93 Bridge Road, Westmead

Acoustic Impact Assessment

Willowtree Planning
Suite 204, Level 2,
165 Walker Street, North Sydney

Report Reference: 240009 – 93 Bridge Road, Westmead – Acoustic Impact Assessment – R1

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Revision: R1

Project Number: 240009

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1	R0	Final	30/01/24	MA	LT	MA
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1 INTRODUCTION

Willowtree Planning is preparing a Planning Proposal for the site at 93 Bridge Road, Westmead (Parramatta) – a 0.9 hectare lot to the north of the junction where Bridge Road intersects the railway line.

The Site is currently occupied by 31 dwellings arranged around an internal access road and the communal facilities of the adjacent 16-storey Monarco Estate. The Site forms part of the Westmead Health and Education Precinct and Innovation District, the largest of its kind in Australia.

It is proposed to amend the Parramatta Local Environmental Plan 2023 to:

- Increase the maximum height of buildings from 20 m to 69 m; and
- Increase the maximum Floor Space Ratio from 1.7:1 to 3.6:1.

The overall objective is to support the future precinct-oriented development of the site for high density residential development.

Pulse White Noise Acoustics (PWNA) has been engaged to prepare an Acoustic Impact Assessment to support this Planning Proposal.

1.1 Scope of report

PWNA has been engaged to undertake an Acoustic Impact Assessment for the Planning Proposal at 93 Bridge Road, Westmead.

This report:

- Identifies the existing noise sensitive receivers,
- Presents details about existing noise environment,
- Identifies the applicable City of Parramatta and NSW EPA noise and vibration policies and applicable operational acoustic design criteria,
- Assesses the acoustic impacts of the proposal in accordance with the relevant criteria; and
- Provides acoustic mitigation and management measures to achieve the applicable design criteria.

1.2 Background

This Planning Proposal represents a refined iteration of the previous Proposal, which made it as far as a Rezoning Review Panel in October 2021, but fell on a deciding vote on a point of prematurity as the Westmead Place Strategy had not been published (until October 2022).

The overall site exhibits an approximate area of 8,663m^2, with a primary street frontage along Bridge Road to the west. The Site also adjoins a private access road, registered partly on the Title of the subject site and partly on the Title of Lot 1 in DP 270360 to the south, with Rights of Way benefitting and burdening the respective sites.

The Site is currently occupied by a housing estate comprising 31 detached and semi-detached single storey dwellings arranged around an internal access road. Vehicular and pedestrian access to the Site is via the looping private access road to the south. The buildings are of brick construction with tiled roofs and are primarily orientated away from the street frontage to face the internal access road. The result is an inward-looking development which turns its back on the wider area, with the Bridge Road frontage defined by a Colourbond fence with little activation of the street scene.

Vehicular and pedestrian access to the Site is facilitated via the private access road to the south.

Figure 1 Site location – 93 Bridge Road

2 EXISTING ENVIRONMENT

2.1 Site location

The site is located on Bridge Road, adjacent to the Westmead Hospital precinct and approximately 100 m north of the rail corridor. The rail corridor is in cut at this location, which provides significant noise attenuation.

The site is dominated by road traffic noise on Bridge Road, an arterial road which connects Darcy Road and the Westmead Hospital to the Great Wester Highway. Presented below in Figure 2 is an illustration of the site location and nearest sensitive receivers.

Figure 2 Noise logger locations

Presented below in Table 1 is a summary of the sensitive receiver locations considered in this assessment. The locations are also illustrated in Figure 2.

Table 1 Sensitive receivers

ID	Location	Receiver type
R1	91A Bridge Road	Residential
R2	91D Bridge Road	Residential
R3	142 – 148 Bridge Road	Residential
R4	154 – 156 Bridge Road	Residential
R5	160 Bridge Road	Residential
R6	105 Bridge Road	Residential

2.2 Ambient noise levels

Background noise logging was undertaken at two locations between 18 and 29 January 2024 at the two locations illustrated in Figure 2. The locations were chosen as they represent the two noise environments on the site, the side of the site with receivers impacted by road traffic noise from Bridge Road, and receivers shielded from road traffic noise.

The noise logging was conducted with two Rion NL-42 measuring octave band noise levels in 15-minute intervals. The noise logging data has been measured, analysed and reported in accordance with Australian Standard 1055:2018 Acoustics - Description and measurement of environmental noise and the EPAs Noise Policy for Industry (NPfI).

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 am to 6 pm
- Evening – 6 pm to 10 pm
- Night-time – 10 pm to 7 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. 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
L1	156 Bridge Road Front	49	47	37	64	63	58
L2	93 Bridge Road Rear	46	46	45	54	50	48

The noise logging location at L2 appears to be influenced by mechanical ventilation noise. Given that the location has been influenced by other sources, data obtained from this logger has not been used further in this assessment. The noise levels from L2 had higher evening and night-time noise levels. Using L1 will result in a more conservative outcome for the project.

The noise logging in the area was undertaken during the school holidays. Hence some areas may have notably lower road traffic volumes during these periods. However, a review of traffic routes and volumes on Bridge Road has identified that any change in road traffic is likely to be minor. A significant portion of traffic is associated with the nearby hospital, which is not appreciably affected by holiday traffic. Any increase in traffic would also increase the criteria noise levels presented in this report, making it less stringent. As such, the noise logging is considered to be conservative and suitable for use in this planning proposal.

3 ACOUSTIC CRITERIA

3.1 City of Parramatta

The City of Parramatta Development Control Plan identifies that the Multi-Storey Residential Developments must be designed in accordance with the NSW Planning and Environment Apartment Design Guide. Section 4J of the Apartment Design Guide identifies that noise intrusion from external transport infrastructure such as roads and railways should be considered in the design, in accordance with NSW Government's Development near Rail Corridors and Busy Roads - Interim Guideline as called up by State Environmental Planning Policy (Infrastructure) 2007.

3.2 Development Near Rail Corridors and Busy Roads

The Infrastructure SEPP 2007 has been superseded by the Infrastructure SEPP 2021.

2.100 Impact of rail noise or vibration on non-rail development

1. This section applies to development for any of the following purposes that is on land in or adjacent to a rail corridor and that the consent authority considers is likely to be adversely affected by rail noise or vibration—
   a. residential accommodation,
   b. a place of public worship,
   c. a hospital,
   d. an educational establishment or centre-based childcare facility.

2. Before determining a development application for development to which this section applies, the consent authority must take into consideration any guidelines that are issued by the Planning Secretary for the purposes of this section and published in the Gazette.
3. If the development is for the purposes of residential accommodation, the consent authority must not grant consent to the development unless it is satisfied that appropriate measures will be taken to ensure that the following LAeq levels are not exceeded—
   a. in any bedroom in the residential accommodation—35 dB(A) at any time between 10.00 pm and 7.00 am,
   b. anywhere else in the residential accommodation (other than a garage, kitchen, bathroom or hallway)—40 dB(A) at any time.

2.120 Impact of road noise or vibration on non-road development

1. This section applies to development for any of the following purposes that is on land in or adjacent to the road corridor for a freeway, a tollway or a transitway or any other road with an annual average daily traffic volume of more than 20,000 vehicles (based on the traffic volume data published on the website of TfNSW) and that the consent authority considers is likely to be adversely affected by road noise or vibration—
   a. residential accommodation,
   b. a place of public worship,
   c. a hospital,
   d. an educational establishment or centre-based child care facility.

2. Before determining a development application for development to which this section applies, the consent authority must take into consideration any guidelines that are issued by the Planning Secretary for the purposes of this section and published in the Gazette.

3. If the development is for the purposes of residential accommodation, the consent authority must not grant consent to the development unless it is satisfied that appropriate measures will be taken to ensure that the following LAeq levels are not exceeded—

   a. in any bedroom in the residential accommodation—35 dB(A) at any time between 10 pm and 7 am,
   b. anywhere else in the residential accommodation (other than a garage, kitchen, bathroom or hallway)—40 dB(A) at any time.

   (3A) Subsection (3) does not apply to a building to which State Environmental Planning Policy (Housing) 2021, Chapter 3, Part 7 applies.

4. In this section, freeway, tollway and transitway have the same meanings as they have in the Roads Act 1993.

3.2.1 Site location

The proposed site, located at 93 Bridge Road is not immediately adjacent to the railway, located approximately 100 m from the rail corridor with a multi-storey residential development located between the site and the corridor. Given the site is not located immediately adjacent to a railway corridor, item 2.100 of in the Infrastructure SEPP does not apply to the proposal.

