Laceby Battery Energy Storage System

Noise and Vibration Impact Assessment

ANZA Power Platform

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1 INTRODUCTION

1.1 Background

ANZA Power Platform is proposing to develop a 240 MWh Battery Energy Storage System (BESS) Facility and an accompanying solar farm (which has existing planning approval) at the property located at the corner of Wangaratta-Kilfeera Road, Laceby 3678. The site is formally identified as Parcel 1\TP253930.

The proposal includes the construction and operation of the BESS section of the development (including the cumulative noise impacts resulting from the BESS and solar farm components).

The proposed operational hours if the development are:

- Operate continuously 24 / 7.

1.2 Scope of this report

Pulse White Noise Acoustics (PWNA) has been engaged to undertake a Noise and Vibration Impact Assessment (NVIA) for the proposed development. This NVIA is developed to form part of the designated and integrated development application to address noise and vibration impacts that have the potential to be generated by the proposal.

This report:

- Identifies the existing noise sensitive receivers,
- Presents details about the existing noise environment, including existing noise measurements of the existing operation on site,
- Identifies the applicable VIC noise and vibration policies and applicable operational design criteria,
- Assesses the operational noise and vibration impacts in accordance with the applicable VIC policies; and
- Provides operational noise and vibration mitigation and management measures to comply with the applicable design criteria.

2 EXISTING AMBIENT NOISE ENVIRONMENT

2.1 Land uses

The project site is located within the existing agricultural area approximately 2 km south-west of the Wangaratta Airport, VIC. The project site is bounded by Snow Road along the northern boundary, Wangaratta-Kilfeera Road along the eastern boundary, Oconnell Lane along the southern boundary, and existing agricultural farming land along the western boundary.

The nearest existing residential receivers are located approximately 70 m to the northwest of the project site and 170 m west. Additional residential receivers are located further to the northeast and east / southeast of the project site.

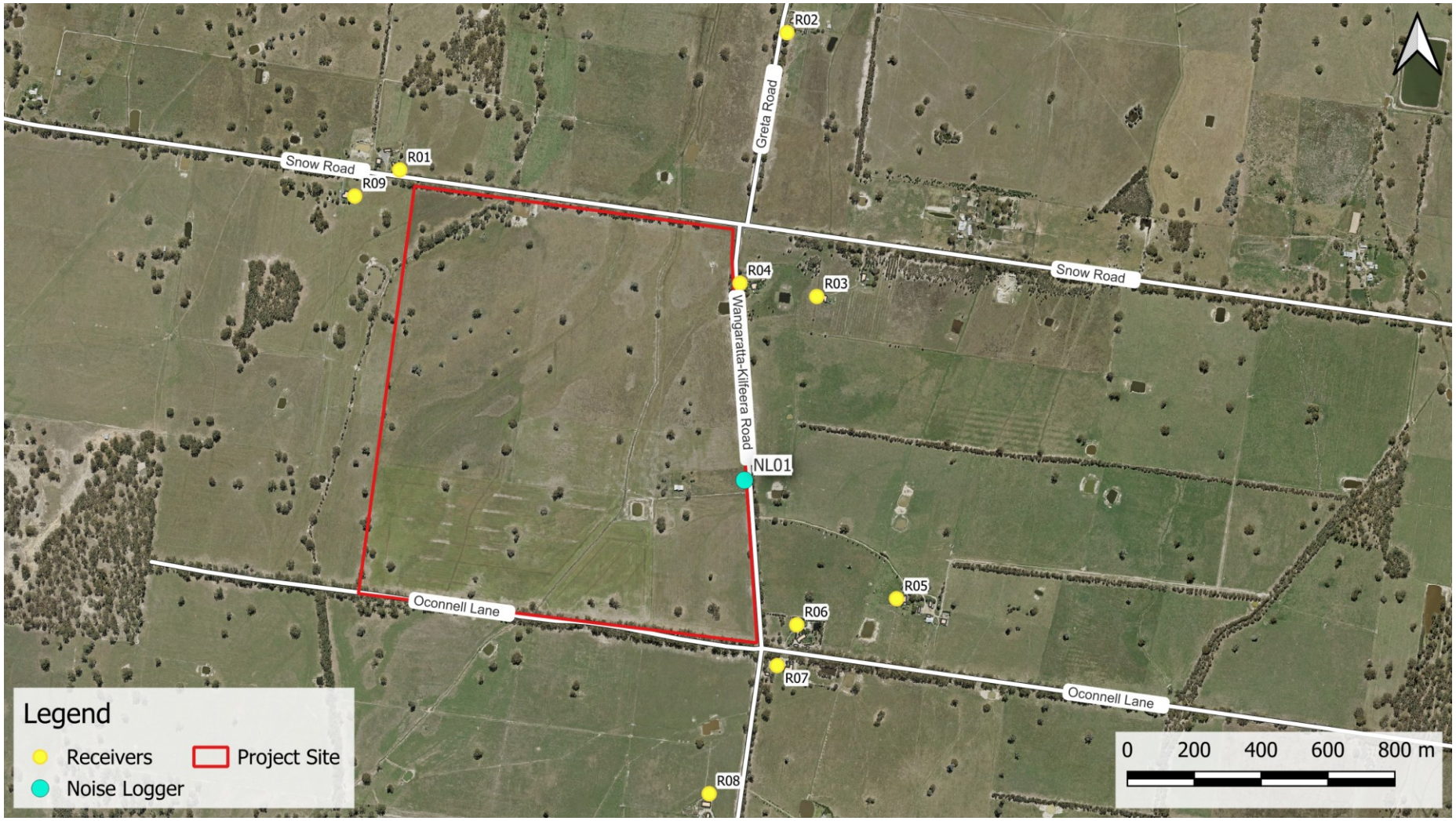
The project site is located within an existing agricultural farming area, zoned as 'Farming Zone'. The noise environment of the nearest receivers of the project site is typical of rural farmland, with background noise levels largely controlled by natural sounds with occasional road traffic noise (majority of which results from the nearby Snow Road).

Presented below in Table 1 are the location of the potentially most affected sensitive receivers and their respective land zoning. These locations are illustrated in Figure 1 below.

Table 1 Noise sensitive receivers.

ID	Address	Use (Land Zoning)
R01	205 SNOW ROAD LACEBY 3678	Residential (FZ)
R02	791 GRETA ROAD LACEBY 3678	Residential (FZ)
R03	348 SNOW ROAD LACEBY 3678	Residential (FZ)
R04	17 WANGARATTA-KILFEERA ROAD LACEBY 3678	Residential (FZ)
R05	87 WANGARATTA-KILFEERA ROAD LACEBY 3678	Residential (FZ)
R06	125 WANGARATTA-KILFEERA ROAD LACEBY 3678	Residential (FZ)
R07	131 WANGARATTA-KILFEERA ROAD LACEBY 3678	Residential (FZ)
R08	186 WANGARATTA-KILFEERA ROAD LACEBY 3678	Residential (FZ)
R09	190 SNOW ROAD LACEBY 3678	Residential (FZ)

Figure 1 Site map, measurement locations and surrounding receivers – site map sourced from VicPlan



2.2 Noise survey

Background noise logging was undertaken in one location between the 8th of October 2025 and the 17th of October 2025. Noise Logger 01 was positioned along the southwestern boundary of the project site. The results from logger 01 have been presented in Appendix B.1, and not been corrected (i.e., raw data is presented).

Instrumentation for the survey comprised one Rion NL-42 sound level meter (NL01 - Serial number 01000231). Calibration of the logger was checked prior to and following the measurements. Drift in calibration did not exceed ± 0.5 dB. All equipment carried appropriate and current NATA (or manufacturer) calibration certificates.

Charts presenting summaries of the measured daily noise data are attached in Appendix B.1. The charts present each 24-hour period and show the L_{A01}, L_{A10}, L_{Aeq} and L_{A90} noise levels for the corresponding 60-minute periods. This data has been filtered to remove periods affected by adverse weather conditions based on weather information.

Data affected by adverse meteorological conditions and by spurious and uncharacteristic events have been excluded from the results and excluded from the data used to determine the noise emission criteria. Meteorological information has been obtained from the Albury Airport AWS (ID 072160). Noise levels provided are processed results with extraneous weather events removed.

The noise logger location illustrated Figure 1 above and has been selected to measure the existing noise environment representative of the nearby noise sensitive receivers.

The Rating Background Noise Level (RBL) is the background noise level used for assessment purposes at the nearest potentially affected receiver. It is the 90th percentile of the daily background noise levels during each assessment period, being day, evening and night. The L_{Aeq} is the ambient noise level (logarithmically averaged) over the period.

The standard measurement periods used in NSW for site noise impacts are:

- Daytime – 7:00 am to 6:00 pm
- Evening – 6:00 pm to 10:00 pm
- Night-time – 10:00 pm to 7:00 am

Presented in Table 2 is a summary of the ambient and RBL noise levels measured over the entire measurement period. Noise logging charts are presented in Appendix B.1. These noise levels are used throughout the assessment to determine the existing noise environment and establish appropriate site-specific noise criteria.

Table 2: Measured ambient noise levels, dB(A)

ID	Address	Rating background level			Ambient noise level, $L_{Aeq,period}$		
		Daytime	Evening	Night	Daytime	Evening	Night
Noise Logger 01	Along eastern boundary of the project site. (refer to Figure 1)	42	35	35	60	58	51

The dominate noise source for Nosie Logger 01 consists of primarily natural sounds (birds chirping) and distant agricultural noise (tractors / machinery noise). An inspection of the logger location and nearest residential receivers identified that the noise logger location was representative of the noise environment for all nearby sensitive receivers.

3 NOISE AND VIBRATION CRITERIA

3.1 Construction noise

3.1.1 EPA Publication 1834 Construction Guide

Civil construction, building and demolition related noise can impact the health and wellbeing of people and animals when not managed appropriately. Vibration may also interfere with scientific equipment or damage building and undergrade services.

There are no objective legislative requirements to limit noise and vibration from construction projects in Victoria. However, there are best practice processes to minimise impacts where possible to the nearest surrounding receivers.

