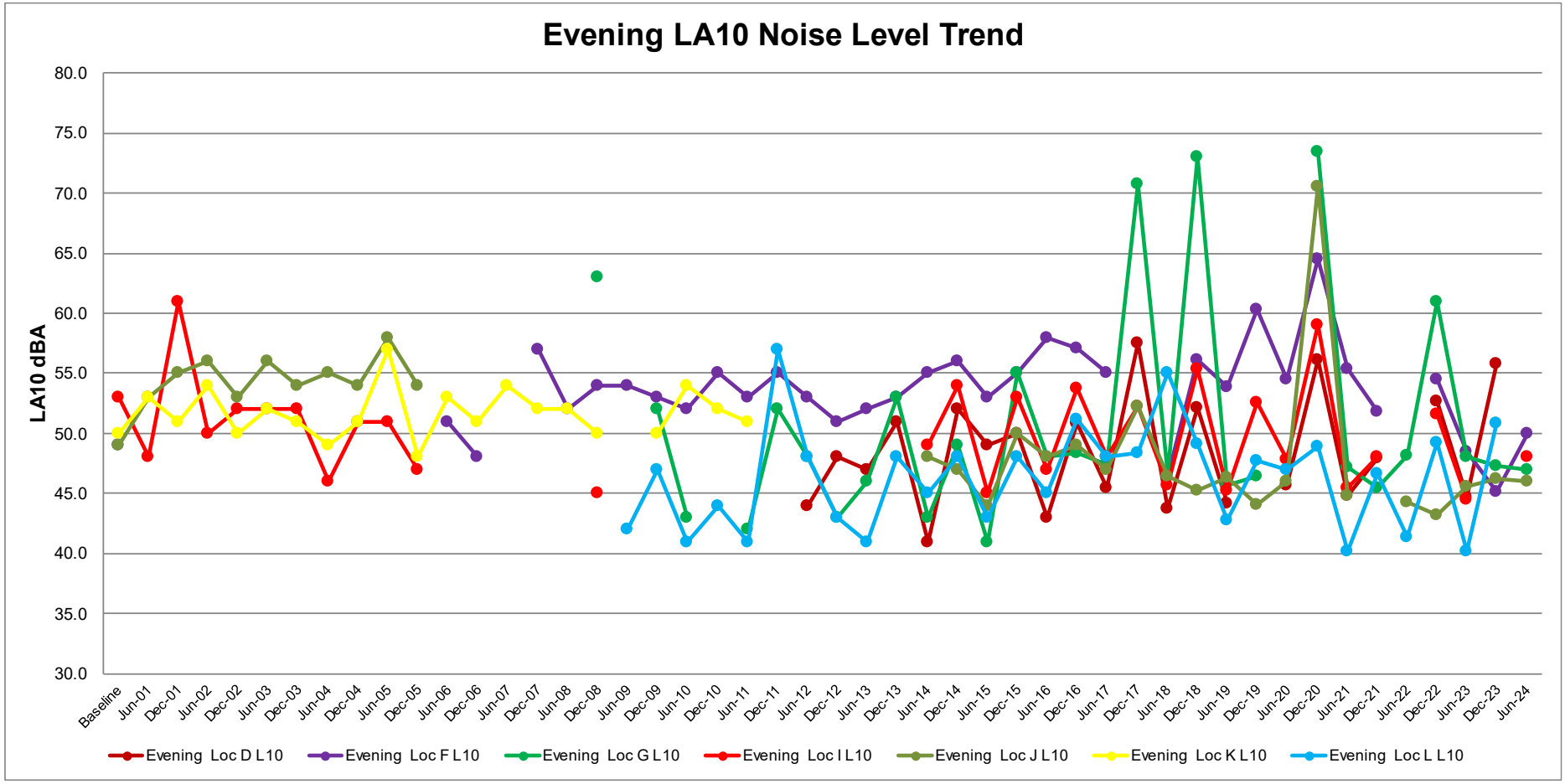
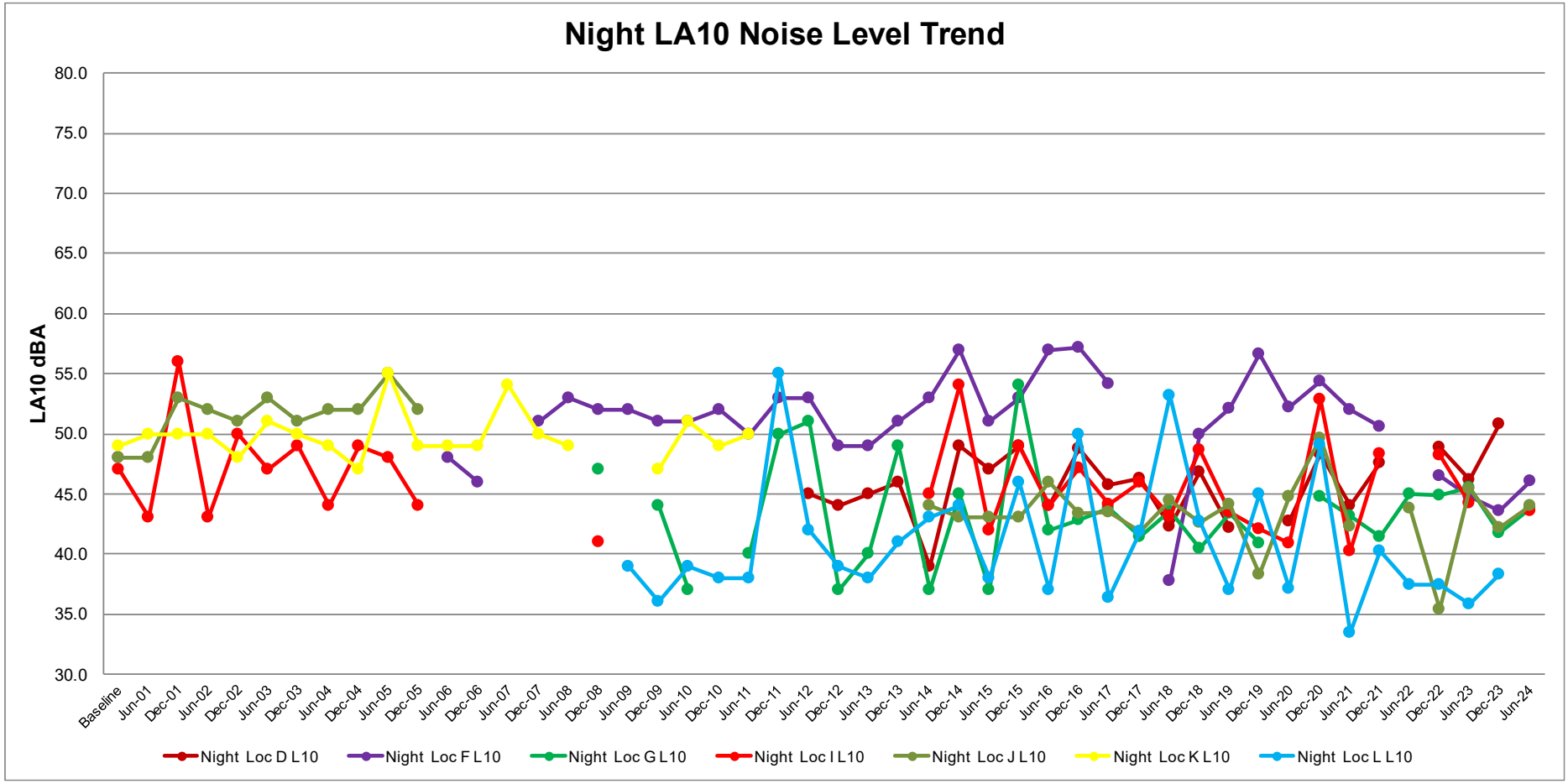


**Figure 6 Long term Night $L_{A10}$ Noise Levels**



#### 5.2.2.1 Baseline

**Table 15** presents the ambient $L_{A10}$ noise levels recorded for the current monitoring period compared to the levels recorded during the baseline monitoring period.

**Table 15 $L_{A10}$ Results Comparison – Baseline**

| Monitoring Location | Period[1] | Long term Night-time $L_{A10}$ Noise Levels | | |
|---|---|---|---|---|
| | | Baseline | June/July 2024 | Difference dB[3] |
| D – Black Hill School, Black Hill | Day | N/A[2] | N/A[2] | N/A[2] |
| | Evening | N/A[2] | N/A[2] | N/A[2] |
| | Night | N/A[2] | N/A[2] | N/A[2] |
| F – Black Hill Road, Black Hill | Day | 51 | 51 | 0 |
| | Evening | 49 | 50 | 1 |
| | Night | 48 | 46 | -2 |
| G – Buchanan Road, Buchanan | Day | N/A[2] | 49 | N/A[2] |
| | Evening | N/A[2] | 47 | N/A[2] |
| | Night | N/A[2] | 44 | N/A[2] |
| I – Magnetic Drive, Ashtonfield | Day | 50 | 50 | 0 |
| | Evening | 53 | 48 | -5 |
| | Night | 47 | 44 | -3 |
| L – Tipperary Dr, Ashtonfield | Day | N/A[2] | N/A[2] | N/A[2] |
| | Evening | N/A[2] | N/A[2] | N/A[2] |
| | Night | N/A[2] | N/A[2] | N/A[2] |
| J – Parish Drive, Thornton | Day | 51 | 48 | -3 |
| | Evening | 49 | 46 | -3 |
| | Night | 48 | 44 | -4 |

Note 1: Periods are as detailed the NPfI and are Daytime - 7.00 am to 6.00 pm Monday to Saturday, 8.00 am to 6.00 pm Sunday; Evening - 6.00 pm 10.00 pm; Night - 10.00 pm to 7.00 am pm Monday to Saturday, 10.00 pm to 8.00 am Sunday.

Note 2: No data was available, therefore no comparisons can be made.

Note 3: Rounded to the nearest whole dB.

#### 5.2.2.2 Previous Half-year

**Table 16** presents the ambient $L_{A10}$ noise levels recorded for the current monitoring period compared to those measured during the previous monitoring period.

**Table 16 $L_{A10}$ Results Comparison – Previous Half-year**

| Monitoring Location | Period[1] | Long term Night-time $L_{A10}$ Noise Levels | | |
|---|---|---|---|---|
| | | December 2023 | June/July 2024 | Difference dB[3] |
| D – Black Hill School, Black Hill | Day | 63 | N/A[2] | N/A[2] |
| | Evening | 56 | N/A[2] | N/A[2] |
| | Night | 51 | N/A[2] | N/A[2] |
| F – Black Hill Road, Black Hill | Day | 50 | 51 | 0 |
| | Evening | 45 | 50 | 1 |
| | Night | 44 | 46 | -2 |
| G – Buchanan Road, Buchanan | Day | 50 | 49 | N/A[2] |
| | Evening | 47 | 47 | N/A[2] |
| | Night | 42 | 44 | N/A[2] |
| I – Magnetic Drive, Ashtonfield | Day | N/A[2] | 50 | 0 |
| | Evening | N/A[2] | 48 | -5 |
| | Night | N/A[2] | 44 | -3 |
| L – Tipperary Dr, Ashtonfield | Day | 51 | N/A[2] | N/A[2] |
| | Evening | 51 | N/A[2] | N/A[2] |
| | Night | 38 | N/A[2] | N/A[2] |
| J – Parish Drive, Thornton | Day | 47 | 48 | -3 |
| | Evening | 46 | 46 | -3 |
| | Night | 42 | 44 | -4 |

Note 1: Periods are as detailed the NPfI and are Daytime - 7.00 am to 6.00 pm Monday to Saturday, 8.00 am to 6.00 pm Sunday; Evening - 6.00 pm 10.00 pm; Night - 10.00 pm to 7.00 am pm Monday to Saturday, 10.00 pm to 8.00 am Sunday.

Note 2: No data was available, therefore no comparisons can be made.

Note 3: Rounded to the nearest whole dB.

#### 5.2.2.3 Coinciding Period Last Year

**Table 17** presents the ambient $L_{A10}$ noise levels recorded for the current monitoring period compared to those measured during the coinciding monitoring period last year.

**Table 17 $L_{A10}$ Result Comparison – Coinciding Period Last Year**

| Monitoring Location | Period[1] | Long term Night-time $L_{A10}$ Noise Levels | | |
|---|---|---|---|---|
| | | June/July 2023 | June/July 2024 | Difference dB[3] |
| D – Black Hill School, Black Hill | Day | 57 | N/A[2] | N/A[2] |
| | Evening | 45 | N/A[2] | N/A[2] |
| | Night | 46 | N/A[2] | N/A[2] |
| F – Black Hill Road, Black Hill | Day | 51 | 51 | 1 |
| | Evening | 49 | 50 | 2 |
| | Night | 45 | 46 | 1 |
| G – Buchanan Road, Buchanan | Day | 51 | 49 | -1 |
| | Evening | 48 | 47 | -1 |
| | Night | 46 | 44 | -2 |
| I – Magnetic Drive, Ashtonfield | Day | 55 | 50 | -5 |
| | Evening | 45 | 48 | 4 |
| | Night | 44 | 44 | -1 |
| L – Tipperary Dr, Ashtonfield | Day | 50 | N/A[2] | N/A[2] |
| | Evening | 40 | N/A[2] | N/A[2] |
| | Night | 36 | N/A[2] | N/A[2] |
| J – Parish Drive, Thornton | Day | 50 | 48 | -2 |
| | Evening | 46 | 46 | 0 |
| | Night | 45 | 44 | -1 |

Note 1: Periods are as detailed the NPfI and are Daytime - 7.00 am to 6.00 pm Monday to Saturday, 8.00 am to 6.00 pm Sunday; Evening - 6.00 pm 10.00 pm; Night - 10.00 pm to 7.00 am pm Monday to Saturday, 10.00 pm to 8.00 am Sunday.

Note 2: No data was available, therefore no comparisons can be made.

Note 3: Rounded to the nearest whole dB.

## 5.3 Rail Noise Monitoring

In order to determine compliance with the rail noise criteria, a noise logger was positioned at Location J. The train loading times during the noise monitoring period are presented in **Table 18**.

**Table 18 Coal Train Loading Operations Log**

| Date | Coal Train Loading Time | Period |
|---|---|---|
| 04/07/2024 | 04:55-12:22 | Night and Day |

The measured $L_{Aeq(period)}$ noise level for each period from rail traffic at Location J are presented in **Table 19.**

**Table 19 Rail Noise Impact Monitoring Results**

| Location | Date | Period | Measured $L_{Aeq(period)}$ | Criteria $L_{Aeq(period)}$ | Compliance |
|---|---|---|---|---|---|
| J | 04/07/2024 | Day | 41 | 55 | Yes |
| | | Night | 38 | 40 | Yes |

Results presented in **Table 19** indicate that rail noise levels from the Bloomfield Rail Spur were in compliance with the Abel Mine Project Approval during the noise monitoring period.

# 6.0 Conclusion

SLR was engaged by Donaldson Coal Pty Ltd to conduct half-yearly noise monitoring surveys for Donaldson Coal Mine and Abel Coal Mine in accordance with the NMP, dated 3 June 2019.

Abel mine was placed in Care & Maintenance on 28th April 2016 and there were no operations onsite, excluding that from the Bloomfield CHPP which operates under the Abel Coal Mine project consent conditions.

Operator-attended and unattended noise measurements were conducted for the June 2024 half at six focus locations surrounding the mine.

Results of the attended noise monitoring have indicated that compliance with the Abel Mine *Project Approval* was achieved at all locations.

A comparison of ambient $L_{A10}$ and $L_{A90}$ noise levels recorded during the current monitoring period (June 2024), the baseline monitoring period, the last monitoring period (December 2023), and the coinciding monitoring period from last year (June 2023) has been conducted.

Rail noise levels from the Bloomfield Rail Spur were considered to be in compliance with the Abel Mine Project Approval during the noise monitoring period.

# Appendix A Acoustic Terminology

## Donaldson and Abel Coal Mines

### Bi-Annual Noise Monitoring - Half-year Ending June 2024

**Donaldson Coal Pty Ltd**

SLR Project No.: 630.01053.20000

6 November 2024

## 1. Sound Level or Noise Level

The terms ‘sound’ and ‘noise’ are almost interchangeable, except that ‘noise’ often refers to unwanted sound.

Sound (or noise) consists of minute fluctuations in atmospheric pressure. the human ear responds to changes in sound pressure over a very wide range with the loudest sound pressure to which the human ear can respond being ten million times greater than the softest. the decibel (abbreviated as dB) scale reduces this ratio to a more manageable size by the use of logarithms.