Bridge Road is an arterial road in Westmead. Based on the road traffic report, it is unclear if the annual average daily traffic volume would exceed 20,000 vehicles. In the avoidance of doubt, it has been conservatively assumed that this clause does apply, and the noise logging data used to assess the road traffic noise impacts on the proposal.

3.3 EPAs Noise Policy for Industry

Responsibility for the control of noise emissions in New South Wales is vested in Local Government and the NSW Environment Protection Authority (EPA).

The EPAs NSW Noise Policy for Industry (NPfI) provides guidance on appropriate noise levels for external noise emissions from fixed facilities on surrounding sensitive receivers. The NPfI criteria for industrial noise sources have two components:

- Controlling the intrusive noise impacts for residents and other sensitive receivers in the short term; and
- Maintaining noise level amenity of defined land uses for residents and sensitive receivers in other land uses.

The intrusiveness noise level protects against significant changes in noise, while the amenity noise level seeks to protect against cumulative noise impacts from industry. Together, these levels are used to assess the potential impact of noise and assess reasonable and feasible noise mitigation measures. Project noise trigger levels are developed through this process. They are not used directly as regulatory limits.

The NPfI requires a project to take consideration of other industrial noise sources in setting amenity noise objectives. In cases of a new development where there are no existing industrial sources, the NPfI accepts a default of the amenity noise level minus 5dB to take account of future industrial sources.

For this project, the default amenity noise level minus 5dB adjustment will be used to account for cumulative noise sources.

Intrusive noise impacts – residential receivers

The intrusiveness noise level protects against significant changes in noise levels and is applicable to residential receivers only. The criterion is defined by the formula below:

$$L_{Aeq,15min} = rating\ background\ noise\ level + 5\ dB$$

The RBL is the average background noise level over a measurement period of at least one week. Using the RBL results in the intrusiveness criterion being met for 90% of the time. Adjustments are to be applied to the level of noise produced by the source that is received at the assessment point where the noise source contains annoying characteristics such as tonality or impulsiveness.

Presented below in Table 3 is a summary of the measured RBL and corresponding intrusiveness level for each time period.

Table 3 Intrusive noise criteria, dB(A)

Location	Rating background level			Intrusive noise level, $L_{Aeq,15min}$		
	Daytime	Evening	Night-time	Daytime	Evening	Night-time
NCA1	49	47	37	54	52	42

Note 1: The NPfI identifies that the project intrusiveness level for the night-time should be no greater than the evening. Likewise the evening should be no greater than the day. The intrusive noise levels presented here have been adjusted to achieve this requirement.

Protecting noise amenity

The amenity noise level seeks to protect against cumulative noise impacts from industry.

The NPfI uses project noise trigger levels measured over a 15-minute time period, assessed as an $L_{Aeq,15min}$. To account for converting $L_{Aeq,period}$ to $L_{Aeq,15min}$, the NPfI accepts a default conversion factor of $L_{Aeq,15min} = L_{Aeq,period} + 3dB$.

To ensure industrial noise levels do not gradually increase with new developments, a minus 5 dB correction is applied to the amenity noise level. The amenity noise levels have been presented in Table 4.

Table 4 Amenity noise levels, dB(A)

Receiver	Noise amenity area	Time of day	Recommended amenity noise level
Residential	Rural	Day	50
		Evening	45
		Night	40
	Suburban	Day	55
		Evening	45
		Night	40
	Urban	Day	60
		Evening	50
		Night	45

Receiver	Noise amenity area	Time of day	Recommended amenity noise level
Hotels, motels, caretakers' quarters, holiday accommodation, permanent resident caravan parks	5 dB(A) above the recommended amenity noise level for a residence for the relevant noise amenity area and time of day		
School classroom	All	Noisiest 1-hour period	35 internal
Hospital ward	All	Noisiest 1-hour period	35 internal 50 external
Place of worship	All	When in use	40
Passive recreation	All	When in use	50
Active recreation	All	When in use	55
Commercial	All	When in use	65
Industrial	All	When in use	70
Industrial interface	Add 5 dB(A) to recommended noise amenity area		

Presented in Table 2.3 of the NPfI is a more detailed description of receiver categories. The location is zoned as R4, High Density Residential, with noise dominated by road traffic noise. The land zoning and the acquired background noise levels would support an urban residential land-use category with reference to Table 2.3 in the Noise Policy for Industry.

The NPfI defines a residential urban area to be an area with an acoustical environment that:

- is dominated by 'urban hum' or industrial source noise, where urban hum means the aggregate sound of many unidentifiable, mostly traffic and/or industrial related sound sources
- has through-traffic with characteristically heavy and continuous traffic flows during peak periods
- is near commercial districts or industrial districts
- has any combination of the above

The NPfI also identifies that an Urban classification has RBL noise levels greater than 45 dB(A) during the daytime, 40 dB(A) during the evening, and greater than 35 dB(A) during the night-time. The local area is therefore considered to be an Urban classification based on the measured noise levels and the local noise environment.

Project specific noise trigger levels

Presented below in Table 5 is a summary of the project specific noise trigger levels.

Table 5 Project specific noise trigger level, $L_{Aeq,15minute}$ dB(A)

Receiver	Time period	RBL	Intrusiveness	Amenity[1]	Overall[2]
Residential NCA1	Daytime	49	54	58	54
	Evening	47	52	48	48
	Night-time	37	42	43	42

Note 1 The amenity noise level has been reduced by 5 dB(A) to account for other industrial noise sources and increased by 3 dB(A) to convert from $L_{Aeq,period}$ to $L_{Aeq,15minute}$

Note 2 The overall PNTL is the more stringent of the intrusiveness and amenity criteria

4 ACOUSTIC ASSESSMENT

4.1 Noise intrusion

Road traffic noise was measured in octave bands to determine the road traffic noise level on the façade of the building. The internal requirements provided by the ISEPP consider two locations, with different time periods, these are:

- Bedrooms – 35 dB(A) from 10pm to 7am; and
- Other habitable spaces – 40 dB(A) at any time

Presented below in Table 6 are two typical spectra from road traffic noise on Bridge Road, to match the ISEPP requirements.

Table 6 Façade noise level, L_{eq}

Parameter	Octave Band Sound Pressure Levels, dB								
	32 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Bedroom - 10pm to 7am	62	64	62	59	53	56	51	43	34
Other spaces – Any time	65	70	64	59	56	57	52	48	38

The measured road traffic noise levels in Table 6 have been used to determine an appropriate window construction. To meet the ISEPP requirements, the following constructions are required:

Table 7 Recommended minimum glazing noise reduction performance and typical construction

Location	Minimum Noise reduction performance	Typical glazing construction
Bedrooms	Rw35	10.38mm lam
Other habitable rooms	Rw35	10.38mm lam

4.2 Mechanical services noise

The site is likely to introduce additional noise sources such as mechanical plant associated with air-conditioning and carpark exhaust fan(s). Given the project is still in the planning stages, equipment selections are not available.

Experience with similar projects indicates that it is both possible and practical to achieve compliance by using typical building services attenuation such as internally lined ductwork, acoustic screening, and/or silencers. Final details of the nature of these attenuation measures would be confirmed in detailed design process when plant requirements and selections are available.

Noise impacts from all proposed plant should be reviewed during the detailed design phase of the project and appropriate noise controls be included in the design to comply with the PNTLs identified in Section 3.3.

4.3 Operational road traffic noise

The existing peak hour noise levels are currently significant, with peak hour noise levels approximately LAeq 64 dB(A). The Transport Assessment by Ason Group (ref P0898-2r01v1 PP TA 93 Bridge Rd, Westmead, Issue) predicts an additional 16 vehicles per hour operating on Bridge Road. This would increase road traffic noise levels by approximately 0.2 dB(A), which is considered to be an inaudible change in noise. Further consideration of noise impacts is not required.

5 CONCLUSION

Willowtree Planning is preparing a Planning Proposal for the site at 93 Bridge Road, Westmead (Parramatta) – a 0.9-hectare lot to the north of the junction where Bridge Road intersects the railway line.