Key aspects for project planning include:

- Identifying people and sensitive environments that could be affected by your construction activities.
- Carrying out appropriate engagement as early as possible
- Avoiding the generation of noise and vibration
- Facilitation construction during normal working hours, where possible
- Reducing noise and vibration by using the most appropriate equipment and work practices for your activities
- Choosing alternative equipment or methods that generate les noise or vibration
- Maintaining equipment and vehicles according to manufacturer's instructions
- Attenuating noise by obstructing the path between noise source and receiver
- Mitigating offsite noise with measures such as respite offers and acoustic treatment
- Considering alternatives if noise and vibration cannot be reduced through avoidance, reduction or attenuation

A construction noise and vibration impact assessment may be required for the project site to predict the scale of the likely noise impacts associated with the construction of the site. Allowing effective noise mitigation and management controls to be developed. The construction noise and vibration impact assessment should be prepared once a contractor has been engaged with construction methodology developed.

The benefits of a noise and vibration impact assessment can be used to:

- Inform the risk assessment process
- Inform plans for managing noise
- Predict the effects of implementing noise and vibration controls
- Identify the need for noise and vibration monitoring, which can also determine the effectiveness of noise controls.

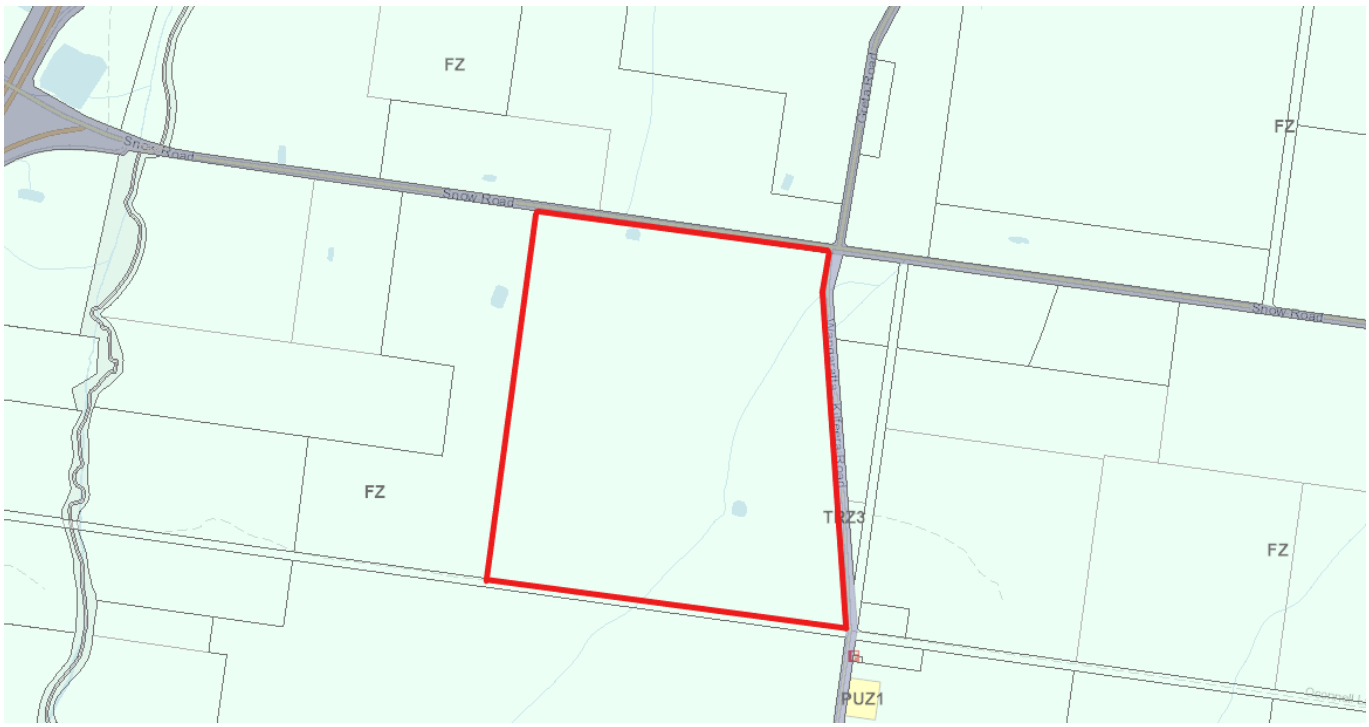
Noise and vibration impact assessments can also be useful when providing information to the community and people who could be affected by noise.

3.2 Operational Noise

3.2.1 Existing land zoning

The project site and all of the nearest surrounding receivers are located within an area zoned as 'Farming Zoning - FZ'. The land zoning map for the project site and the nearest receivers is presented within Figure 2 below.

Figure 2 Land zoning map



3.2.2 EPA Publication 1826.5 – Industrial noise

The project site and nearest noise sensitive receivers are located outside of the Melbourne Urban Growth Boundary (UGB) and any Major Urban Areas (<7,000 population), the applicable noise limits for commercial operations are detailed within Section 2.1 of the EPA Publication 1826.5 'Noise limits in rural areas for commercial, industrial and trade premises other than utilities and earth resources', under the 'Noise Limits - Rural Area Method'. The applicable noise limit criteria for the project site are presented in below.

Table 3 EPA 1826.5 Noise criteria – Rural area method

Noise generating planning zone	Noise receiving planning zone	Noise criteria, $L_{Aeq,30\ min}$ dB(A)		
		Daytime[1]	Evening[1]	Night-time[1]
Farming Zone (FZ) – Project Site	Farming Zone (FZ) – All sensitive receivers	46	41	36

Note 1 EPA 1826.5 Period Definitions: Day: Monday – Saturday: 7:00 am – 6:00 pm
Evening: Monday – Saturday: 6:00 pm – 10:00 pm
Night: All days 10:00 pm – 7:00 am
Sunday or Holiday: 7:00 am – 10:00 pm

4 OPERATIONAL NOISE IMPACTS

4.1 Modelling methodology

Calculations of the noise impacts have been undertaken in accordance with the ISO9613-2: 2024-01 noise propagation algorithm at the most affected sensitive receiver locations. ISO9613-2 includes consideration of downwind noise propagation. Receivers located further from the site would have lower noise levels from the proposed works.

4.2 Operational site noise emissions

Typical operations of the site include the continuous operation of the battery energy storage system, and associated electrical equipment, including inverters (serving the BESS units) and battery Energy Storage System (BESS) units during the daytime and evening periods.

Additionally, the transformer located within the electrical sub-station will operate continuous (though all operational periods).

The solar farm component of the development includes inverters servicing the solar panels during periods of power generation. Impacts from the solar farm have been assessed cumulatively with the noise emissions resulting from the BESS component of the development, ensuring that the overall site achieves the applicable noise limits.

Table 4 below depicts the modelled worst-case noise scenarios for each time of operation. The operational equipment represents a single movement and corrected for the number of operational equipment sources in a 30-minute period.

Table 4 Predicted worst-case site operations

Scenario / time period	Description – Peak 30-minute period
Scenario 1 – (7:00 am – 6:00 pm)	
Daytime	22 x BESS Inverters – Continuous daytime and evening period operation 44 x BESS Containers – Continuous daytime and evening period operation 1 x Transformers – Continuous 24 / 7 operations 18 x PV inverter – continuous daytime period operation
Scenario 2 – (6:00 pm – 10:00 pm)	
Evening	22 x BESS Inverters – Continuous daytime and evening period operation 44 x BESS Containers – Continuous daytime and evening period operation 1 x Transformer – Continuous 24 / 7 operations
Scenario 3 – (10:00 pm – 7:00 am)	
Nighttime	1 x Transformer – Continuous 24 / 7 operations

4.3 Source noise levels

Presented in Table 5 are the sound power levels (SWL) used for this assessment. The SWL represents a single noise source.

The locations of modelled sources are illustrated in Figure 3, Figure 4, and Figure 5 for the daytime, evening, and nighttime periods respectively.

Table 5 Single event source noise levels, L_{Aeq} SWL, dB(Z)

Source	63 Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4 kHz	8 kHz	Overall, dB(A)
BESS Inverters[3]	57	64	73	74	73	74	81	73	**84**
Typical BESS Container	57	77	80	81	81	78	72	62	**85**
Transformer[3]	98	100	95	94	89	84	79	69	**95**
PV Inverters[3]	64	70	79	81	80	81	88	80	**91**

Note 1 Octave band data is presented unweighted, overall level is presented A-weighted.

Note 2 Sound power levels for the electrical plant / equipment presented have been obtained from the manufacturer, information from previous projects and / or our database.

Note 3 A +5 dB penalty has been added to these noise levels to account for the tonal nature of the noise source.

