



Appendix X Acoustic Assessment

Fast-Track Approvals Act 2024 Substantive Application

Hinuera Solar Farm

Harmony Energy NZ #6 Limited

SLR Project No.: 880.016894.00001

19 August 2026





Acoustic Assessment

**Hinuera Solar Farm Project
Fast Track Approvals Application**

Harmony Energy NZ #6 Limited

Prepared by:

SLR Consulting New Zealand Limited

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Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
2.0	22 June 2026	L. Jansen	P. Runcie	P. Runcie
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Basis of Report

This report has been prepared by SLR Consulting New Zealand Limited (SLR), on the instruction of Harmony Energy NZ #6 Limited (the Client), in accordance with the agreed scope of work. It is intended to support the Client's application under the Fast Track Approvals Act 2024 and may be relied upon by the Expert Panel and relevant administering agencies for the purposes of assessing the application. While SLR has exercised due care in preparing this report, it does not accept liability for any use of the report beyond its intended purpose. Where information has been supplied by the Client or obtained from external sources, it has been assumed to be accurate unless otherwise stated.

Statement of Qualifications and Experience

Lodewyk Petrus Jansen – Associate Consultant – Acoustics & Vibration

Lodewyk Petrus Jansen is an Associate Consultant in the Acoustics & Vibration team at SLR, a global environmental consultancy specialising in sustainability, planning, environmental management, and impact assessment. He has been with SLR since 2020.

He holds a Bachelor of Science (Honours) in Environmental Sciences and Development from North West University (2009) and is a full member of the Acoustical Society of New Zealand (ASNZ).

Lodewyk has over 14 years of experience in acoustics, including ten in New Zealand, with his focus on environmental noise. His work includes acoustic assessments for industrial developments, infrastructure, and utilities. He has contributed to several environmental noise assessments and was involved in several solar farm applications under the COVID-19 Recovery (Fast-track Consenting) Act 2020. He has participated in Environment Court mediation and presented technical evidence at Council hearings.

As the author of this report, Lodewyk confirms he has read and abides by the Environment Court of New Zealand Practice Note 2023, specifically section 9 – the Code of Conduct for Expert Witnesses.

Peter Michael Runcie – Technical Director – Acoustics & Vibration

Peter Michael Runcie is Technical Director – Acoustics & Vibration at SLR. He holds a Bachelor of Science (Honours) in Audio Technology from the University of Salford (UK, 2007) and is a full member of the Institute of Acoustics (UK), the Acoustical Society of New Zealand, and the New Zealand Planning Institute. He also represents SLR New Zealand in the Association of Australasian Acoustical Consultants.

Peter has over 18 years' experience in acoustic consultancy across New Zealand, Australia, the Middle East, and the UK. His expertise includes environmental noise assessments for industrial, infrastructure, and land use planning projects. He has presented expert evidence at council hearings and in the Environment Court.

As reviewer of this report, Peter confirms he has read and abides by the Environment Court of New Zealand Practice Note 2023, specifically section 9 – the Code of Conduct for Expert Witnesses.



Executive Summary

The proposed Hinuera Solar Farm and decentralised Battery Energy Storage System would be located near the intersection of State Highway 29 and State Highway 27 in the Matamata-Piako District. This assessment considers potential acoustic effects during both construction and operation of the proposal and confirms compliance with nominated project criteria developed to align with relevant district plan requirements of the Matamata-Piako and South Waikato District as well as current best practice.

Construction Phase

Construction noise has been assessed against NZS 6803:1999, the current national standard for construction noise, which provides clearer measurement procedures and duration-based limits. This approach replaces the superseded NZS 6803P:1984 referenced in the Matamata-Piako District Plan and aligns with the South Waikato District Plan and the National Planning Standards (the NZS 6803P:1984 has been replaced in many district plans).

Compliance with the NZS 6803:1999 limits is achievable using standard management practices, with setback controls recommended for high-noise activities such as impact piling. Vibration levels from construction activities, including piling, are predicted to remain well below DIN 4150-3 guideline values for cosmetic damage at all structures.

Operational Phase

Operational noise limits have been nominated based on the South Waikato District Plan provisions, as these reflect the modern approach adopted nationally and align with the National Planning Standards. A conservative worst-case assessment confirms that the solar farm and BESS can achieve compliance with these limits with a minimum 150 metre setback from any BESS area to the nearest notional boundary. Predicted noise levels are below or comparable to existing ambient levels and are considered reasonable and consistent with rural zone expectations.

Design Flexibility

Alternative design options, including acoustic screening and increased setbacks, have been identified to provide flexibility in equipment selection while maintaining no change in compliance or level of effects. A design noise compliance report is recommended to be provided before installation to confirm that the final site layout, equipment and mitigation measures achieve compliance.

Overall, the nominated criteria and assessment methodology provide a robust compliance framework. The assessment provides a conservative and robust basis to support approval under the Fast Track Approvals Act.



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Acronyms and Abbreviations

Term	Description
Ambient noise level	The all-encompassing sound is associated with an environment or area, including the specific sound. Also referred to as the "Total Sound"
Background noise level (L90)	The level in decibels equalled or exceeded for 90% of the measurement interval. It is the component of residual sound that is subjectively perceived as continuously present.
BESS	Battery Energy Storage System
dBA	A-weighted decibel.
DIN 4150-3:1999	German Standard DIN 4150-3:1999 "Structural Vibrations – Part 3: Effects of vibration on structures"
Impulsive noise	Transient sound having a peak level of short duration, typically less than 100 milliseconds.
Intermittent noise	Noise that varies in level with the change in level being audible.
ISO 9613-2:2024	International Standards Organisation ISO 9613-2:2024 "Acoustics — Attenuation of sound during propagation outdoors — Part 2: Engineering method for the prediction of sound pressure levels outdoors".
L90, L10, LN, etc.	Statistical exceedance levels, where LN is the sound pressure level exceeded for N% of a given measurement period.
LAeq	The A-weighted equivalent noise level. It is defined as the steady sound level that contains the same amount of acoustical energy as the corresponding time-varying sound.
L _{Amax}	The A-weighted maximum sound pressure level of an event.
Lp or SPL	Sound Pressure Level.
LWA or SWL	Sound Power Level.
MW	Megawatt
MWp	Megawatt peak – a measure of the maximum potential output of power. A unit of measurement for the output of power from a source such as solar or wind where the output may vary according to the strength of sunlight or wind speed
Noise logger	A self-contained, battery powered item of equipment that is used to measure noise levels over several days.
Notional Boundary	A line 20 metres from any side of a dwelling, or the legal boundary where this is closer to the dwelling.
NZS 6801:1991	New Zealand Standard NZS6801:1991 Measurement of Sound
NZS 6801:2008	New Zealand Standard NZS 6801:2008 Acoustics – Measurement of Environmental Sound
NZS 6802:1991	New Zealand Standard NZS6802:1991 Assessment of Environmental Sound
NZS 6802:2008	New Zealand Standard NZS 6802:2008 Acoustics – Environmental Noise.
NZS 6803:1999	New Zealand Standard NZS 6803:1999 Acoustics – Construction Noise.
NZS 6803P:1984	New Zealand Standard NZS 6803P:1984 The Measurement and Assessment of Noise from Construction, Maintenance and Demolition Work
Rating level	A derived level used for comparison with a noise limit.
Residual noise level	The total sound remaining at a given position in a given situation when the specific sound under consideration is suspended or is an insignificant part of the total sound.
SAC	Special Audible Characteristics
Specific sound	The component of the total sound that can be identified as associated with a specific source.
Specific source	An activity or object that emits sound and includes a site from which noise is emitted.
Steady-state noise	A noise that remains relatively constant in level over time, as opposed to time-varying noise which fluctuates over time.
Tonality	Noise that contains a prominent frequency.



1.0 Introduction

SLR has been engaged by Harmony Energy NZ #6 Limited to assess the potential acoustic effects associated with the construction and operation of the proposed Hinuera Solar Farm (the **Proposal**).

The Proposal comprises a 70 MW AC / 100 MW DC solar farm with decentralised Battery Energy Storage System (**BESS**) providing up to 400 MWh of storage capacity.

The assessment supports the Client's application under the Fast Track Approvals Act 2024 and addresses compliance with relevant district plan requirements and applicable New Zealand Standards.

The purpose of this report is to:

- Identify nominated noise and vibration criteria for the Proposal.
- Evaluate predicted construction and operational noise levels at surrounding receivers.
- Confirm whether the Proposal complies with relevant limits and determine if mitigation is required.

2.0 Site Location and Project Description

2.1 Site Description

The site is located at the intersection of State Highway 29 and State Highway 27, Hinuera, within the Matamata-Piako District, approximately 10 km south of Matamata. The proposal spans four Records of Title, covering approximately 150 hectares currently used for dairy farming.

The surrounding environment is zoned Rural and characterised by agricultural land uses. Most receivers are within the Matamata-Piako District (**MPD**), with some located in the South Waikato District (**SWD**) to the south-east. A detailed list of receivers is provided in **Appendix A**, along with a map showing their location relative to the Proposal. **Figure 1** illustrates the solar farm extent and the local authority boundary between MPD and SWD.

2.2 Project Description

The proposal is designed based on a single-axis tracking photovoltaic (**PV**) system which allows panels to rotate along one axis to follow the sun's movement, optimising energy generation throughout the day. The tracking system determines the orientation of the solar array panels (north to south) and the placement of associated infrastructure (such as the BESS and central inverters units). This assessment is based on the tracking layout shown in the proposed site plan provided by Harmony Energy in the drawing "Hinuera – PV Module Areas" (dated 29 May 2026), presented in **Appendix B**.

The proposal includes approximately 170,000 photovoltaic (**PV**) modules and the electricity generated will be converted from direct current (**DC**) to alternating current (**AC**) through the central inverter units spread across the site. Each of the central inverter units will be accompanied by a BESS unit (collectively referred to as **BESS Area**). Each BESS Area will comprise up to three batteries and associated infrastructure (such as a power control system and transformer). The decentralised BESS component will provide storage capacity for discharge during peak electricity periods or when required.

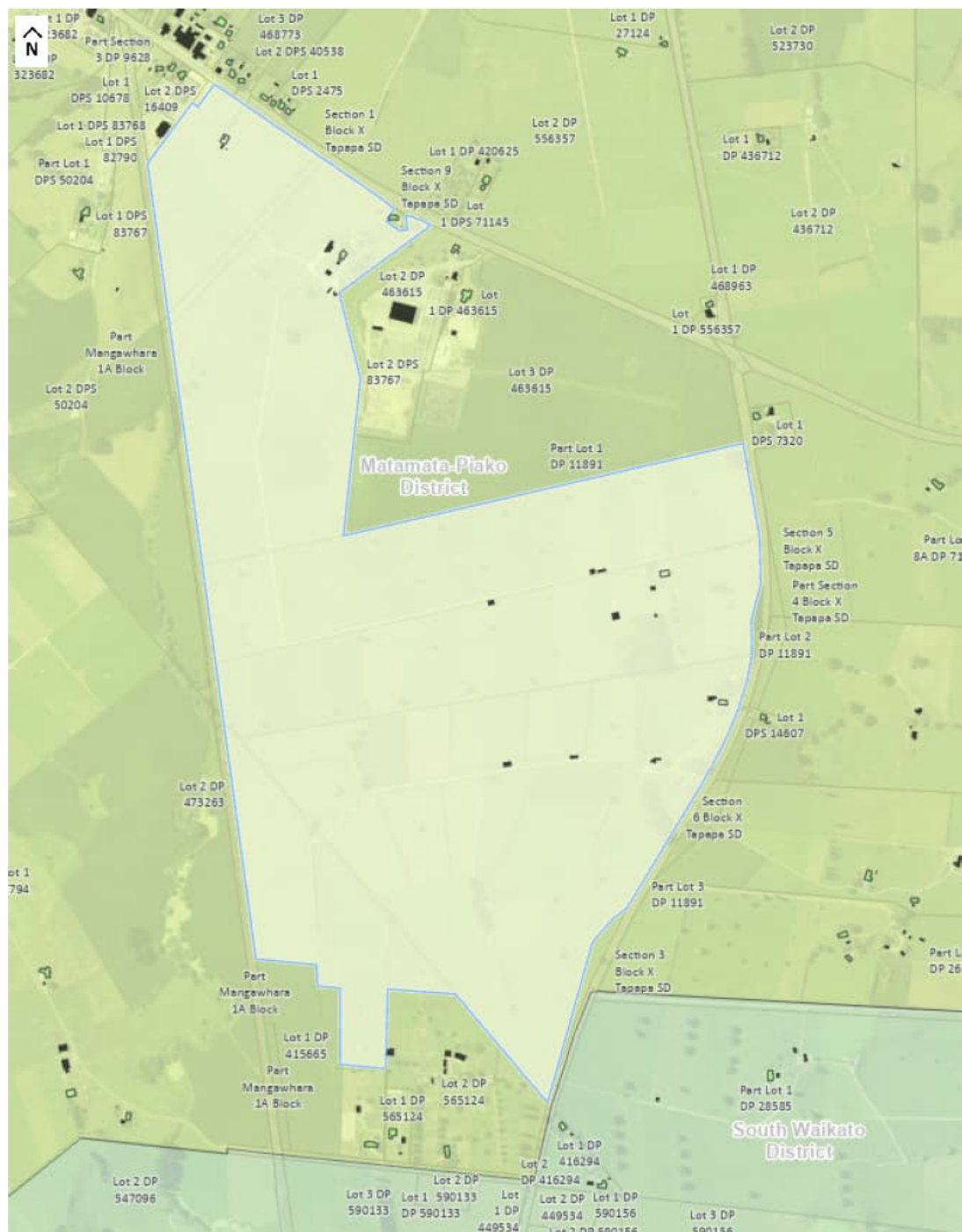
Electricity is expected to be generated during daylight hours, typically from 5:00 am to 6:00 pm in summer and 8:00 am to 4:00 pm in winter. It is anticipated that the BESS component would discharge during the typical peak electricity demand periods that are



between 7:00 am and 9:00 am in the morning and 5:00 pm to 7:00 pm in the evening. Recharging of the BESS units will occur during periods of low demand at a controlled rate to reduce thermal loading and minimise running of cooling systems.

Supporting infrastructure includes a switching station (no high voltage transformer – no acoustic significant equipment), an operations and maintenance building, and storage buildings. The site will be enclosed by a security fence. The facility will operate primarily under automated control, with minimal on-site staffing.

Figure 1 Solar Farm Location and Surroundings



3.0 Performance Standards

3.1 Construction Noise Criteria

Rule 5.2.1 of the Matamata-Piako District Plan states that construction noise must comply with the requirements specified in Table 1 of New Zealand Standard NZS 6803P:1984 *The Measurement and Assessment of Noise from Construction, Maintenance and Demolition Work* (NZS 6803P:1984).

NOISE-R2 of Chapter 12.7 of the South Waikato District Plan states that construction noise must comply with the provisions of New Zealand Standard NZS 6803:1999 *Construction noise* (NZS 6803:1999).

3.1.1 Project Nominated Construction Noise Criteria

NZS 6803P:1984 has been superseded by NZS 6803:1999, which introduced more detailed methods for predicting, managing, and assessing construction noise. This standard also expanded the framework to include clearer guidance on measurement procedures, duration-based limits, and activity-specific considerations.

As a more recent standard is available, and the SWD has adopted this standard, it is recommended that the construction noise assessment and any associated conditions follow the methodology and limits set out in NZS 6803:1999, reflecting current best practice. This approach is consistent with recent consenting practice for large-scale infrastructure projects. Compliance with the L_{Aeq} limits specified in NZS 6803:1999 would generally represent compliance with equivalent L_{A10} limit as set out in NZS 6803P:1984.

Construction activities associated with the proposal are expected to occur over a period exceeding 20 weeks. The applicable long-duration construction noise limits from Table 2 of NZS 6803:1999 are reproduced in **Table 1**. These noise limits are measured at 1 m from the facade of any dwelling occupied during the works.

Table 1 Construction Noise Limits – Table 2 of NZS 6803:1999 (Long-term Duration)

Time of Week	Time Period	Long-term duration of Construction work (more than 20 weeks)	
		dB L_{Aeq}	dB L_{Amax}
Weekdays	6:30 am – 7:30 am	55	75
	7:30 am – 6:00 pm	70	85
	6:00 pm – 8:00 pm	65	80
	8:00 pm – 6:30 am	45	75
Saturdays	6:30 am – 7:30 am	45	75
	7:30 am – 6:00 pm	70	85
	6:00 pm – 8:00 pm	45	75
	8:00 pm – 6:30 am	45	75
Sundays and public holidays	6:30 am – 7:30 am	45	75
	7:30 am – 6:00 pm	55	85
	6:00 pm – 8:00 pm	45	75
	8:00 pm – 6:30 am	45	75



3.2 Construction Vibration Criteria

In the absence of specific construction vibration criteria within the Matamata-Piako District Plan, this assessment adopts the standard referenced in the South Waikato District Plan: German Standard DIN 4150-3:1999 – *Structural Vibrations, Part 3: Effects of Vibration on Structures (DIN 4150-3)*. This internationally recognised standard provides guideline vibration values that, if complied with, are not expected to result in damage affecting the serviceability of structures.

3.2.1 Project Nominated Construction Vibration Criteria

It is recommended that the construction vibration assessment is based on the DIN 4150-3 guideline. This Standard provides guideline vibration values which, if complied with, are not expected to result in damage that would adversely affect the serviceability of a structure.

For residential-type buildings, the standard considers serviceability to be reduced if:

- Cracks form in plastered surfaces of walls;
- Existing cracks become enlarged;
- Partitions become detached from load-bearing walls or floors.

These effects are classified as *minor damage*. DIN 4150-3 guideline values for evaluating short-term and long-term vibration on structures are given in **Table 2**. DIN 4150-3 provides separate guideline values for *Short-term vibration* refers to intermittent events that do not cause structural fatigue or resonance; and *Long-term vibration* refers to continuous or repeated exposure, such as that associated with construction activities.

Table 2 Guideline Values for Vibration to be Used when Evaluating the Effects of Short-term and Long-term Vibration on Structures (DIN 4150-3)

Line	Type of Structure	Guideline values for v_i in mm/s				
		Short-term Vibration			Long-term Vibration	
		Vibration at the foundation at a frequency of:			Vibration at horizontal plane of highest floor at all frequencies	Vibration at horizontal plane of highest floor at all frequencies
		1-10Hz	10-50Hz	50-100Hz		
1	Commercial type building	20	20-40	40-50	40	10
2	Residential type building	5	5-15	15-20	15	5
3	Listed buildings and sensitive to vibrations	3	3-8	8-10	8	2.5



3.3 Operational Noise Criteria

3.3.1 Matamata-Piako District

Rule 5.2.6 of the Matamata-Piako District Plan states that noise levels measured within the notional boundary of any rural dwelling should not exceed the limits in **Table 3**.

Table 3 Operational Noise Limits – Rule 5.2.6 of the Matamata-Piako District Plan

Timeframe	Noise Criteria
7:00 am – 8:00 pm	50 dB LA10
8:00 pm – 7:00 am	40 dB LA10

The Plan states that noise levels shall be measured and assessed in accordance with the requirements of NZS 6801:1991 *Measurement of Sound (NZS 6801:1991)* and NZS 6802:1991 *Assessment of Environmental Sound (NZS 6802:1991)*.

3.3.2 South Waikato District

NOISE-R1 of Chapter 12.7 of the South Waikato District Plan states that noise levels measured within the notional boundary of any rural dwelling should not exceed the limits in **Table 4**.

Table 4 Operational Noise Limits – NOISE-R1 of the South Waikato District Plan

Timeframe	Noise Criteria
7:00 am – 10:00 pm	50 dB LAeq
10:00 pm – 7:00 am	40 dB LAeq 70 dB L _{Amax}

The Plan states that noise levels shall be measured and assessed in accordance with the requirements of NZS 6801:2008 *Acoustics – Measurement of Environmental Sound (NZS 6801:2008)* and assessed in accordance with NZS 6802:2008 *Acoustics – Environmental Noise (NZS 6802:2008)*.

3.3.3 Nominated Project Operational Noise Criteria

The noise rules in both District Plans differ in three key areas.

- Noise measurement metrics

MPD applies the now outdated LA10, whereas SWD applies the current metrics of LAeq and L_{Amax}.

For steady-state noise, LA10 and LAeq are typically similar; however, they are not strictly equivalent. For the purposes of this assessment, compliance with LAeq is considered representative of compliance with LA10, subject to confirmation at detailed design.



- Timeframe

MPD defines daytime as 7:00 am to 8:00 pm; SWD extends this to 10:00 pm.

As BESS units could operate at any time, compliance for such sites is driven by the most stringent night-time limit.

Therefore, the definition of daytime and night-time hours is not critical because the limits, as noted above, are the same in both plans.