The Site is currently occupied by 31 dwellings arranged around an internal access road and the communal facilities of the adjacent 16-storey Monarco Estate. The site forms part of the Westmead Health and Education Precinct and Innovation District, the largest of its kind in Australia.

Pulse White Noise Acoustics (PWNA) has been engaged to undertake an Acoustic Impact Assessment for the Planning Proposal at 93 Bridge Road, Westmead.

Background noise logging was undertaken at two locations from 18 to 29 January 2024. The locations were chosen as they represent the two noise environments on the site, the side of the site where receivers are impacted by road traffic noise from Bridge Road, and receivers shielded from road traffic noise. The noise measurements identified that the noise environment in the area is controlled by road traffic noise.

Noise intrusions has been assessed in accordance with the requirements of the Infrastructure SEPP 2021. The assessment has used octave band noise measurements to determine appropriate glazing recommendations. The analysis has determined that standard building construction would be suitable to provide a suitable internal noise environment, with a glazing recommendation included in the analysis.

Operational noise emission criteria have been derived from the background noise logging in accordance with the EPAs Noise Policy for Industry and background noise logging undertaken for this project. A review of the criteria and typical mechanical services has identified that it is both possible and practical to achieve compliance by using typical building services attenuation. Noise impacts from all proposed plant should be reviewed during the detailed design phase of the project and appropriate noise controls be included in the design to comply with the PNTLs identified in this report.

Operational road noise criteria have been derived from the EPAs Road Noise Policy. Road traffic noise levels would increase by as much as 0.2 dB, which is considered to be an indiscernible change in noise. Further considerations of road traffic noise impacts are not required.

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; 0dB the faintest sound we can hear 30dB a quiet library or in a quiet location in the country 45dB typical office space. Ambience in the city at night 60dB Martin Place at lunch time 70dB the sound of a car passing on the street 80dB loud music played at home 90dB the sound of a truck passing on the street 100dB the sound of a rock band 115dB limit of sound permitted in industry 120dB 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 CHARTS

93 Bridge Road, Westmead

Ambient noise monitoring report

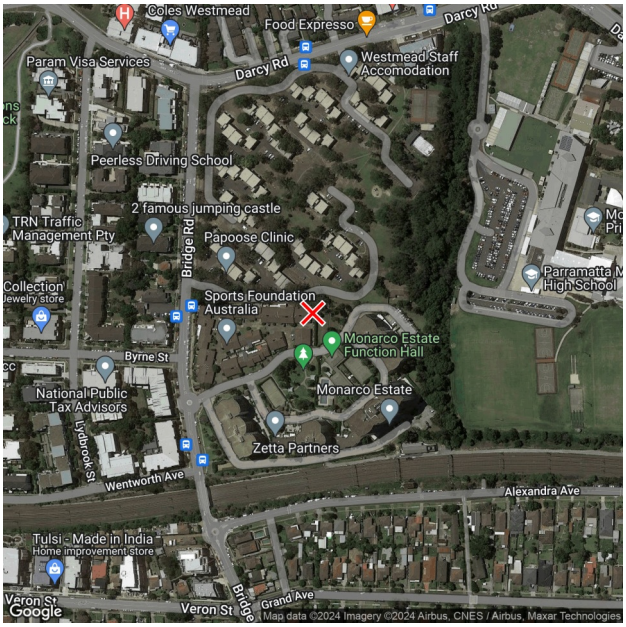
Item	Information
Logger Type	NL-42
Serial number	396932
Address	93 Bridge Road, Westmead
Location	Rear of 93 Bridge Road
Facade / free field	Free field
Environment	Ambient noise controlled by road traffic noise

Measured noise levels

Logging date	Rating Background Level			$L_{Aeq,period}$		
	Daytime 7am-6pm	Evening 6pm-10pm	Night-time 10pm-7am	Daytime 7am-6pm	Evening 6pm-10pm	Night-time 10pm-7am
Thu 18 Jan 2024	-	-	-	51	52	47
Fri 19 Jan 2024	46	46	45	53	50	48
Sat 20 Jan 2024	46	46	46	51	51	48
Sun 21 Jan 2024	46	46	45	49	49	48
Mon 22 Jan 2024	47	47	46	61	50	48
Tue 23 Jan 2024	-	46	-	50	51	48
Wed 24 Jan 2024	46	46	45	49	50	48
Thu 25 Jan 2024	46	46	45	49	51	47
Fri 26 Jan 2024	46	47	46	50	51	48
Sat 27 Jan 2024	-	-	-	49	-	49
Sun 28 Jan 2024	-	46	-	53	50	47
Mon 29 Jan 2024	-	-	-	56	-	48
Summary	**46**	**46**	**45**	**54**	**50**	**48**

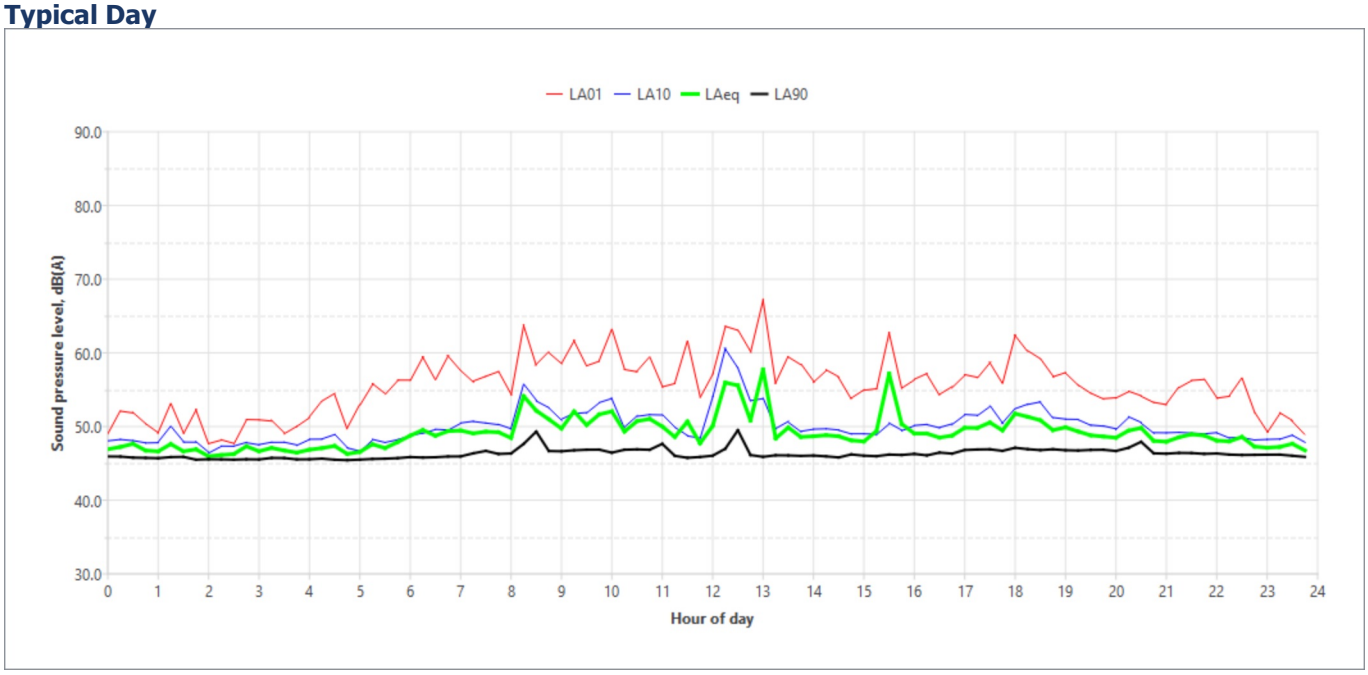
Note: Results with a '-' identify that there were not enough measurements available to correctly calculate the level, in accordance with the Noise Policy for Industry. The data has been excluded either from weather or manual exclusions. See the charts for more information