Figure 3 Modelled source location layout – daytime period

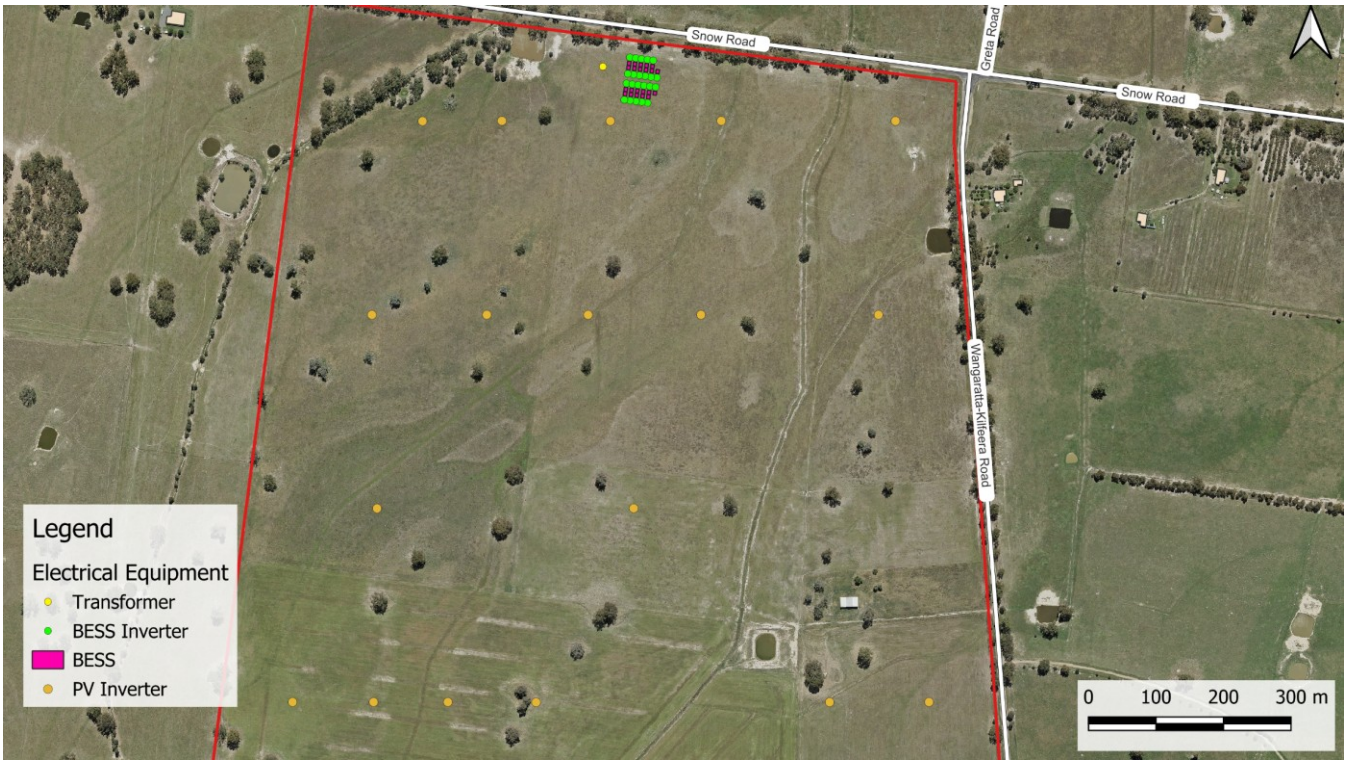


Figure 4 Modelled source location layout – evening period

Figure 5 Modelled source location layout – nighttime period

4.4 Predicted site operational noise impacts

Presented below in Table 6 is a summary of the predicted noise levels for each scenario and the applicable noise criteria. Noise contours of these scenarios are presented in Appendix D. The presented noise levels are inclusive of any penalties added due to annoying characteristics, tonality (+5 dB) for this assessment and the noise mitigation measures detailed within Section 5.2.1.

Table 6 Predicted operational noise impacts, $L_{Aeq,30\ minute}$, dB(A)

Receiver	PSNTL	Noise predictions (dB(A))
Peak daytime operations (7:00 am – 6:00 pm)		
R01	46	37
R02	46	32
R03	46	36
R04	46	42
R05	46	30
R06	46	34
R07	46	32
R08	46	29
R09	46	37
Peak evening operations (6:00 pm – 10:00 pm)		
R01	41	33
R02	41	31
R03	41	33
R04	41	36
R05	41	26
R06	41	29
R07	41	27
R08	41	26
R09	41	35
Peak nighttime operations (10:00 pm – 7:00 am)		
R01	36	27
R02	36	22
R03	36	24
R04	36	26
R05	36	20

Receiver	PSNTL	Noise predictions (dB(A))
R06	36	20
R07	36	21
R08	36	20
R09	36	29

Note 1 The predicted noise levels are inclusive of the +5 dB penalty added to both the inverters and transformer for tonality.

The results in Table 6 indicate that compliance with the noise criteria is achieved at all locations, so long as the mitigation recommendations are implemented into the design and operation of the development. Refer to Section 5.2 for details of the mitigation measures.

4.5 Cumulative noise impacts

In addition to the noise impacts associated with the battery energy storage system, cumulative noise impacts from the solar farm (with existing planning approval) have been considered. The solar farm is located on the same piece of land (at the corner of Wangaratta-Kilfeera Road, Laceby 3678. The site is formally identified as Parcel 1\TP253930).

The operational noise assessment as detailed within Section 4.2 considered the additional noise generating equipment associated with the solar farm component of the project (PV Inverters). The predicted operational noise impacts indicate that operational compliance can be achieved at all sensitive receivers for all operational periods when considering both noise impacts from the BESS and PV components of the project cumulatively, so long as the noise mitigation measures are implemented into the design of the project site (refer to Section 5.2.1 for additional details).

Further consideration of the potential for cumulative noise impacts is not required.

5 MANAGEMENT AND MITIGATION MEASURES

5.1 Construction management measures

5.1.1 General comments

The contractor will, where reasonable and feasible, apply best practice noise mitigation measures. These measures shall include the following:

- Maximising the offset distance between plant items and nearby noise sensitive receivers.
- Preventing noisy plant working simultaneously and adjacent to sensitive receivers.
- Minimising consecutive works in the same site area.
- Orienting equipment away from noise sensitive areas.
- Carrying out loading and unloading away from noise sensitive areas.

To minimise noise impacts during the works, the contractor will take all reasonable and feasible measures to mitigate noise effects.

The contractor will also take reasonable steps to control noise from all plant and equipment. Examples of appropriate noise control include efficient silencers and low noise mufflers.

The contractor should apply all feasible and reasonable work practices to meet the NMLs and inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels, duration of noise generating construction works, and the contact details for the proposal.

Presented below in Table 7 is a summary of the noise management measures and approximate noise reductions. Further information is provided in the proceeding section.

Table 7 Standard noise and vibration mitigation measures.

Item	Description	Noise reduction
Management measures		
Implement community consultation measures	Providing the community ongoing updates about potential noise impacts can reduce the impacts and annoyance from the project	Reduced annoyance
Site inductions	All employees, contractors and subcontractors are to receive an environmental induction which would include consideration of noise and vibration impacts.	
Behavioural practices	No swearing or unnecessary shouting or loud stereos/radios on site. No dropping of materials from height, throwing of metal items and slamming of doors.	
Monitoring	See Section 5.1.3.	
Work scheduling	Includes scheduling noise intensive works and respite periods	Annoyance reduction
Source controls		
Alternative equipment or process	Use quieter and less vibration emitting construction methods where feasible and reasonable.	5 to 15 dB
Plan worksites and activities to minimise noise and vibration	Plan traffic flow, parking and loading/unloading areas to minimise reversing movements within the site	1 to 3 dB
Minimise the movement of materials	Reduces noise generated through reduced plant operations	1 dB to 3 dB
Broadband reversing alarm	Site based vehicles should be fitted with broadband reversing alarms to reduce tonal noise impacts.	5 dB
Siting of equipment	Simultaneous operation of noisy plant within discernible range of a sensitive receiver is to be avoided. The offset distance between noisy plant and adjacent sensitive receivers is to be maximised. Plant used intermittently to be throttled down or shut down. Noise-emitting plant to be directed away from sensitive receivers	3 to 15 dB
Silencers on mobile plant	Where possible reduce noise from mobile plant through additional fittings	5 dB to 8 dB
Maximise hammer penetration	Reduces the time required and associated noise impacts	Reduced duration
Path controls		
Acoustic enclosure or screening	Stationary noise sources should be enclosed or shielded whilst ensuring that the occupational health and safety of workers is maintained.	5 dB to 10 dB

Alternate equipment or process

Exceedance of the site's NMLs should result in an investigation as to whether alternate equipment could be used, or a difference process could be undertaken.

In some cases, the investigation may conclude that no possible other equipment can be used, however, a different process could be undertaken.

Acoustic enclosures/screening

Typically, on a construction site there are three different types of plant that will be used: mobile plant (i.e., excavators, skid steers, etc.), semi mobile plant (i.e., hand tools generally) or static plant i.e. (diesel generators).

For plant items which are static it is recommended that, in the event exceedances are being measured due to operation of the plant item, an acoustic enclosure/screen is constructed to reduce impacts. These systems can be constructed from Fibre Cement (FC) sheeting or, if airflow is required, acoustic attenuators or louvres.

For semi mobile plant, relocation of plant should be investigated to either be operated in an enclosed space or at locations away from a receiver.

With mobile plant it is generally not possible to treat these sources. However, investigations into the machine itself may result in a reduction of noise (i.e., mufflers/attenuators etc).

General mitigation measures (Australia Standard 2436-2010)

As well as the above project specific noise mitigation controls, AS 2436-2010 *"Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites"* sets out numerous practical recommendations to assist in mitigating construction noise emissions. Examples of strategies that could be implemented on the subject project are listed below, including the typical noise reduction achieved, where applicable.

Adoption of universal work practices

- Regular reinforcement (such as at toolbox talks) of the need to minimise noise and vibration.
- Regular identification of noisy activities and adoption of improvement techniques.
- Avoiding the use of portable radios, public address systems or other methods of site communication that may unnecessarily impact upon nearby sensitive receivers.
- Where possible, avoiding the use of equipment that generates impulsive noise.
- Minimising the need for vehicle reversing for example (particularly at night), by arranging for one-way site traffic routes.
- Use of broadband audible alarms on vehicles and elevating work platforms used on site.
- Minimising the movement of materials and plant and unnecessary metal-on-metal contact.
- Minimising truck movements.

Plant and equipment

The operation of plant and equipment on the site should be undertaken, including the following:

- Choosing quieter plant and equipment based on the optimal power and size to most efficiently perform the required tasks.
- Selecting plant and equipment with low vibration generation characteristics.
- Operating plant and equipment in the quietest and most efficient manner.

Work scheduling

- Providing respite periods which could include restricting very noisy activities to time periods that least affect the nearby noise sensitive locations, restricting the number of nights that after-hours work is conducted near residences or by determining any specific requirements.

- Scheduling work to coincide with non-sensitive periods.
- Planning deliveries and access to the site to occur quietly and efficiently and organising parking only within designated areas located away from the sensitive receivers.
- Optimising the number of deliveries to the site by amalgamating loads where possible and scheduling arrivals within designated hours.

Source noise control strategies

Some ways of controlling noise at the source are:

- Where reasonably practical, noisy plant or processes should be replaced by less noisy alternatives.
- Modify existing equipment: Engines and exhausts are typically the dominant noise sources on mobile plant such as cranes, graders, excavators, trucks, etc. To minimise noise emissions, residential grade mufflers should be fitted on all mobile plant utilised on site.
- Siting of equipment: locating noisy equipment behind structures that act as barriers, or at the greatest distance from the noise-sensitive area; or orienting the equipment so that noise emissions are directed away from any sensitive areas, to achieve the maximum attenuation of noise.
- Regular and effective maintenance.

Miscellaneous comments

Deliveries should be undertaken, where possible, during standard construction hours.

Maximise hammer penetration (and reduce blows) by using sharp hammer tips. Keep stocks of sharp profiles at site and monitor the profiles in use.

It is advised that mobile plant and trucks operating on site for a significant portion of the project are to have reversing alarm noise emissions minimised. This is to be implemented subject to recognising the need to maintain occupational safety standards.

No public address system should be used on site.