- Acoustic Standards

MPD refers to the now superseded NZS 6801:1991 and NZS 6802:1991, whereas the SWD adopts the current NZS 6801:2008 and NZS 6802:2008.

For the reasons noted above regarding the interchangeability of the noise descriptors in this case, and in line with best practice and the National Planning Standards ("Section 15 – Noise and Vibration Metrics Standard" by the Ministry for the Environment, November 2019), the latest publications of NZS 6801 and NZS 6802 (2008) have been adopted.

For clarity, ease of enforcement and consistency, it is recommended that the requirements of SWD (**Section 3.3.2**) are adopted for all surrounding receivers.

Given the steady nature of the operational sources and the alignment of night-time L_{Aeq} limit, compliance with the adopted SWD limits will also represent compliance with the MPD limits. Similarly, as the operational plant generates steady, non-impulsive noise, no impulsive events are expected at receiver locations during night-time periods. Therefore, compliance with the 70 dB L_{Amax} limit is anticipated.

4.0 Existing Noise Levels

Noise monitoring was carried out from Friday, 14 November 2025 and to Thursday, 27 November 2025 to characterise and quantify the existing noise environment surrounding the site. Two noise loggers were deployed, one north and one south of the site. The location of the loggers are summarised and the graphical profile over the survey period are represented in **Appendix C**.

The northern logger was positioned to represent dwellings near State Highway 29 (receivers P1 to P14, P20 to P23, and P29), while the southern logger represented dwellings located further south along State Highway 27 (receivers P35, P40 to P43, and P47 to P51).

Both loggers were Svantek 977D Type 1 sound level meters (serial numbers SN 99013 and SN 99014). Noise levels were measured in general accordance with NZS 6801:2008 with no significant drift in calibration found before and after the monitoring period. Weather conditions during the monitoring period were recorded by a weather station deployed at the southern logger position, at microphone height. The weather during the survey was at times affected by rainfall and/or high wind speeds. These periods of adverse weather have been identified (when windspeeds were above 5 m/s and the rainfall rate was more than 0.6 mm per hour) and excluded during post-processing of the data.

Observations during logger setup and retrieval identified the dominant noise sources at both positions as road traffic on State Highway 27 and State Highway 29, with occasional train movements on the North Island Main Trunk Line. Secondary sources included wind-induced vegetation noise and intermittent local farming activity.



5.0 Construction Assessment

5.1 Noise

Construction works are expected to occur between 7:00 am and 6:00 pm, Monday to Saturday, with no work on Sundays or public holidays. Quiet activities such as staff arrivals, departures, and deliveries may occur outside these hours. High-noise activities will be scheduled after 7:30 am to minimise early morning impacts. However, this restriction does not apply to the logistical movements such as relocating equipment to the day's working area.

The proposed works include clearing and levelling of limited areas, such as the site laydown area, site access and internal roads, administrative area, and BESS unit footprints. Delivery of equipment and assembly of the BESS will occur after earthworks are completed.

The loudest construction activity for solar farm projects is typically piling of the structural supports for the solar panel arrays. The specialised impact piling rigs commonly used at solar farm projects are diesel-powered, track-mounted, high-speed hydraulic rigs (such as the GAYK HRE 4000). Based on our observations and measurements, installing a single pile involves a full sequence of tasks, from traversing to the pile position, lifting and loading the pile, hammering the pile into place, and releasing the hammer. Depending on site conditions and setup, installation rates typically range from one to three piles per 15-minute period.

Staging of works across the site will influence the proximity of equipment operating at the same time. A list of expected equipment (provided by the applicant) and associated reference sound pressure levels are provided in **Table 5**. These levels are based on a combination of measurements of other similar activities/plant and published data (BS 5228-1: 2009 *Code of practice for noise and vibration control on construction and open sites – Part 1; Noise*). The noted setback distances to compliance (with the 70 dB L_{Aeq} limit) have been calculated in accordance with the methodology in NZS 6803:1999. They include facade corrections and are calculated assuming no intervening acoustically reflective ground.

The nearest dwelling is 4735 State Highway 29 (Lot 3 DPS 2475, refer to as P20 in **Appendix A**) and located approximately 80 metres from potential construction work. Based on the approximate setback distances in **Table 5**, compliance can be achieved during construction activities, provided that any wood chipper activity does not occur within 120 metres of a dwelling.

During peak activity, the client has indicated that up to ten piling rigs may operate across the site. Based on experience, works will be staged so that not all rigs operate in one area simultaneously. Typically, rigs work in smaller groups of up to three within 100 metres of each other. To manage cumulative noise and achieve compliance with the 70 dB L_{Aeq} limit prescribed by NZS 6803:1999, the following setback distances should be maintained:

- $d < 75$ m: No impact piling without prior investigation or mitigation.
- $75 \text{ m} \leq d < 105$ m: Impact piling may be carried out by one rig only.
- $105 \text{ m} \leq d < 135$ m: Impact piling may be carried out by up to two rigs.
- $d \geq 135$ m: Impact piling may be carried out by three or more rigs.

Figure 2 shows the recommended distance-based management approach for impact piling.



Table 5 Plant Items and Typical Noise Emission Levels

Activity	Plant Item	Sound Pressure Level at 10m	Approximate setback distance without mitigation – for compliance with 70 dB LAeq
Excavation works	Excavator (<30t) fitted with a bucket attachment	75 dB LAeq	30
Clearing	Woodchipper	85 dB LAeq	120
	Dozer (≤10t or ≤80kW)	75 dB LAeq	24
	Dozer (10-25t or 80-165kW)	80 dB LAeq	45
Grader	Motor Grade (≤20t) with blade	65 dB LAeq	17
	Motor Grade (20-30t) with blade	70 dB LAeq	30
Compaction	Non-vibratory roller (<15t)	70 dB LAeq	13
	Non-vibratory roller (>15t)	65 dB LAeq	8
	Vibratory Plate Compactor (<250kg)	80 dB LAeq	45
	Vibratory roller (<3t)	75 dB LAeq	11
Transport	Transportation truck	75 dB LAeq	13
	Concrete Truck	70 dB LAeq	21
	Water Truck	65 dB LAeq	8
Assembly	Mobile Wheeled Crane (<150t)	70 dB LAeq	13
	Generator	65 dB LAeq	11
	Powered Tools	65 dB LAeq	10
Impact Piling	Solar Piling Rig	85 dB LAeq	75

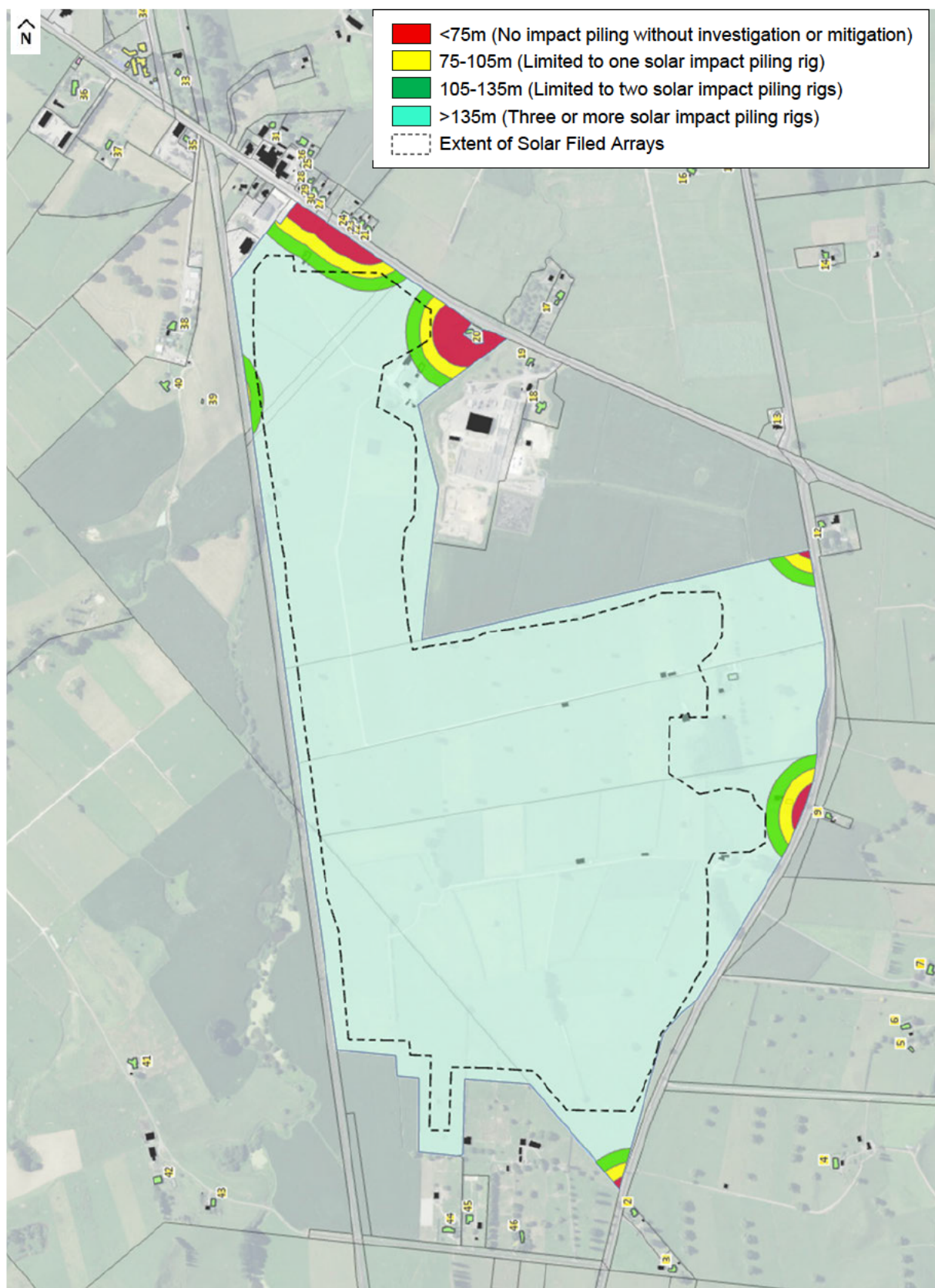
5.2 Vibration

Measurements of impact piling as part of solar farm construction activities in New Zealand identified levels of up to 5 mm/s PPV at approximately 10 metres from the source.

Based on these measurements, vibration generated by the construction activities would be well below typical perception thresholds at residential receivers, and thus significantly lower than the guideline values for the avoidance of cosmetic damage meeting the project criteria.



Figure 2 Solar Impact Piling Set back distances



6.0 Operational Noise

This section assesses operational noise from the proposal against the nominated criteria in **Section 3.3.3**.

6.1 Sound Propagation Methodology and Assumptions

Operational noise generated by the proposal has been predicted following the ISO 9613-2:2024 *Acoustics — Attenuation of sound during propagation outdoors — Part 2: Engineering method for the prediction of sound pressure levels outdoors* algorithm, implemented in SoundPLAN. This standard provides an engineering method for predicting sound propagation in outdoor environments, accounting for source sound levels, distance, ground effects, and attenuation from barriers or buildings.

The method assumes meteorological conditions favourable to sound propagation (such as downwind or moderate temperature inversion), representing a conservative worst-case scenario for all receivers.

This modelling approach aligns with predictive methodologies referenced in NZS 6802:2008 for environmental noise assessment.

The assessment has been based on the following information and assumptions:

- Addresses, building footprints and property boundaries data from the LINZ Open Data Portal (<https://data.linz.govt.nz/>).
- Terrain data for the site and surrounding area interpolated to 1 metre interval contours from LINZ.
- Receivers modelled at 1.5 m above ground level at the notional boundary of existing dwellings.
- Intervening ground modelled as acoustically absorbing, except within the BESS areas which are modelled as acoustically reflective.
- The noise reduction via intervening physical screening provided by the solar panel arrays has conservatively not been taken into account.
- Noise source levels and modelling assumptions are detailed in **Section 6.2**.

6.2 Assessment Scenario

Given that the specific make and model of equipment have not yet been confirmed, and based on the current proposed site layout, the operational noise assessment adopts a conservative scenario using representative equipment types.

6.2.1 Equipment Assumptions

The following equipment was assumed across the site as per the proposed site layout:

- 1) Solar Component –
 - a) 1,550 individual single-axis tracker motors.
 - b) 30 containerised central inverter units (one per BESS area)
- 2) BESS Component –
 - a) 90 battery units integrated with power control system inverters (three containerised battery units per BESS area)
 - b) 30 medium voltage transformer units (one per BESS area).



Noise emissions will primarily come from the cooling systems of the BESS and inverter units. These vary depending on power load (charging/discharging), ambient temperature, and heat output, which influence fan speed. To ensure a conservative assessment, the model assumes all equipment operates at peak generation under warm conditions. This scenario is unlikely to occur within the project's nominated night-time period (10:00 pm to 7:00 am), but appropriate for worst-case analysis.

Solar tracker motors operate intermittently, no more than 15 seconds per movement, with total daily operation estimated at less than five minutes. The system would also run the motors in sequential or staggered blocks to manage electrical load and protect equipment. Therefore, not all motors would run at the same time. The movements are likely to be more frequent in the morning and late afternoon (could occur every 10–15 minutes) and less frequent during the middle of the day (could occur every 20–30 minutes). The assessment is based on all motors operating simultaneously within the same 15-minute window and is considered a conservative assumption.

6.2.2 Special Audible Characteristics

Section 6.3 of NZS 6802:2008 contains provisions for adjustments for undesirable noise characteristics such as tonality and impulsiveness. If one or more characteristics are present at the receptor under assessment, then an SAC adjustment should be applied to the overall noise level at that receiver.

A +5 dB adjustment has been conservatively applied to all receivers to account for potential tonal characteristics. This represents a worst-case assumption and will be refined once equipment specifications are confirmed by manufacturer data.

If non-tonal performance is confirmed, this adjustment can be removed, allowing the permissible sound power levels per unit to be increased. It is recommended that an SAC assessment be carried out to determine where an SAC are predicted to be present at any notional boundary, once the site layout and equipment has been finalised.

6.2.3 Duration Adjustment

No duration adjustment has been applied to ensure a conservative assessment, noting that some sources (e.g. tracker motors) operate intermittently.

6.2.4 Sound Power Levels

The sound power levels (LWA with third-octave spectra) used in this assessment are shown in **Table 6**. These values are based on a combination of measurements, manufacturer-published noise data, and information provided by the project team. All items have been modelled assuming operation at full load and in a steady state to represent the highest potential 15-minute period of noise generation on the site.

The BESS and inverter unit LWA's represent the highest level to achieve compliance without mitigation. These LWA's correspond to commercially available units operating in their highest noise-generating mode (full load and cooling system at 100% duty).

The sound power levels and spectrum data for transformers have been derived based on sizing and reference to IEC 60076-10 – *Power Transformers, Part 10: Determination of Sound Levels*.

This approach ensures a conservative and robust assessment that can be evaluated against the applicable night-time noise limit.



Table 6 List of Noise Sources

Noise Source	Sound Power Levels (dB LWA/unit) based on LAeq
Individual Solar Array Tracker Motor	60
Solar Central Inverter Station with Power Control System	90
Battery Energy Storage System (BESS) Units	80
Medium Voltage Transformer	72

6.3 Predicted Noise Rating Levels

Predicted peak 15-minute noise levels are summarised in **Appendix D** and the noise contours are shown on the accompanying noise contour map.

Based on the information in **Section 6.2**, including equipment with noise levels no greater than the typical equipment levels identified above and BESS areas being setback 150 metres from the nearest notional boundaries, noise from the proposal is predicted to comply with the nominated daytime and night-time noise limits in **Section 3.3.3**.

As operational plant generates steady noise, no impulsive events are expected at receivers; on that basis, compliance with 70 dB LAmax is anticipated.

6.3.1 Assessment of Effects

Compliance with the relevant noise limits at the notional boundaries of existing properties indicates that the proposed project is consistent with the expectations for the Rural Zone under the Matamata-Piako and South Waikato District Plans, with the limits set to reflect the intended character and amenity outcomes for the receiving environment.

Daytime (7:00am to 10:00pm)

Predicted cumulative noise levels comply with the daytime limit of 50 dB LAeq.

Noise from the solar farm is unlikely to be discernible above existing ambient noise levels. Daytime noise effects are considered reasonable and unlikely to interfere with normal outdoor communication or amenity.

Night-time (10:00pm to 7:00am)

Predicted cumulative operational noise levels comply with the applicable night-time limit of 40 dB LAeq at all receivers.

At the dwellings along State Highway 29 (locations P11–P14 and P20), the highest predicted 15-minute noise level is 38 dB LAeq, which is 11 dB below the lowest measured 15-minute ambient level recorded at MP-North between 10:00 pm and 7:00 am. During the early morning period within the hour before 7:00 am, when the BESS units could discharge to meet peak demand, the predicted noise level remains below the measured ambient range of 55–66 dB LAeq(15-minute) for that period.

At 8309 State Highway 27 (Lot 1 DPS 14607 - - P35), the highest predicted 15-minute noise level is 36 dB LAeq, which is 12 dB above the lowest measured 15-minute ambient level of 24 dB LAeq recorded between 10:00 pm and 7:00 am. During the early morning period before 7:00 am, when the BESS units could discharge to meet peak demand, the predicted noise level remains well below the measured ambient range of 47–61 dB LAeq for that period.

It is important to note that night-time noise effects are typically experienced indoors. With windows partially open for ventilation or cooling, on a warm night, the internal noise levels are approximately typically in the order of 10–20 dB (depending on façade construction and window position). Based on this, internal noise levels from the proposed are predicted to



remain below 30 dB LAeq. This is below the recommended internal noise limit of 40 dB LAeq(24hour) in Section 5.2.12 of the Matamata-Piako District Plan for rural dwellings near state highways; and within the recommended range of 25-30 dB LAeq for sleeping areas of houses in rural areas with negligible transportation in accordance with AS/NZS 2107:2016.

On this basis, and where night-time noise effects are typically experienced, adverse effects on sleep are not anticipated, and the night-time noise effects of the proposal can be considered reasonable and acceptable.

Overall compliance with the nominated noise criteria has been demonstrated to be achievable and that the noise effects associated with the proposal are considered acoustically reasonable and aligned with the expectations for the receiving zone under both district plans.

6.4 Design Flexibility

As the final equipment selection and internal site layout is not known, alternate design options have been identified that would result in noise levels and effects no greater than those identified above. These alternate design options demonstrate that there is flexibility in the final site design without change to noise effects. It is recommended that an acoustic review by suitably qualified specialist is undertaken to confirm compliance with the nominated limits prior to installation.

6.4.1 Alternate Design Option Based on Localised Acoustic Screening around Selected BESS Areas

Acoustic screening would enable higher noise generating BESS equipment to be used whilst achieving compliance under the following parameters.

- 3.0 m high acoustic screen around the identified BESS areas (indicative locations shown in **Figure 3**),
- BESS areas at least 150 metres from any notional boundary,
- Sound power levels for BESS units no greater than 86 dB LWA (or 91 dB LWA if non-tonal), and
- The transformer and inverter unit's LWA remain as per **Table 6**.

6.4.2 Alternate Design Option Based on Boundary Acoustic Screening at 4735 State Highway 29 (P20)

Installing a 2.0 m high acoustic barrier near the shared property boundary provides flexibility in equipment selection of northern BESS area units.

- 2.0 m high acoustic screen within 2 metres of the shared boundary with 4735 State Highway 29 (P20) (see **Figure 3**),
- BESS areas at least 150 metres from any notional boundary,
- Sound power levels for BESS units no greater than 86 dB LWA (or 91 dB LWA if non-tonal), and
- The transformer and inverter unit's LWA remain as per **Table 6**.