Logger location



Logger deployment photo

Typical Day



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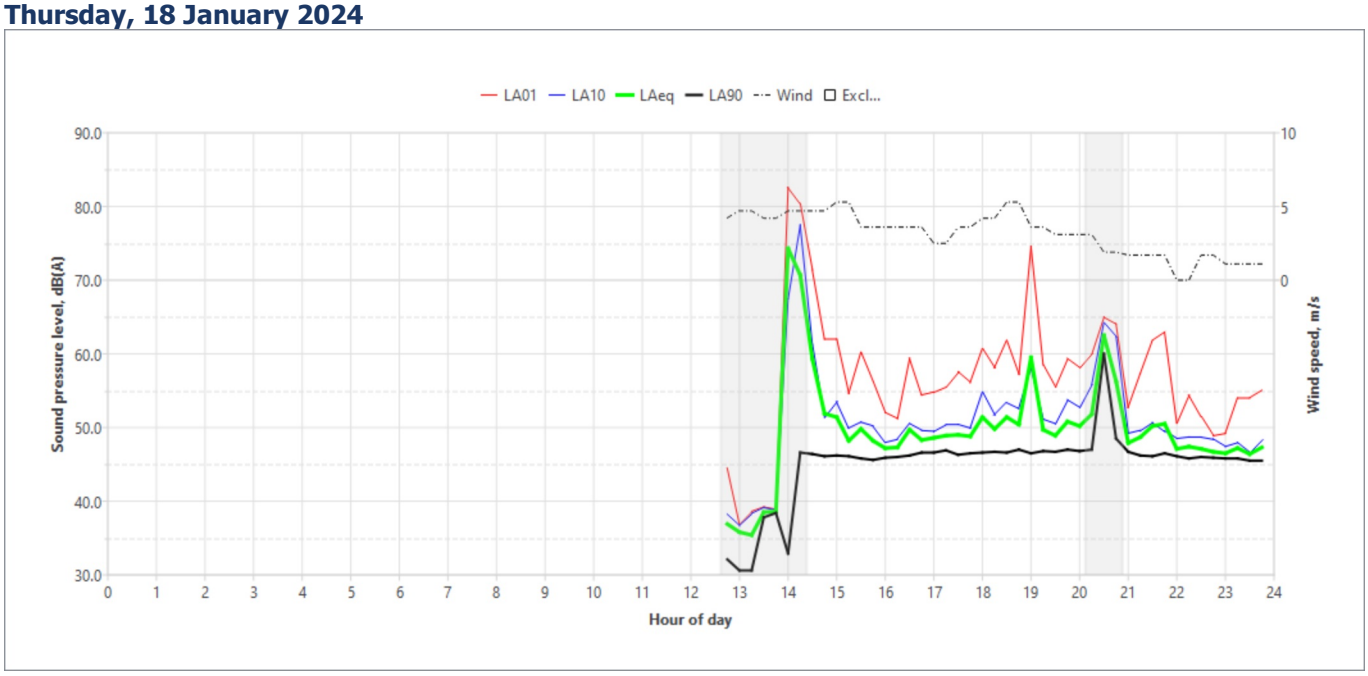

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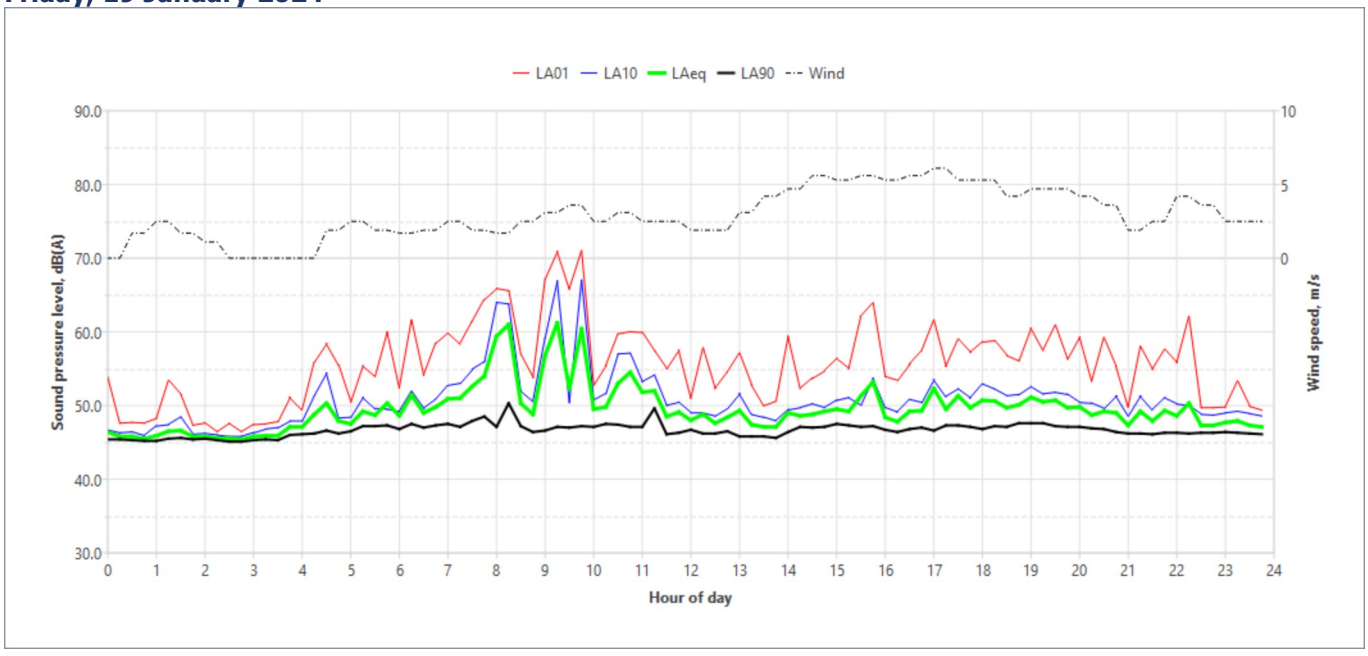

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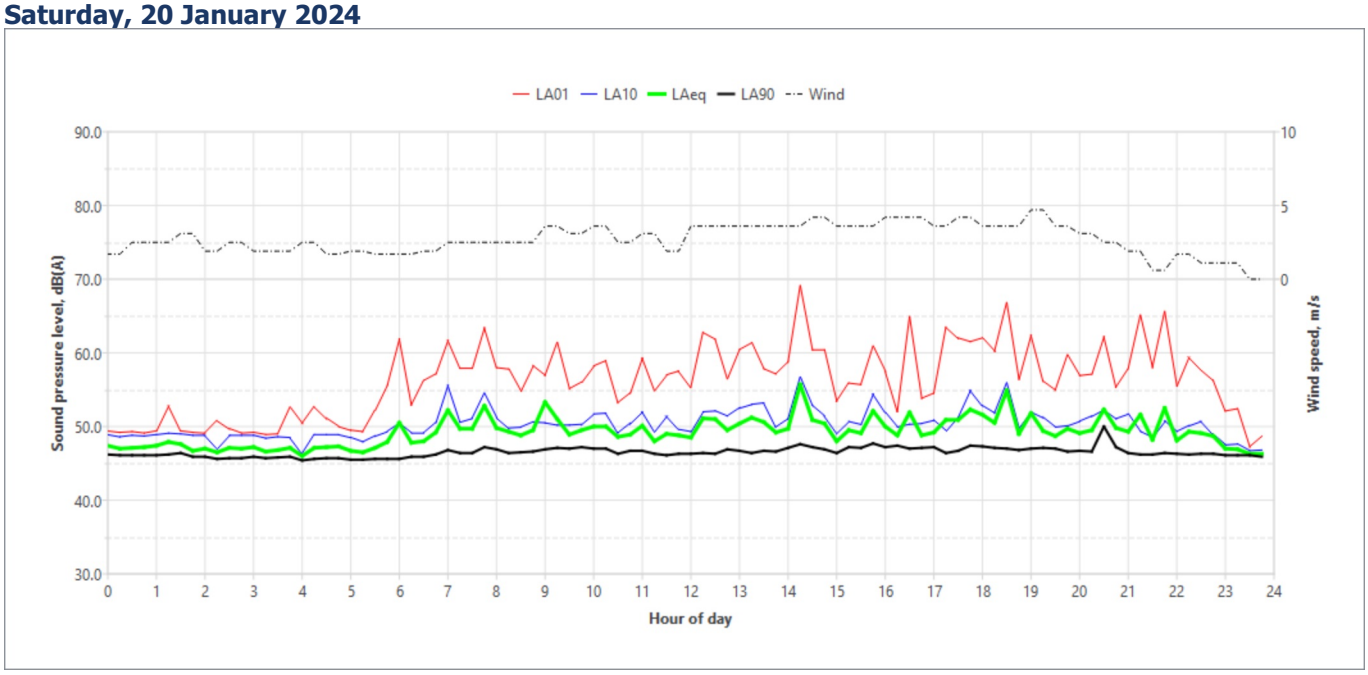