5.1.2 Construction vibration mitigation measures

The following vibration mitigation measures should be implemented:

- Any vibration generating plant and equipment is to be in areas within the site to lower the vibration impacts.
- Investigate the feasibility of rescheduling the hours of operation of major vibration generating plant and equipment.
- Use lower vibration generating items of construction plant and equipment; that is, smaller capacity plant.
- Minimise conducting vibration generating works consecutively in the same area (if applicable).
- Undertake the removal of concrete within the building using saw cutting or pulverising where possible.

To ensure the vibration impact criteria detailed in this report are complied with the following safe working mitigations and/or working distances should be implemented as detailed in the table below.

Table 8 Vibration mitigation requirements.

Construction Phase	Activity	Vibration Mitigation
Construction	General Construction activities	General construction activities are not expected to exceed project vibration limits detailed in this report.

5.1.3 Noise and vibration monitoring

Noise monitoring, if required, will be performed by an acoustical consultant directly engaged by the contractor in accordance with the projects Conditions of Consent.

Noise monitoring is recommended to be undertaken by attended noise measurements at the start of any new phase of works (i.e. demolition, ground works or remediation works etc.). The statistical parameters to be measured should include the following noise descriptors: L_{Amin}, L_{A90}, L_{A10}, L_{A1}, L_{Amax} and L_{Aeq}. Unattended noise measurements should be conducted over consecutive 30-minute periods.

The survey methodology and any equipment should comply with the requirements discussed in Standard AS 1055.1-1997.

As part of the management of noise and vibration from the proposed demolition and ground works activities to be undertaken on the site the following noise and vibration measurements are recommended to be undertaken:

1. Noise Monitoring –
    a. Attended construction noise surveys of the site and surrounding impacts on neighbours should be undertaken during the following as a minimum (where relevant):
        i. Commencement of any rock breaking or sawing on the site.
        ii. In response to any ongoing complaints received from neighbours.

2. Vibration Monitoring– To confirm vibration magnitudes are within the expected levels the following attended vibration measurements are required:
    a. Short term attended vibration measurements – Attended short term vibration measurement of activities with the potential to generate maximum vibration to be undertaken on commencement at the site, including the following:
        i. Measurements to be undertaken at a representative location from the activity being conducted with a similar distance to the potentially affected receiver.
        ii. Activities with the potential to generate the greatest magnitudes of vibration include:
            Hydraulic hammering during the post installation phase for the solar panel farm.
            Hydraulic hammering of concrete slabs.
            Hydraulic hammering during ground works within rock.

5.1.4 Community consultation

Active community consultation and the maintenance of positive relations with nearby court houses, local residents, and businesses would assist in alleviating concerns and thereby minimising complaint.

This form of notification should provide specific notification of the duration and timing of the required ground works activities so that residents are informed about the works ahead of time. The letter should also provide the community with a hotline number for a community liaison officer available to adequately respond to all project related enquiries.

Ideally the hotline number should provide concerned locals an opportunity to raise any concerns with the project proponent and provide an opportunity to determine the best method to satisfy all requirements.

Prior to the works onsite being undertaken, community consultation with the neighbouring affected parties be undertaken. Community engagement and consultation should not be limited to the beginning of the onsite works but throughout, providing the community with constant updates on the progress and upcoming works. In our experience these could include:

- Site noticeboard,
- Email notifications; and
- Letterbox drops.

Complaints management system

Should complaints arise they must be dealt with in a responsible and uniform manner, therefore, a management system to deal with complaints is detailed below:

Local residents and landowners should be informed by direct mail of a direct 24-hour telephone line where any noise complaints related to the required ground works will be recorded. The 24-hour telephone line number will be made available on the construction site signage.

All complaints should be investigated by the Contractor in accordance with the procedures outlined in Australia Standard 2436-2010. Consequently, a complaint response procedure should be implemented. Information to be gathered as part of this process should include:

- location of complainant
- time/s of occurrence of alleged noise or vibration impacts
- nature of impact particularly with respect to vibration
- Perceived source
- Prevailing weather conditions and similar details that could be utilised to assist in the investigation of the complaint.

All resident complaints will be responded to in the required timeframe and action taken recorded.

Post receiving a noise and or vibration complaint, the process outlined in the Contingency Plans below should be undertaken.

Contingency plans

Contingency plans are required to address noise or vibration problems if excessive levels are measured at surrounding sensitive receivers and/or if justified complaints occur. Such plans include:

- Stop the onsite works.
- Identify the source of the main equipment within specific areas of the site which is producing the most required ground works noise and vibration at the sensitive receivers; and
- Review the identified equipment and determine if an alternate piece of equipment can be used or the process can be altered.

- In the event an alternate piece of equipment or process can be used, works can re-commence.
- In the event an alternate piece of equipment or process cannot be determined implement a construction assessment to be performed by a suitably qualified acoustic consultant.
- Respite periods to be scheduled during potentially noise sensitive periods of the surrounding receivers.

The Superintendent shall have access to view the Contractor's noise measurement records on request. The Superintendent may undertake noise monitoring if and when required.

5.2 Operational noise management and mitigation measures

The noise impact assessment has predicted compliance with the operational noise criteria with the use of additional noise mitigation. Refer to Section 5.2.1 below.

5.2.1 Operational mitigation measures

Presented below is a summary of the indicative noise mitigation for the proposed development. With this noise mitigation included, compliance with the PSNTLs can be achieved at all sensitive receiver locations. At this early stage, the noise mitigation is indicative only and has been included to highlight that the site can be designed effectively to achieve all project noise requirements. The level of noise mitigation is directly linked to the final selection of the electrical equipment. During the detailed design stage of the project, the development must be reassessed to confirm the suitability of the noise mitigation measures required.

The recommended noise mitigation may include:

- A noise barrier is required around the BESS electrical infrastructure. The noise barrier must be configured in an inverted 'U' shape, with the western and northern sides built to a height of 4.5 m, whilst the eastern side built to a height of 6 m.

- A noise barrier is required around the HV transformer. The noise barrier must be configured in an inverted 'U' shape. The noise barrier must be configured to a height of 3 m.

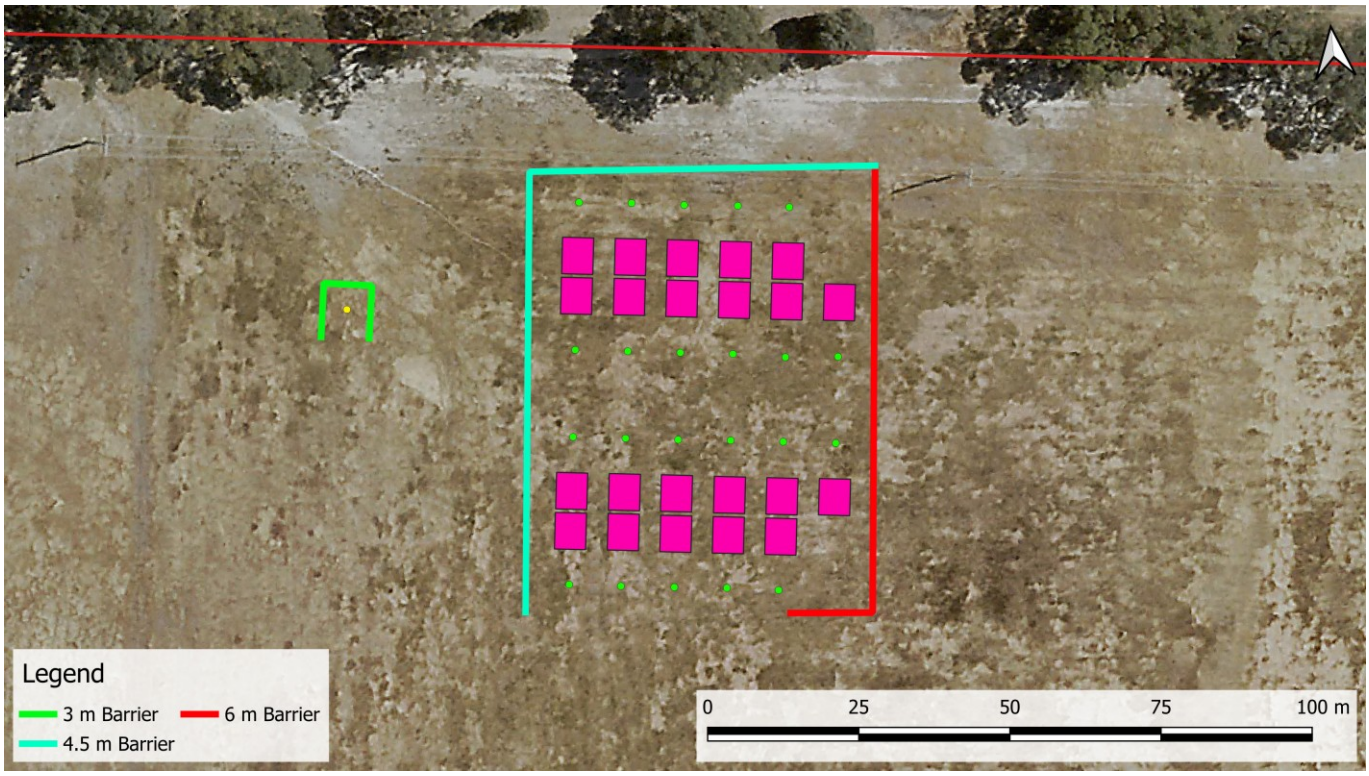
There are other mitigation measures that may also be suitable, including:

- Exhaust / intake silencers / localised acoustic treatment to each individual plant item
- Special acoustic fans with reduced sound power levels

Additionally, overall quieter equipment may remove the need for acoustic mitigation entirely. This highlights the importance of reassessing the noise emissions from the proposed development during the detail design stage of the project.

The noise mitigation recommendations (in the form of acoustic barriers) are illustrated below in Figure 6.

Figure 6 Mitigation recommendations



5.2.2 Operational management measures

Noise management measures can be effective to control noise impacts associated with behaviours. The corner stone to noise management measures is making employees and people accessing the site aware of their site requirements and obligations.

Light and heavy service vehicles that may occasionally access the site, should minimise reversing where possible, removing the potential tonal noise source.

It is anticipated that all service / maintenance operations would occur within the daytime period.

6 CONCLUSION

ANZA Power Platform is proposing to develop a 240 MWh battery Energy Storage System (BESS) and accompanying solar farm (with existing planning approval) at the property located at the corner of Wangaratta-Kilfeera Road, Laceby 3678. The site is formally identified as Parcel 1\TP253930.