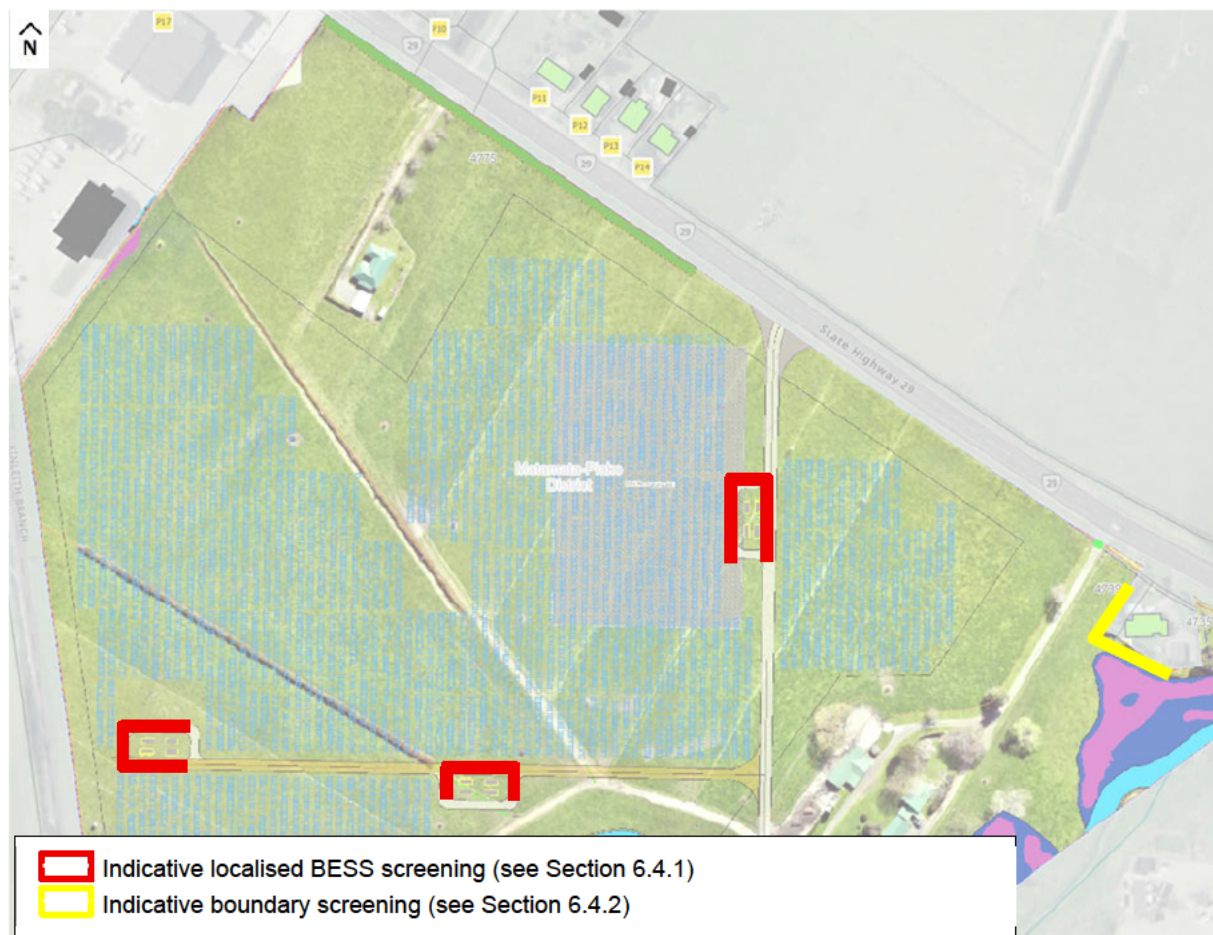
6.4.3 Alternate Design Option Based on Increased Setback for Higher LWA Equipment

Increasing the distance between BESS areas and boundaries would enable use of a wider range of BESS units.



- BESS areas at least 250 metres from any notional boundary,
- Sound power levels no greater than 88 dB LWA (or 93 dB LWA if non-tonal), and
- The transformer and inverter unit's LWA remain as per **Table 6**.

Figure 3 Potential Acoustic Barrier Locations



For an acoustic barrier to be effective, there should be no gaps between panels or between the barrier and the ground. The barrier material must have a minimum surface mass of 10 kg/m^2 , i.e., close boarded timber, plywood.



7.0 Recommended Conditions of Consent

The following conditions of consent are recommended to manage noise effects:

Construction Noise

- 1) Noise arising from construction activity shall comply with and be measured and assessed in accordance with NZS 6803:1999 *Acoustics – Construction Noise*.

Construction Noise and Vibration Management Plan (CNVMP)

- 2) The Consent Holder must submit to Matamata-Piako District Council for certification a final Construction Noise Management Plan (CNVMP) prepared by a SQEP.
- 3) The objective of the CNVMP is to identify and require the adoption of the Best Practicable Option for ensuring compliance with the relevant conditions of this consent and minimising any other unnecessary noise and vibration. The CNVMP shall include (but not be limited to), the following matters:
 - a) The roles and responsibilities of the personnel in the contractor team for managing and monitoring noise levels and effects;
 - b) Expected hours of construction (and any required limits on hours of construction);
 - c) Construction machinery and equipment that will be used (and their operating noise levels);
 - d) The timing and duration of specific construction activities over the total construction period;
 - e) The location and proximity of neighbouring dwellings;
 - f) Systems or procedures for receiving and resolving any community complaints about noise emissions, including noise monitoring, where appropriate;
 - g) Induction and training procedures for construction personnel;
 - h) Methods and measures to mitigate noise and vibration effects;
 - i) Use of maps to identify any areas of piling that are likely to exceed the consented construction noise limits without specific attenuation or management;
 - j) Identification of suitable methods of noise or vibration attenuation or management that should be used to comply with the noise and vibration limits set out in these conditions when piling within these areas and/or any procedures that must be implemented prior to construction work beginning in these areas.

Operational Noise

- 4) Noise rating levels generated by the operation of the consented activity shall not exceed the following limits when measured and assessed at or within the notional boundary of surrounding properties:

Receiver	Time Period	Noise Limit
Rural Zone Dwellings within the: • South Waikato District; or • Matamata-Piako District	7:00am to 10:00pm (Daytime)	50 dB LAeq
	10:00pm to 7:00am (Night-time)	40 dB LAeq 70 dB LAmax

- 5) Noise shall be measured in accordance with NZS 6801:2008 *Acoustics – Measurement of environmental sound* and assessed in accordance with NZS 6802:2008 *Acoustics – Environmental Noise*.



Design Noise Compliance Report

- 6) No later than three (3) weeks prior to the installation of the BESS and inverter units, the consent holder must submit to Council a Design Noise Compliance Report prepared by a suitably qualified and experienced acoustics professional. The report must:
 - a) Include the finalised site layout, selected equipment and quantity.
 - b) Identify the sound power levels (LWA) for the equipment.
 - c) Include an SAC assessment and apply adjustments if required in accordance with NZS 6802:2008 where Special Audible Characteristics are predicted to be present at any notional boundary.
 - d) Confirmation of the mitigation measures required to achieve compliance with the limits in [Condition 4] under representative worst-case operating conditions.

8.0 Conclusion

This assessment confirms that the proposed Hinuera Solar Farm and decentralised Battery Energy Storage System can achieve compliance with the relevant Matamata-Piako and South Waikato District Plan requirements, under conservative worst-case operating conditions.

The noise rules in the Matamata-Piako and South Waikato District Plans were reviewed and found that they are similar in intent. The key difference between the two districts are that the Matamata-Piako provisions reference outdated acoustic standards and metrics. To provide a consistent approach across the project and align the assessment with the National Planning Standards, project specific criteria have been nominated. For construction noise, NZS 6803:1999 has been adopted as it provides a more robust and defensible compliance framework for long-duration works. Similarly, for operational noise, the South Waikato District Plan limits have been applied, as it reflects the latest standards (NZS 6801:2008 and NZS 6802:2008) and use the modern LAeq metric while maintaining similar numerical limits.

Construction

Compliance with NZS 6803:1999 limits are achievable using standard management practices. To manage the loudest activity (being impact piling works) setback distances based on the number of piling rigs that could operate near dwellings are provided. More than three rigs operating in proximity of each other would be allowed to operate if the works is more than 135 metres away from any occupied dwelling.

Vibration from construction, including piling, is predicted to be well below DIN 4150-3 cosmetic damage criteria and below typical perception thresholds at nearest dwellings.

Operation

Predicted operational noise levels confirm that the solar farm and BESS can comply with the nominated daytime and night-time limits under a conservative worst-case scenario, which assumes all equipment operating at full load in warm conditions. A minimum setback of 150 metres from any BESS area to the nearest notional boundary is sufficient to achieve compliance. Predicted noise levels are below or equal to existing ambient levels, are consistent with rural zone expectations therefore unlikely to cause adverse noise effects on amenity or sleep.

Design Flexibility

As the final equipment selection and internal site layout is not known, alternate design options utilising screening (either localised or at the boundary) or increasing setback distances, have been identified that would result in noise levels and effects no greater than



those identified above. These alternate design options demonstrate that there is flexibility in the final site design without change to noise effects. It is recommended that an acoustic review by suitably qualified specialist is undertaken to confirm compliance with the nominated limits prior to installation.

With the recommended conditions, the noise and vibration effects of the proposal are considered reasonable and consistent with rural zone expectations and not to generate significant adverse acoustic effects in the surrounding environment.

SLR Consulting New Zealand Limited

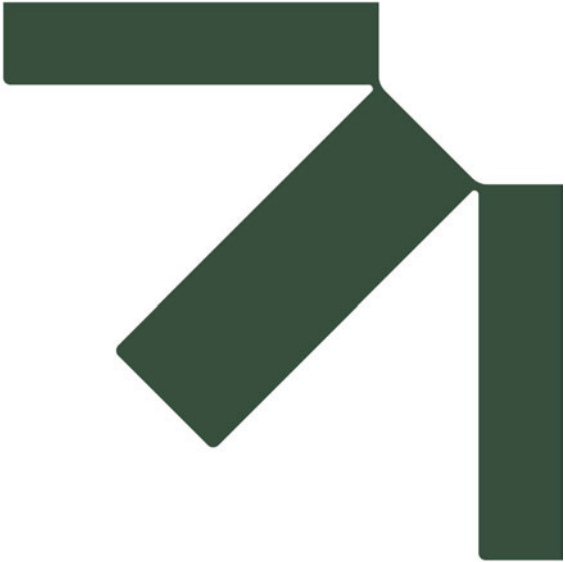


LJ Jansen
Associate – Acoustics & Vibration



Peter Runcie
Technical Director – Acoustics & Vibration





Appendix A List of Surrounding Receivers

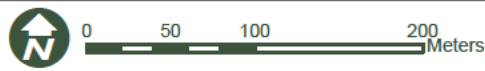
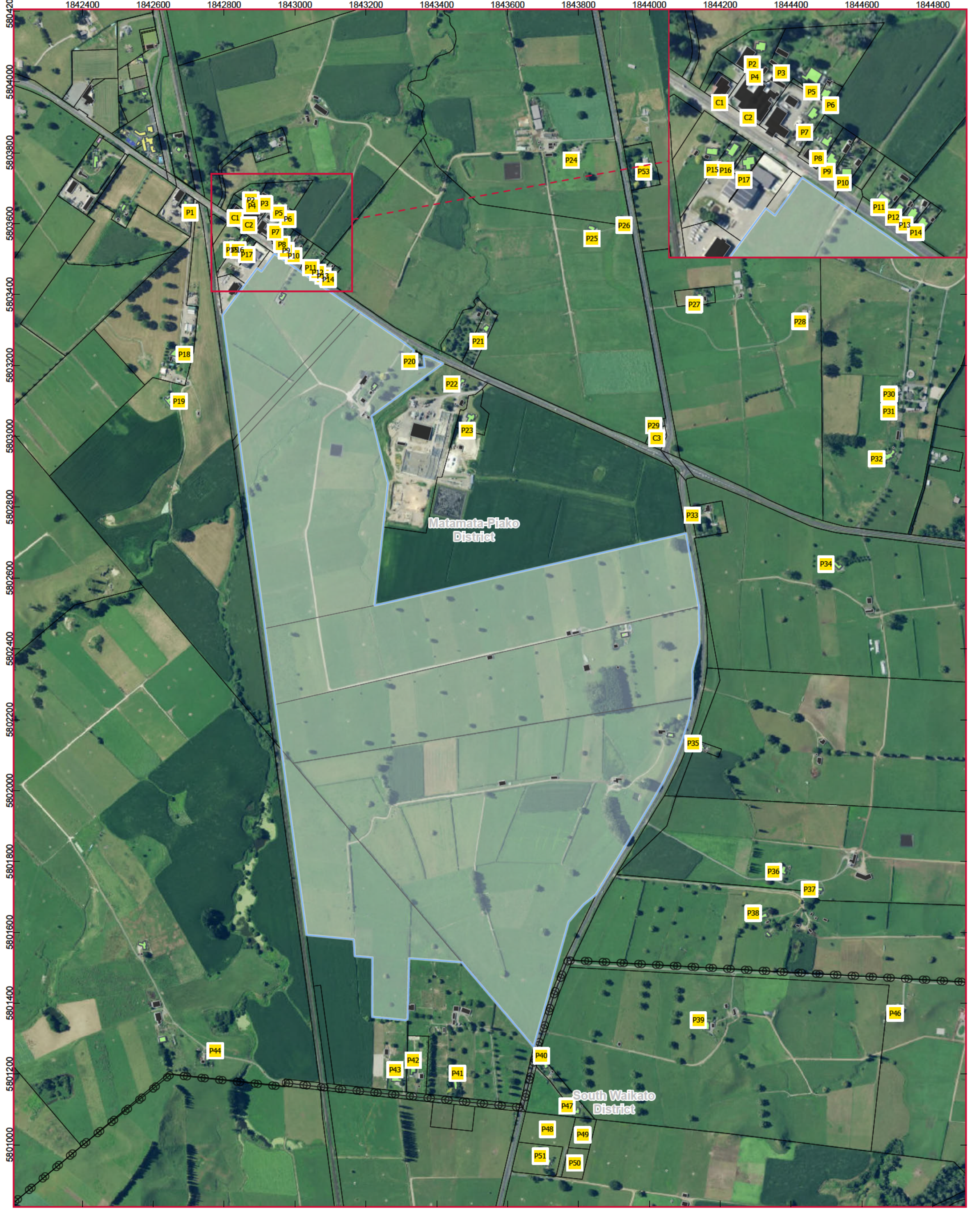
Acoustic Assessment

**Hinuera Solar Farm Project
Fast Track Approvals Application**

Harmony Energy NZ #6 Limited

SLR Project No.: 880.016894.00003

22 June 2026



Coordinate System: NZGD 2000 New Zealand Transverse Mercator
Scale: 1:4,500 at A3
Project Number: 880.016894.00001
Date: 18/11/2025
Drawn by: L. Jansen



Map Element Legend

- Assessment Properties
- Hinuera Solar Farm Subject Site
- LINZ NZ Building Outlines
- LINZ NZ Primary Parcels

- Existing Buildings
- Onsite Dwelling
 - Residential
 - School
 - Church
 - Unknown

HARMONY ENERGY NZ LIMITED
HINUERA SOLAR FARM PROJECT
ACOUSTIC ASSESSMENT

Assessment
Locations for all Nearest Properties

APPENDIX A-1

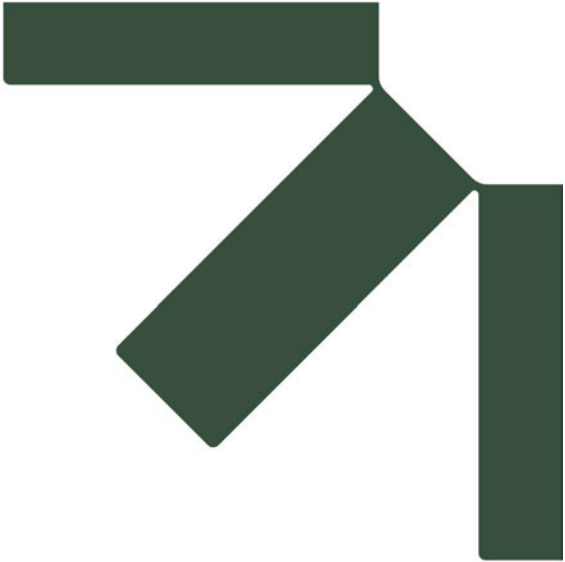
Table A- 1 Summary list of existing dwellings

Assessment Location	Address	Legal Description
C1	4800 State Highway 29	Part Section 3 DP 9628
C2	4790 State Highway 29	Lot 1 DPS 71461
C3	8224 State Highway 27	Lot 1 DP 556357
P01	4813 State Highway 29	Lot 3 DPS 2475
P02	4798A State Highway 29	Lot 2 DPS 71461
P03	4798B State Highway 29	Lot 3 DPS 71461
P04	4798C State Highway 29	Lot 2 DPS 71461
P05	4792A State Highway 29	Lot 3 DPS 71461
P06	4792C State Highway 29	Lot 4 DPS 71461
P07	4788 State Highway 29	Lot 1 DPS 10302
P08	4784 State Highway 29	Lot 1 DP 32466
P09	4782 State Highway 29	Lot 1 DPS 40538
P10	4780 State Highway 29	Lot 2 DPS 40538
P11	4774 State Highway 29	Lot 2 DPS 3374
P12	4772 State Highway 29	Lot 1 DPS 2475
P13	4770 State Highway 29	Lot 2 DPS 2475
P14	4768 State Highway 29	Lot 3 DPS 2475
P15	4795 State Highway 29	Lot 2 DPS 10678
P16	4793 State Highway 29	Lot 4 DPS 10678
P17	4791 State Highway 29	Lot 1 DPS 16489
P18	4811B State Highway 29	Part Lot 1 DPS 50204
P19	4811A State Highway 29	Lot 2 DPS 50204
P20	4735 State Highway 29	Lot 1 DPS 12998
P21	4720A State Highway 29	Lot 1 DPS 71145
P22	4713 State Highway 29	Lot 2 DP 463615
P23	4711 State Highway 29	Lot 1 DP 463615
P24	8138 State Highway 27	Lot 1 DP 27124
P25	8166 State Highway 27	Lot 2 DP 556357
P26	8164 State Highway 27	Lot 1 DP 27124
P27	8187B State Highway 27	Lot 1 DP 436712
P28	8187A State Highway 27	Lot 1 DP 436712
P29	8224 State Highway 27	Lot 1 DP 468963
P30	4602B State Highway 29	Part Lot 1 DP17672
P31	4602C State Highway 29	Lot 3 DPS 71461
P32	4602A State Highway 29	Lot 3 DPS 71461
P33	8243 State Highway 27	Lot 1 DPS 7320



Assessment Location	Address	Legal Description
P34	4599 State Highway 29	Part Lot 8A DP 7128
P35	8309 State Highway 27	Lot 1 DPS 14607
P36	8333A State Highway 27	Part Lot 1 DP 26787
P37	8333B State Highway 27	Part Lot 1 DP 26787
P38	8351 State Highway 27	Part Lot 2 DP 26787
P39	8379 State Highway 27	Part Lot 1 DP 28585
P40	792 State Highway 27	Lot 1 DP 416294
P41	22 Gore Road	Lot 2 DP 565124
P42	32 Gore Road	Lot 1 DP 565124
P43	34 Gore Road	Lot 1 DP 415665
P44	70 Gore Road	Part Lot 1 DP 35794
P45	677 State Highway 27	Lot 1 DPS 53658
P46	8379 State Highway 27	Part Lot 2 DP 28585
P47	790 State Highway 27	Lot 2 DP 41694
P48	759 State Highway 27	Lot 2 DP 449534
P49	748B State Highway 27	Lot 1 DP 590156
P50	748B State Highway 27	Lot 2 DP 590156
P51	748 State Highway 27	Lot 1 DP 449534
P52	712 State Highway 27	Lot 2 DP 12824
P53	8153 State Highway 27	Lot 1 DP 523730





Appendix B Hinuera Site Layout

Acoustic Assessment

**Hinuera Solar Farm Project
Fast Track Approvals Application**

Harmony Energy NZ #6 Limited

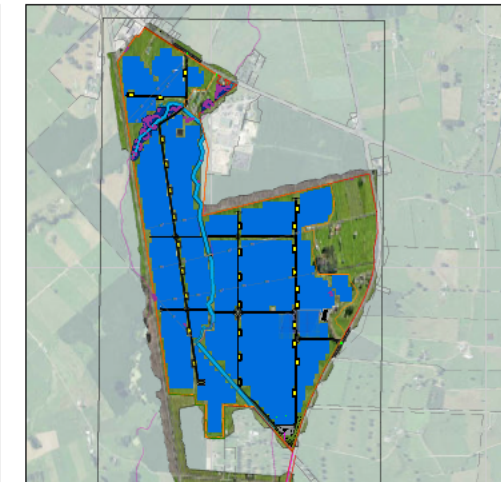
SLR Project No.: 880.016894.00003

22 June 2026

Project Site Map - NTS



Project Location



SITE ACCESS AND NORTHERN LAYDOWN AREA



EASTERN ACCESS POINT



SOUTHERN SITE ACCESS AND LAYDOWN AREAS



Legend	
	Lot Boundary
	Available PV Module Area
	33 kV Underground Cable
	Security Perimeter Fence
	Site Access
	Water Tank
	PV Module
	ITS - Inverter Transformer Station
	BESS
	Low Quality Wetland
	Contractor's Camp
	Laydown Area
	Screen Planting
	Buffer Screen Planting
	PV Module Area