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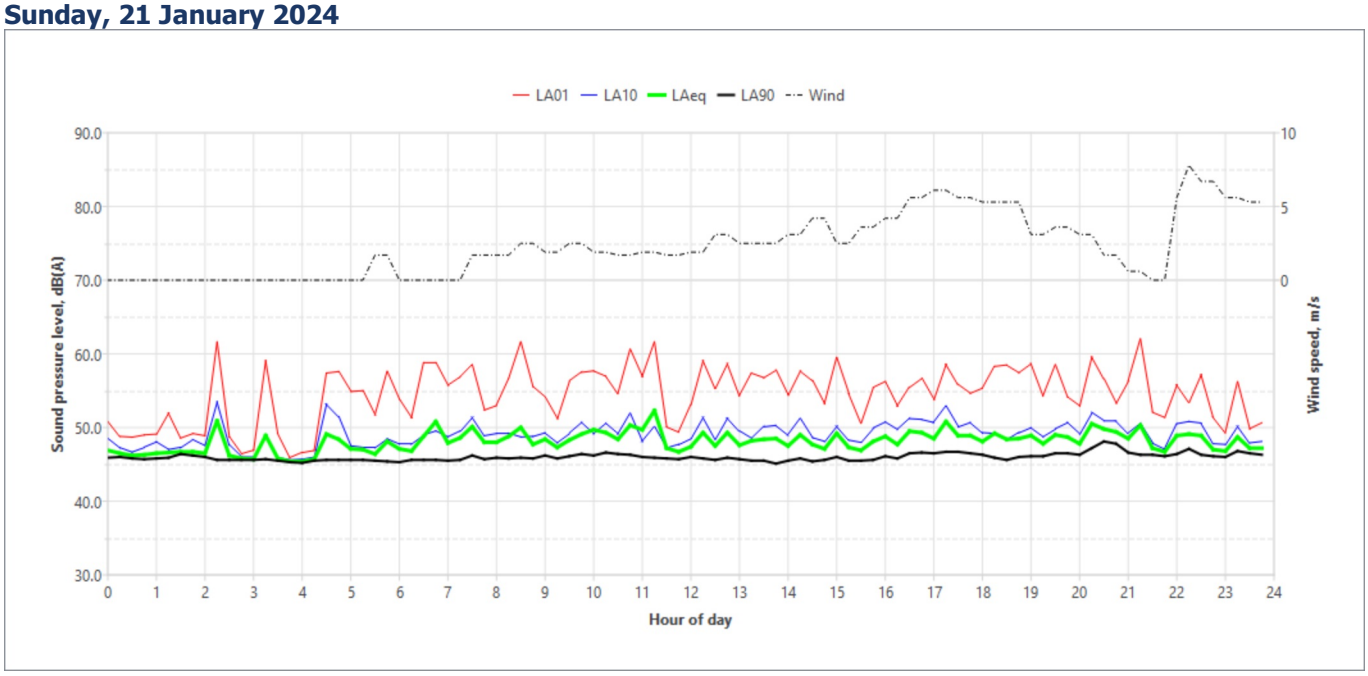

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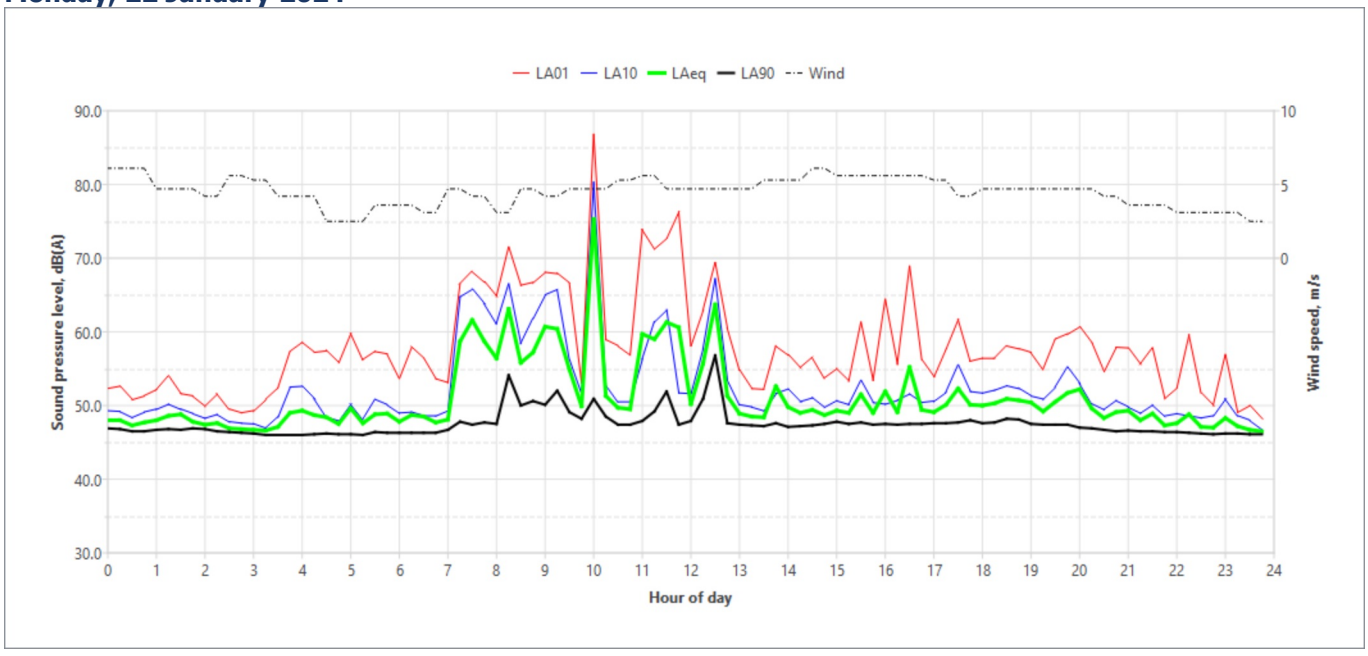

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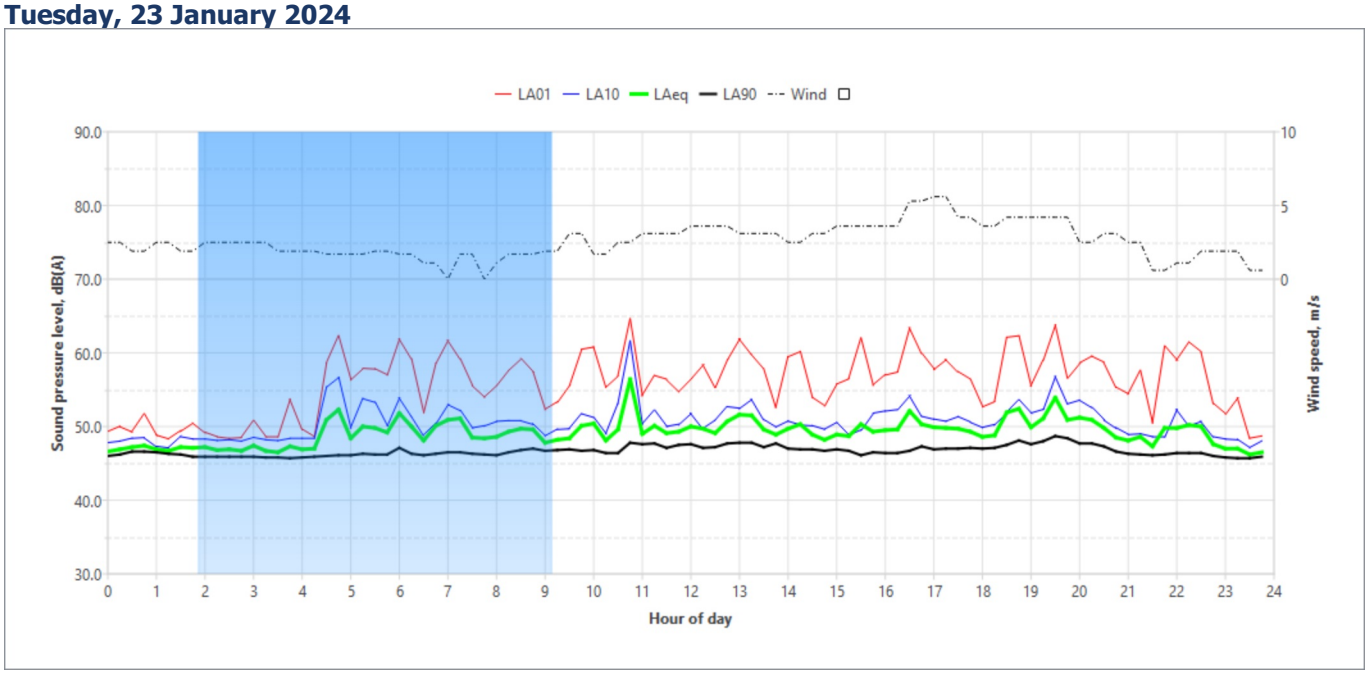