The symbols SPL, L or LP are commonly used to represent Sound Pressure Level. the symbol LA represents A-weighted Sound Pressure Level. the standard reference unit for Sound Pressure Levels expressed in decibels is 2 x $10^{-5}$ Pa.

## 2. ‘A’ Weighted Sound Pressure Level

The overall level of a sound is usually expressed in terms of dBA, which is measured using a sound level meter with an ‘A-weighting’ filter. This is an electronic filter having a frequency response corresponding approximately to that of human hearing.

People’s hearing is most sensitive to sounds at mid frequencies (500 Hz to 4,000 Hz), and less sensitive at lower and higher frequencies. Different sources having the same dBA level generally sound about equally loud.

A change of 1 dB or 2 dB in the level of a sound is difficult for most people to detect, whilst a 3 dB to 5 dB change corresponds to a small but noticeable change in loudness. A 10 dB change corresponds to an approximate doubling or halving in loudness. the table below lists examples of typical noise levels.

| Sound Pressure Level (dBA) | Typical Source | Subjective Evaluation |
|---|---|---|
| 130 | Threshold of pain | Intolerable |
| 120 | Heavy rock concert | Extremely noisy |
| 110 | Grinding on steel | |
| 100 | Loud car horn at 3 m | Very noisy |
| 90 | Construction site with pneumatic hammering | |
| 80 | Kerbside of busy street | Loud |
| 70 | Loud radio or television | |
| 60 | Department store | Moderate to quiet |
| 50 | General Office | |
| 40 | Inside private Office | Quiet to very quiet |
| 30 | Inside bedroom | |
| 20 | Recording studio | Almost silent |

Other weightings (eg B, C and D) are less commonly used than A-weighting. Sound Levels measured without any weighting are referred to as ‘linear’, and the units are expressed as dB(lin) or dB.

## 3. Sound Power Level

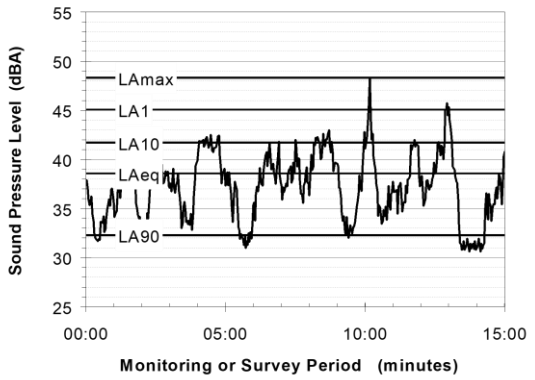
The Sound Power of a source is the rate at which it emits acoustic energy. As with Sound Pressure Levels, Sound Power Levels are expressed in decibel units (dB or dBA), but may be identified by the symbols SWL or LW, or by the reference unit $10^{-12}$ W.

The relationship between Sound Power and Sound Pressure is similar to the effect of an electric radiator, which is characterised by a power rating but has an effect on the surrounding environment that can be measured in terms of a different parameter, temperature.

## 4. Statistical Noise Levels

Sounds that vary in level over time, such as road traffic noise and most community noise, are commonly described in terms of the statistical exceedance levels LAN, where LAN is the A-weighted sound pressure level exceeded for N% of a given measurement period. for example, the LA1 is the noise level exceeded for 1% of the time, LA10 the noise exceeded for 10% of the time, and so on.

The following figure presents a hypothetical 15 minute noise survey, illustrating various common statistical indices of interest.




Of particular relevance, are:

$L_{A1}$ the noise level exceeded for 1% of the 15 minute interval.

$L_{A10}$ the noise level exceeded for 10% of the 15 minute interval. This is commonly referred to as the average maximum noise level.

$L_{A90}$ the noise level exceeded for 90% of the sample period. This noise level is described as the average minimum background sound level (in the absence of the source under consideration), or simply the background level.

$L_{Aeq}$ the A-weighted equivalent noise level (basically, the average noise level). It is defined as the steady sound level that contains the same amount of acoustical energy as the corresponding time-varying sound.

## 5. Frequency Analysis

Frequency analysis is the process used to examine the tones (or frequency components) which make up the overall noise or vibration signal.

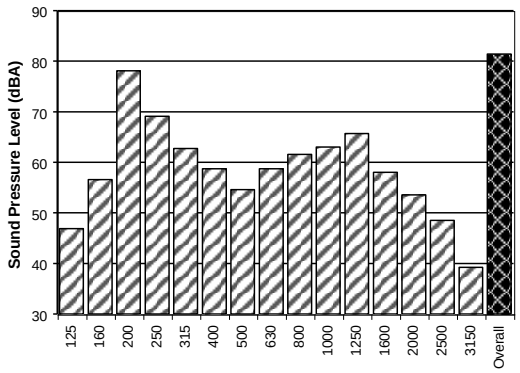
the units for frequency are Hertz (Hz), which represent the number of cycles per second.

Frequency analysis can be in:

- Octave bands (where the centre frequency and width of each band is double the previous band)
- 1/3 octave bands (three bands in each octave band)

Narrow band (where the spectrum is divided into 400 or more bands of equal width)

The following figure shows a 1/3 octave band frequency analysis where the noise is dominated by the 200 Hz band. Note that the indicated level of each individual band is less than the overall level, which is the logarithmic sum of the bands.




## 6. Annoying Noise (Special Audible Characteristics)

A louder noise will generally be more annoying to nearby receivers than a quieter one. However, noise is often also found to be more annoying and result in larger impacts where the following characteristics are apparent:

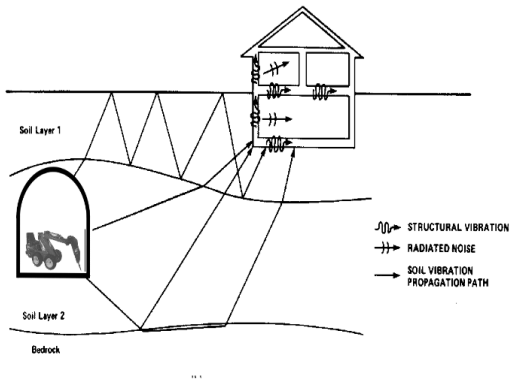
- **Tonality** - tonal noise contains one or more prominent tones (ie differences in distinct frequency components between adjoining octave or 1/3 octave bands), and is normally regarded as more annoying than 'broad band' noise.
- **Impulsiveness** - an impulsive noise is characterised by one or more short sharp peaks in the time domain, such as occurs during hammering.
- **Intermittency** - intermittent noise varies in level with the change in level being clearly audible. An example would include mechanical plant cycling on and Off.
- **Low Frequency Noise** - low frequency noise contains significant energy in the lower frequency bands, which are typically taken to be in the 10 to 160 Hz region.

## 7. Ground-borne Noise, Structure-borne Noise and Regenerated Noise

Noise that propagates through a structure as vibration and is radiated by vibrating wall and floor surfaces is termed 'structure-borne noise', 'ground-borne noise' or 'regenerated noise'. This noise originates as vibration and propagates between the source and receiver through the ground and/or building structural elements, rather than through the air.

Typical sources of ground-borne or structure-borne noise include tunnelling works, underground railways, excavation plant (eg rockbreakers), and building services plant (eg fans, compressors and generators).

The following figure presents an example of the various paths by which vibration and ground-borne noise may be transmitted between a source and receiver for construction activities occurring within a tunnel.




The term 'regenerated noise' is also used in other instances where energy is converted to noise away from the primary source. One example would be a fan blowing air through a discharge grill. the fan is the energy source and primary noise source. Additional noise may be created by the aerodynamic effect of the discharge grill in the airstream. This secondary noise is referred to as regenerated noise.

# Appendix B Noise Monitoring Locations

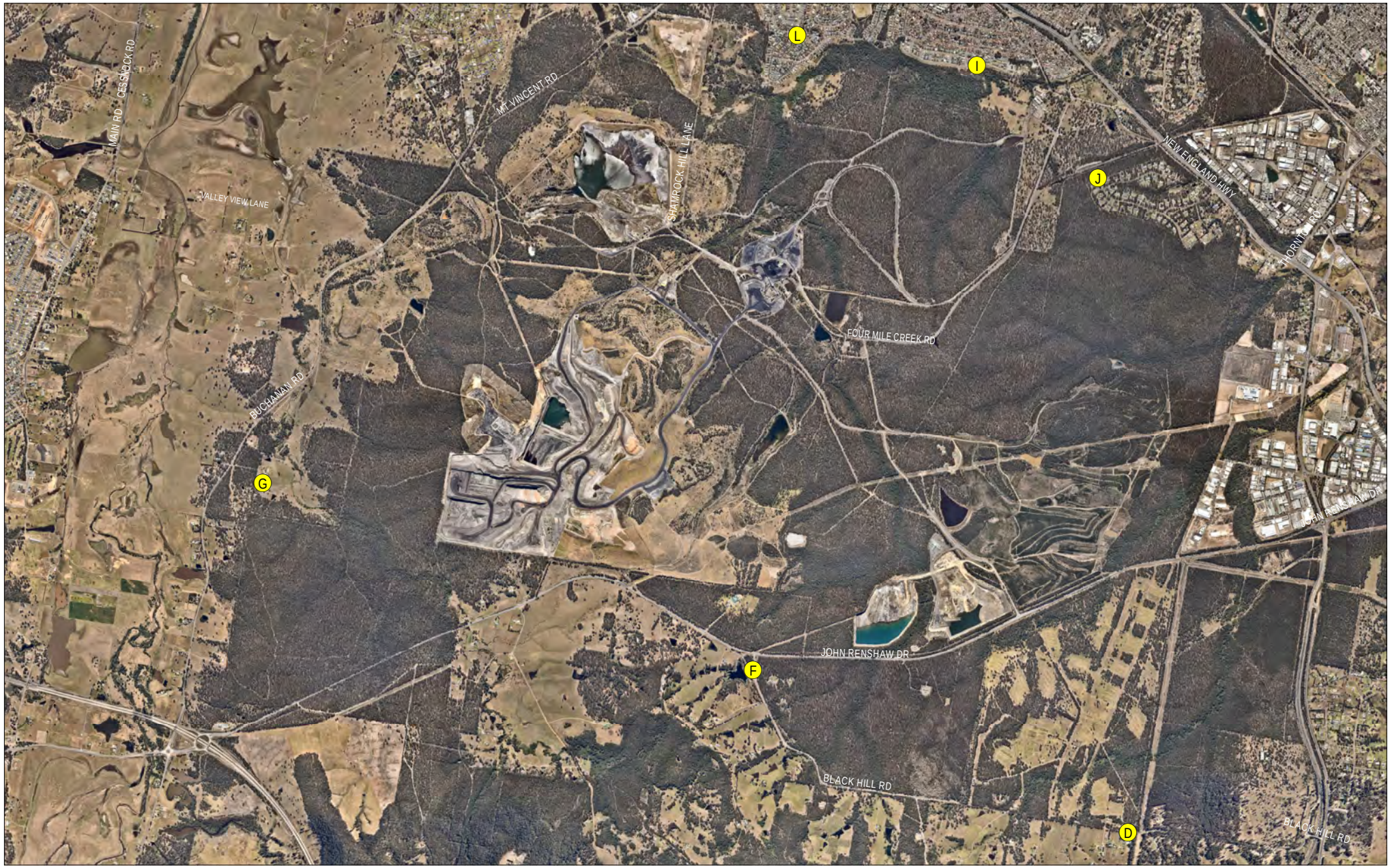
## Donaldson and Abel Coal Mines

**Bi-Annual Noise Monitoring - Half-year Ending June 2024**

**Donaldson Coal Pty Ltd**

SLR Project No.: 630.01053.20000

6 November 2024




D:\Quick Jobs\Martin Davenport\Donaldson\SLR630010530 1200_AB_Monitoringlocations_01.mxd

10 KINGS ROAD
NEW LAMBTON
NEW SOUTH WALES 2305
AUSTRALIA
T: 61 2 4037 3200
F: 61 2 4037 3201
www.slrconsulting.com



| | |
|---|---|
| Project No.: | 630.01053.01200 |
| Date: | 11/01/2018 |
| Drawn by: | NT |
| Scale: | 1:45,000 |
| Sheet Size: | A4 |
| Projection: | GDA 1994 MGA Zone 56 |

LEGEND

Noise Monitoring Locations

N
W
E
S

0 500 1,000 1,500 2,000 m

Donaldson Coal

**Noise Monitoring Locations**

APPENDIX B

# Appendix C Statistical Amient Noise Levels

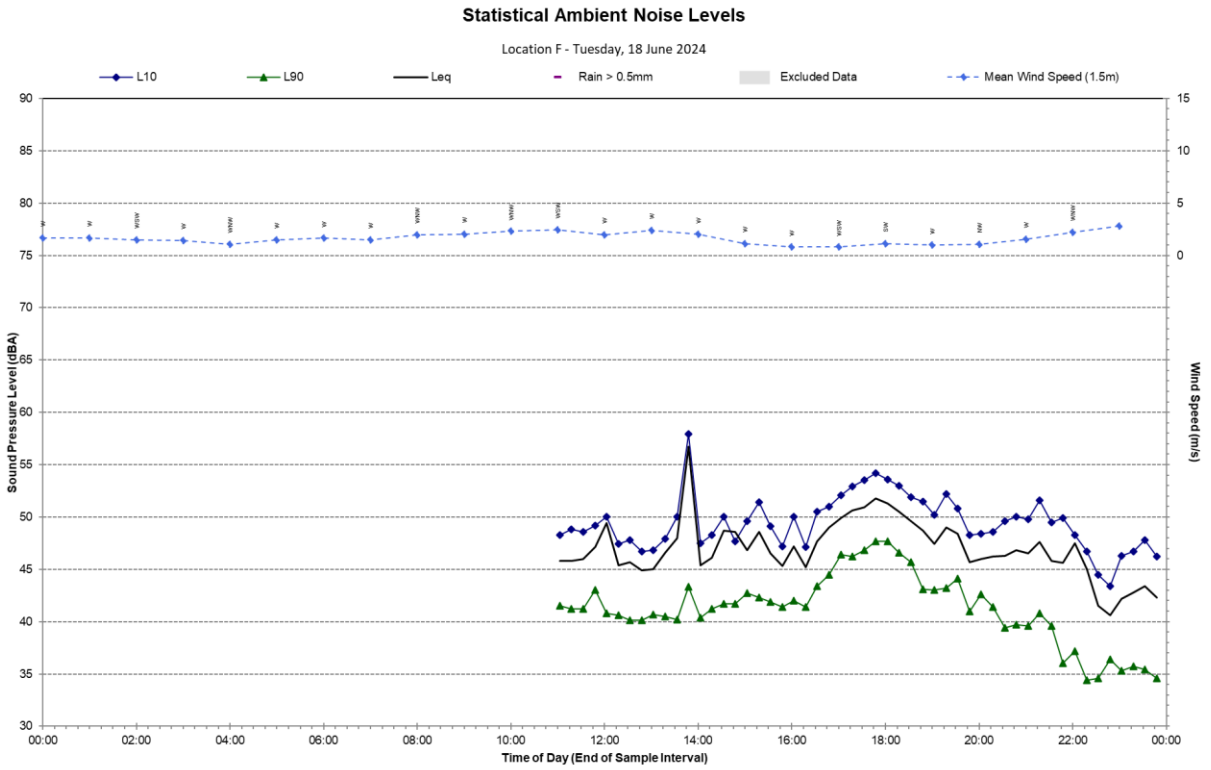
## Donaldson and Abel Coal Mines

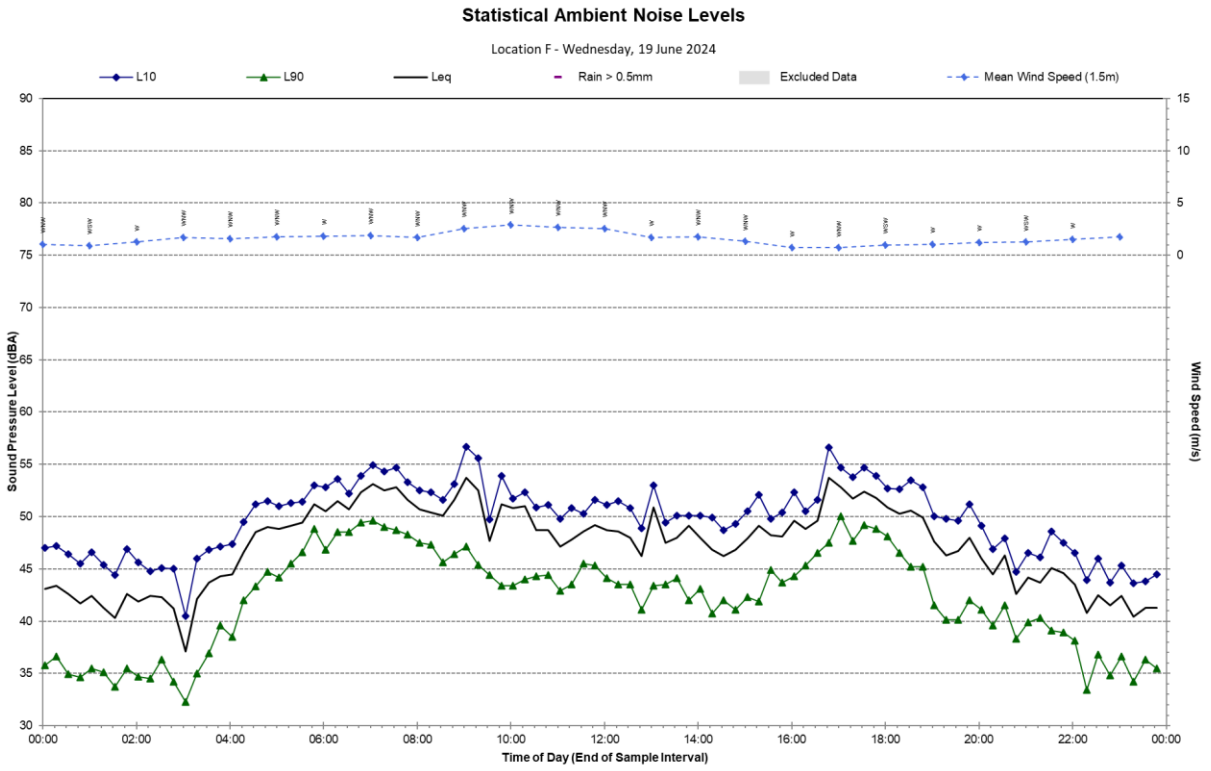
**Bi-Annual Noise Monitoring - Half-year Ending June 2024**