Notes	
Photo Size	100 MPa
Photo Size (MCC)	70 MPa
Module Specifications	
Type	Topcon Hi-TYPE
Quantity	170,000
Power	100kW
Inverter Specifications	
Type	Stringrow SG 3400
Quantity	100
AC/DC	1-100 MW
BESS Specifications	
Type	100k
Quantity	100 BESS Units
Monitoring	100k
Monitoring Specifications	
Type	Tracking System
Quantity	100k
Pitch	15.25m
Connection Specifications	
Point of Connection	Harmony Powerco
Connection Voltage	33 kV

Rev	Date	Description of changes	By
1	20-09-20	Contract Design	RDP
2	20-09-20	Revisions	

HARMONY ENERGY
Auckland
New Zealand

Project Title
HINUERA

Drawing Title
PV MODULE AREAS

Drawing No.
HIN-02.00

Rev No.
RD

Created By
DJ

Designed By
RDP

Checked By
RDP

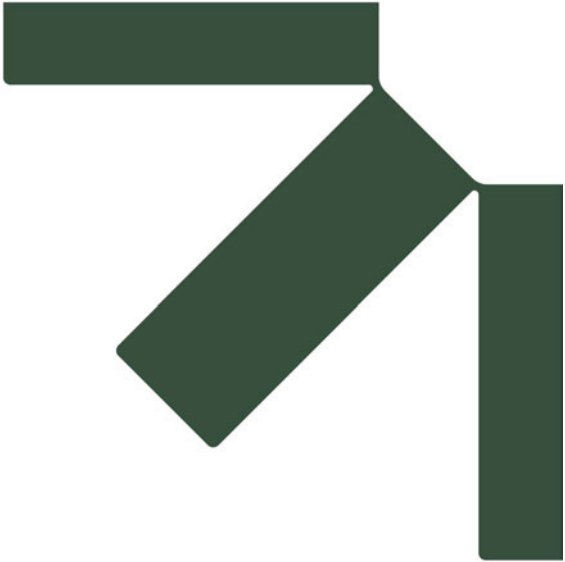
Approved Date

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Appendix C Graphical Representation of Measured Existing Noise Levels

Acoustic Assessment

**Hinuera Solar Farm Project
Fast Track Approvals Application**

Harmony Energy NZ #6 Limited

SLR Project No.: 880.016894.00003

22 June 2026

C.1 Northern Noise Logger

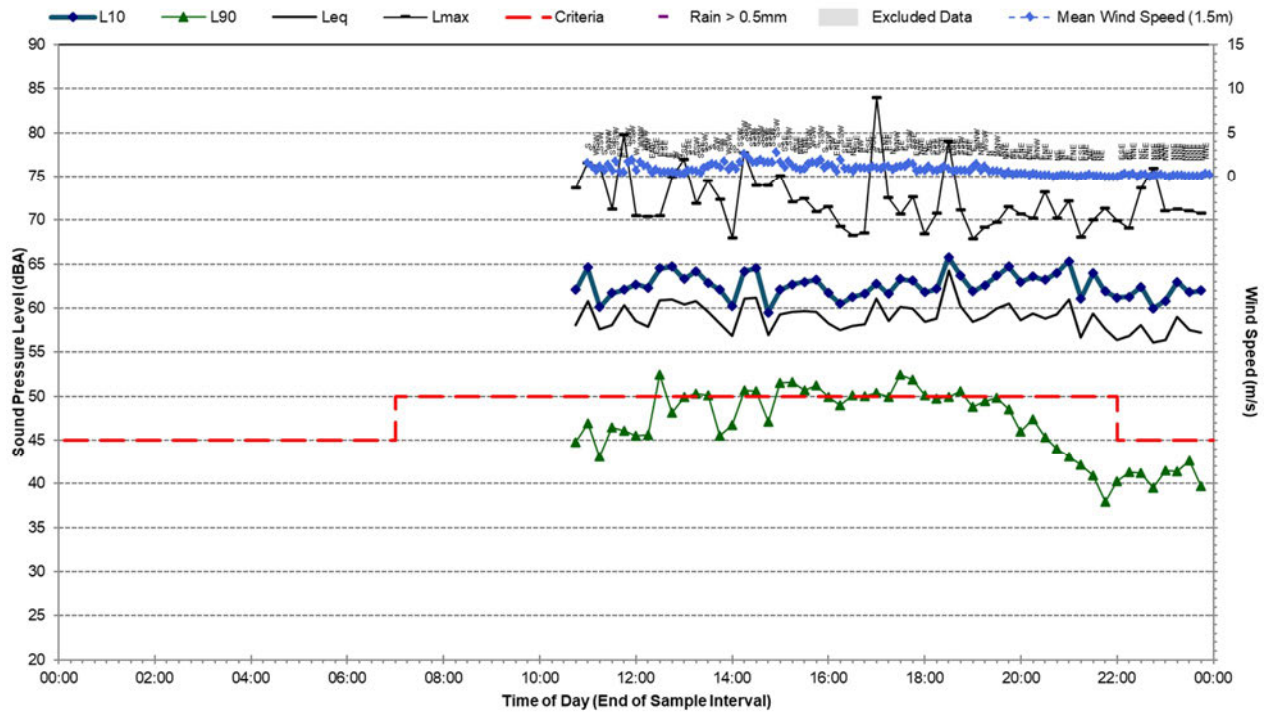
Noise Monitoring Location:	MP-North				Photo of Noise Monitoring Location 
Noise Monitoring Address:	4739 State Highway 29, Hinuera (-37.8851, 175.7647)				
Logger Device Type:	Svantek 977D, Logger Serial No: 99014				
An ambient noise logger was deployed approximately 40 metres from State Highway 29, within the subject site. The logger was positioned in an open, grassed paddock containing a single tree located within 5 metres, and situated more than 100 metres from any residential dwellings. This location was selected to represent the ambient noise environment experienced by dwellings situated north of the site, particularly those within proximity to State Highway 29, including the majority of Hinuera township. Field observations conducted during both deployment and retrieval confirmed that the existing acoustic environment was primarily influenced by road traffic noise, with intermittent contributions from passing trains. It was further verified that cattle were absent from both the monitored paddock and the adjacent paddock for the entire duration of the survey period.					
Existing Noise Level Summary – Based on the Project Specific Timeframes					
Start Date and Time:		2025/11/14 10:45 AM			
End Date and Time:		2025/11/27 8:45 AM			
Monitoring Period	Noise Level (dB), overall arithmetic average per period				
	L _{Amax}	L _{A10}	L _{Aeq}	L _{A90}	
Daytime (7:00–22:00)	87	64	61	48	
Night-time (22:00–7:00)	80	47-68	49-64	20-54	
Attended noise measurement 15-minute Summary					
Date and Start Time	L _{Amax}	L _{A10} (15-minute)	L _{Aeq} (15-minute)	L _{A90} (15-minute)	
2025/11/14 10:30 AM	74	62	58	45	

Map of Monitoring location 					
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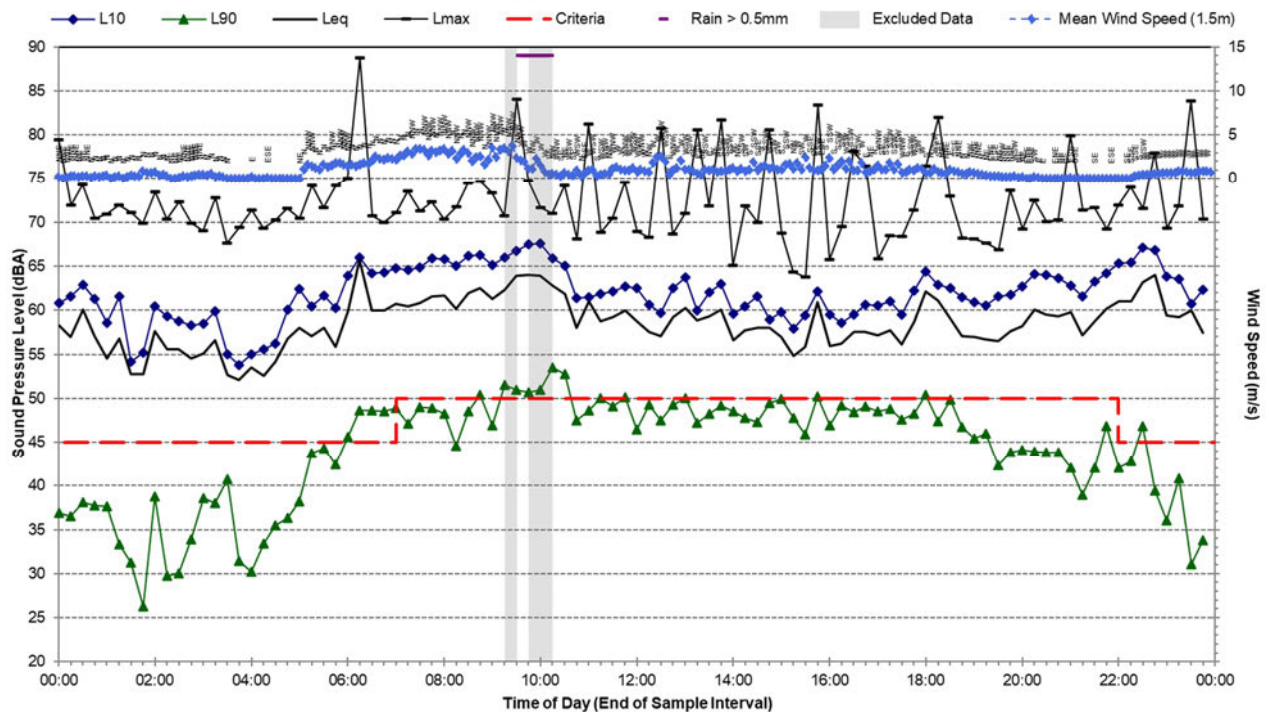
Statistical Ambient Noise Levels

Northern Logger Position - Friday, 14 November 2025

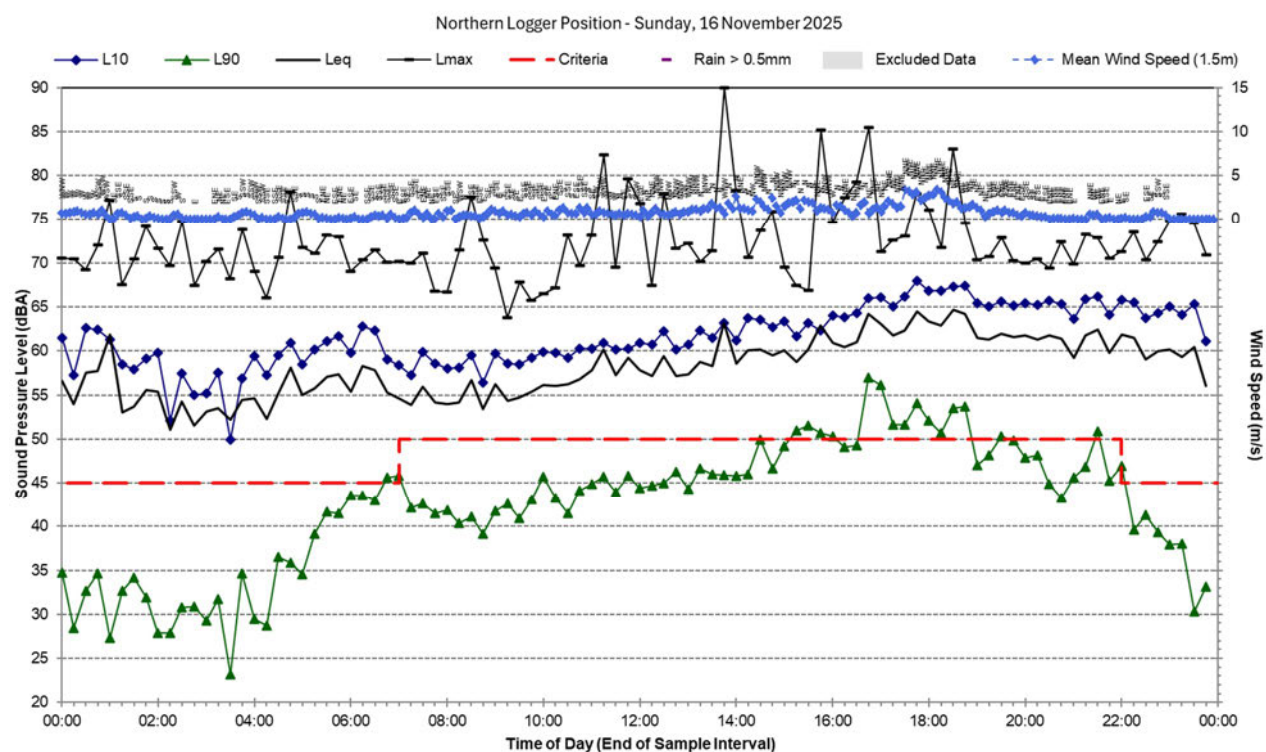


Statistical Ambient Noise Levels

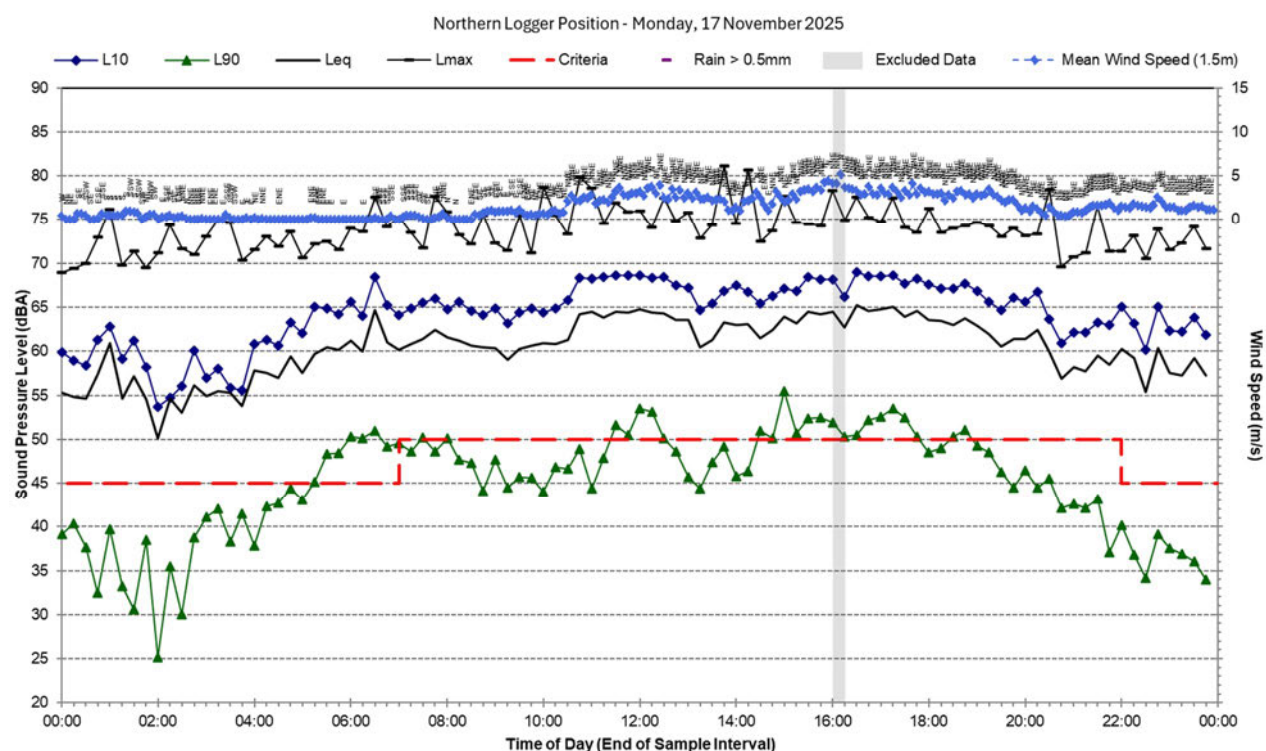
Northern Logger Position - Saturday, 15 November 2025