This report presents a noise and vibration impact assessment to support the development application, including the cumulative noise impacts resulting from both components of the project site (BESS and PV).

The project site is located within the existing agricultural area approximately 2 km south-west of the Wangaratta Airport, VIC. The project site is bounded by Snow Road along the northern boundary, Wangaratta-Kilfeera Road along the eastern boundary, Oconnell Lane along the southern boundary, and existing agricultural farming land along the western boundary.

The nearest existing residential receivers are located approximately 70 m to the northwest of the project site and 170 m west. Additional residential receivers are located further to the northeast and east / southeast of the project site.

An operational noise model has been developed using SoundPLAN v9.1. The noise model assessed the dominant noise sources generated from the operation of the site (which was found to include tonal noise sources). The predicted noise levels identified compliance with the applicable noise criteria is achieved with the inclusion of appropriate noise mitigation measures, including the penalty added to account for the tonal nature of the inverters and transformers.

APPENDIX A. ACOUSTIC TERMINOLOGY

The following is a brief description of the acoustic terminology used in this report:

Ambient Sound	The totally encompassing sound in a given situation at a given time, usually composed of sound from all sources near and far.
Audible Range	The limits of frequency which are audible or heard as sound. The normal ear in young adults detects sound having frequencies in the region 20 Hz to 20 kHz, although it is possible for some people to detect frequencies outside these limits.
Character, acoustic	The total of the qualities making up the individuality of the noise. The pitch or shape of a sound's frequency content (spectrum) dictate a sound's character.
Decibel [dB]	The level of noise is measured objectively using a Sound Level Meter. The following are examples of the decibel readings of every day sounds; 0 dB the faintest sound we can hear 30 dB a quiet library or in a quiet location in the country 45 dB typical office space. Ambience in the city at night 60 dB Martin Place at lunch time 70 dB the sound of a car passing on the street 80 dB loud music played at home 90 dB the sound of a truck passing on the street 100 dB the sound of a rock band 115 dB limit of sound permitted in industry 120 dB deafening
dBA	*A-weighted decibels* The ear is not as effective in hearing low frequency sounds as it is hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the "A" filter. A sound level measured with this filter switched on is denoted as dBA. Practically all noise is measured using the A filter. The sound pressure level in dBA gives a close indication of the subjective loudness of the noise.
Frequency	Frequency is synonymous to *pitch*. Sounds have a pitch which is peculiar to the nature of the sound generator. For example, the sound of a tiny bell has a high pitch and the sound of a bass drum has a low pitch. Frequency or pitch can be measured on a scale in units of Hertz or Hz.
Loudness	A rise of 10 dB in sound level corresponds approximately to a doubling of subjective loudness. That is, a sound of 85 dB is twice as loud as a sound of 75 dB which is twice as loud as a sound of 65 dB and so on
L_{max}	The maximum sound pressure level measured over a given period.
L_{min}	The minimum sound pressure level measured over a given period.
L_1	The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.
L_{10}	The sound pressure level that is exceeded for 10% of the time for which the given sound is measured.
L_{90}	The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L_{90} noise level expressed in units of dBA.
L_{eq}	The "equivalent noise level" is the summation of noise events and integrated over a selected period of time.
Sound Pressure Level, LP dB	A measurement obtained directly using a microphone and sound level meter. Sound pressure level varies with distance from a source and with changes to the measuring environment. Sound pressure level equals 20 times the logarithm to the base 10 of the ratio of the rms sound pressure to the reference sound pressure of 20 micro Pascals.
Sound Power Level, Lw dB	Sound power level is a measure of the sound energy emitted by a source, does not change with distance, and cannot be directly measured. Sound power level of a machine may vary depending on the actual operating load and is calculated from sound pressure level measurements with appropriate corrections for distance and/or environmental conditions. Sound power levels is equal to 10 times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power of 1 picoWatt.

APPENDIX B. NOISE LOGGING DATA

B.1. Noise Logger 01

Snow Road, laceby

Ambient noise monitoring report

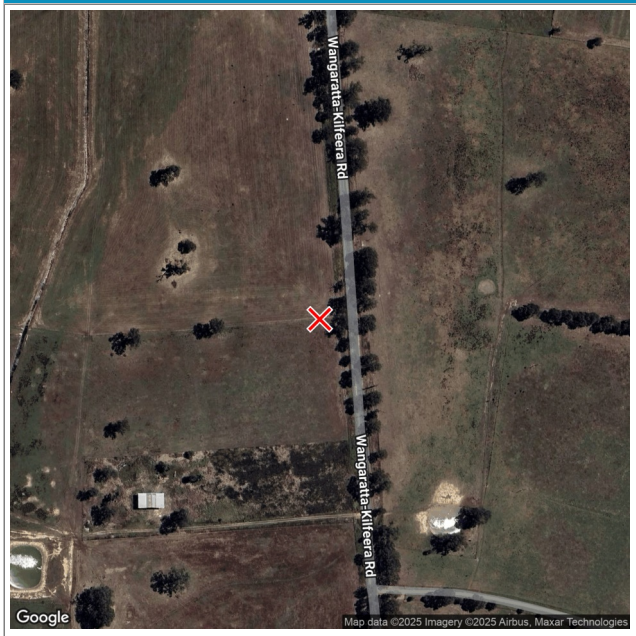
Item	Information
Logger Type	NL-42
Serial number	1000231
Address	Snow Road, laceby
Location	Snow Road, laceby
Facade / free field	Free field
Environment	backgrounds controlled by occasional road traffic and nature.

Measured noise levels

Logging date	$L_{A90,1hour}$			$L_{Aeq,period}$		
	Daytime 7am-6pm	Evening 6pm-10pm	Night-time 10pm-7am	Daytime 7am-6pm	Evening 6pm-10pm	Night-time 10pm-7am
Wed 08 Oct 2025	40	33	34	59	57	53
Thu 09 Oct 2025	47	38	38	63	60	54
Fri 10 Oct 2025	47	39	38	62	61	53
Sat 11 Oct 2025	43	33	33	60	59	51
Sun 12 Oct 2025	44	39	31	61	58	50
Mon 13 Oct 2025	38	32	32	56	54	49
Tue 14 Oct 2025	40	31	36	58	53	50
Wed 15 Oct 2025	37	32	35	55	51	48
Thu 16 Oct 2025	43	36	35	60	58	49
Fri 17 Oct 2025	-	-	33	-	-	47
Summary	**42**	**35**	**35**	**60**	**58**	**51**

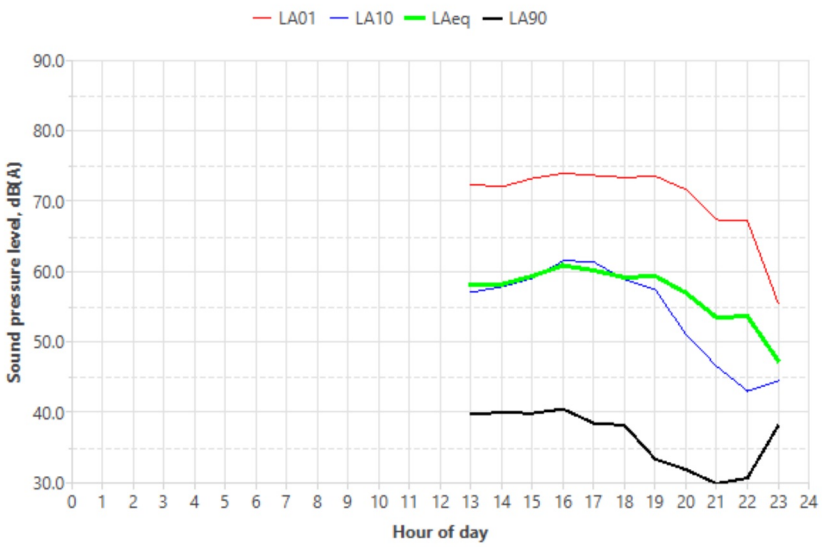
Note: Results with a '-' identify that there were not enough measurements available to correctly calculate the level, See the charts for more information