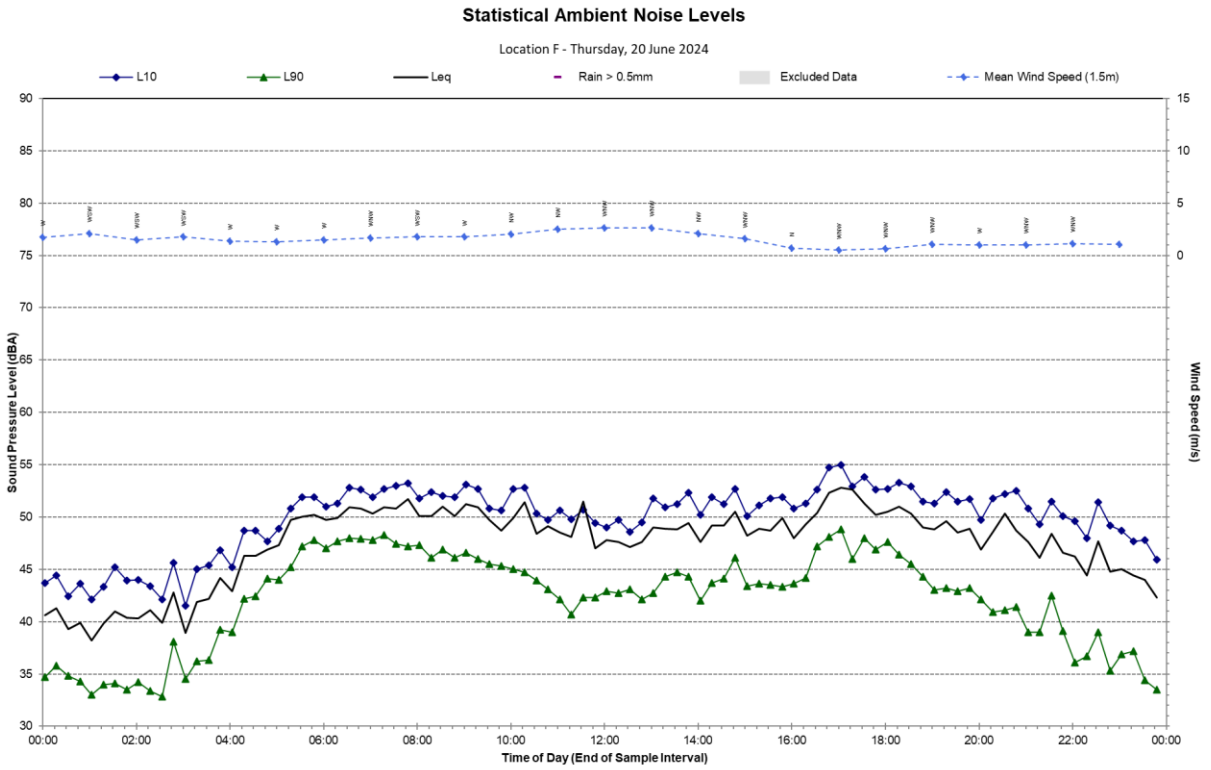
**Donaldson Coal Pty Ltd**

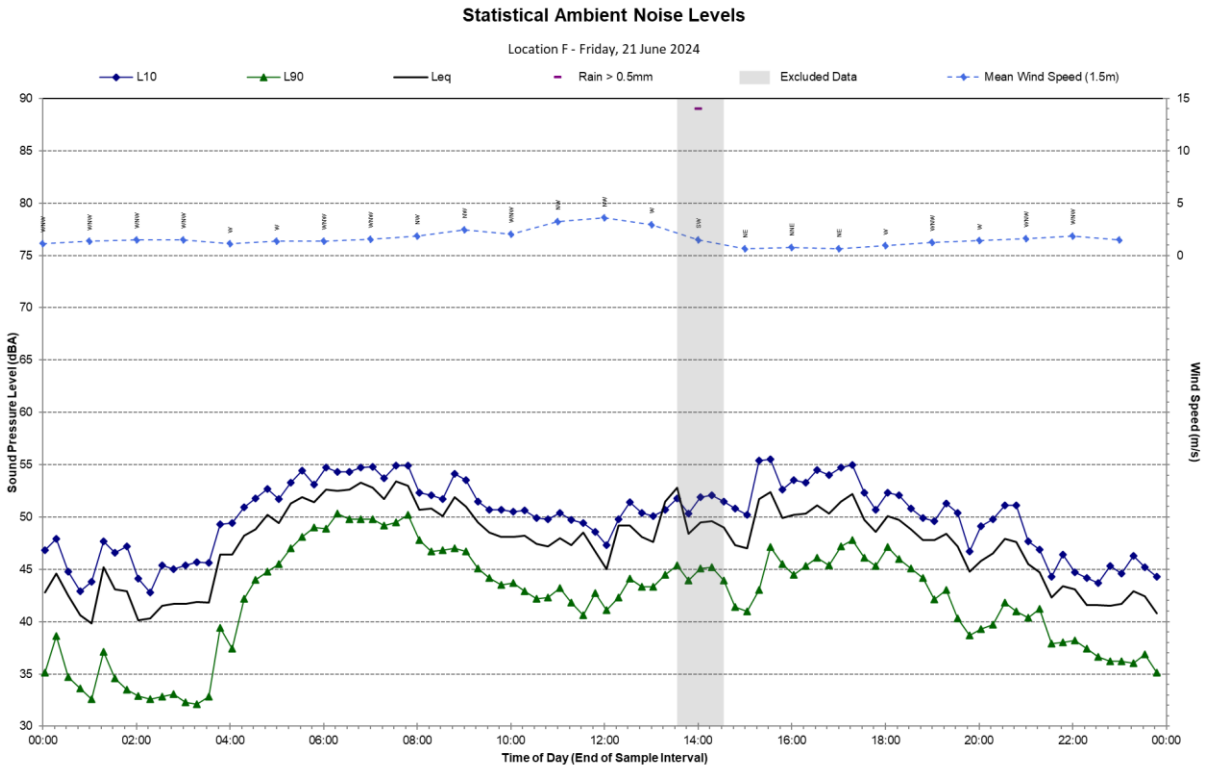
SLR Project No.: 630.01053.20000

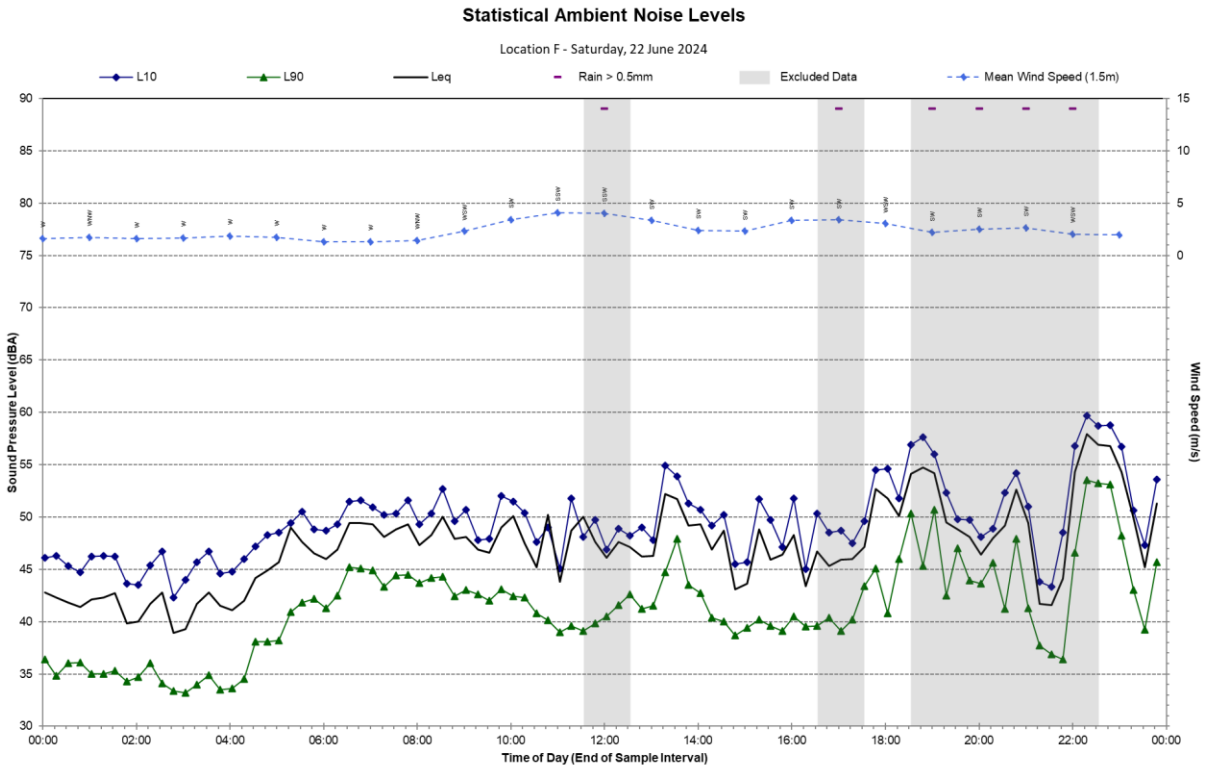
6 November 2024

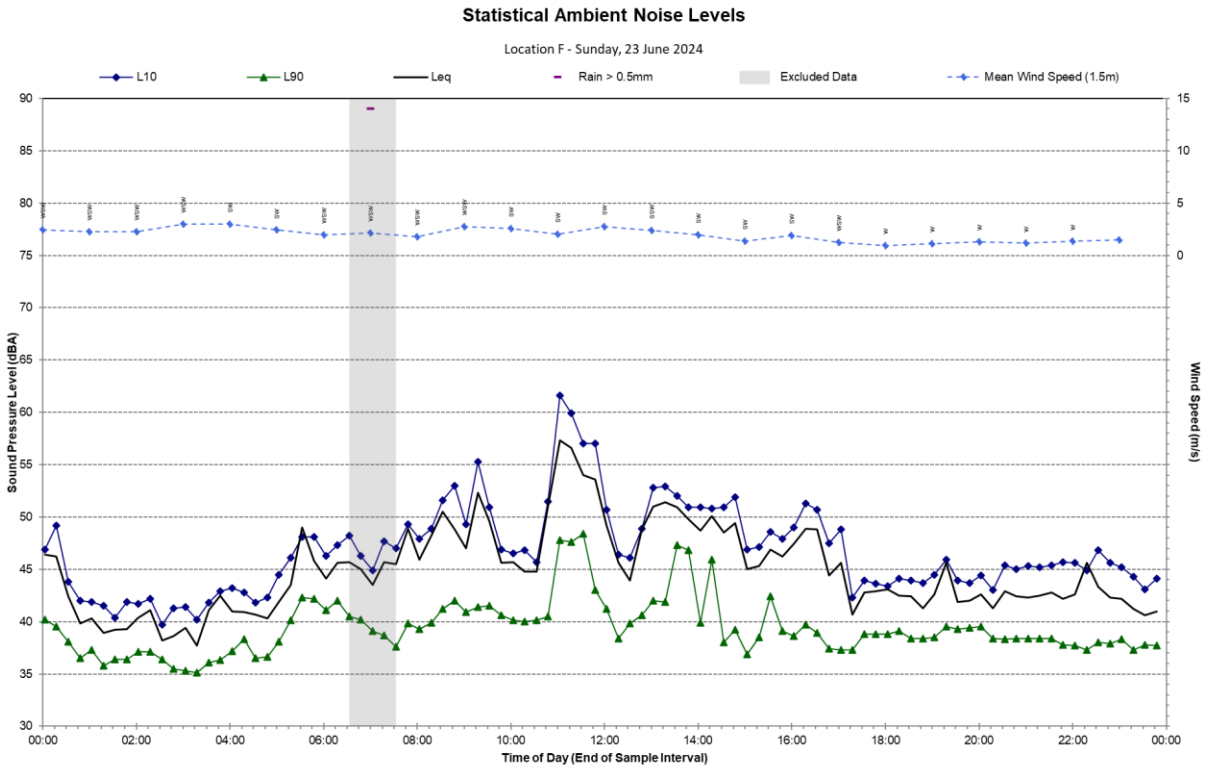

Statistical Ambient Noise Levels
Location F - Tuesday, 18 June 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)

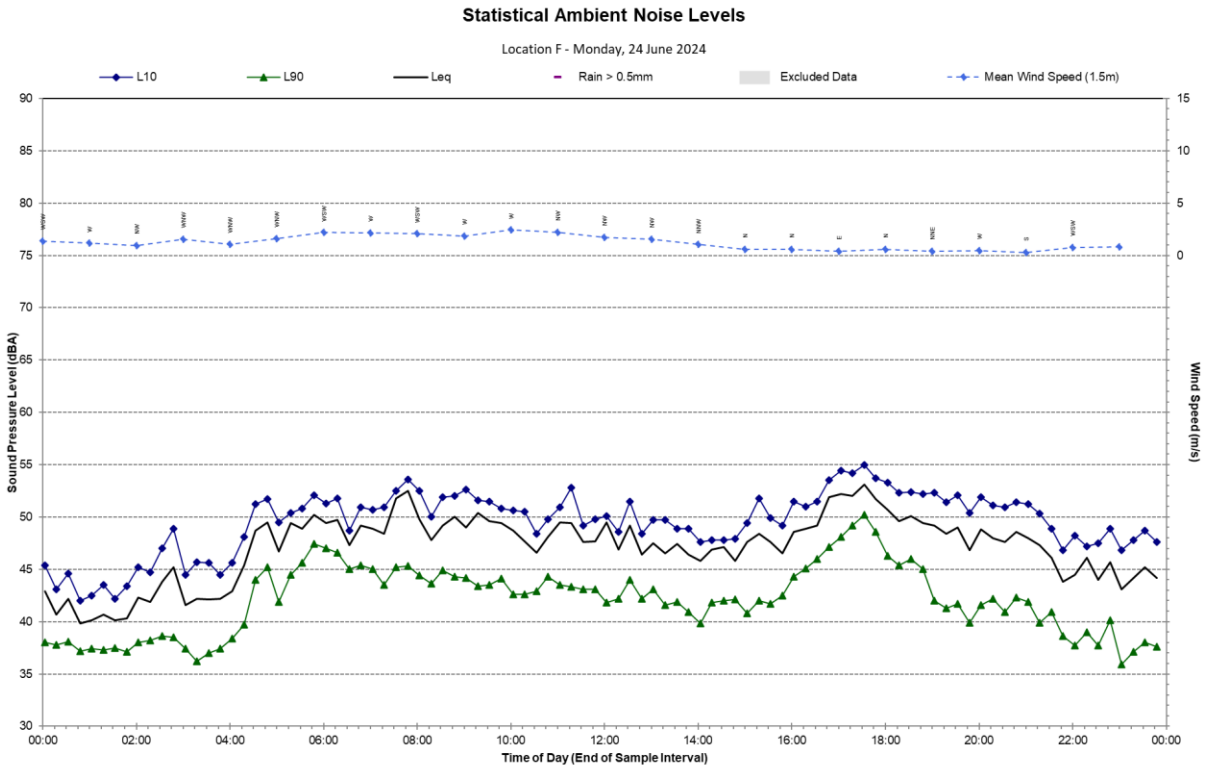

Statistical Ambient Noise Levels
Location F - Wednesday, 19 June 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)