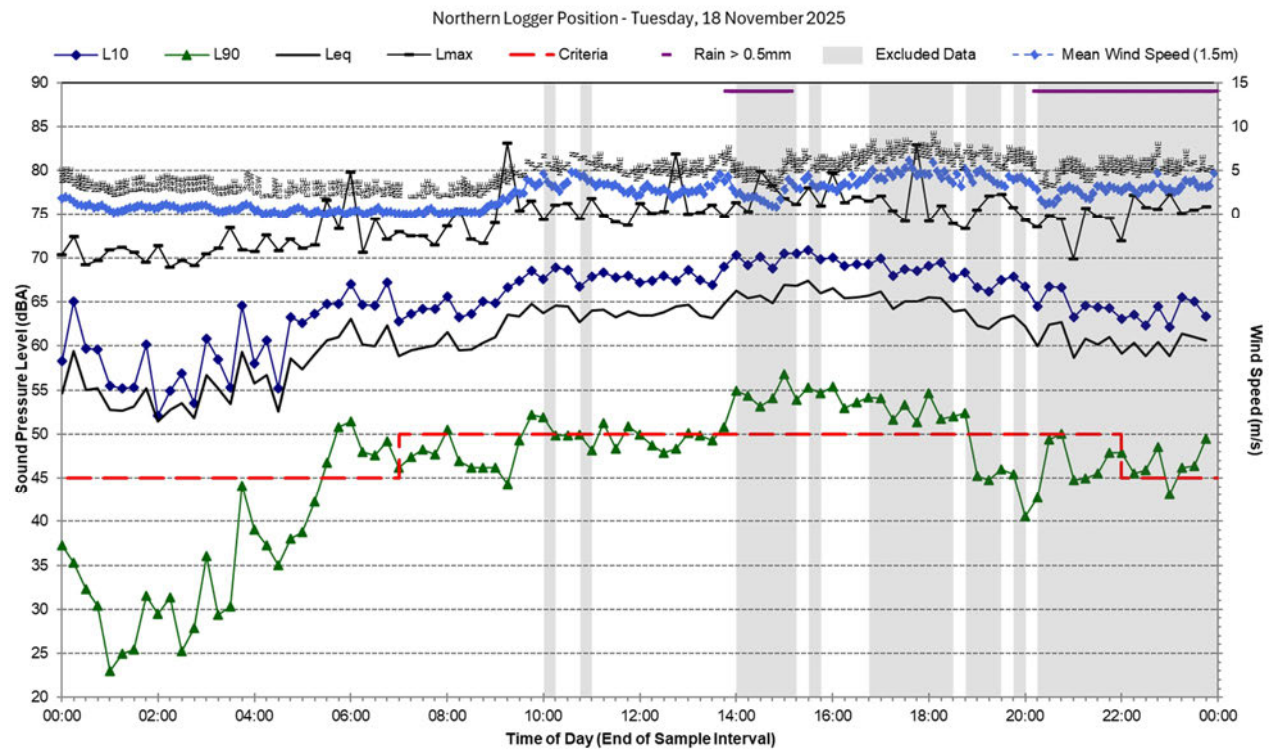
Statistical Ambient Noise Levels



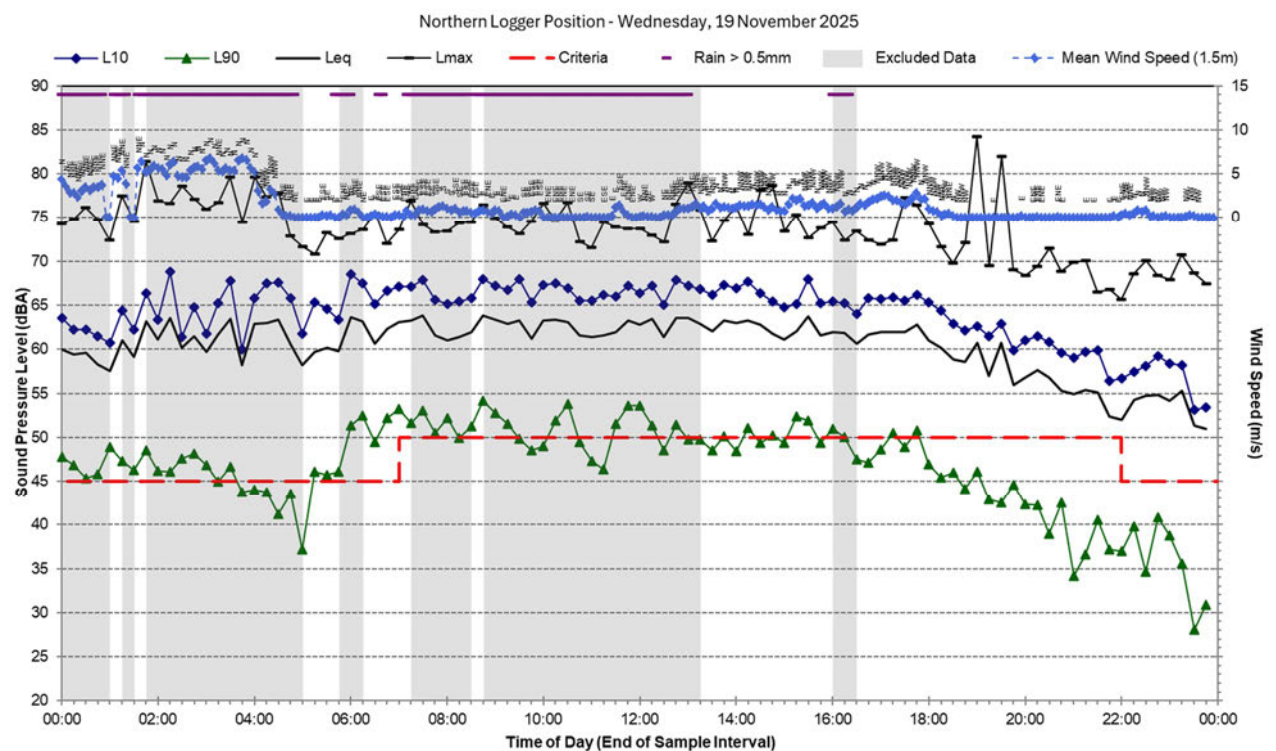
Statistical Ambient Noise Levels



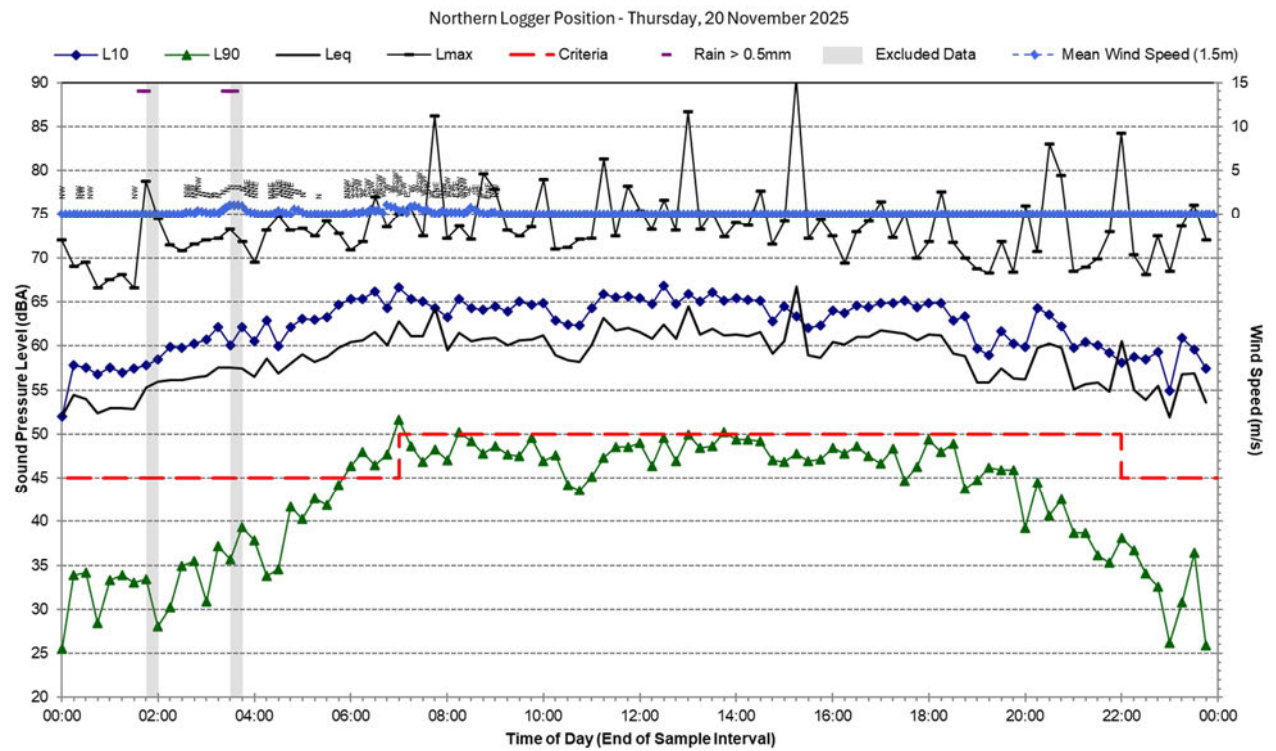
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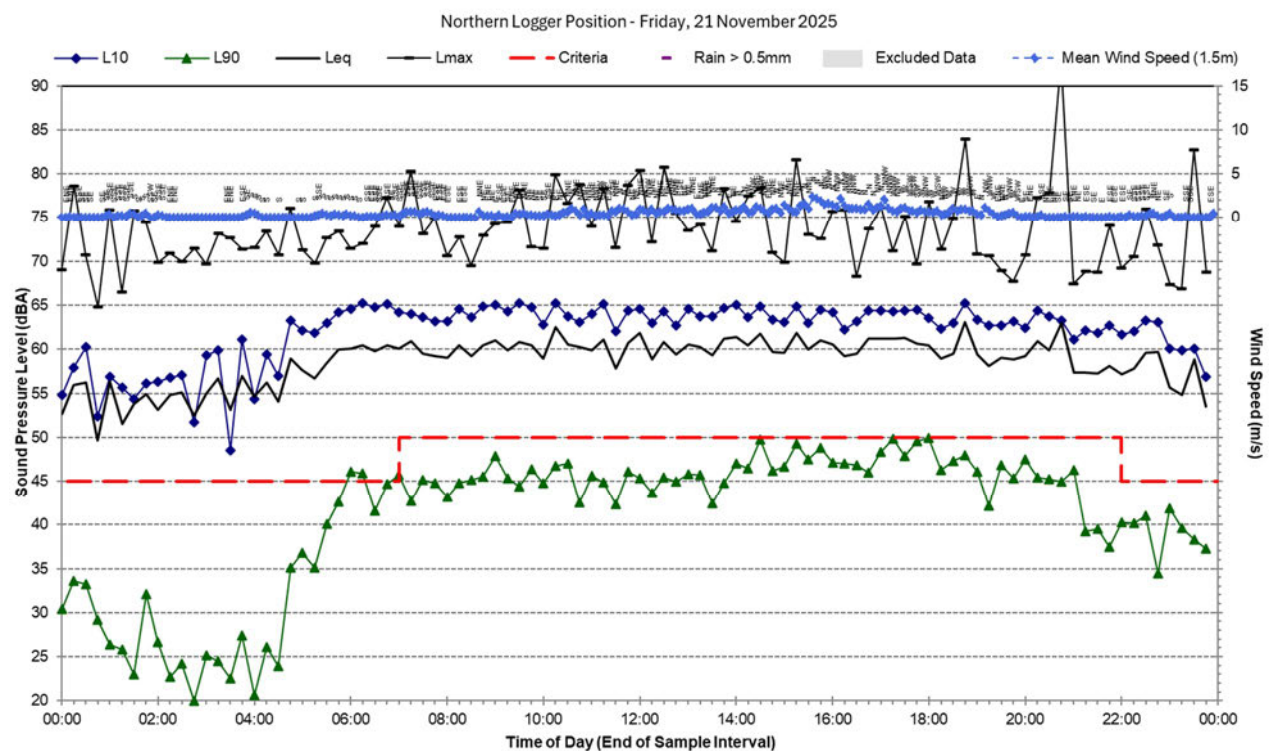
Statistical Ambient Noise Levels