Logger location

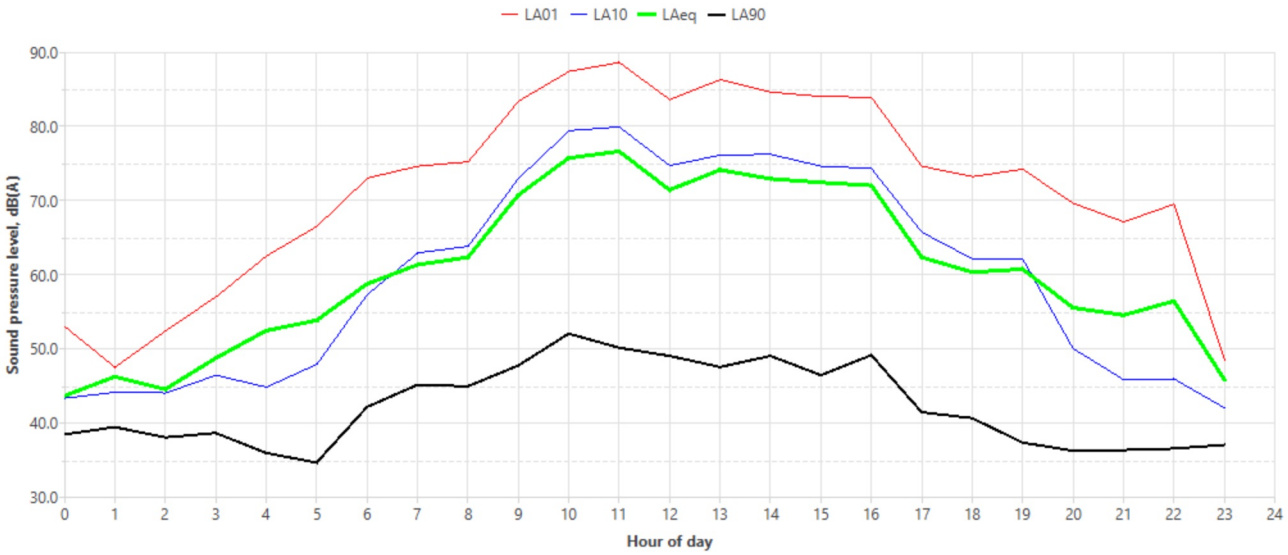


Logger deployment photo

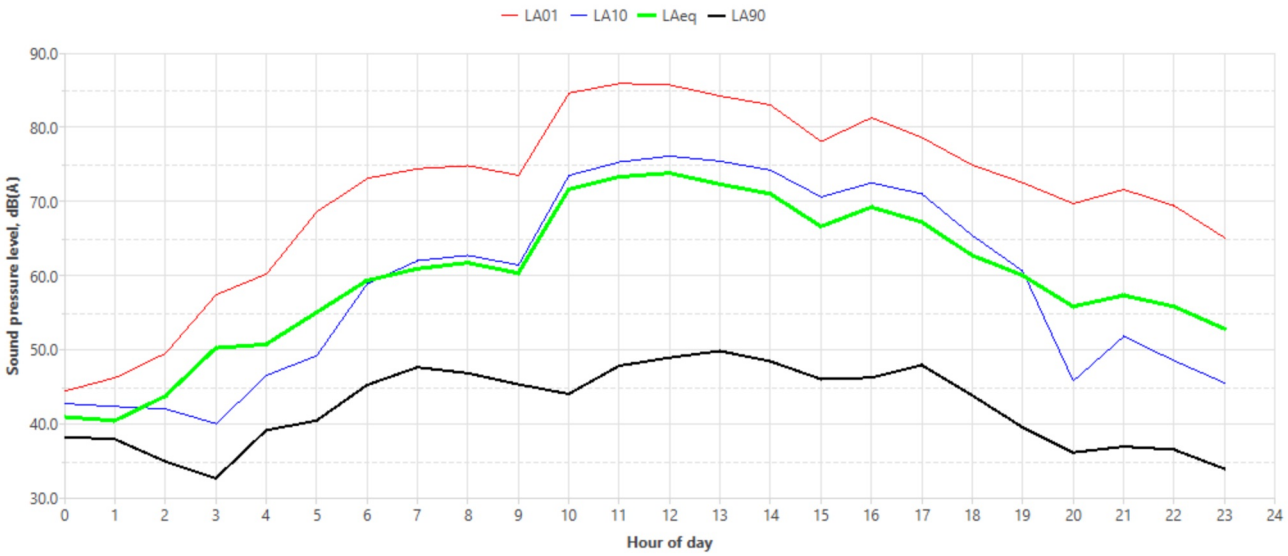
Wednesday, 8 October 2025



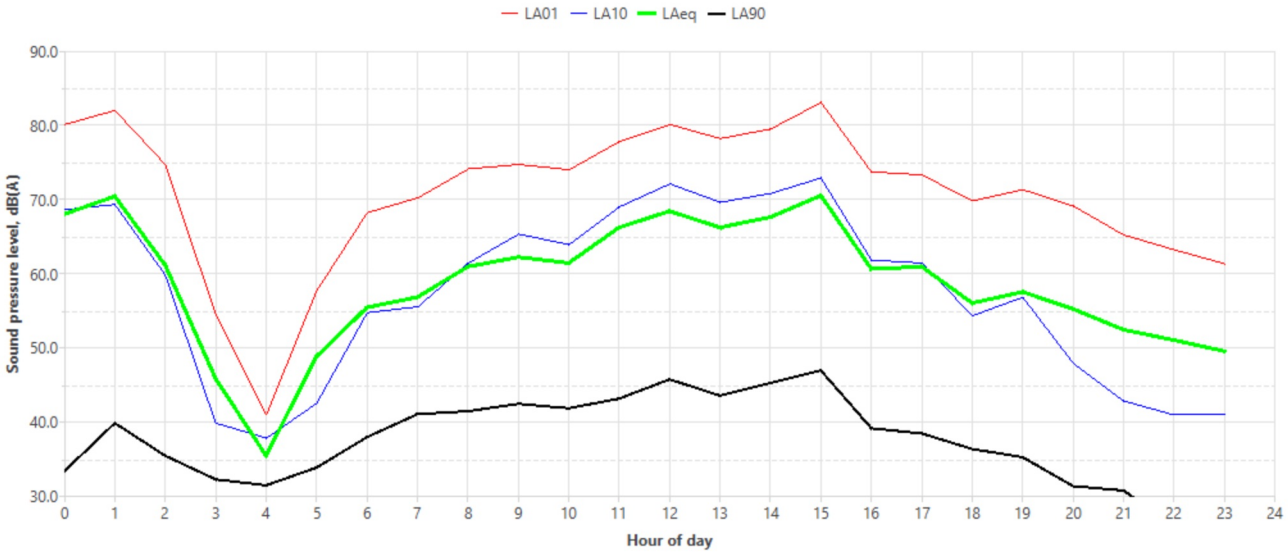
Thursday, 9 October 2025



Friday, 10 October 2025



Saturday, 11 October 2025



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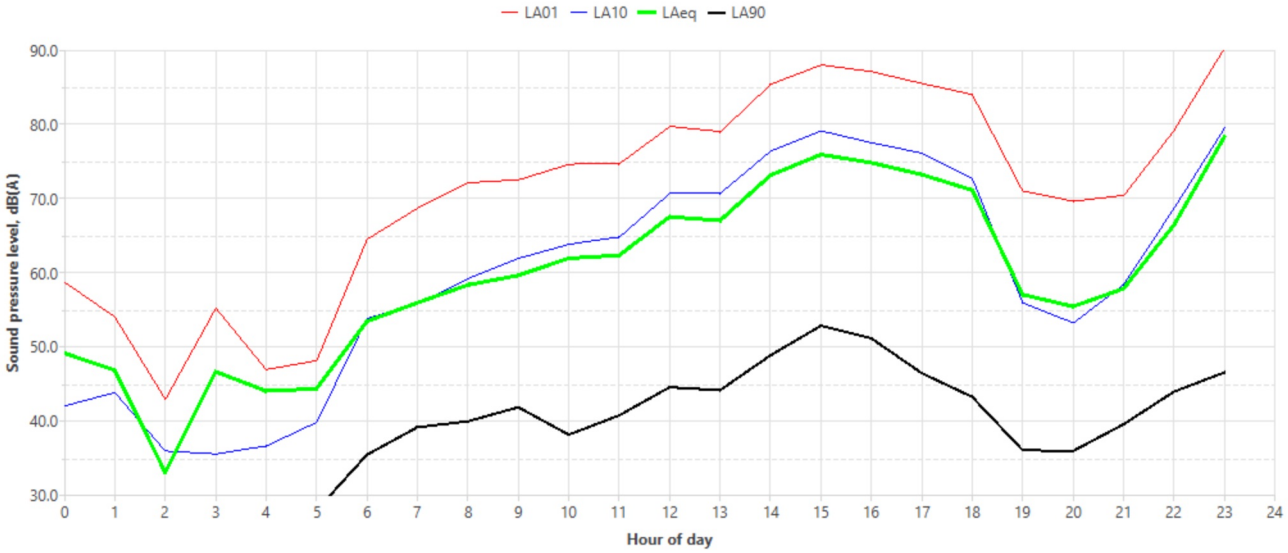
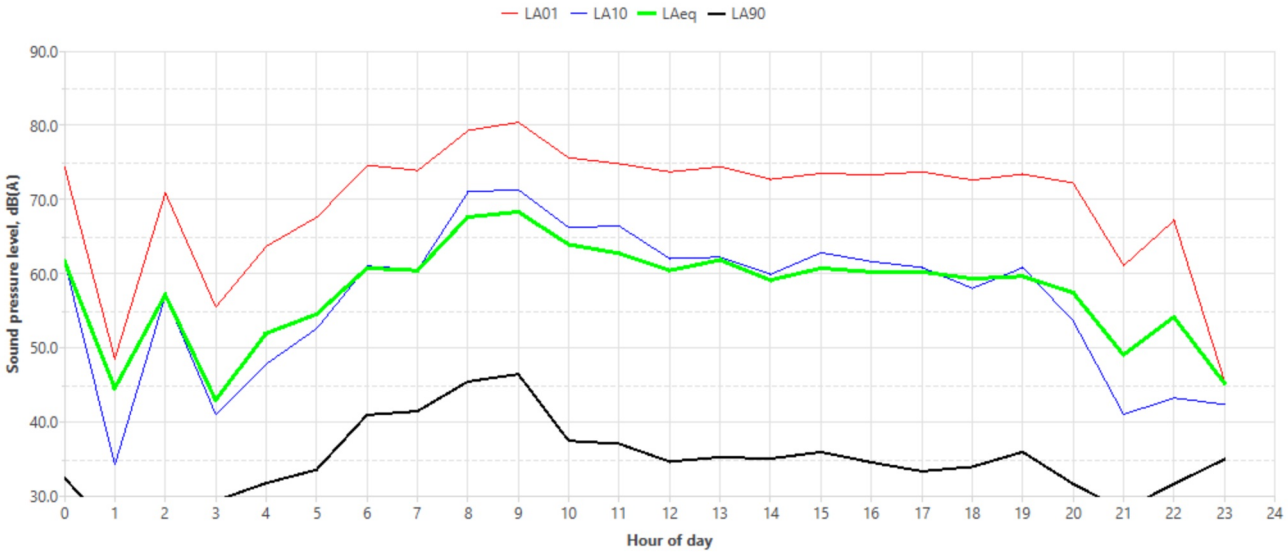
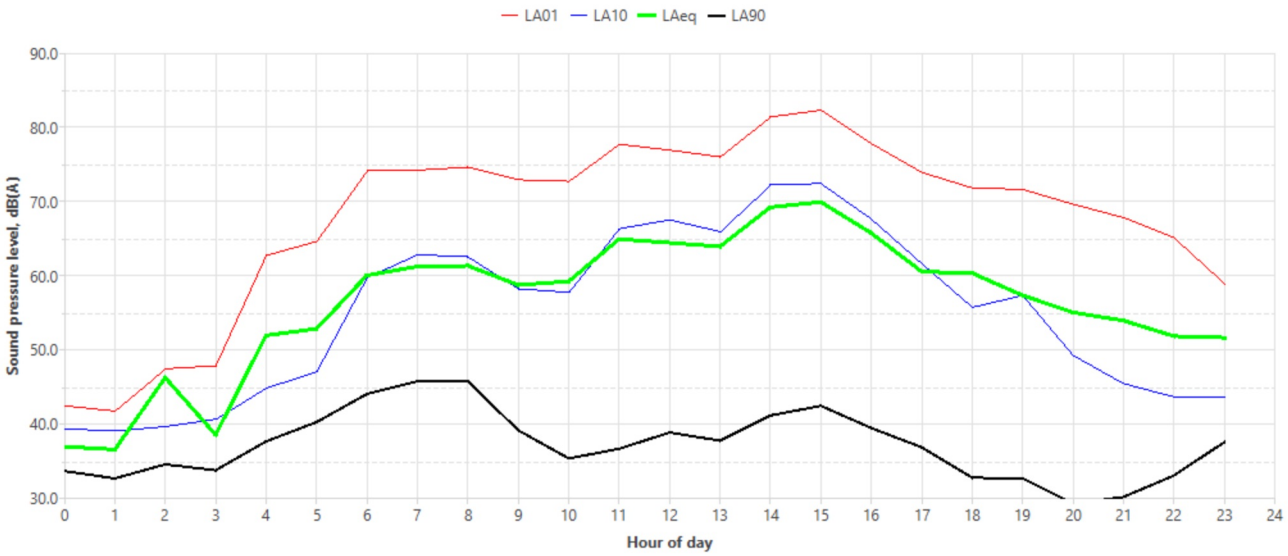