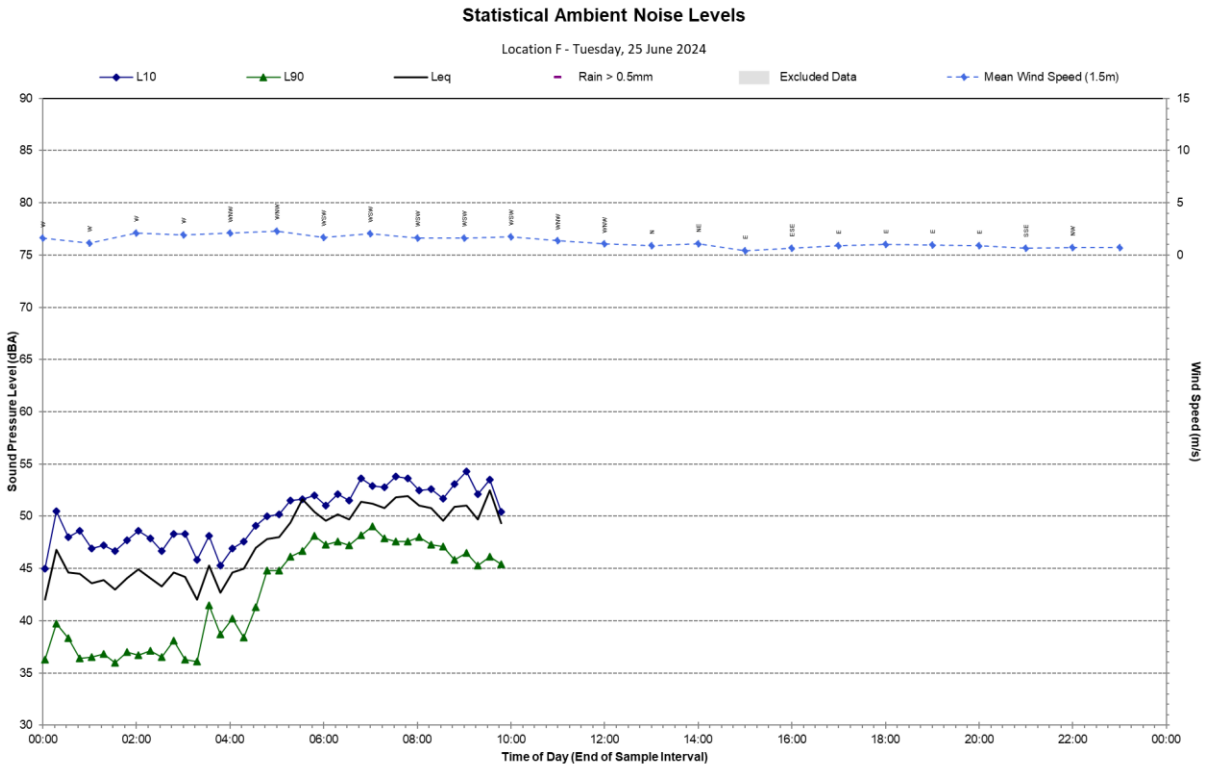

Statistical Ambient Noise Levels
Location F - Thursday, 20 June 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)

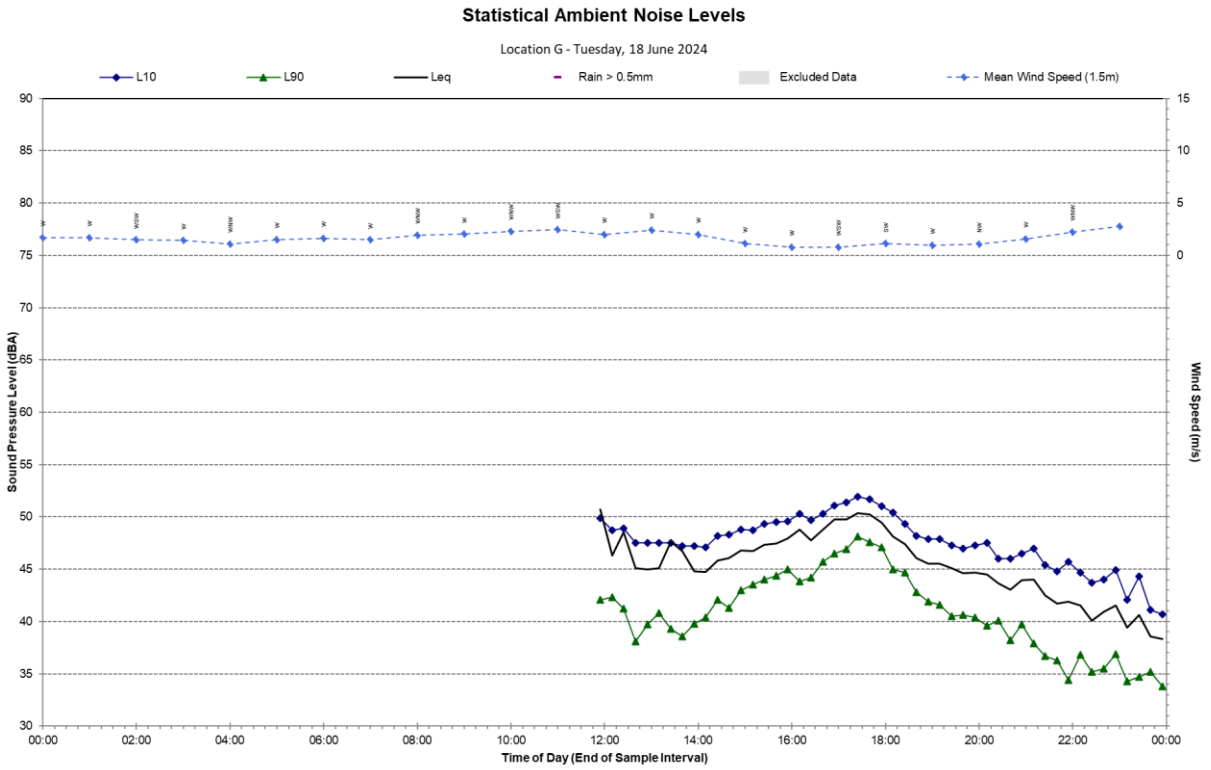

Statistical Ambient Noise Levels
Location F - Friday, 21 June 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)

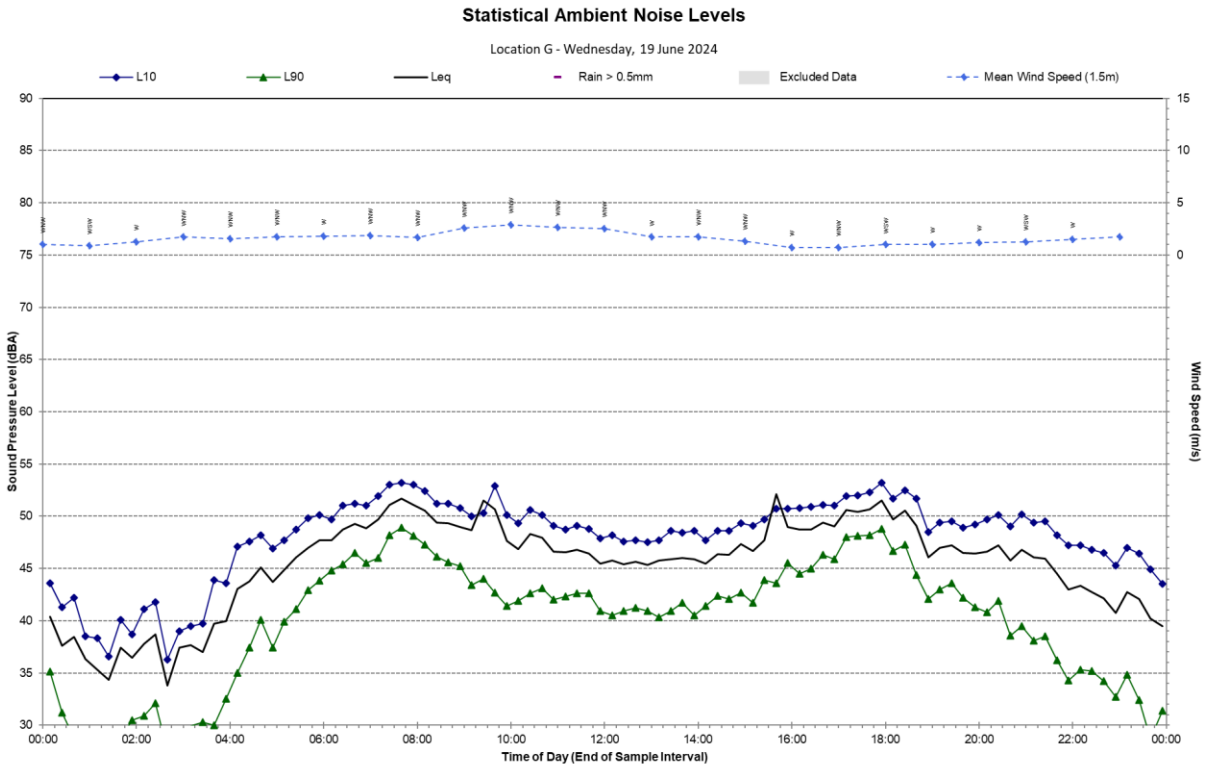

Statistical Ambient Noise Levels
Location F - Saturday, 22 June 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)

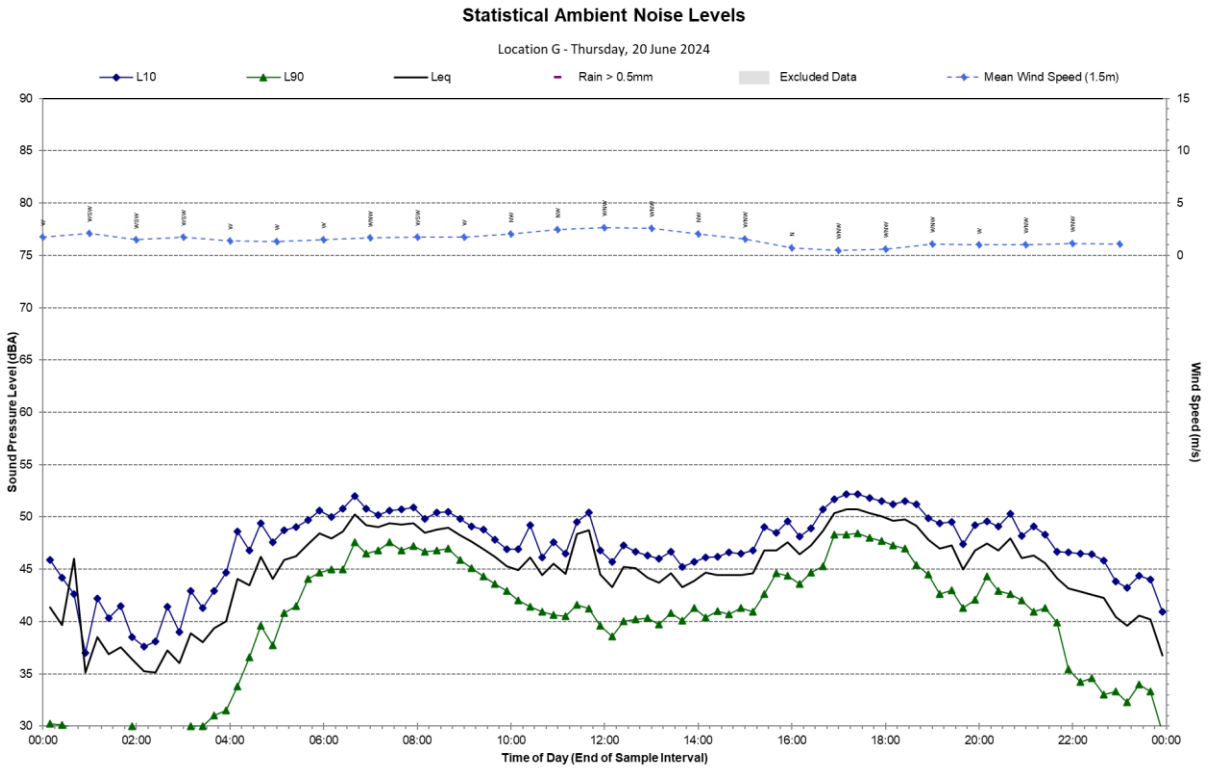

Statistical Ambient Noise Levels
Location F - Sunday, 23 June 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)

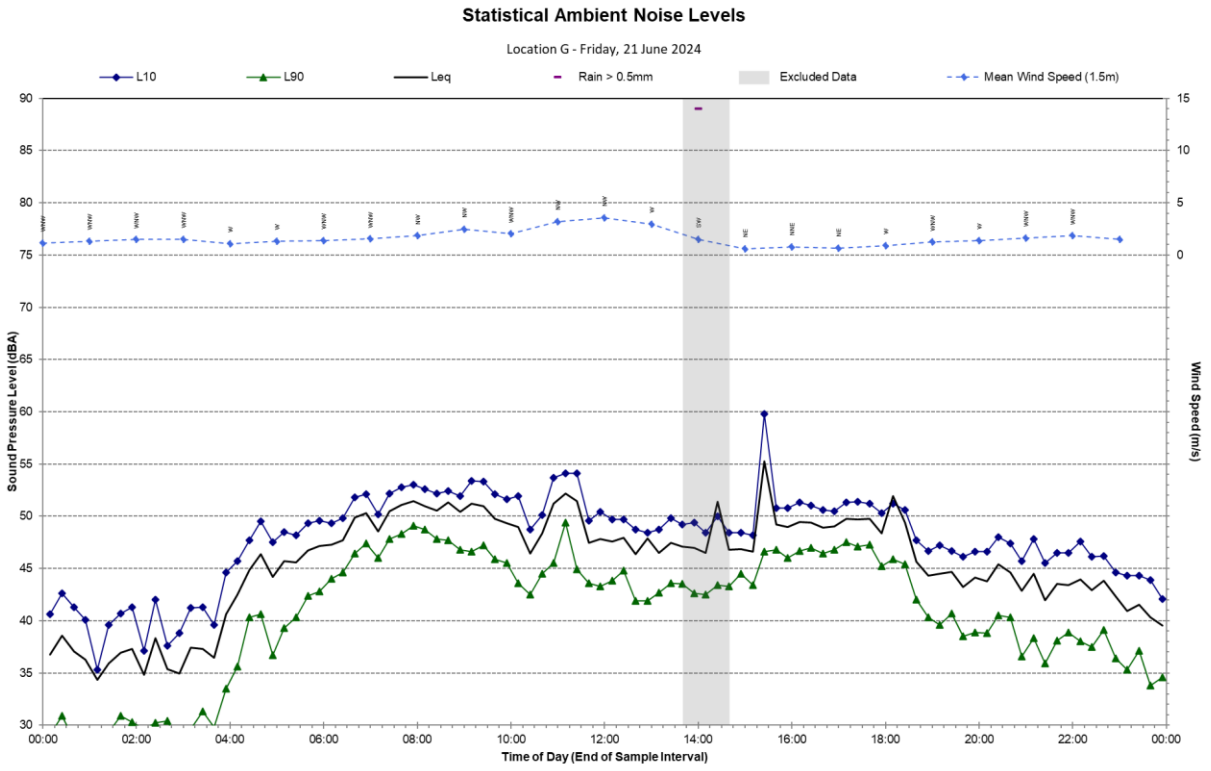

Statistical Ambient Noise Levels
Location F - Monday, 24 June 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)