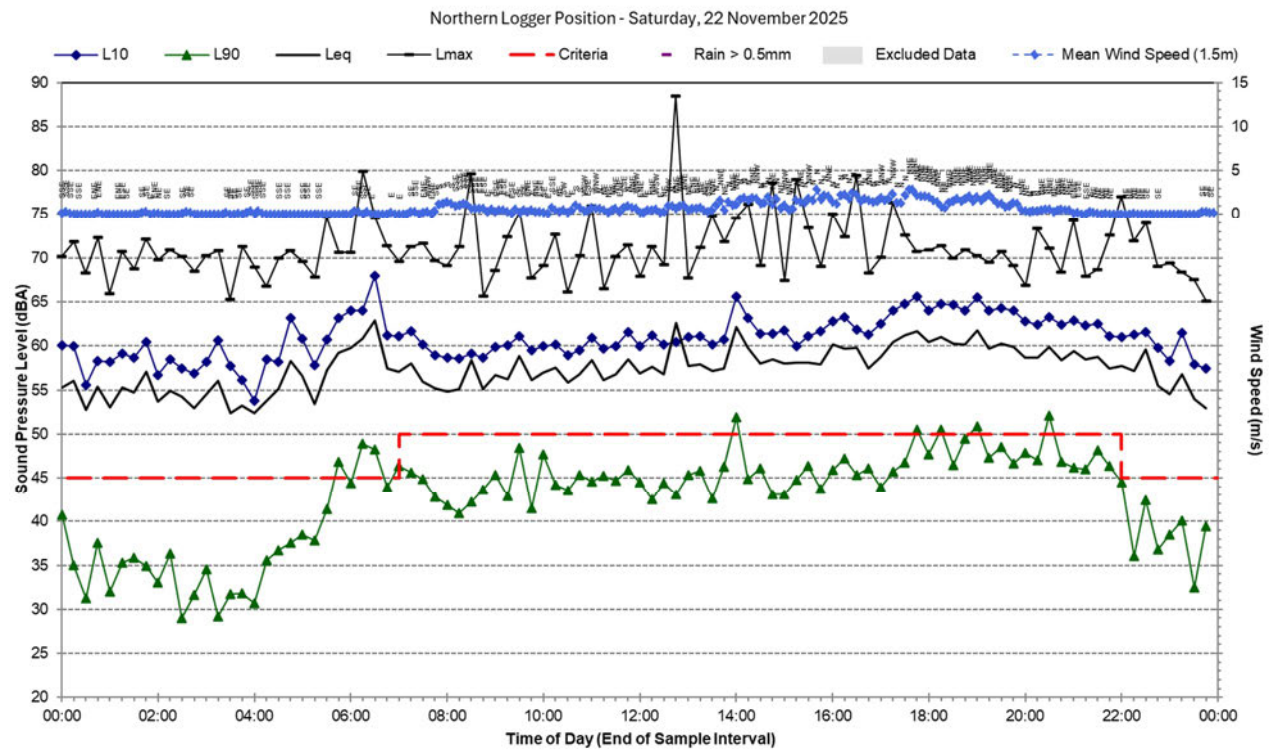
Statistical Ambient Noise Levels



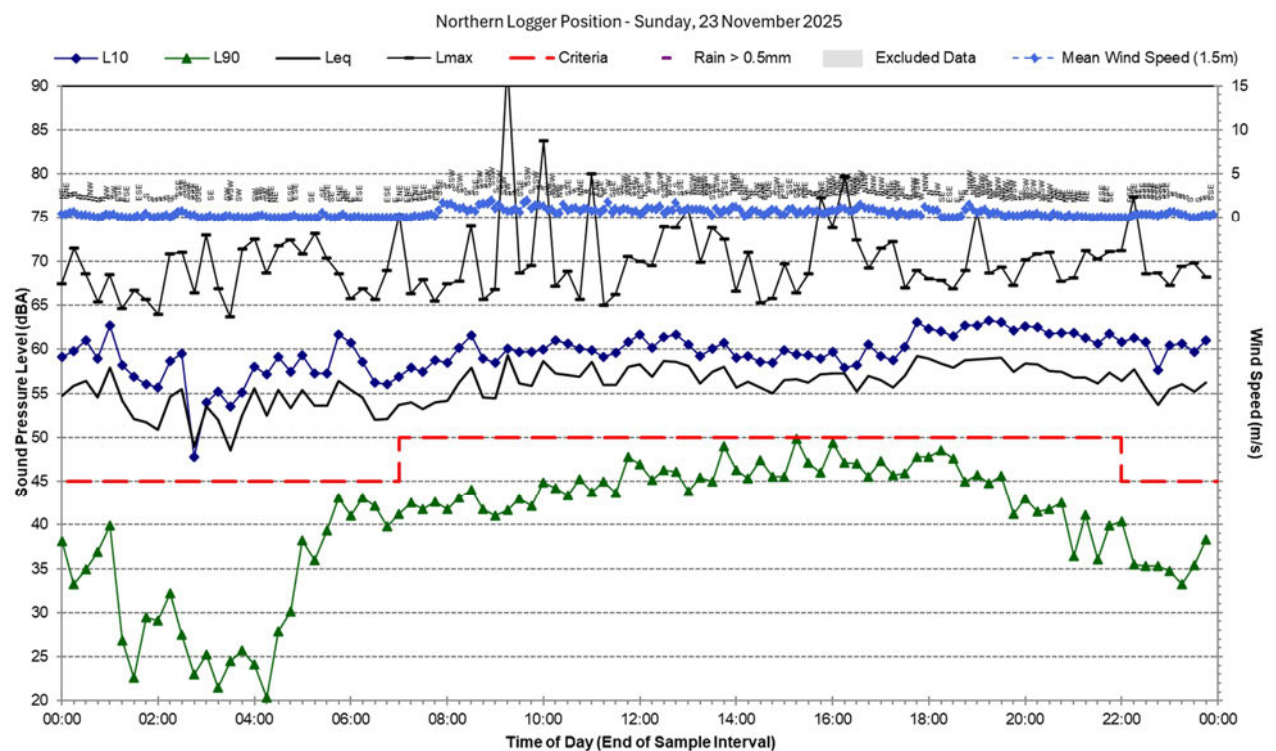
Statistical Ambient Noise Levels



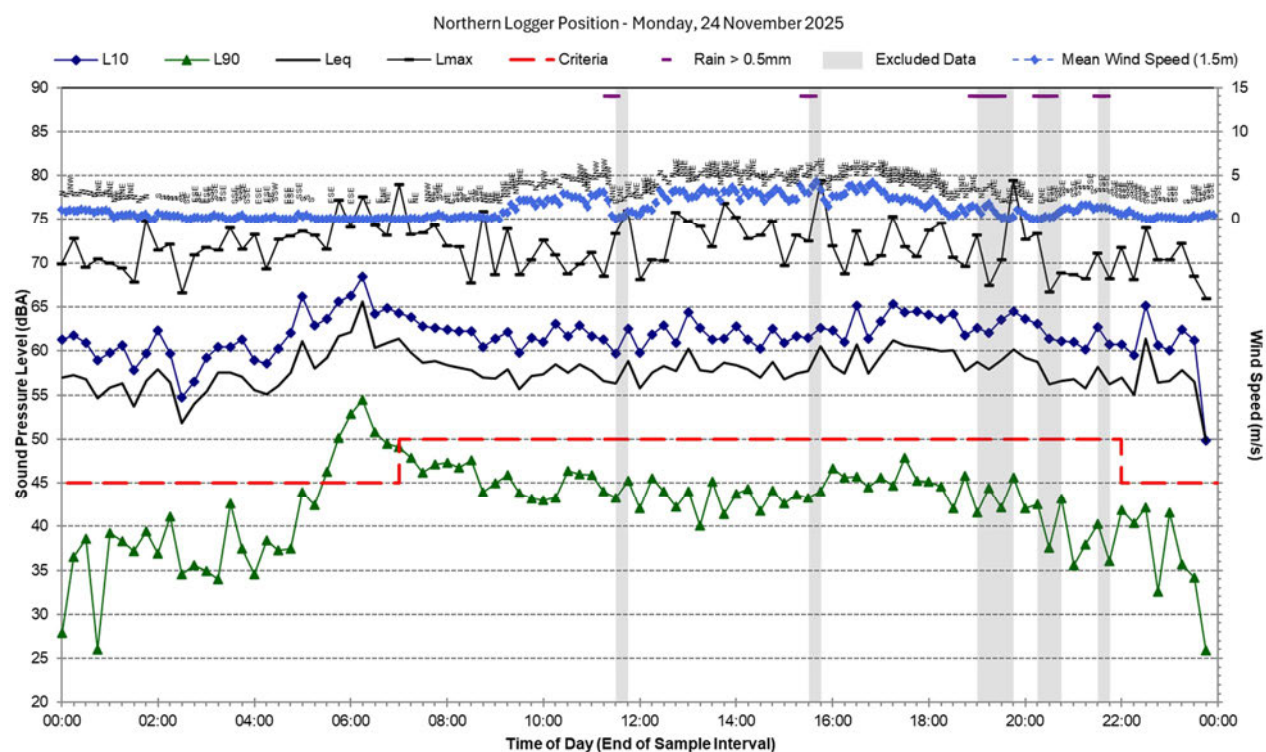
Statistical Ambient Noise Levels



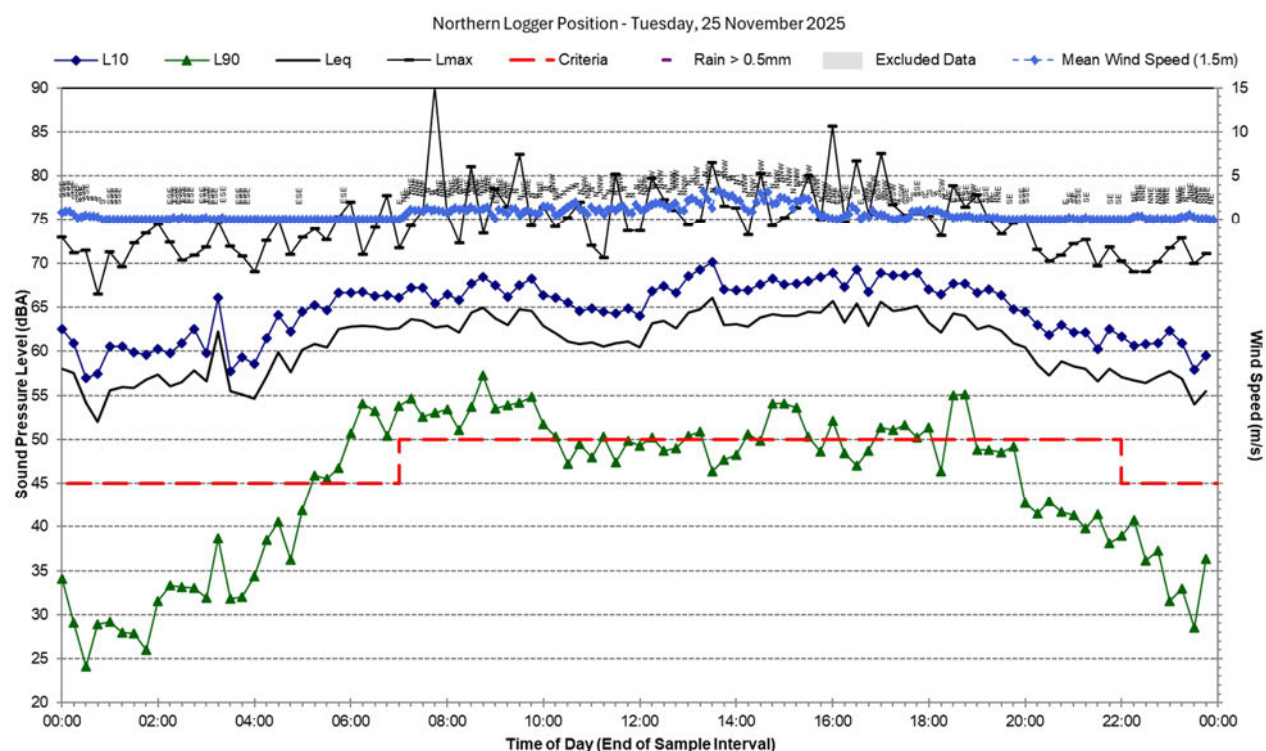
Statistical Ambient Noise Levels



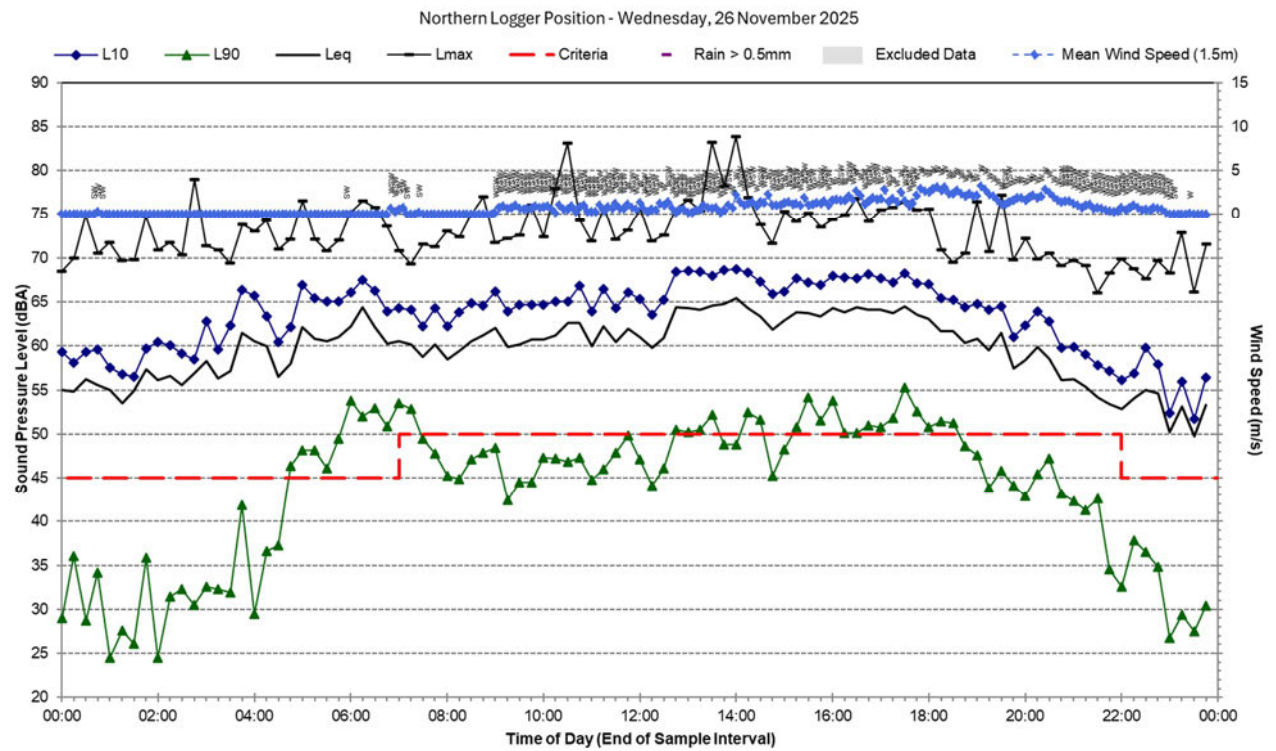
Statistical Ambient Noise Levels



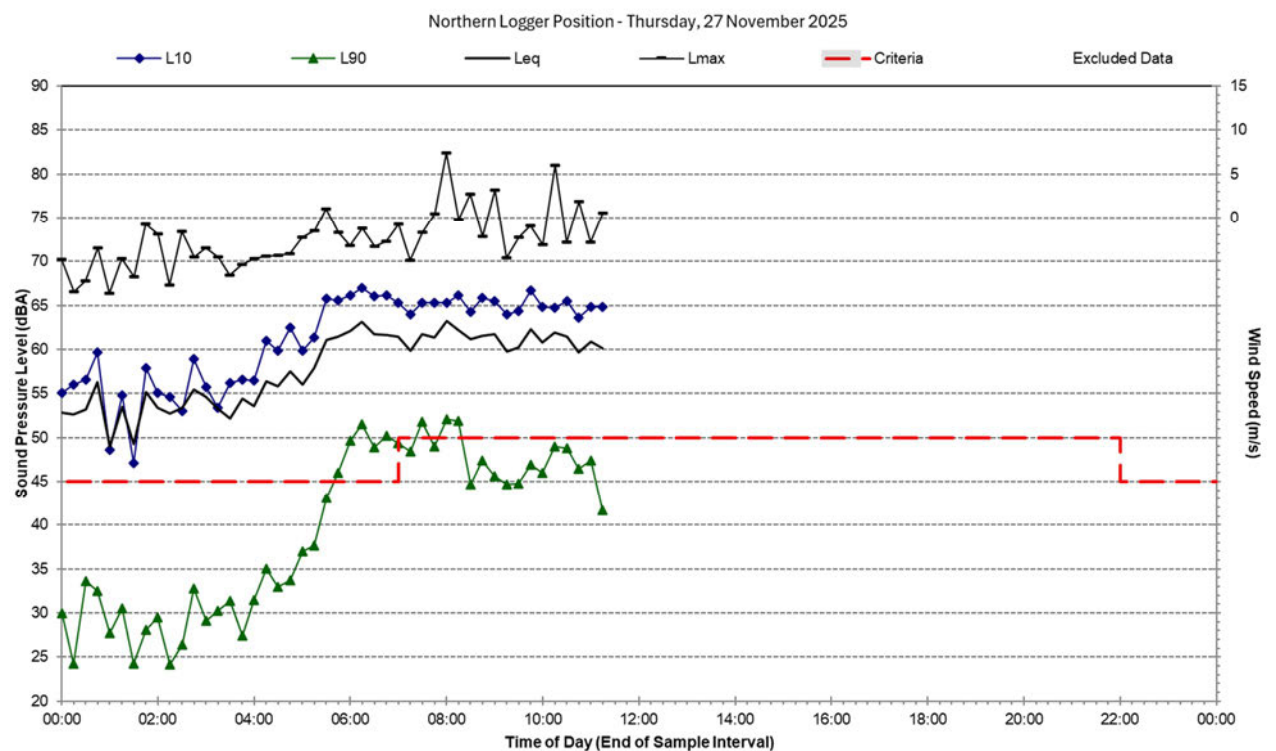
Statistical Ambient Noise Levels



Statistical Ambient Noise Levels



Statistical Ambient Noise Levels



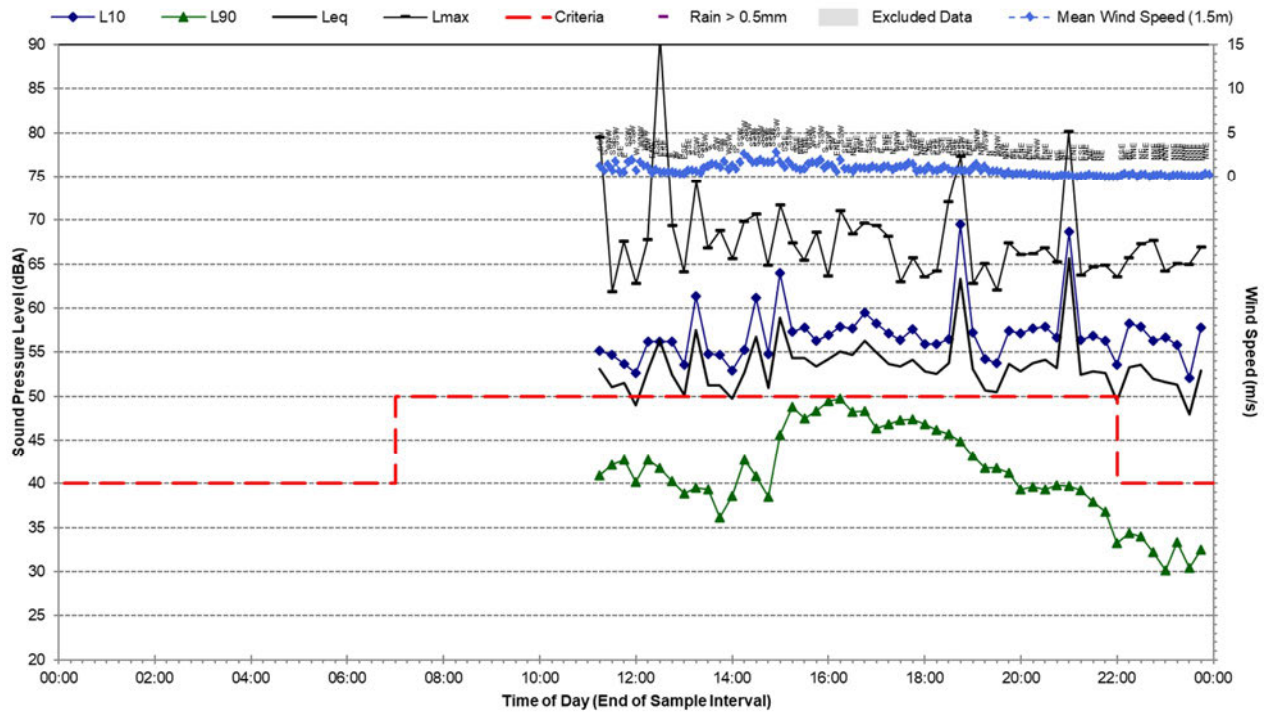
C.2 Southern Noise Logger

Noise Monitoring Location:	MP-South	Photo of Noise Monitoring Location 			
Noise Monitoring Address:	4739 State Highway 27, Hinuera (-37.8851, 175.7647)				
Logger Device Type:	Svantek 977D, Logger Serial No: 99013				
An ambient noise logger was deployed approximately 80 metres from State Highway 27, within the subject site. The logger was positioned in an open, grassed paddock and situated more than 200 metres from any residential dwellings. This location was selected to represent the ambient noise environment experienced by dwellings situated south of the site (away from State Highway 29). Field observations conducted during both deployment and retrieval confirmed that the existing acoustic environment was primarily influenced by road traffic noise, with intermittent contributions from passing trains. It was further verified that cattle were absent from both the monitored paddock and the adjacent paddock for the entire duration of the survey period.					
Existing Noise Level Summary – Hauraki District Plan defined time periods		Map of Monitoring location 			
Start Date and Time:			2025/11/14 11:30 AM		
End Date and Time:			2025/11/27 9:15 AM		
Monitoring Period	Noise Level (dB), overall arithmetic average per period				
	LAm _{ax}		LA ₁₀	LA _{eq}	LA ₉₀
Daytime (7:00–22:00)	82		62	58	46
Night-time (22:00–7:00)	84		28-69	24-68	19-51
Attended noise measurement 15-minute Summary					
Date and Start Time	LAm _{ax}	LA ₁₀ (15-minutes)	LA _{eq} (15-minutes)	LA ₉₀ (15-minutes)	
2025/11/14 11:20 AM	80	55	53	41	



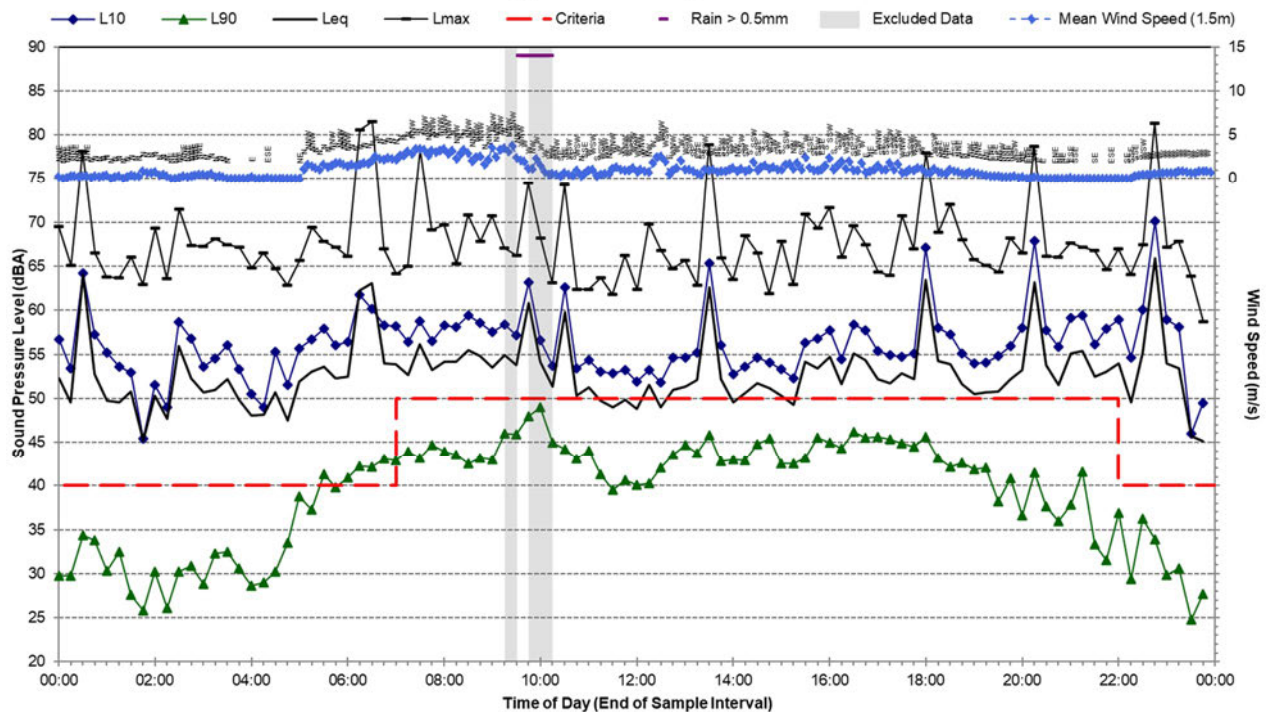
Statistical Ambient Noise Levels

Southern Logger Position - Friday, 14 November 2025

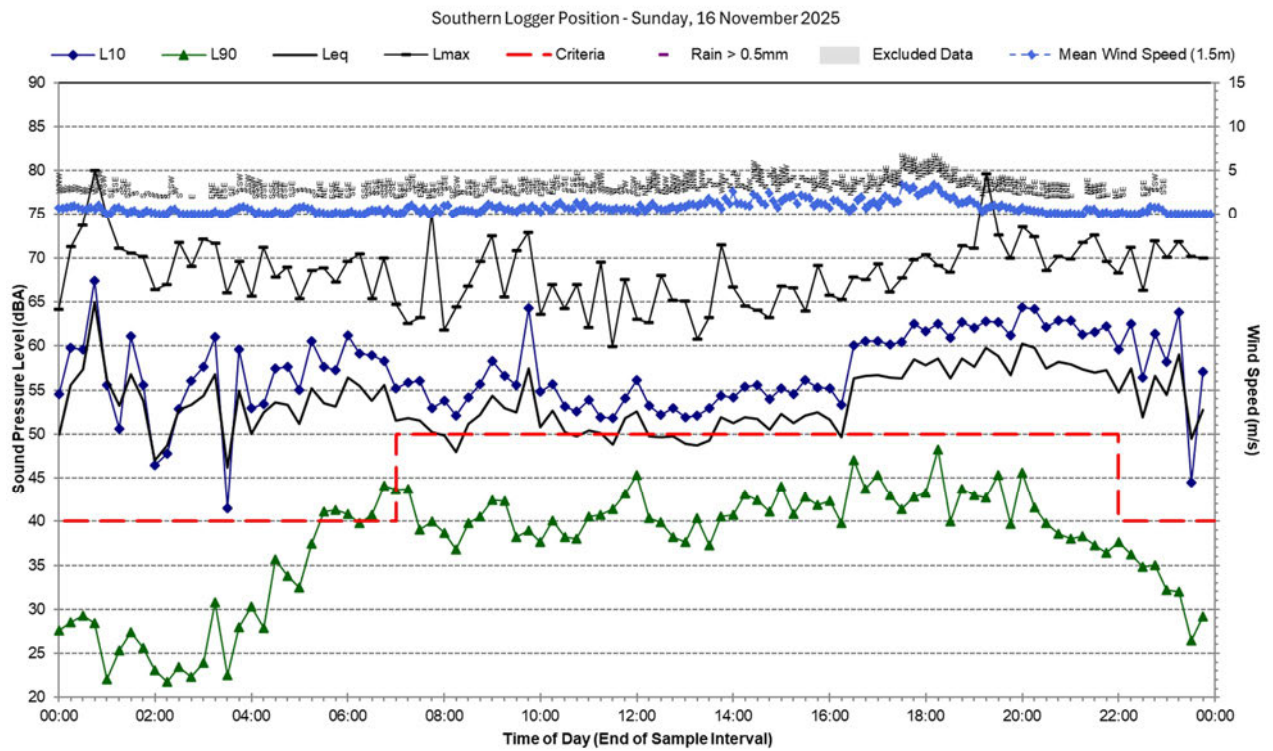


Statistical Ambient Noise Levels

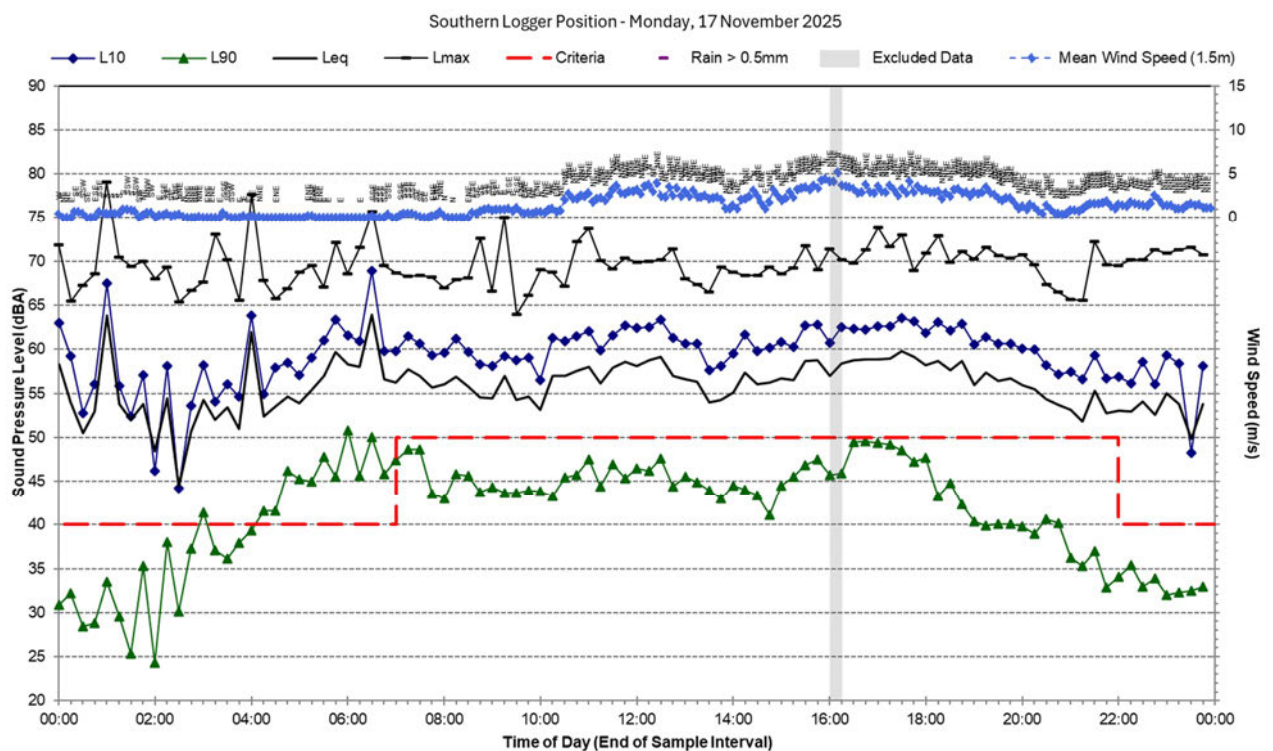
Southern Logger Position - Saturday, 15 November 2025