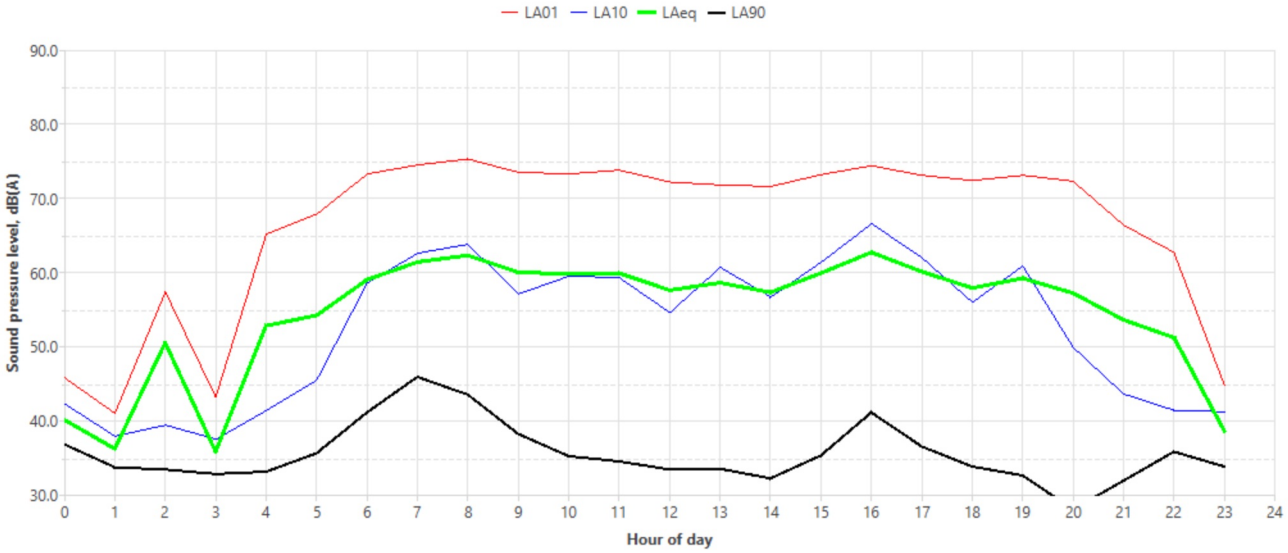
Monday, 13 October 2025



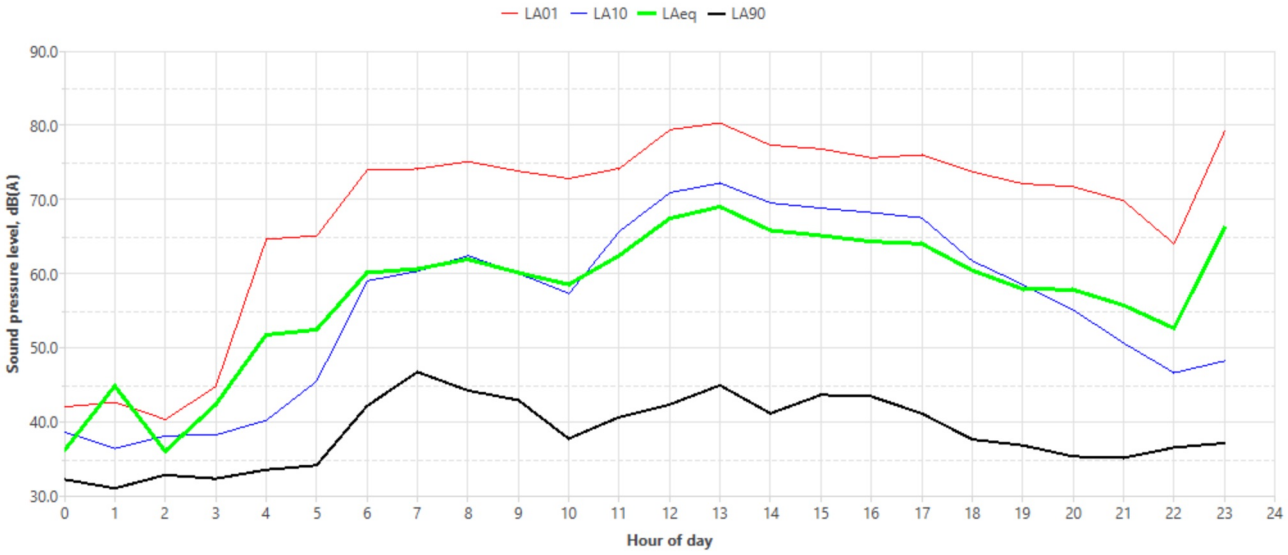
Tuesday, 14 October 2025



Wednesday, 15 October 2025



Thursday, 16 October 2025



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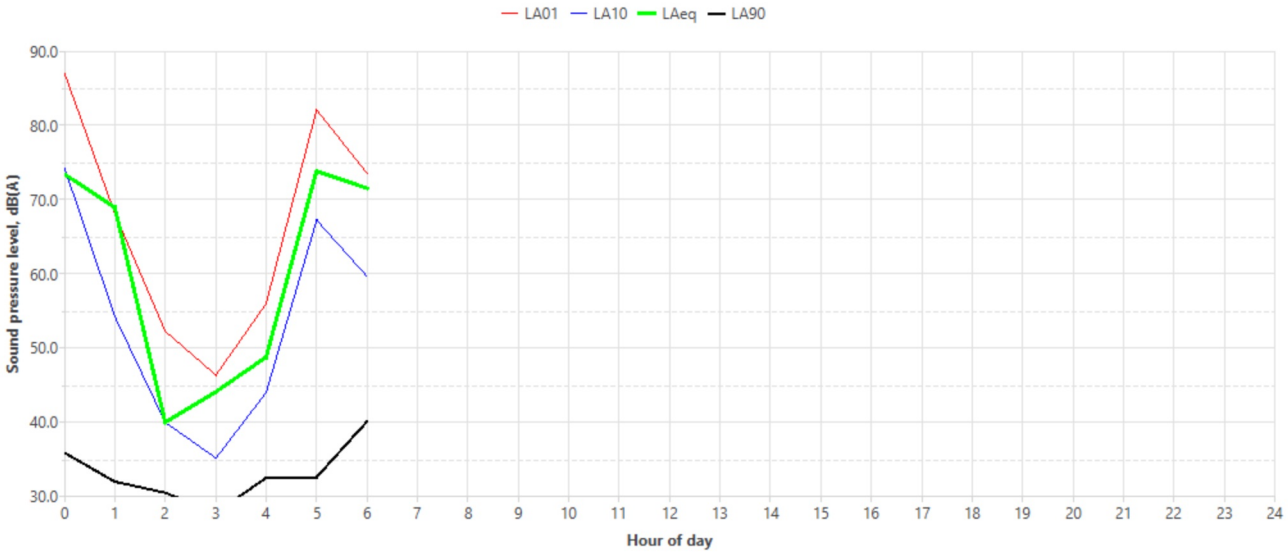
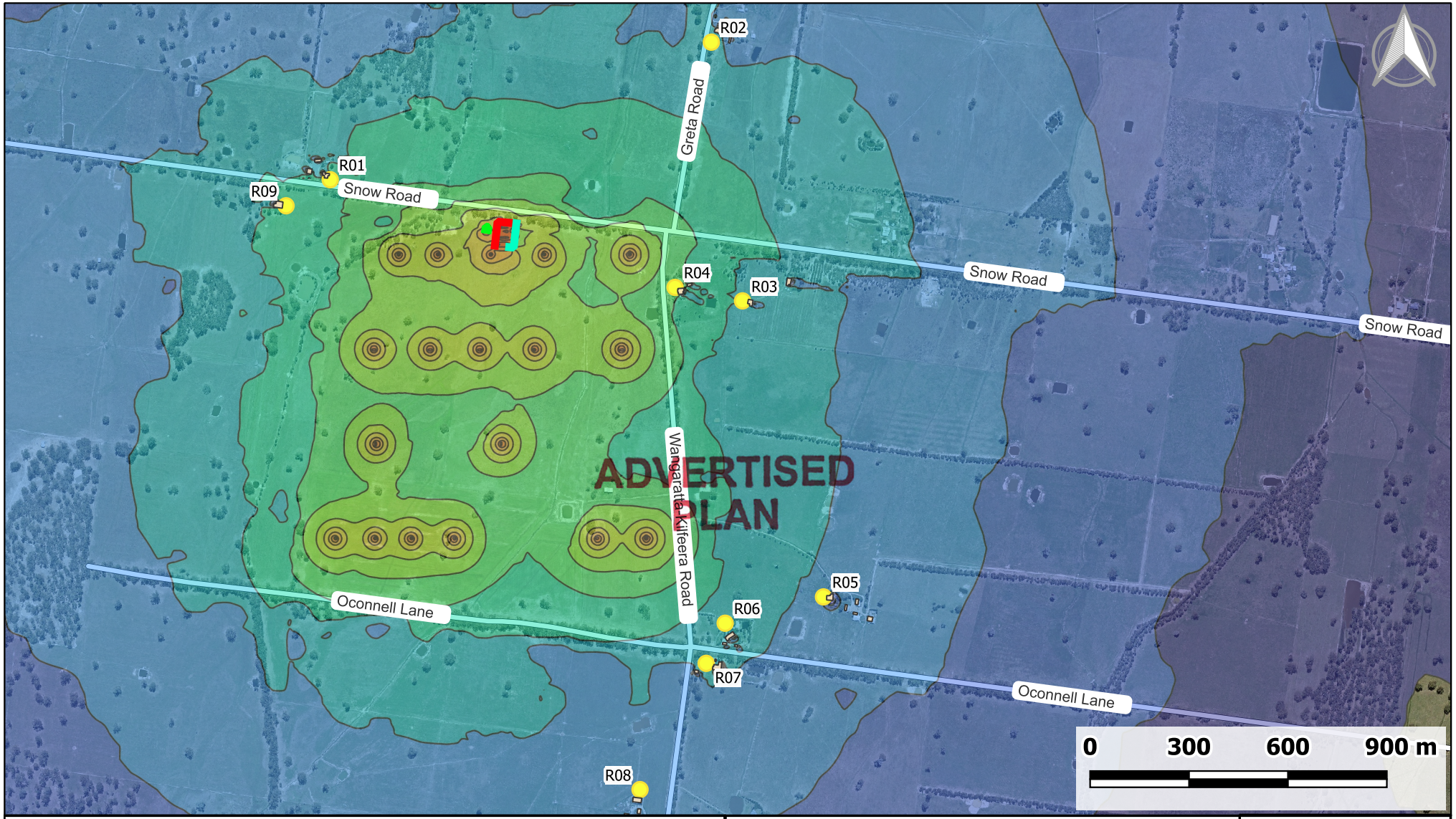