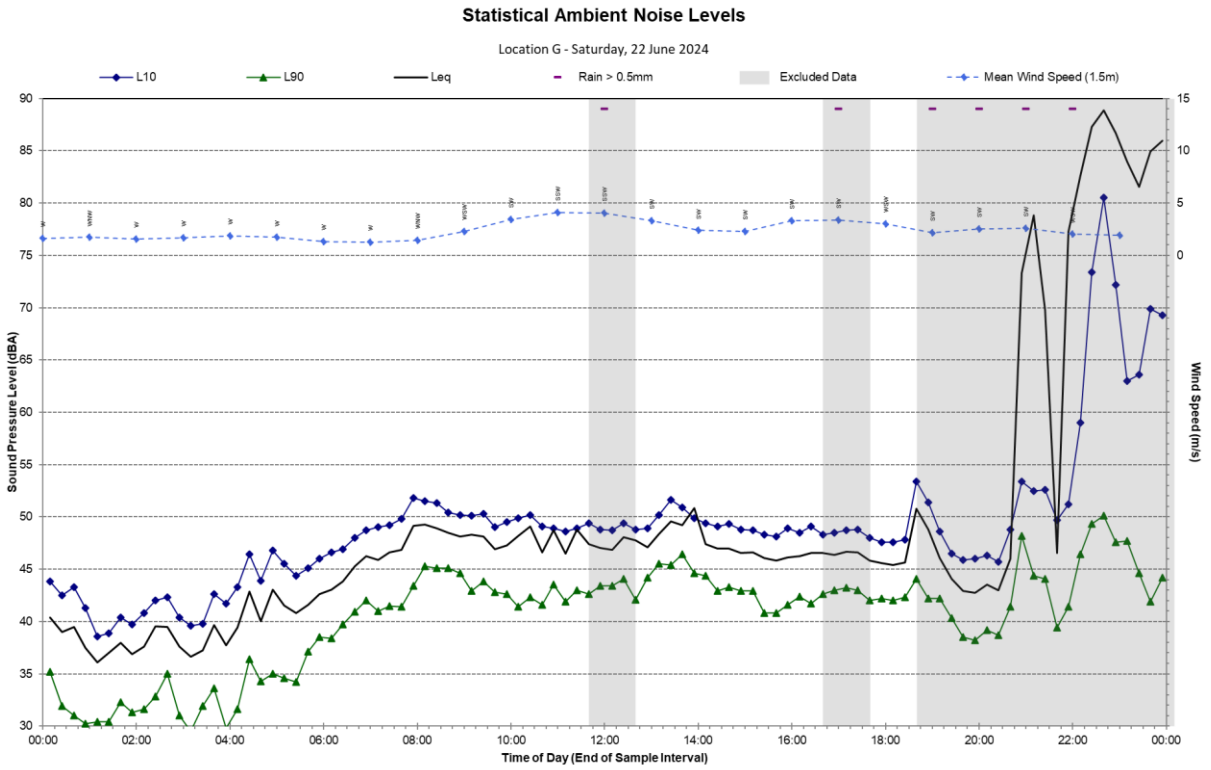

Statistical Ambient Noise Levels
Location F - Tuesday, 25 June 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)

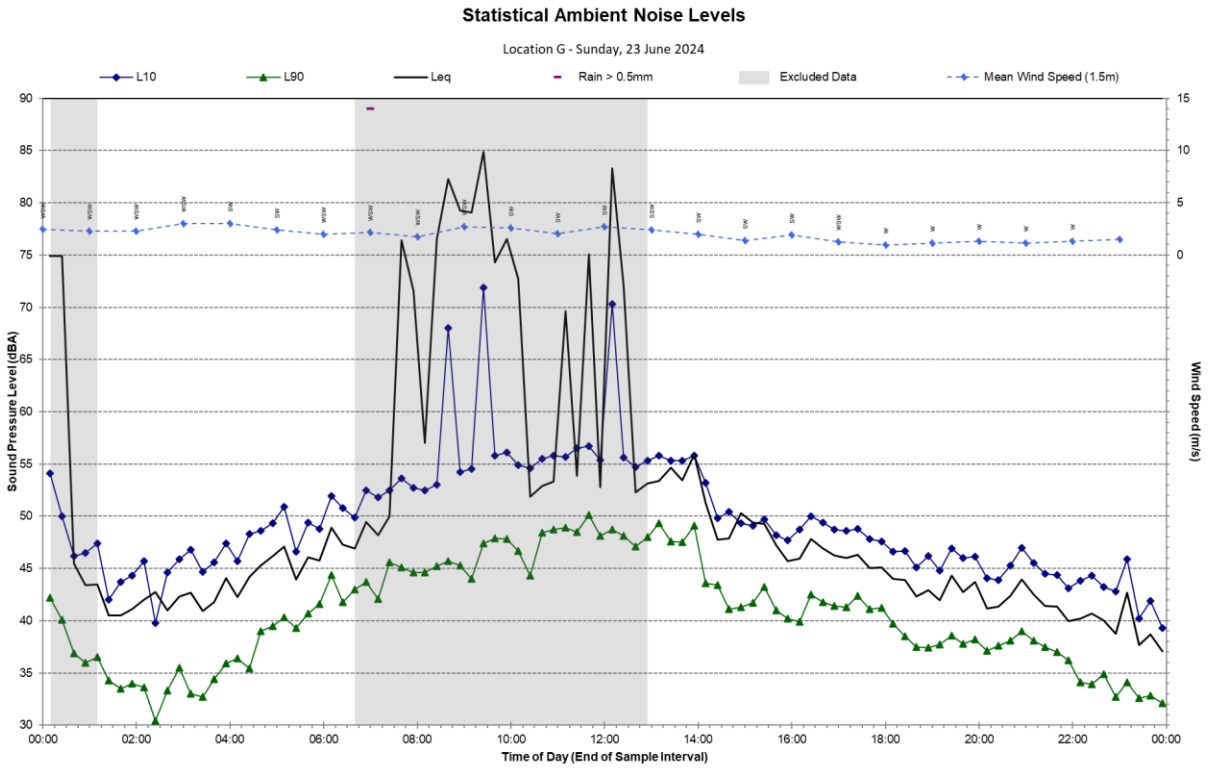

Statistical Ambient Noise Levels
Location G - Tuesday, 18 June 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)

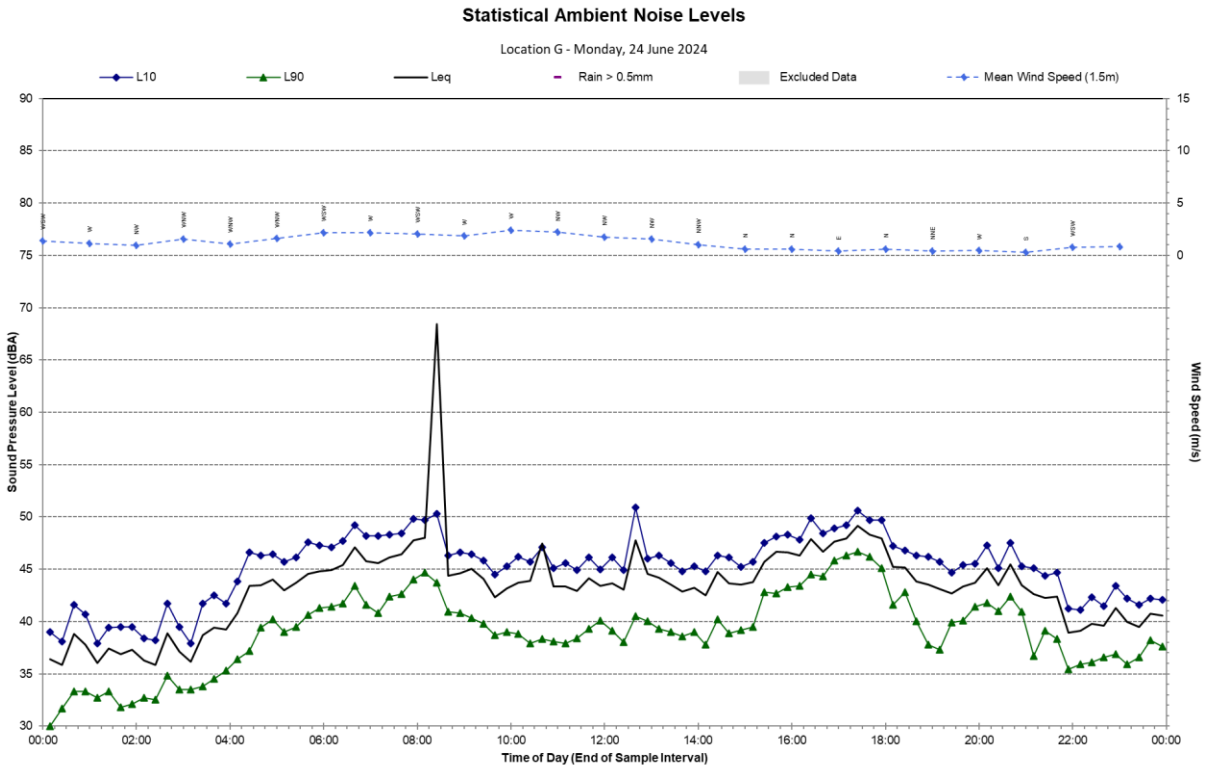

Statistical Ambient Noise Levels
Location G - Wednesday, 19 June 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)

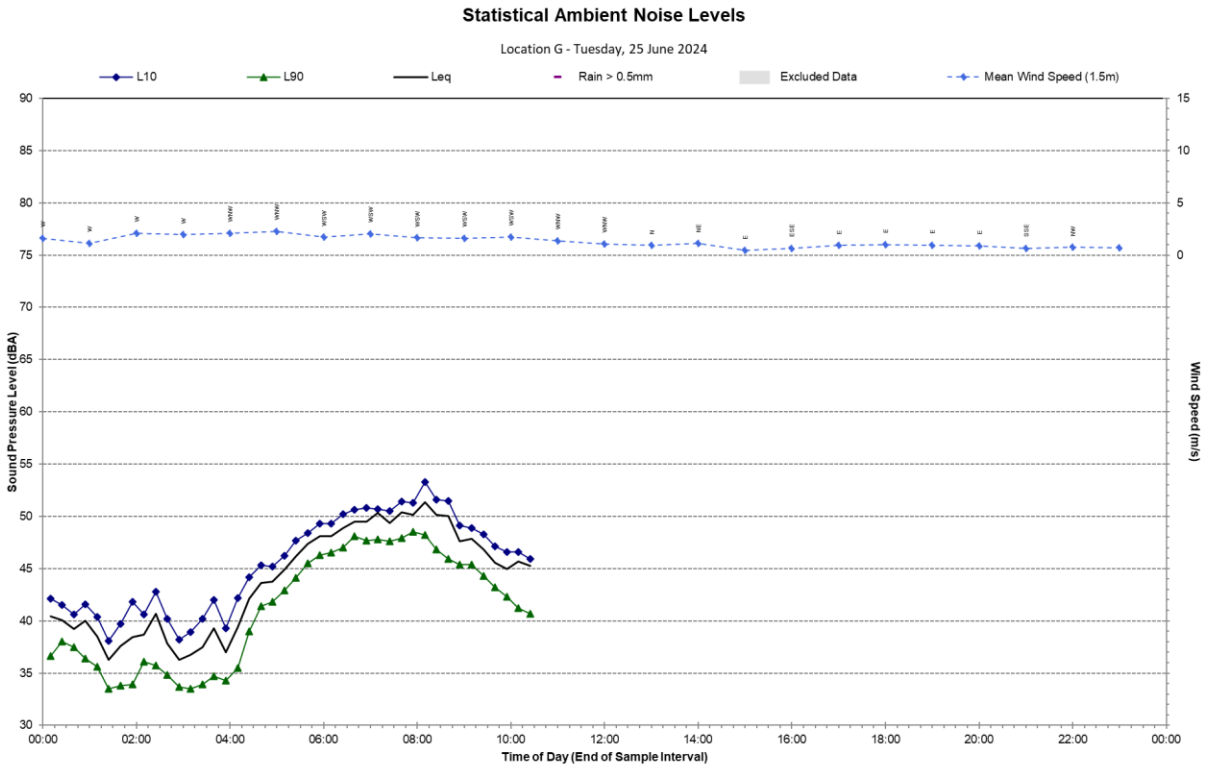

Statistical Ambient Noise Levels
Location G - Thursday, 20 June 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)

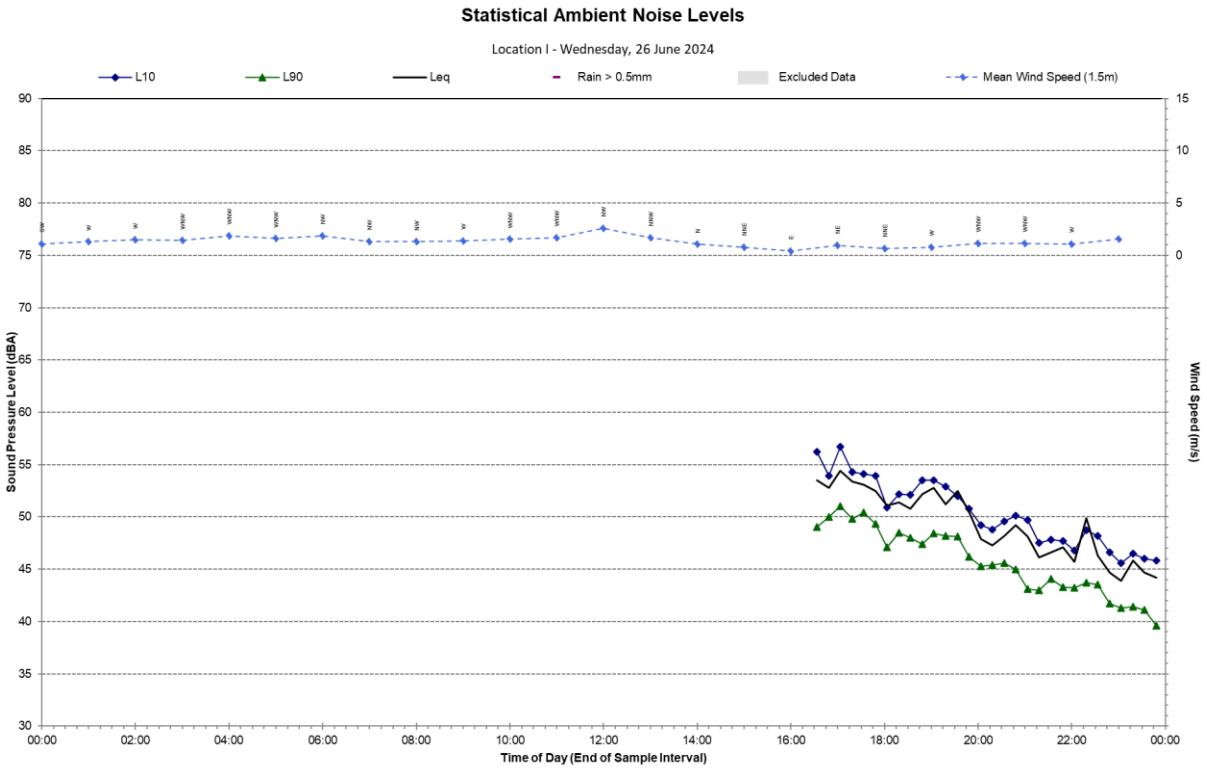

Statistical Ambient Noise Levels
Location G - Friday, 21 June 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)