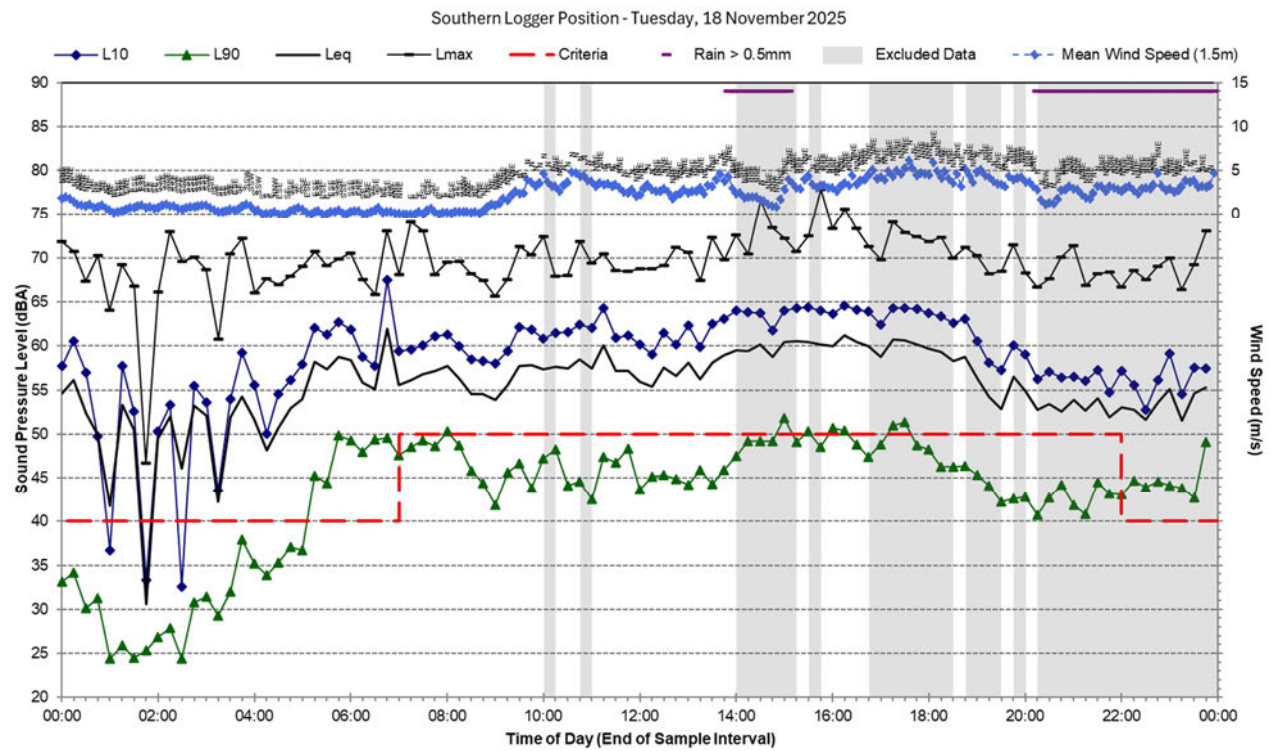
Statistical Ambient Noise Levels



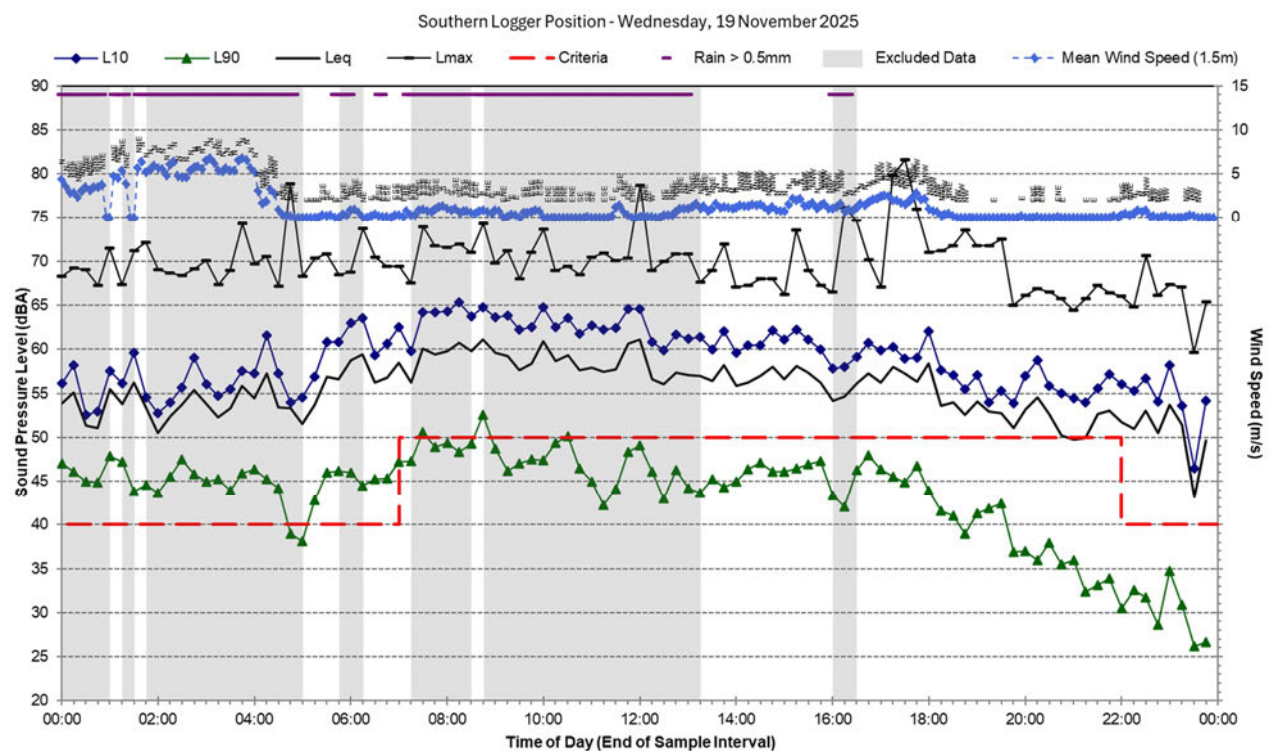
Statistical Ambient Noise Levels



Statistical Ambient Noise Levels

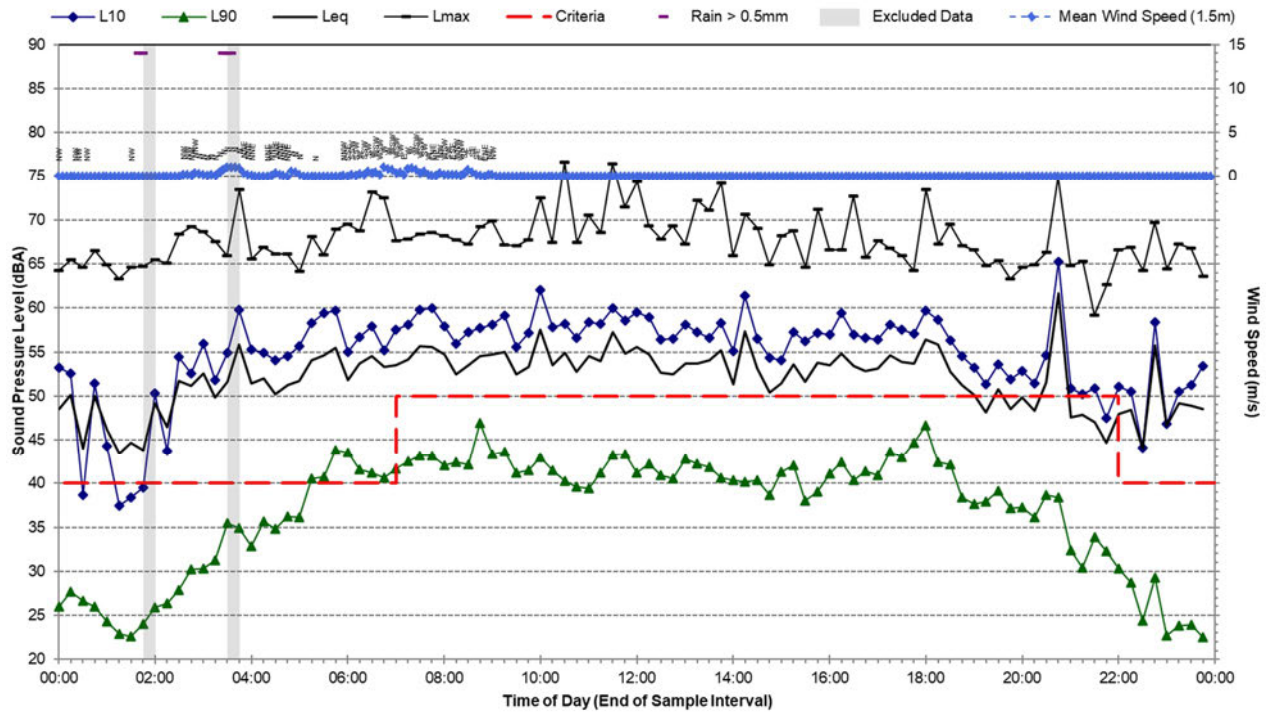


Statistical Ambient Noise Levels



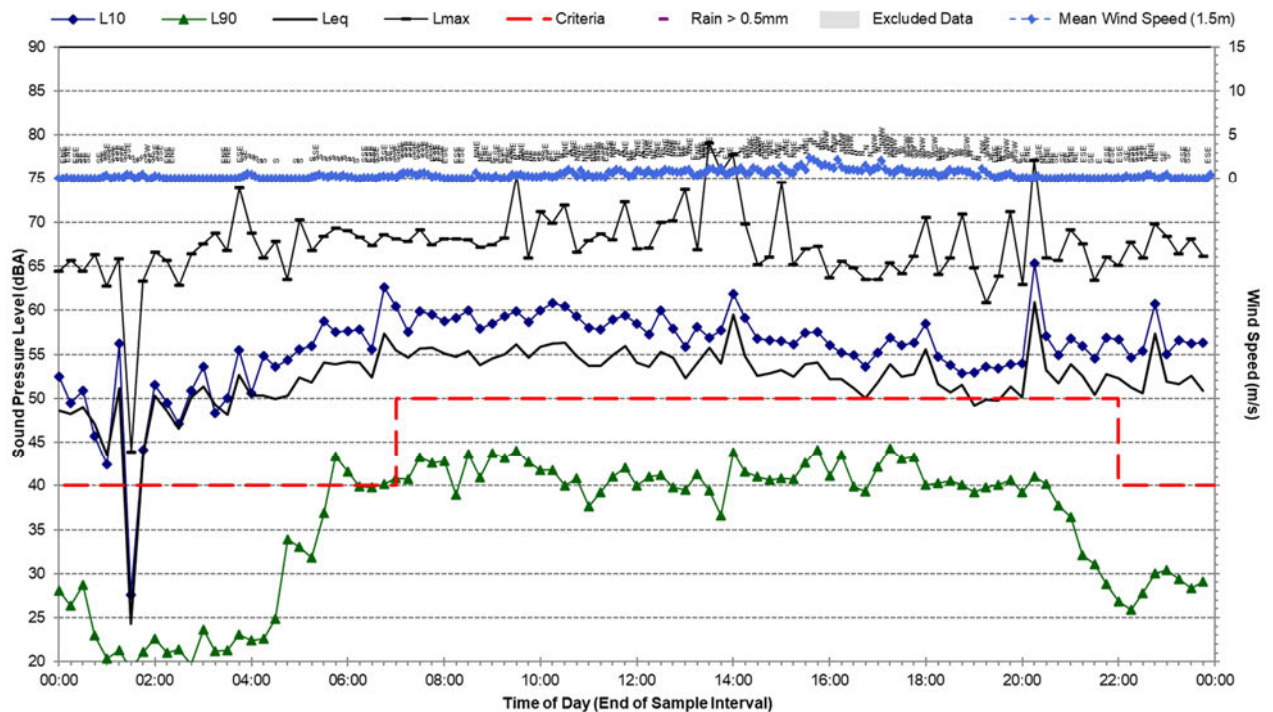
Statistical Ambient Noise Levels

Southern Logger Position - Thursday, 20 November 2025

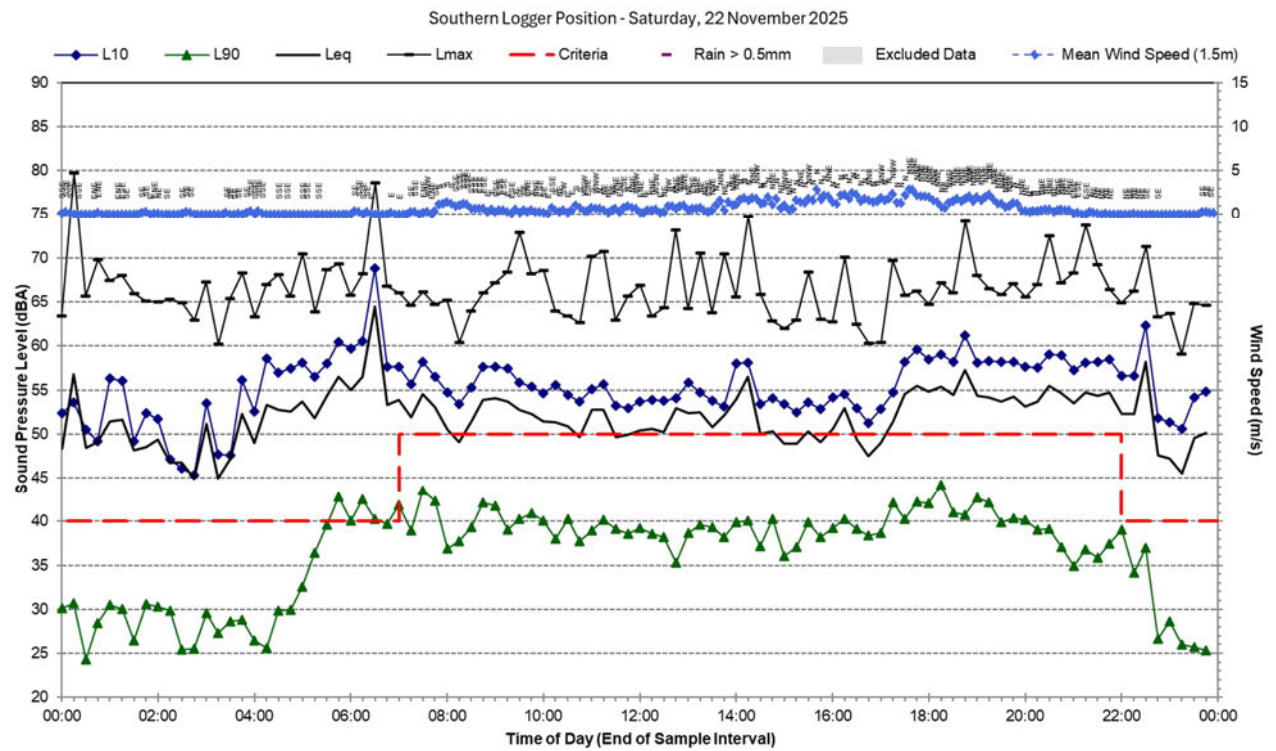


Statistical Ambient Noise Levels

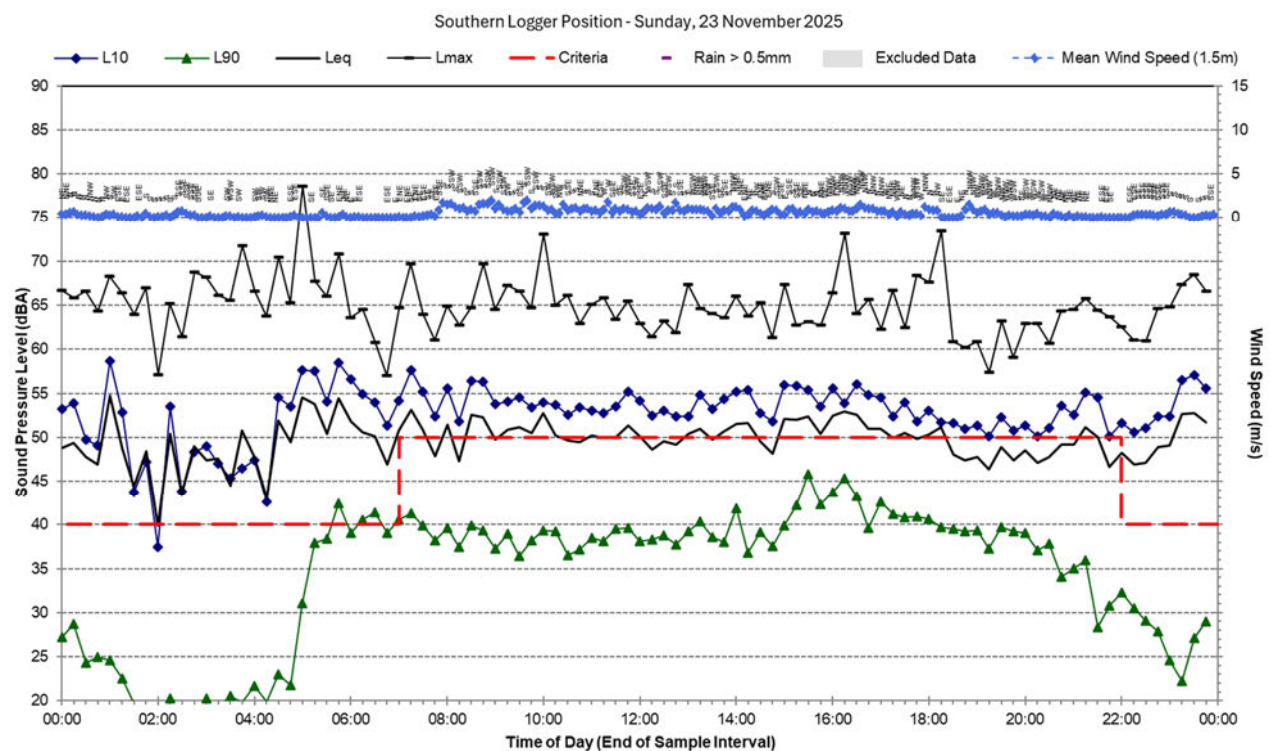
Southern Logger Position - Friday, 21 November 2025