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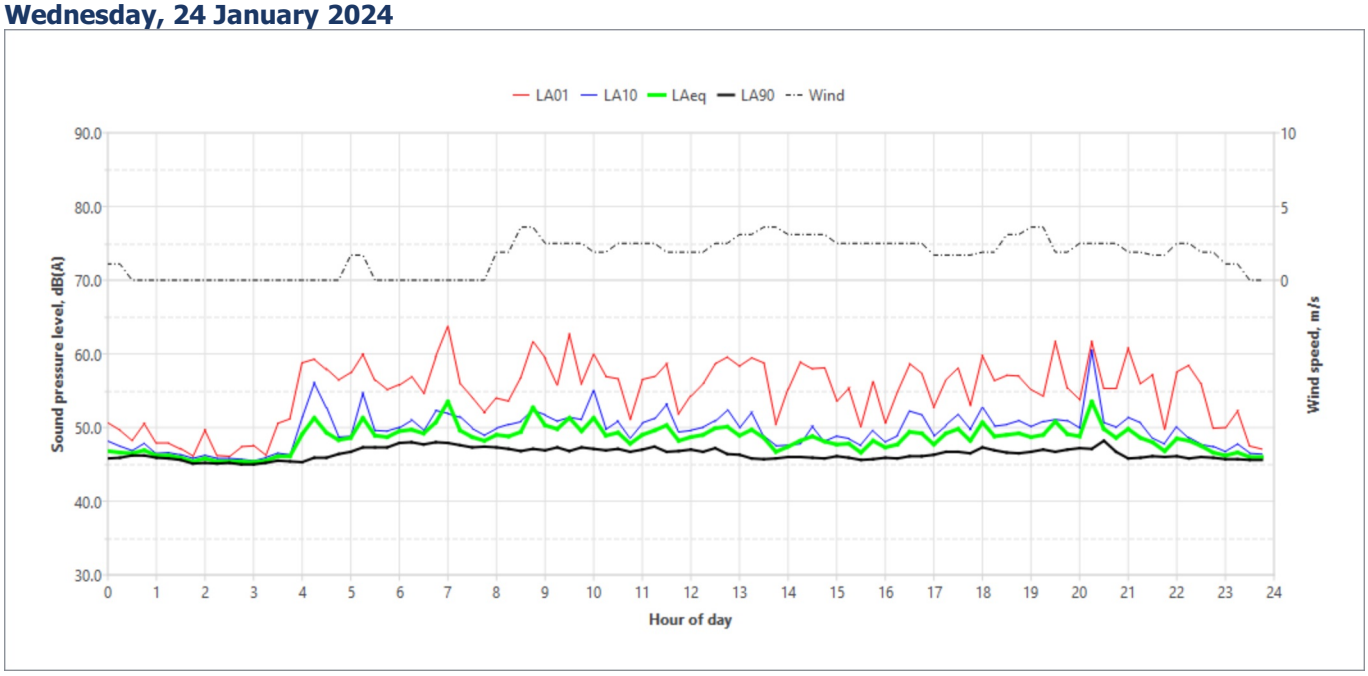

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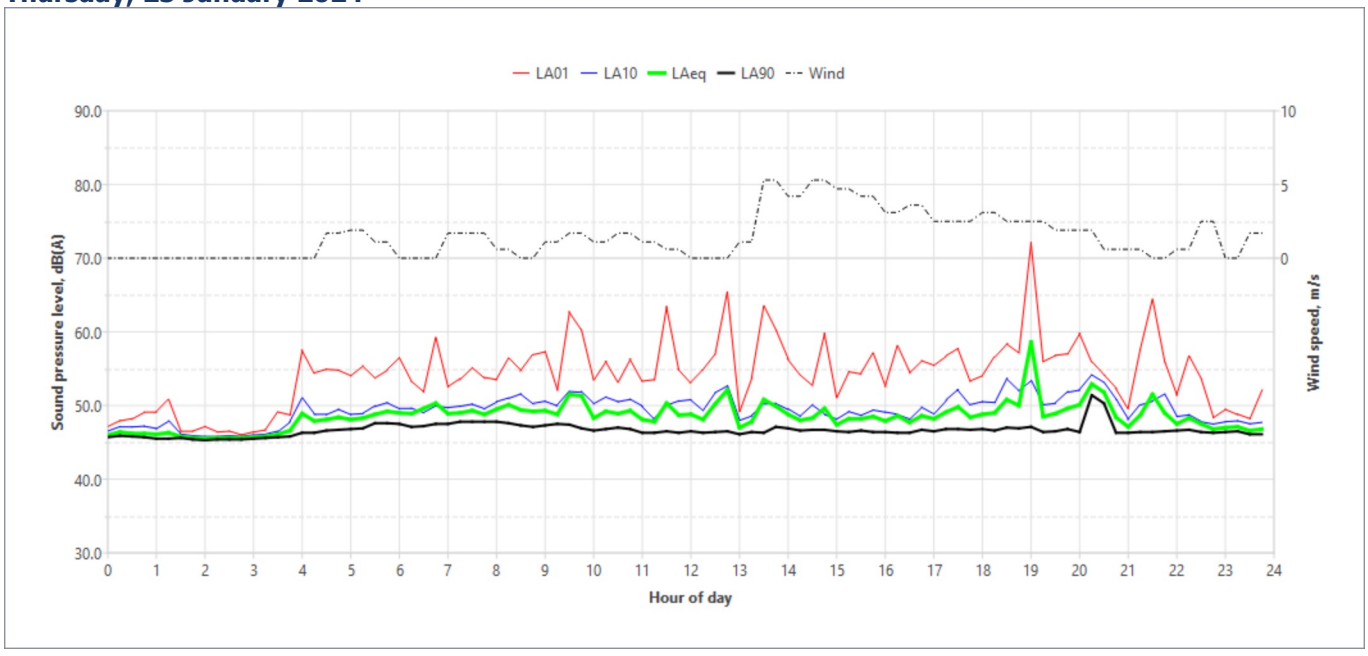