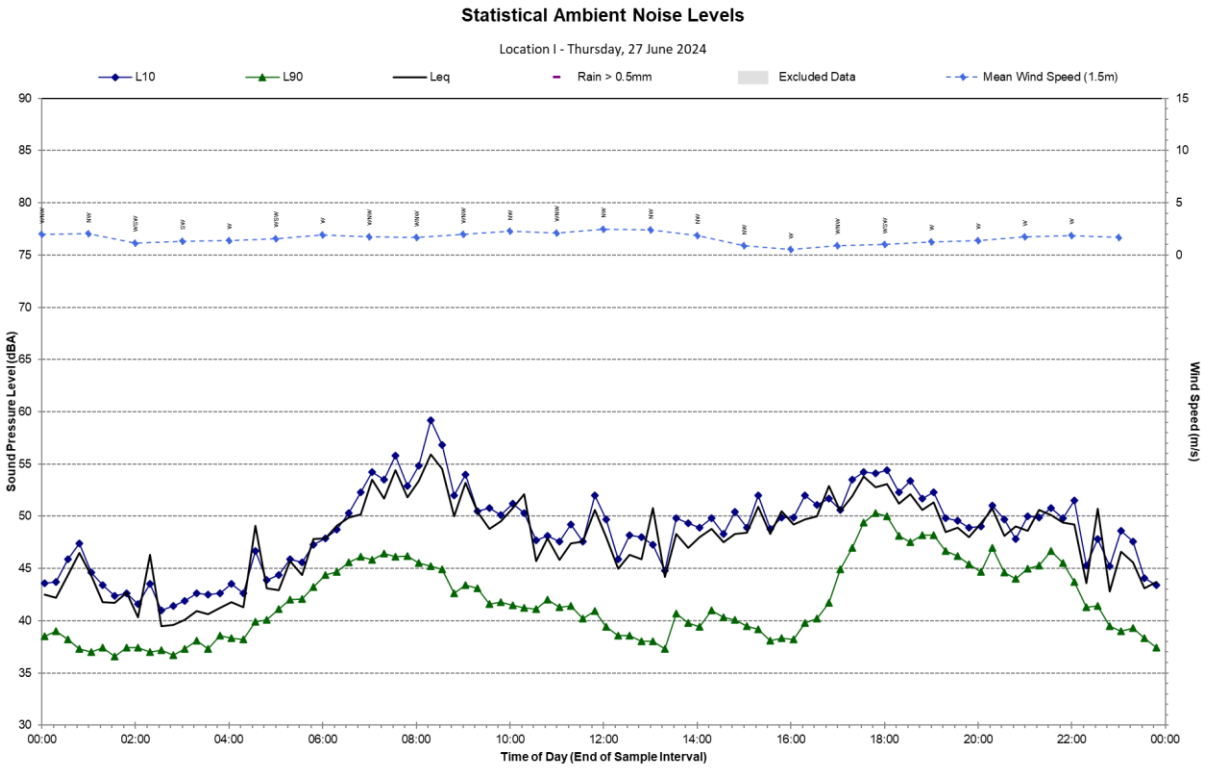

Statistical Ambient Noise Levels
Location G - Saturday, 22 June 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)

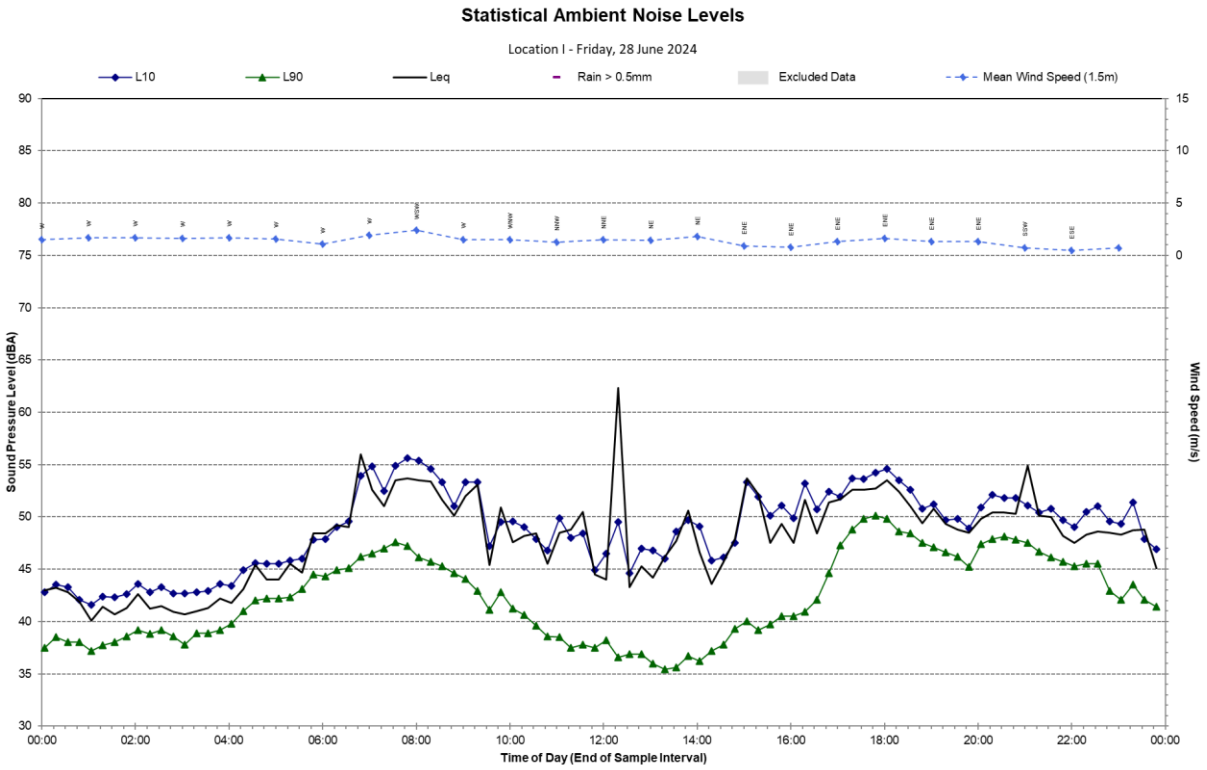

Statistical Ambient Noise Levels
Location G - Sunday, 23 June 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)

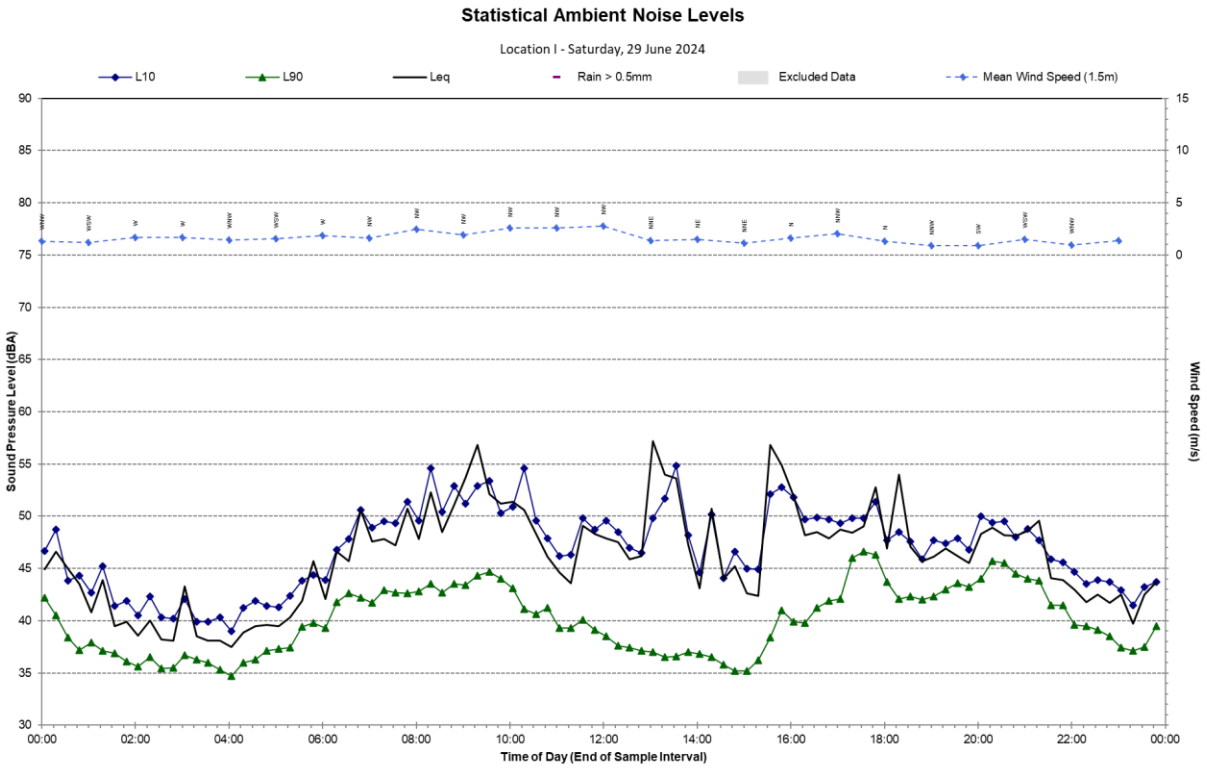

Statistical Ambient Noise Levels
Location G - Monday, 24 June 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)

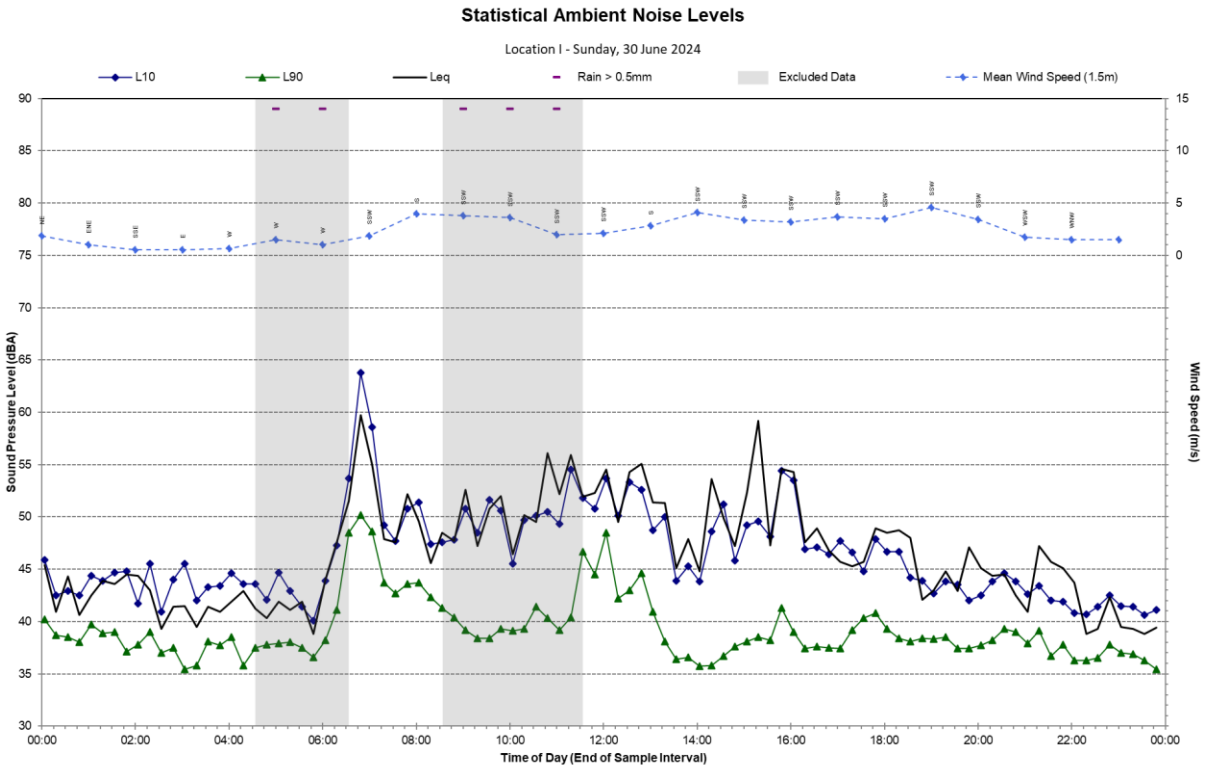

Statistical Ambient Noise Levels
Location G - Tuesday, 25 June 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)

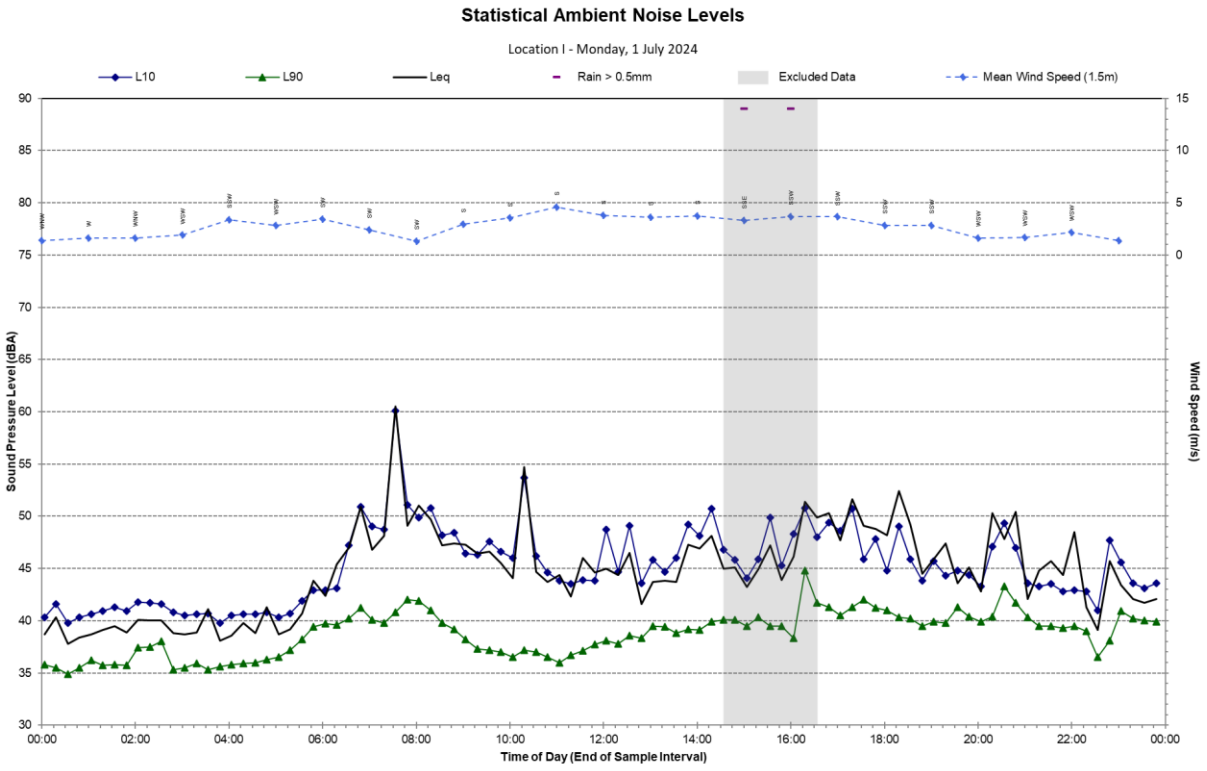

Statistical Ambient Noise Levels
Location I - Wednesday, 26 June 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)

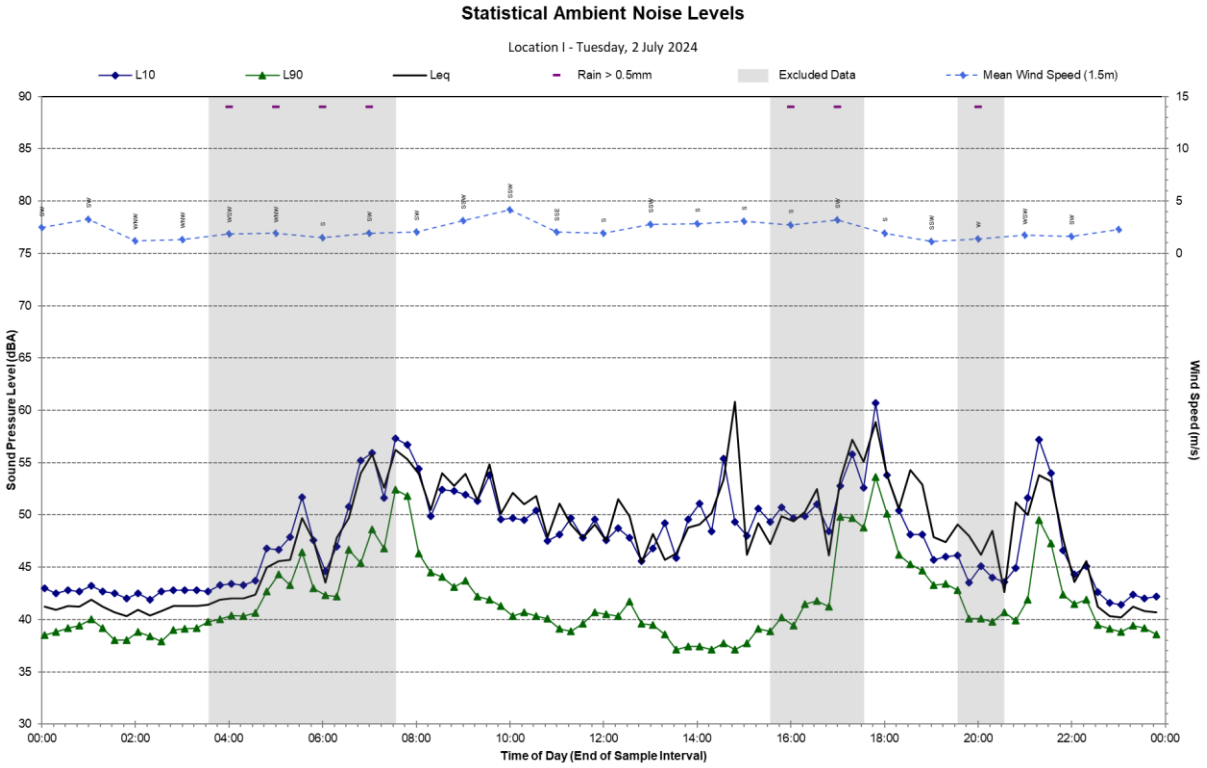

Statistical Ambient Noise Levels
Location I - Thursday, 27 June 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)