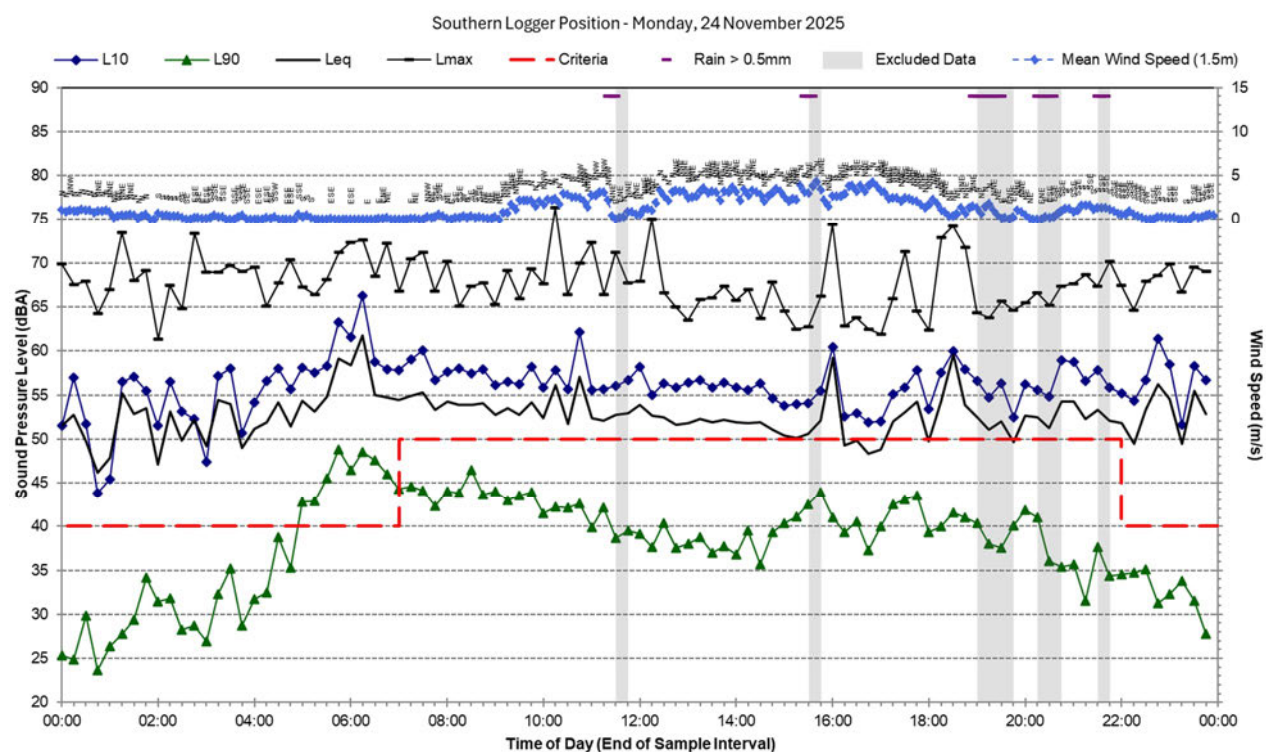
Statistical Ambient Noise Levels



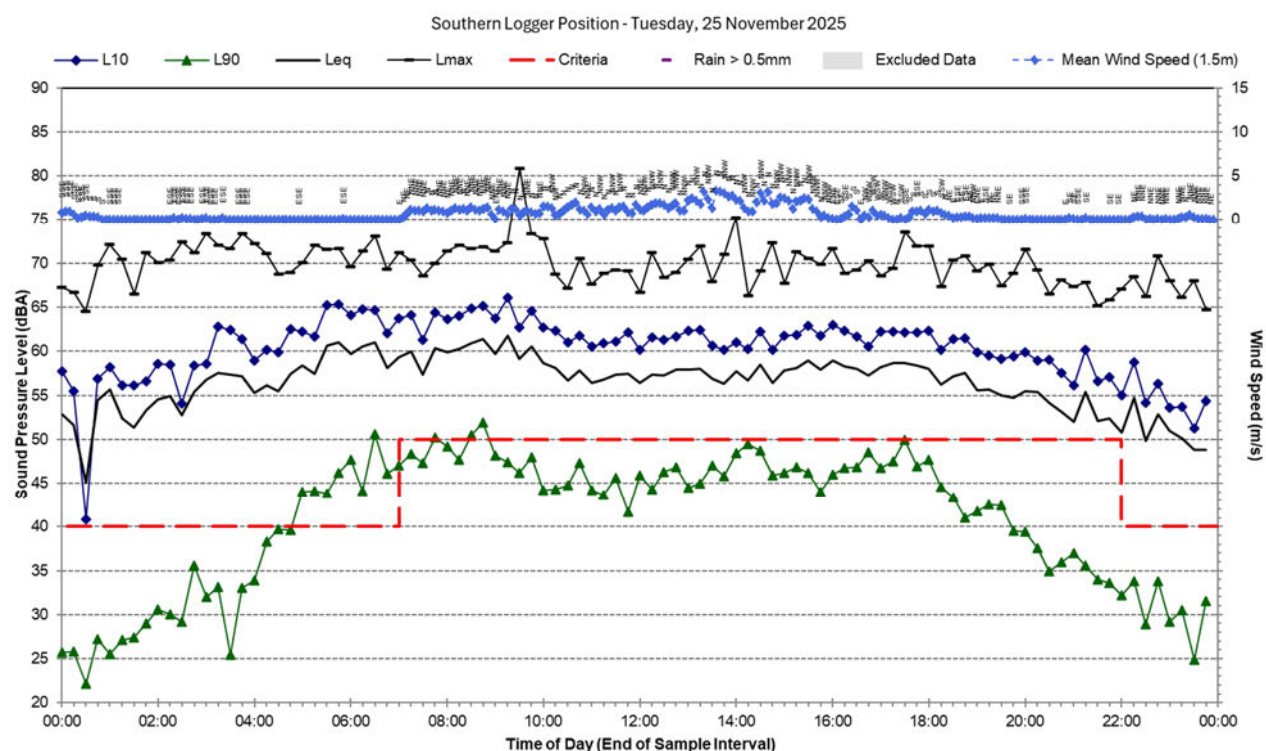
Statistical Ambient Noise Levels



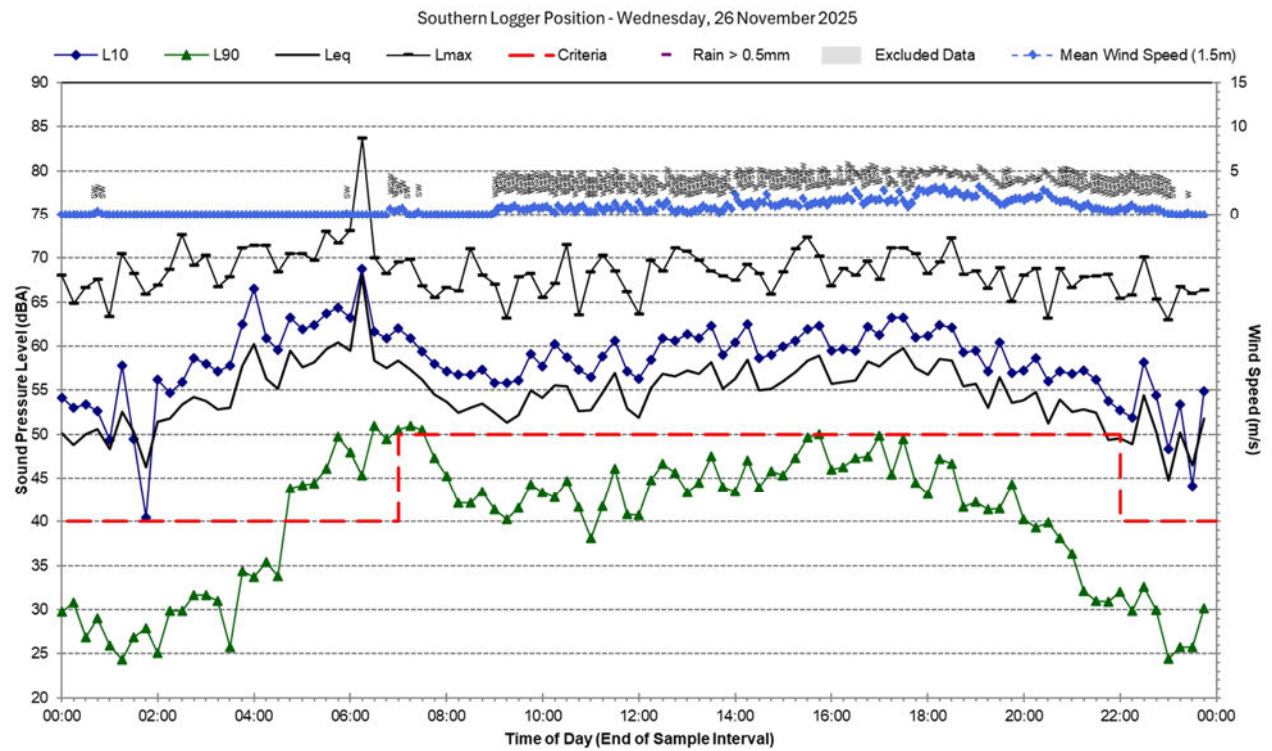
Statistical Ambient Noise Levels



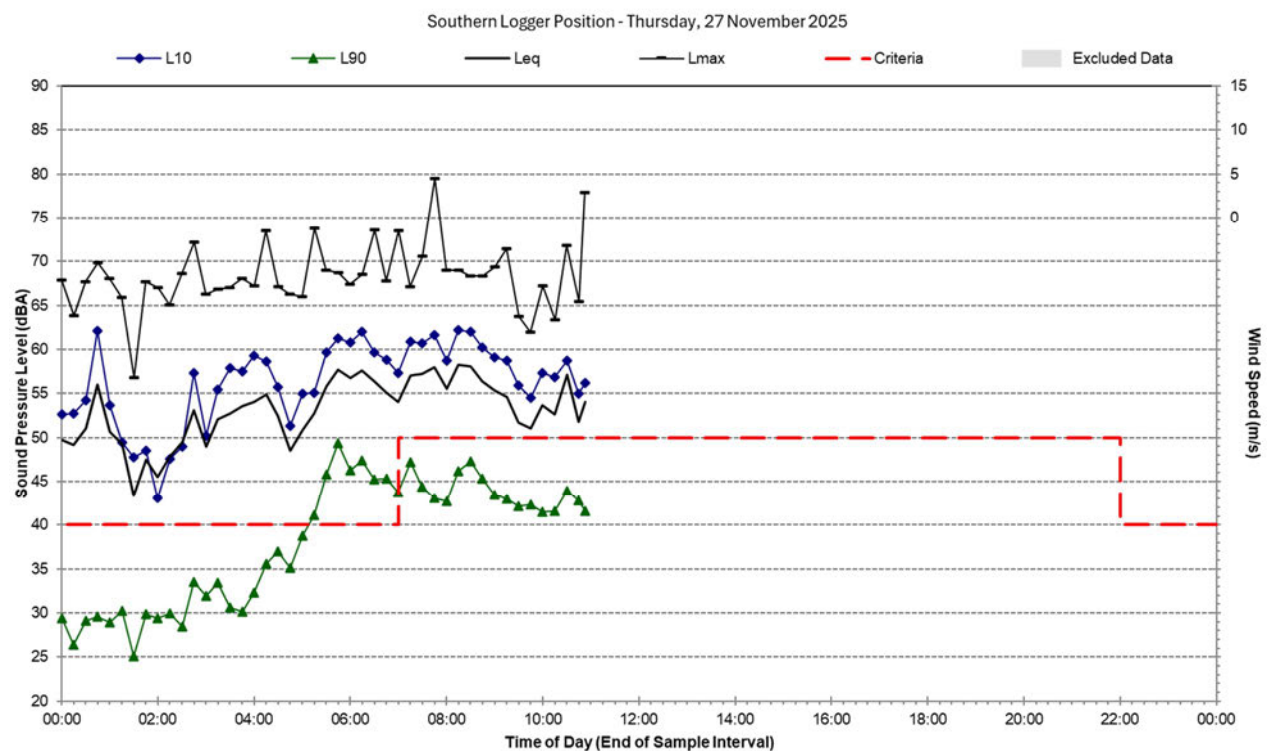
Statistical Ambient Noise Levels

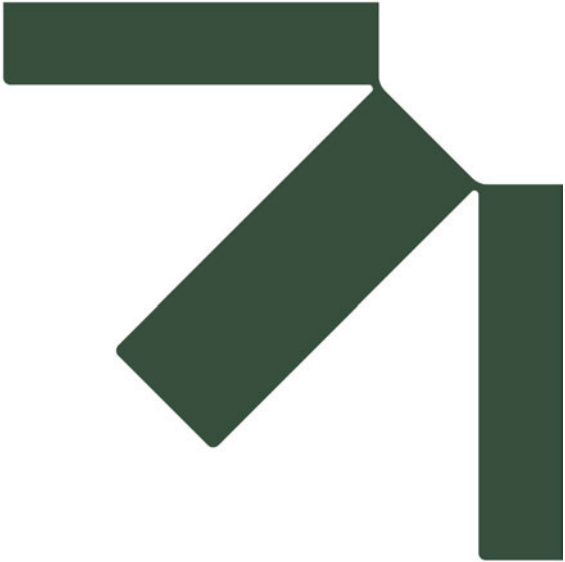


Statistical Ambient Noise Levels



Statistical Ambient Noise Levels





Appendix D Predicted Noise Results and Noise Contour Map

Acoustic Assessment

**Hinuera Solar Farm Project
Fast Track Approvals Application**

Harmony Energy NZ #6 Limited

SLR Project No.: 880.016894.00003

22 June 2026

Table D- 1 presents predicted highest 15-minute operational noise rating levels at the notional boundary of surrounding dwellings for the assessed baseline scenario (**Section 6.2**). Receiver was outside the project area are expected to be lower than the presented noise rating levels.

These noise rating levels include a +5 dB SAC adjustment in accordance with NZS 6802:2008 and represent a conservative worst-case condition assuming full-load operation under favourable propagation conditions. Alternative scenarios discussed in **Section 6.4** were evaluated conceptually and will be confirmed at detailed design stage.

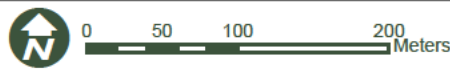
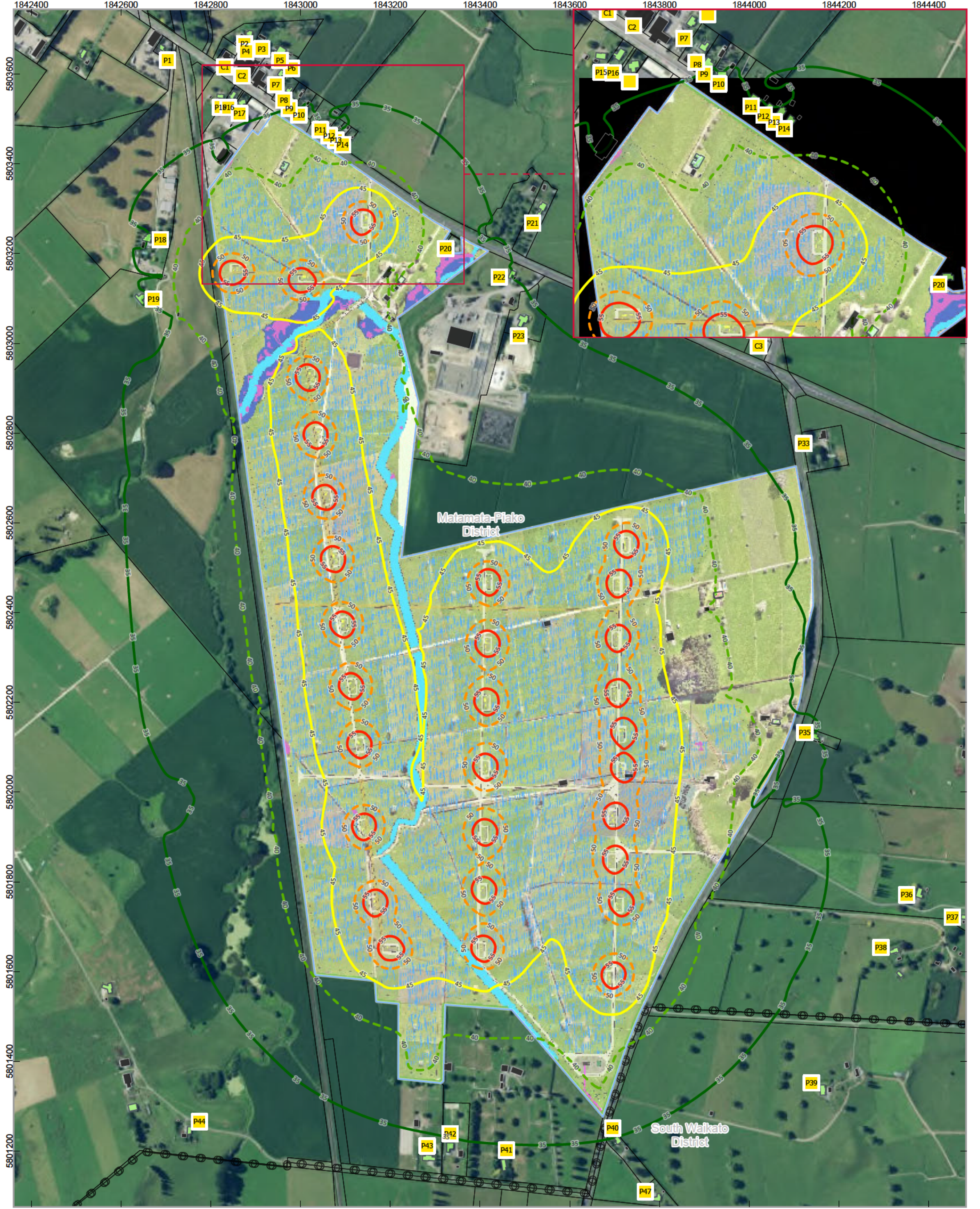
Table D- 1 Predicted Highest Noise Level – Notional Boundary, dB LAeq

Assessment Location	Noise Limit (Section 3.3.3)		Predicted Noise Rating Level	Expected Outcome
	Daytime	Night-time		
C1	50	40	32	Compliance
C2	50	40	34	Compliance
C3	50	40	32	Compliance
P01	50	40	31	Compliance
P02	50	40	33	Compliance
P03	50	40	31	Compliance
P04	50	40	31	Compliance
P05	50	40	32	Compliance
P06	50	40	34	Compliance
P07	50	40	33	Compliance
P08	50	40	35	Compliance
P09	50	40	35	Compliance
P10	50	40	36	Compliance
P11	50	40	37	Compliance
P12	50	40	37	Compliance
P13	50	40	38	Compliance
P14	50	40	38	Compliance
P15	50	40	34	Compliance
P16	50	40	34	Compliance
P17	50	40	35	Compliance
P18	50	40	38	Compliance
P19	50	40	35	Compliance
P20	50	40	38	Compliance
P21	50	40	34	Compliance
P22	50	40	36	Compliance
P23	50	40	36	Compliance
P24	50	40	28	Compliance
P25	50	40	29	Compliance



Assessment Location	Noise Limit (Section 3.3.3)		Predicted Noise Rating Level	Expected Outcome
	Daytime	Night-time		
P26	50	40	29	Compliance
P27	50	40	29	Compliance
P28	50	40	27	Compliance
P29	50	40	32	Compliance
P30	50	40	27	Compliance
P31	50	40	27	Compliance
P32	50	40	28	Compliance
P33	50	40	34	Compliance
P34	50	40	30	Compliance
P35	50	40	36	Compliance
P36	50	40	33	Compliance
P37	50	40	31	Compliance
P38	50	40	33	Compliance
P39	50	40	33	Compliance
P40	50	40	36	Compliance
P41	50	40	35	Compliance
P42	50	40	35	Compliance
P43	50	40	35	Compliance
P44	50	40	32	Compliance
P45	50	40	<i>Out Project Area</i>	<i>Not applicable</i>
P46	50	40	<i>Out Project Area</i>	<i>Not applicable</i>
P47	50	40	34	Compliance
P48	50	40	32	Compliance
P49	50	40	32	Compliance
P50	50	40	31	Compliance
P51	50	40	31	Compliance
P52	50	40	<i>Out Project Area</i>	<i>Not applicable</i>
P53	50	40	<i>Out Project Area</i>	<i>Not applicable</i>





Coordinate System: NZGD 2000 New Zealand Transverse Mercator
Scale: 1:5,000 at A3
Project Number: 880.016894.00001
Date: 22/06/2026
Drawn by: L. Jansen



Map Element Legend

- Assessment Properties
- Existing Buildings
 - Onsite Dwelling
 - Residential
 - School
 - Church
 - Unknown

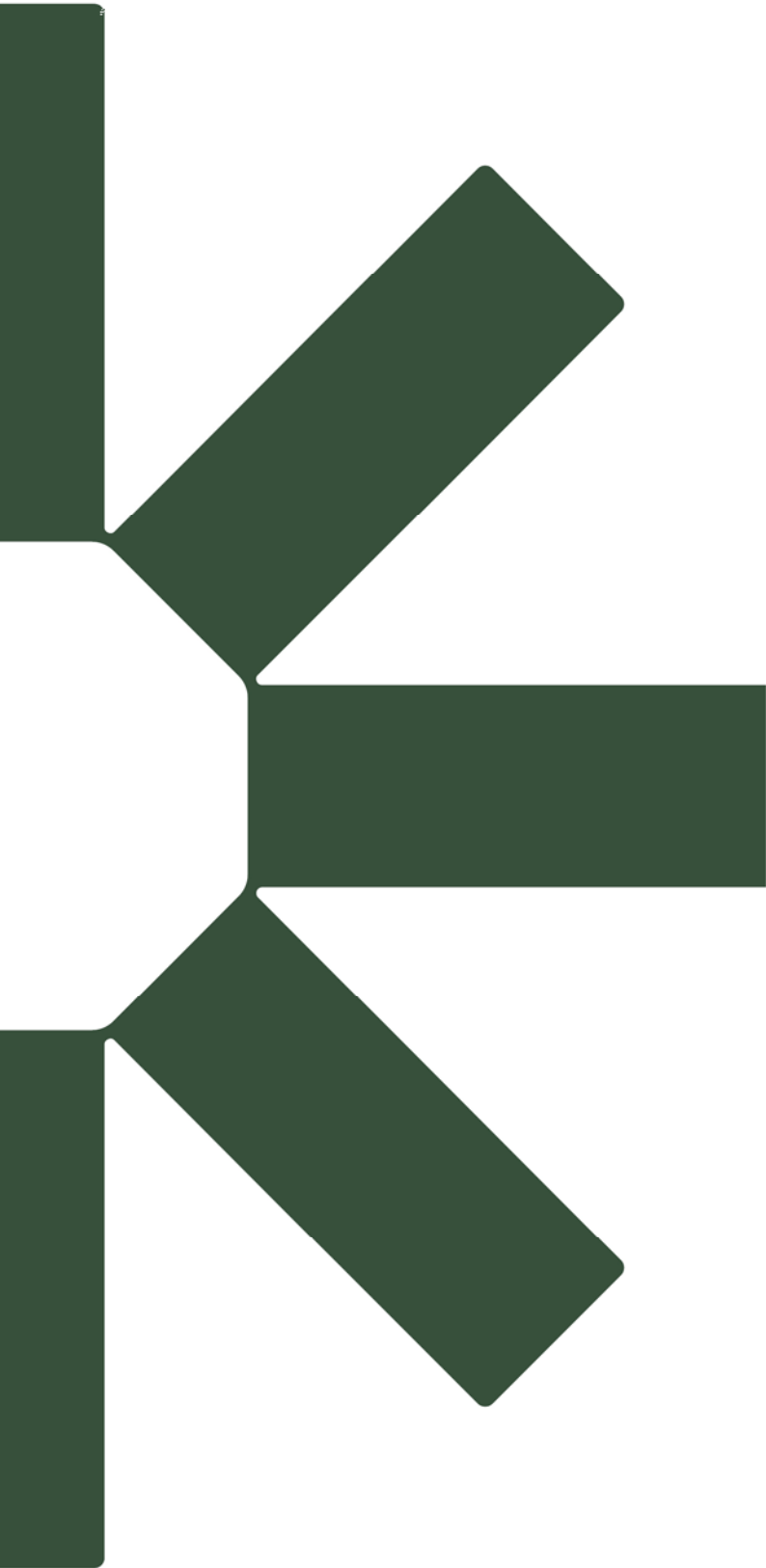
Export FINAL Layout
Peak 15-minute Noise Rating Level

- 35 dB L_{Aeq}
- 40 dB L_{Aeq} (Nighttime Limit)
- 45 dB L_{Aeq}
- 50 dB L_{Aeq} (Daytime Limit)
- 55 dB L_{Aeq}
- Hinuera Solar Farm Subject Site

**HARMONY ENERGY NZ LIMITED
HINUERA SOLAR FARM PROJECT
ACOUSTIC ASSESSMENT**

Noise Contour Map

APPENDIX D-1



Making Sustainability Happen