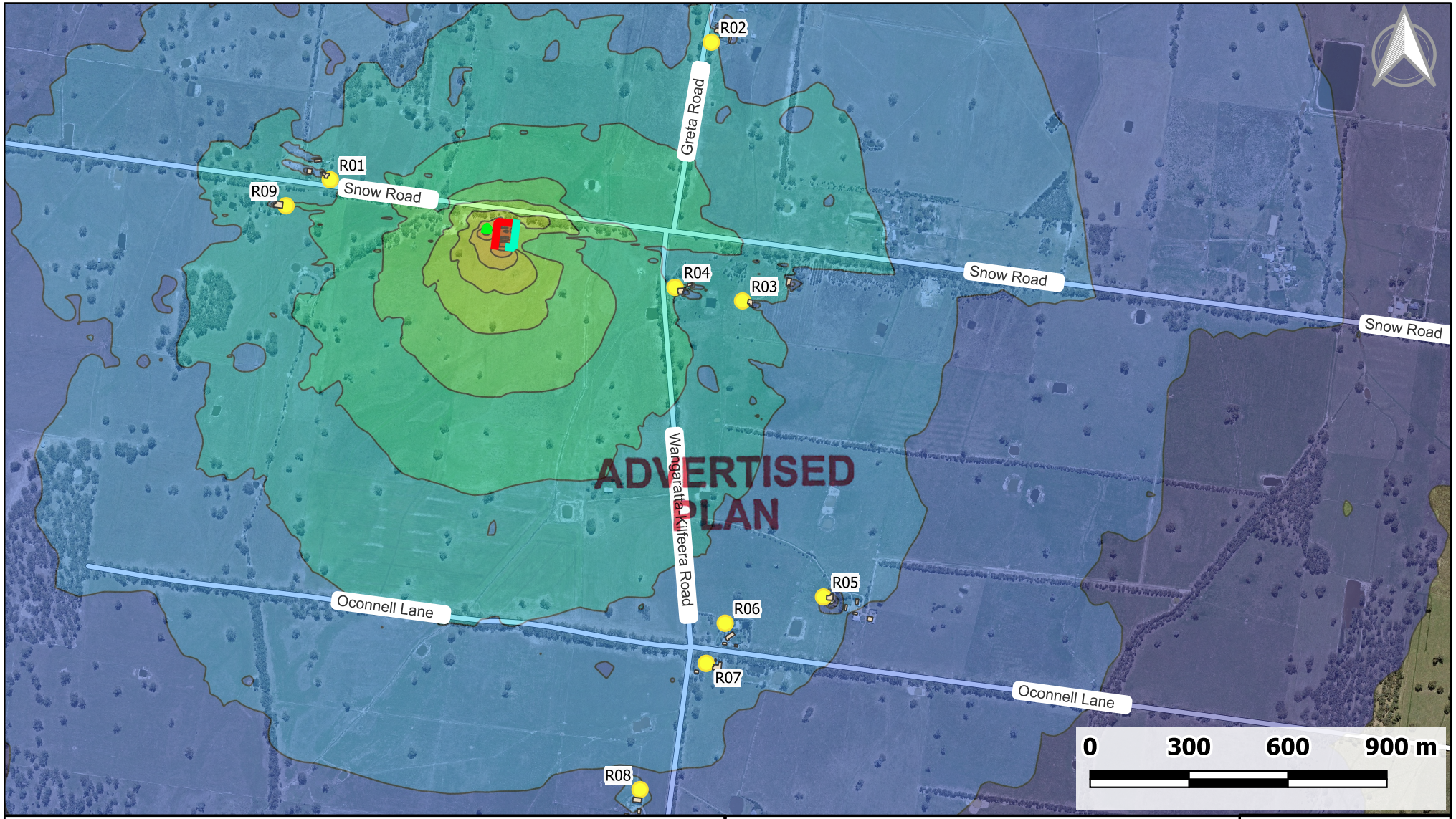
APPENDIX C. OPERATIONAL NOISE IMPACT CONTOURS – ENHANCING METEOROLOGICAL



$L_{Aeq,30min}$ noise levels, dB(A)

- 15 - 20
- 20 - 25
- 25 - 30
- 30 - 35
- 40 - 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- 65 - 70
- 70 - 75
- 75 - 80
- >80

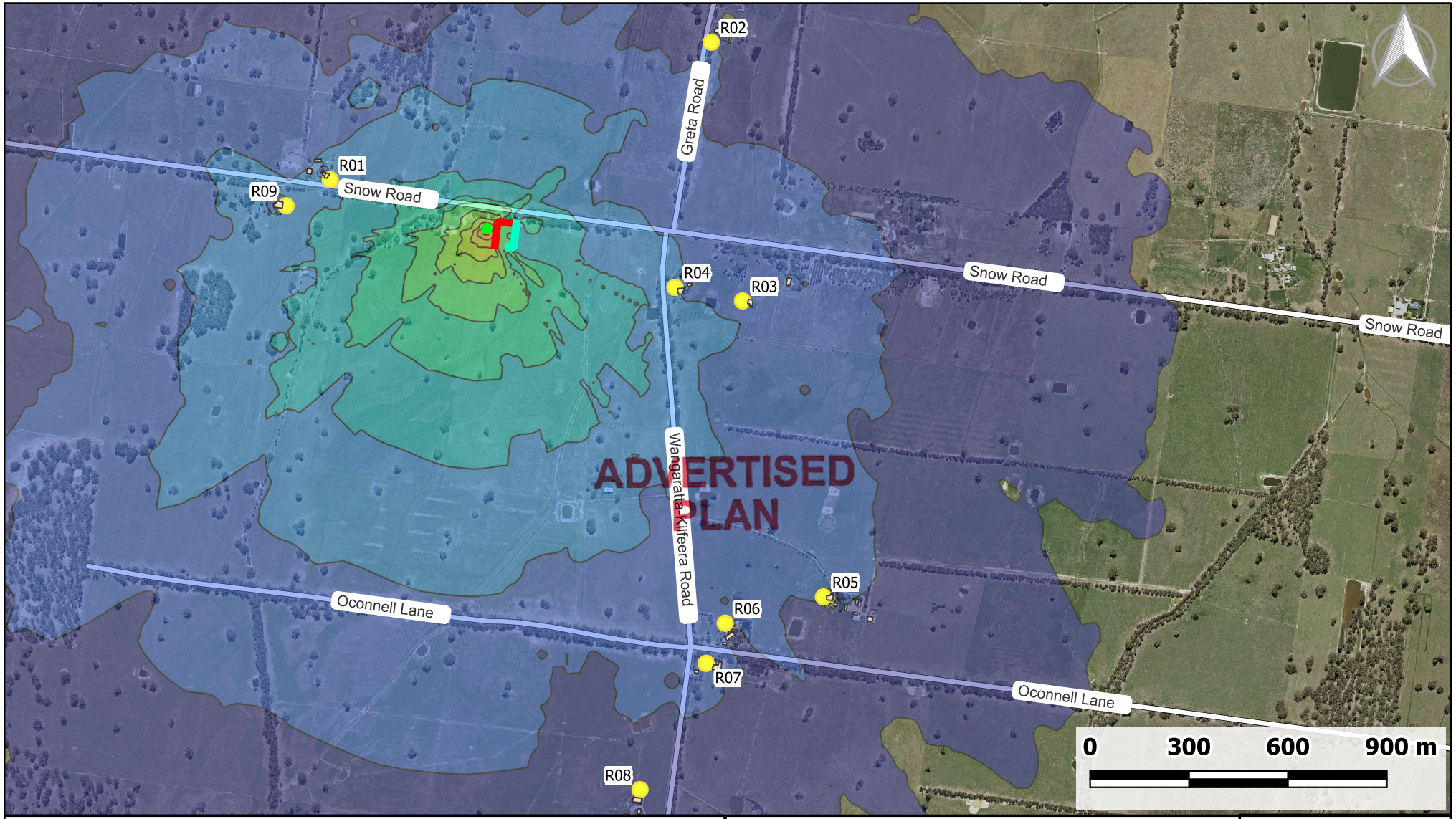
Laceby Solar Farm
Operational noise contours
Daytime
$L_{Aeq,30minute}$ noise impacts
Incluidng Mitigation
Contour Height 1.5 m



$L_{Aeq,30min}$ noise levels, dB(A)

- 15 - 20
- 20 - 25
- 25 - 30
- 30 - 35
- 40 - 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- 65 - 70
- 70 - 75
- 75 - 80
- >80

Laceby Solar Farm
Operational noise contours
Evening
$L_{Aeq,30minute}$ noise impacts
Incluidng Mitigation
Contour Height 1.5 m



$L_{Aeq,30min}$ noise levels, dB(A)

- 15 - 20
- 20 - 25
- 25 - 30
- 30 - 35
- 40 - 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- 65 - 70
- 70 - 75
- 75 - 80
- >80

Laceby Solar Farm
Operational noise contours
Nighttime
$L_{Aeq,30minute}$ noise impacts
Incluidng Mitigation
Contour Height 1.5 m