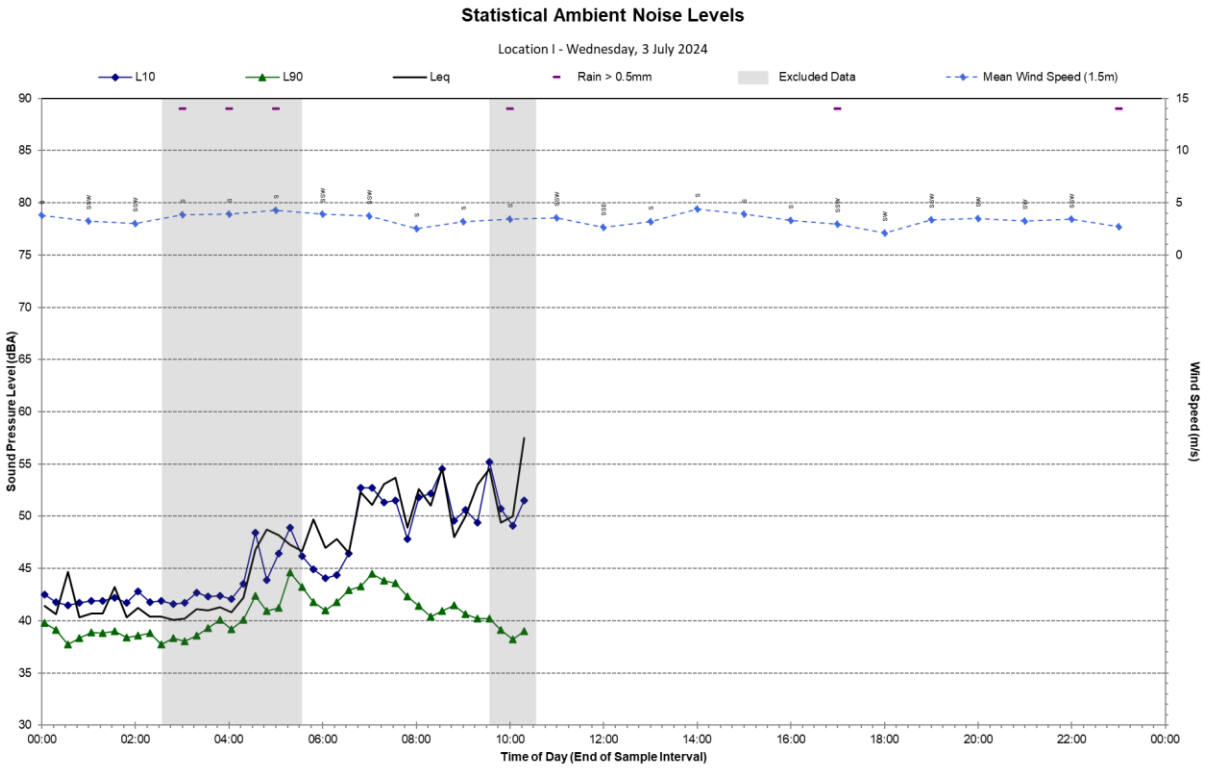

Statistical Ambient Noise Levels
Location I - Friday, 28 June 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)

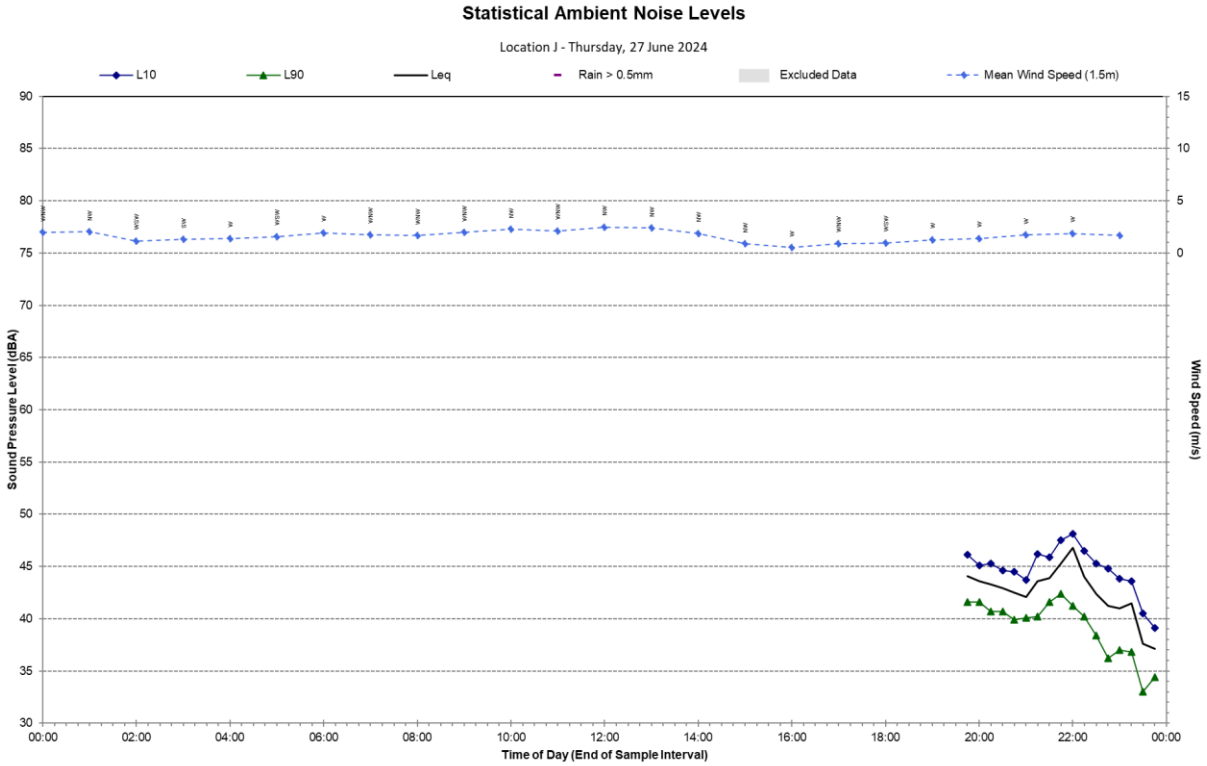

Statistical Ambient Noise Levels
Location I - Saturday, 29 June 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)

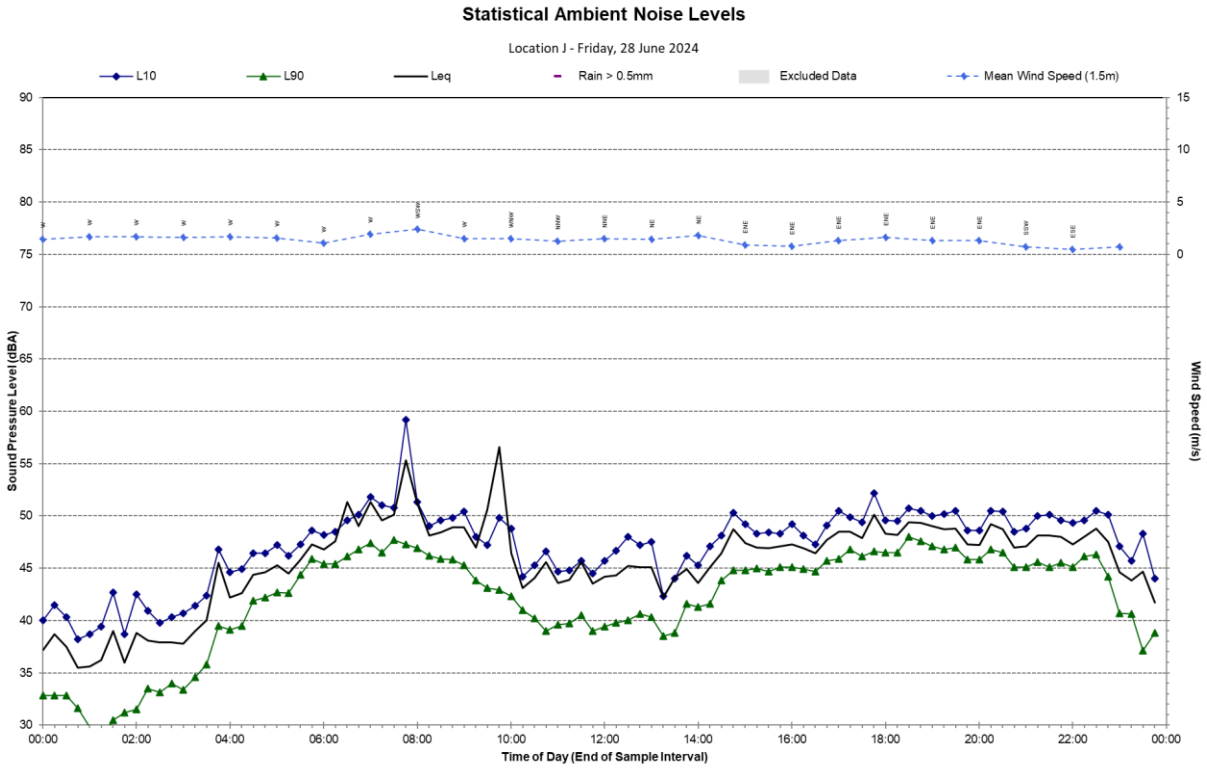

Statistical Ambient Noise Levels
Location I - Sunday, 30 June 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)

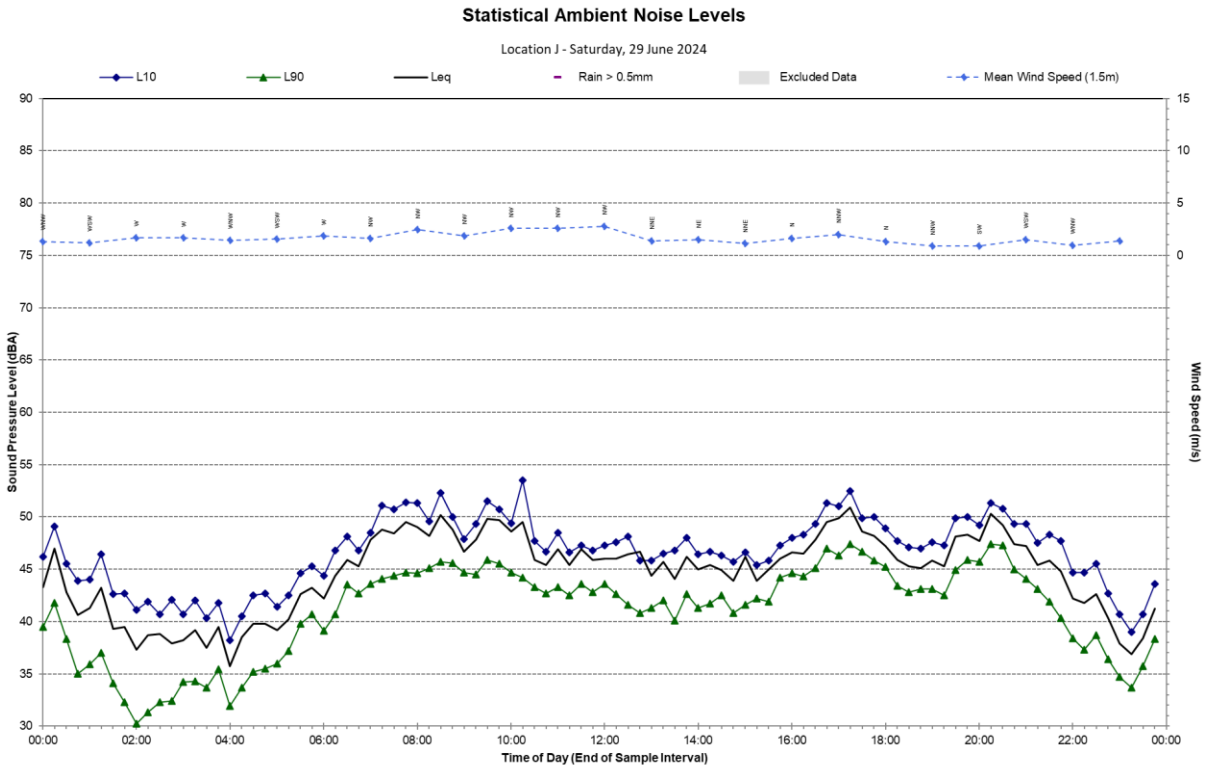

Statistical Ambient Noise Levels
Location I - Monday, 1 July 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)

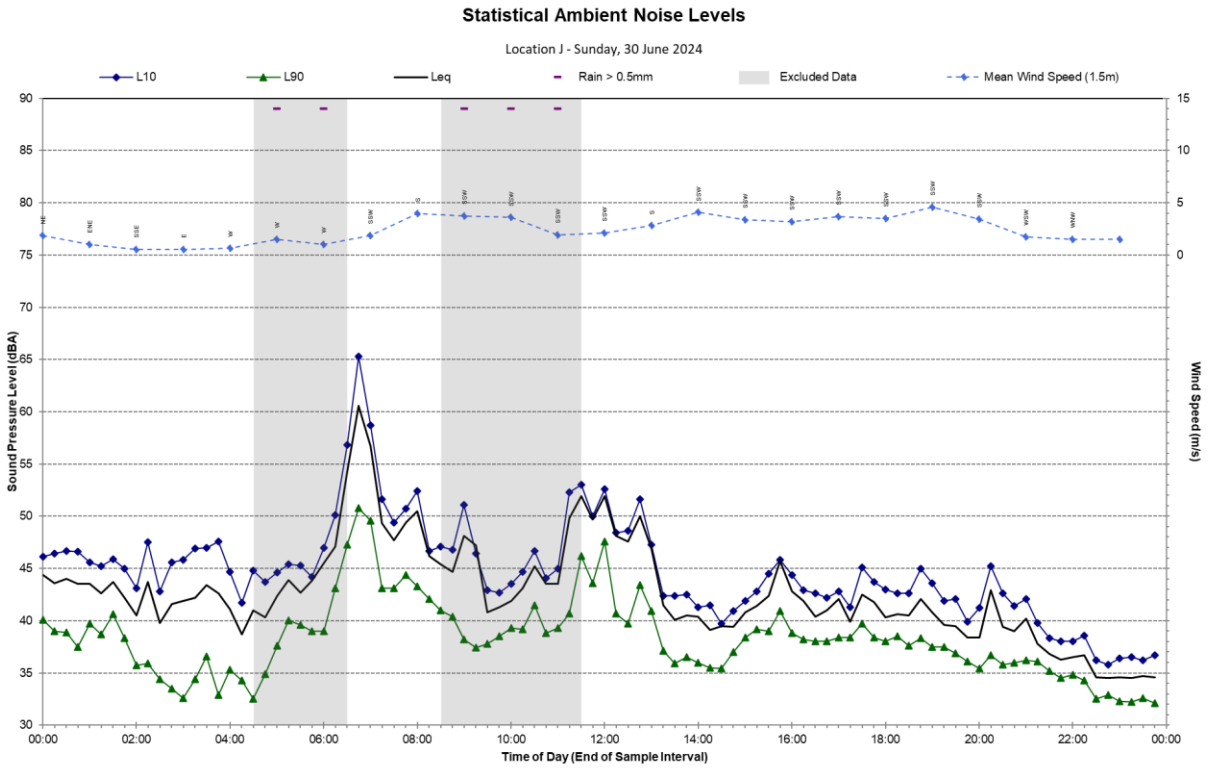

Statistical Ambient Noise Levels
Location I - Tuesday, 2 July 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)