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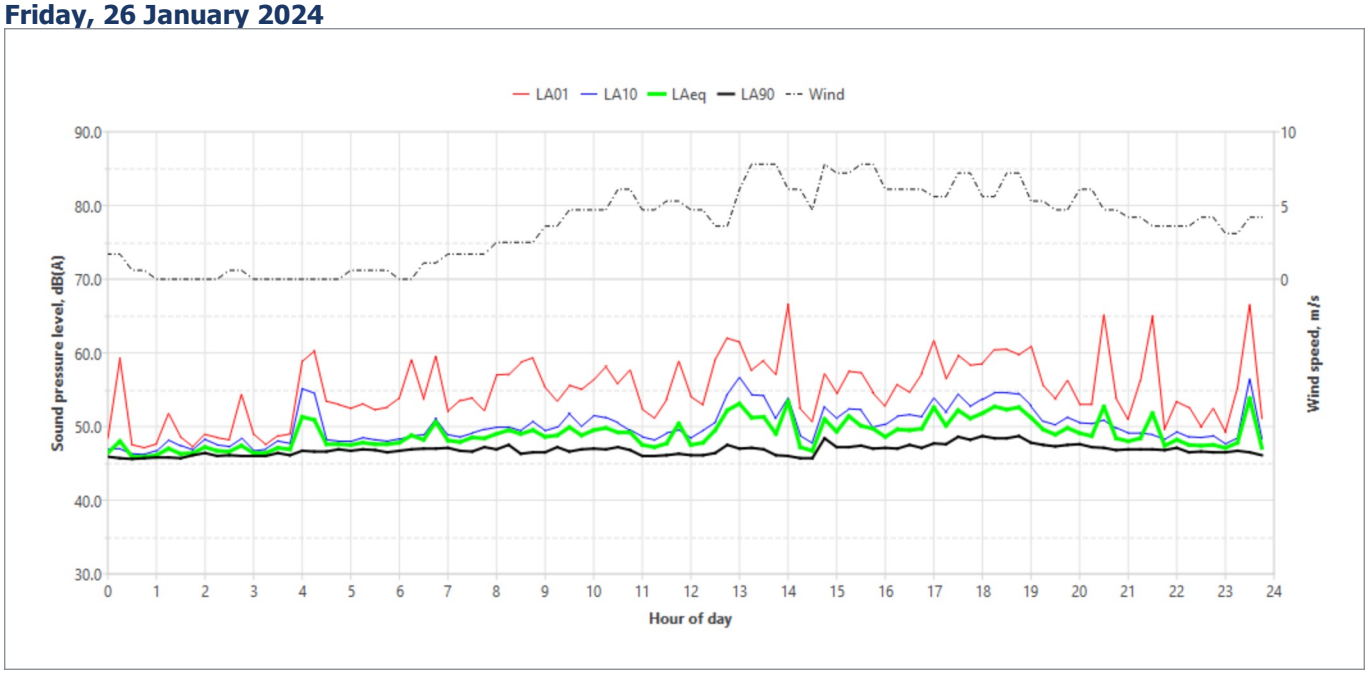
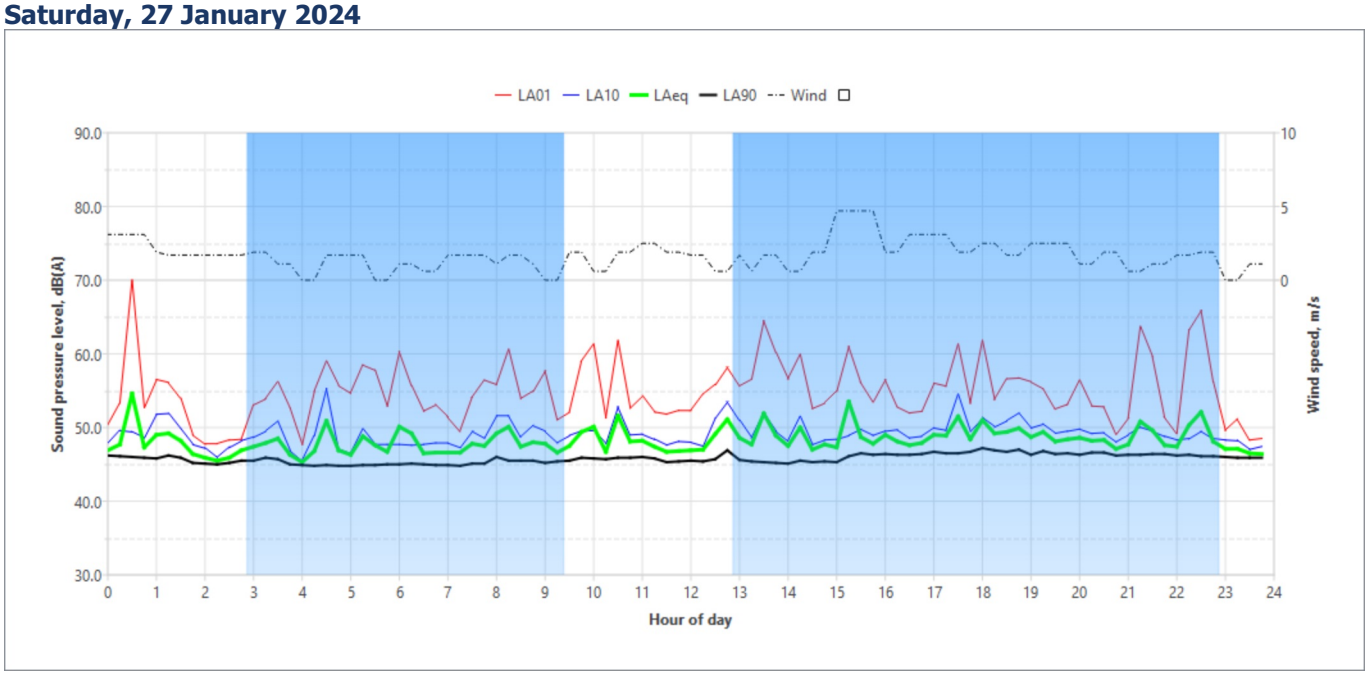
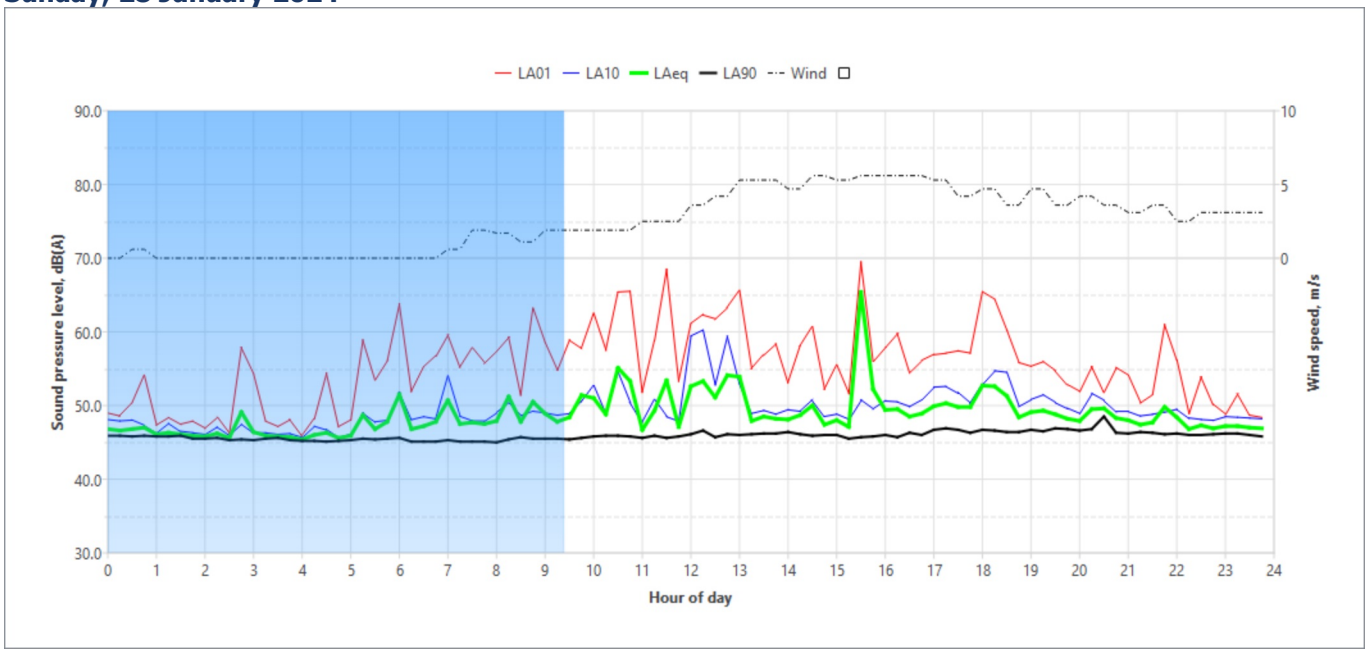