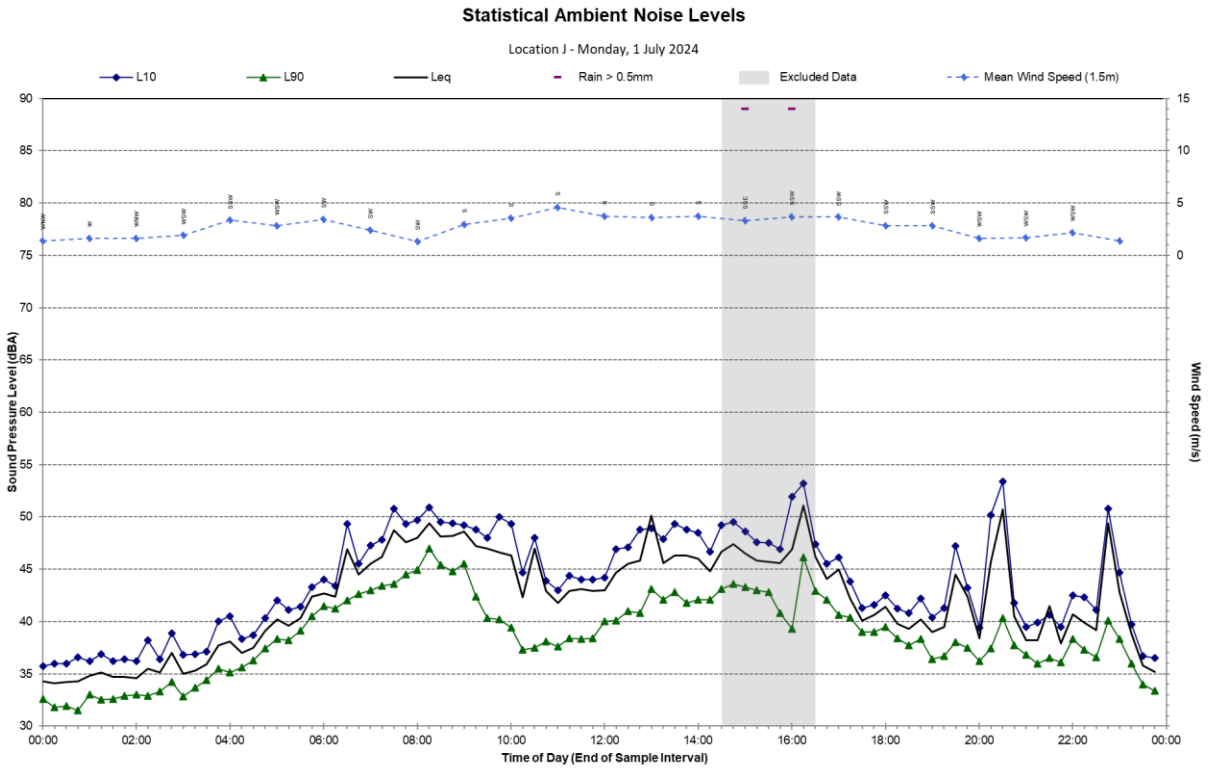

Statistical Ambient Noise Levels
Location I - Wednesday, 3 July 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)

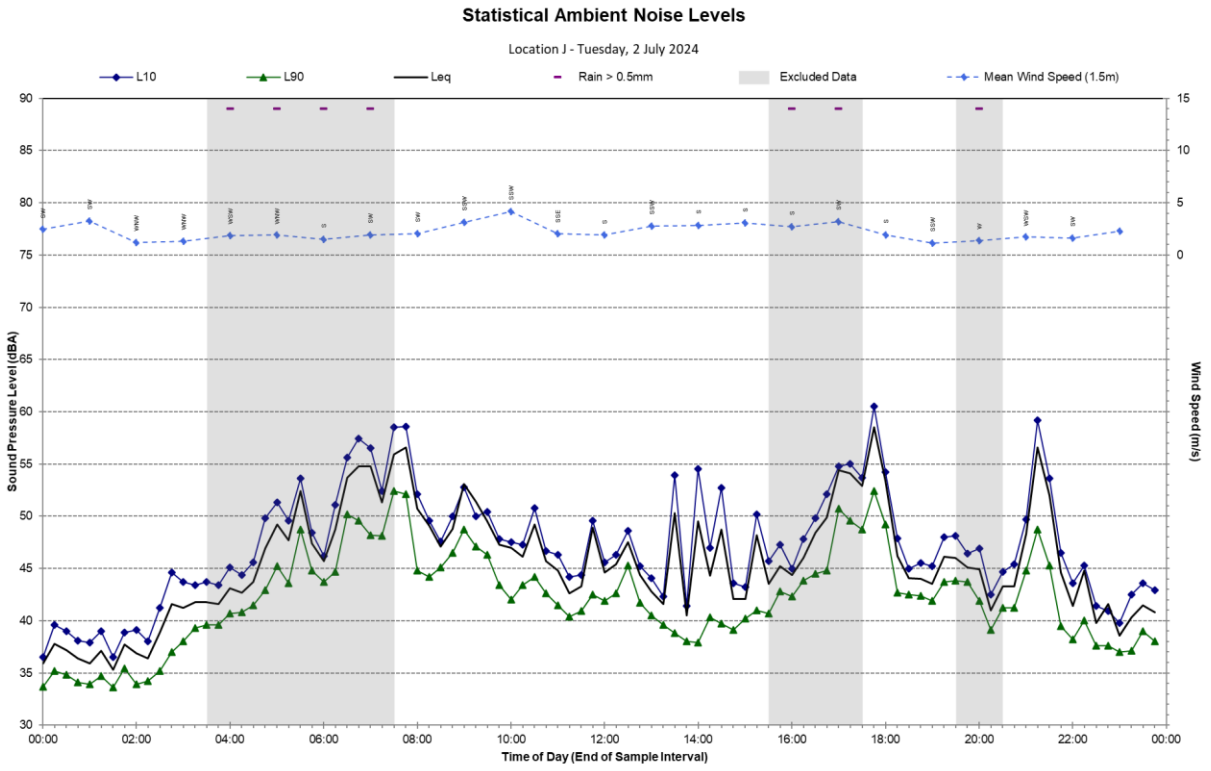

Statistical Ambient Noise Levels
Location J - Thursday, 27 June 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)

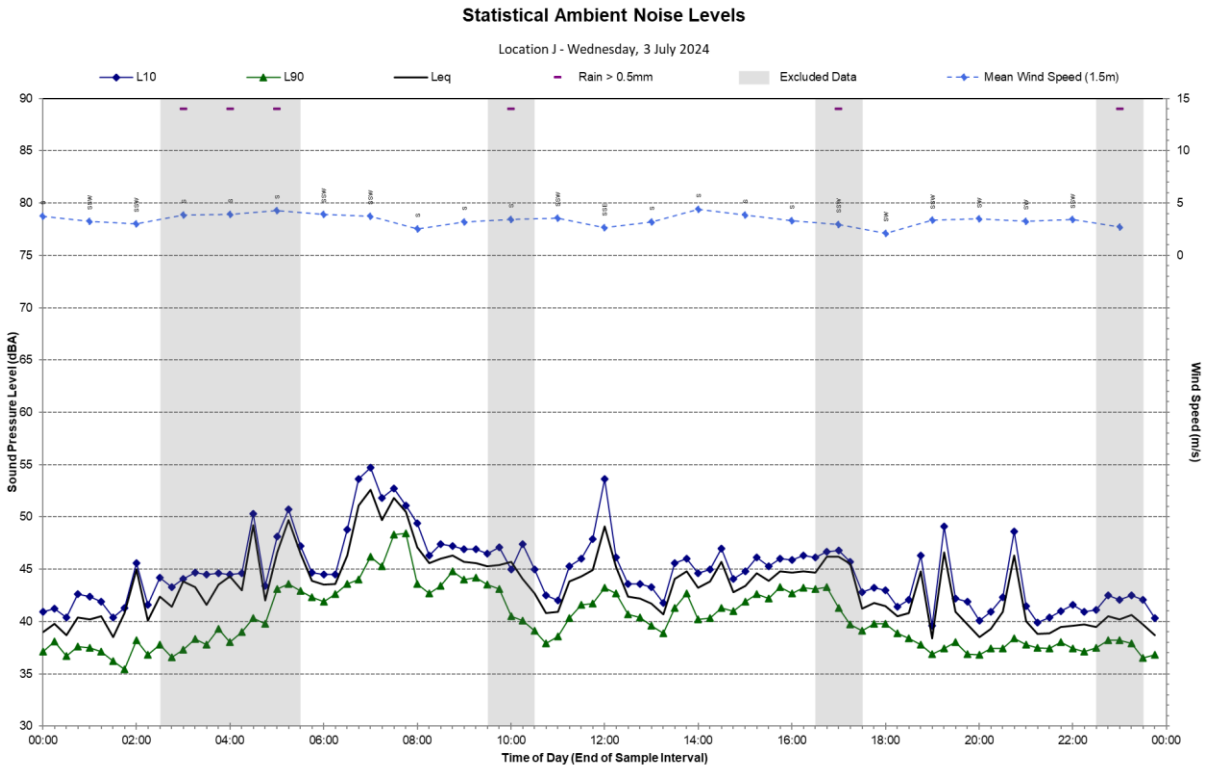

Statistical Ambient Noise Levels
Location J - Friday, 28 June 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)

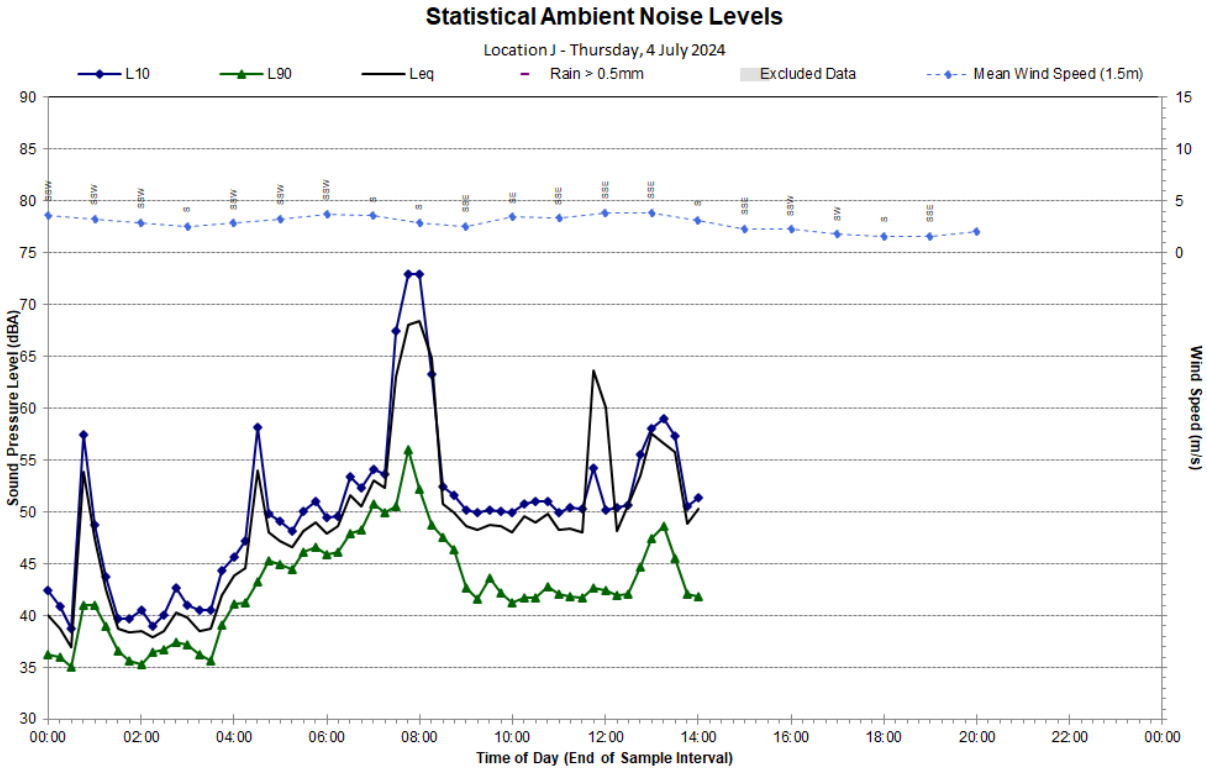

Statistical Ambient Noise Levels
Location J - Saturday, 29 June 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)

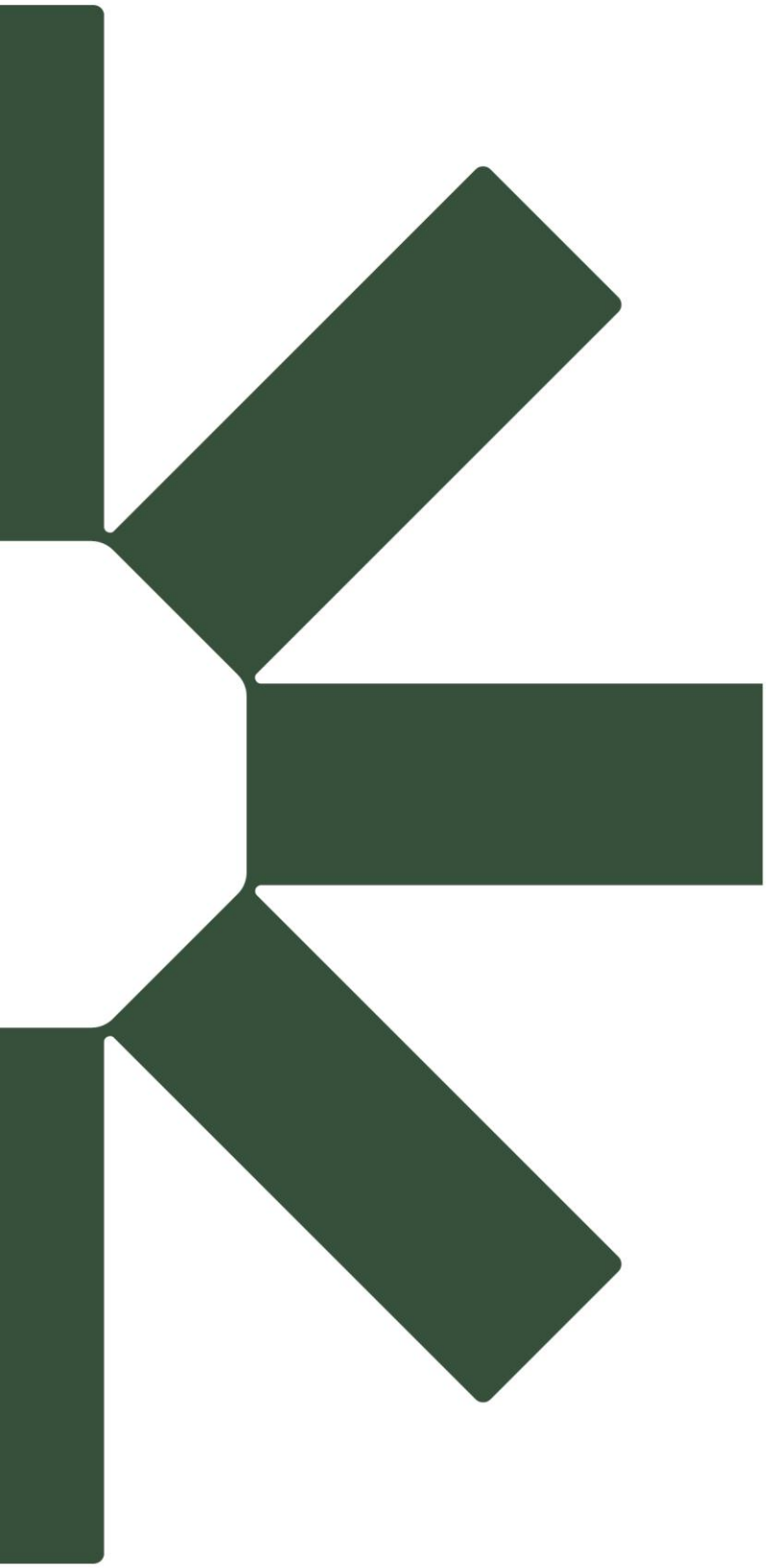

Statistical Ambient Noise Levels
Location J - Sunday, 30 June 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)


Statistical Ambient Noise Levels
Location J - Monday, 1 July 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)


Statistical Ambient Noise Levels
Location J - Tuesday, 2 July 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)


Statistical Ambient Noise Levels
Location J - Wednesday, 3 July 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)


Statistical Ambient Noise Levels
Location J - Thursday, 4 July 2024
L10
L90
Leq
Rain > 0.5mm
Excluded Data
Mean Wind Speed (1.5m)
Sound Pressure Level (dBA)
Wind Speed (m/s)
Time of Day (End of Sample Interval)



Making Sustainability Happen