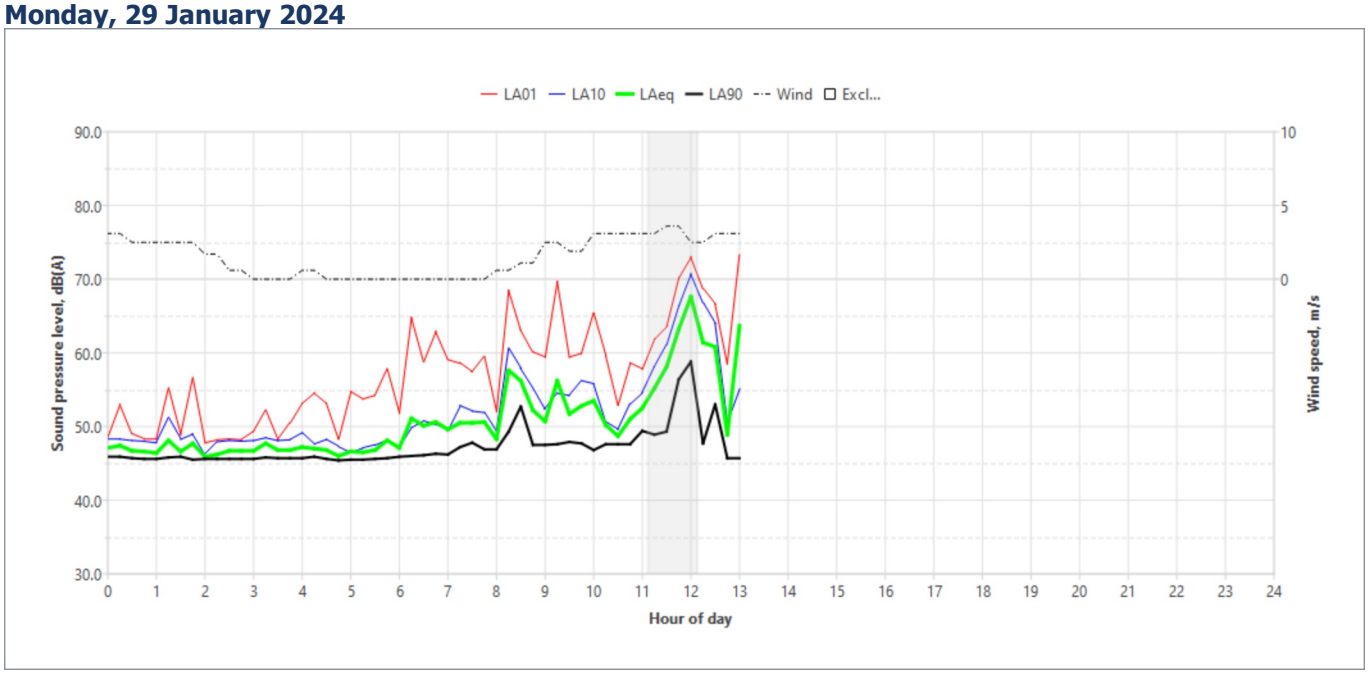
Saturday, 27 January 2024



Sunday, 28 January 2024



Monday, 29 January 2024



93 Bridge Road, Westmead

Ambient noise monitoring report

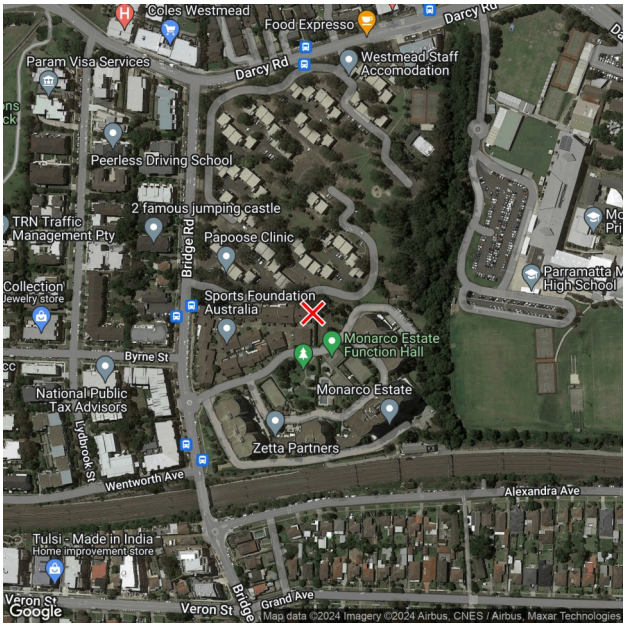
Item	Information
Logger Type	NL-42
Serial number	396932
Address	93 Bridge Road, Westmead
Location	Rear of 93 Bridge Road
Facade / free field	Free field
Environment	Ambient noise controlled by road traffic noise

Measured noise levels

Logging date	Rating Background Level			$L_{Aeq,period}$		
	Daytime 7am-6pm	Evening 6pm-10pm	Night-time 10pm-7am	Daytime 7am-6pm	Evening 6pm-10pm	Night-time 10pm-7am
Thu 18 Jan 2024	-	-	-	51	52	47
Fri 19 Jan 2024	46	46	45	53	50	48
Sat 20 Jan 2024	46	46	46	51	51	48
Sun 21 Jan 2024	46	46	45	49	49	48
Mon 22 Jan 2024	47	47	46	61	50	48
Tue 23 Jan 2024	-	46	-	50	51	48
Wed 24 Jan 2024	46	46	45	49	50	48
Thu 25 Jan 2024	46	46	45	49	51	47
Fri 26 Jan 2024	46	47	46	50	51	48
Sat 27 Jan 2024	-	-	-	49	-	49
Sun 28 Jan 2024	-	46	-	53	50	47
Mon 29 Jan 2024	-	-	-	56	-	48
Summary	**46**	**46**	**45**	**54**	**50**	**48**

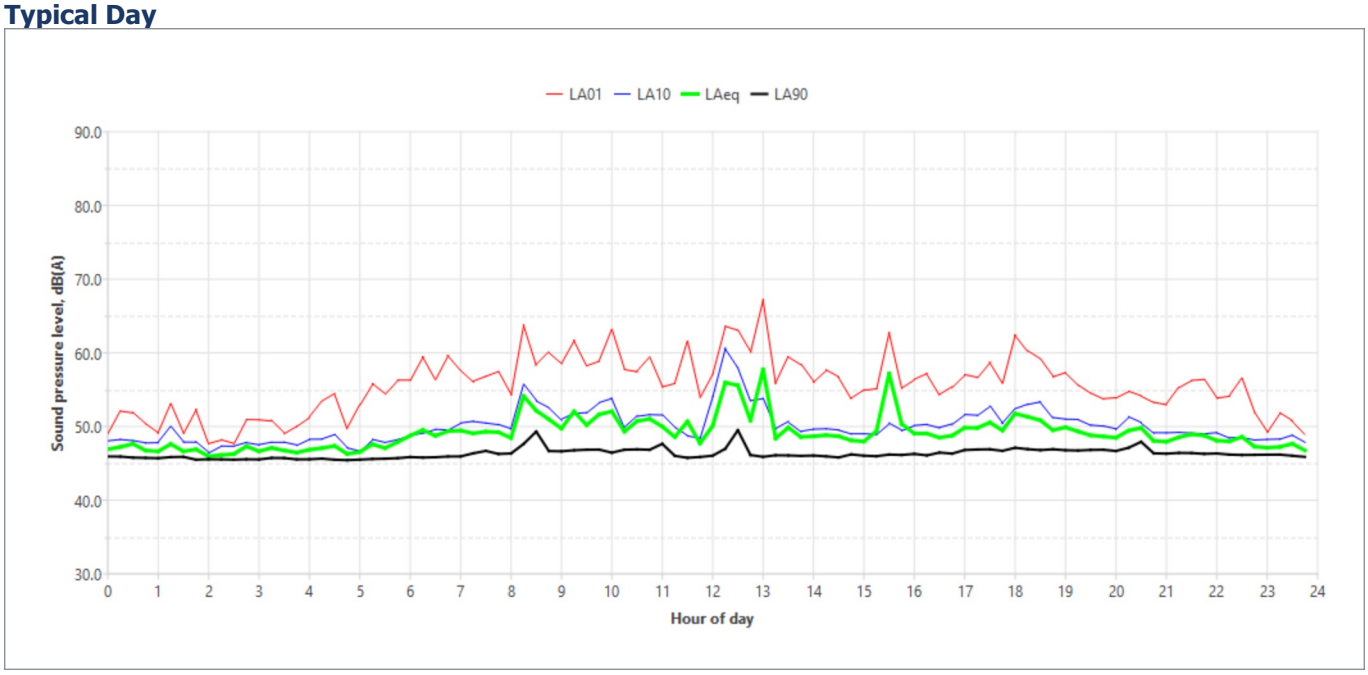
Note: Results with a '-' identify that there were not enough measurements available to correctly calculate the level, in accordance with the Noise Policy for Industry. The data has been excluded either from weather or manual exclusions. See the charts for more information

Logger location

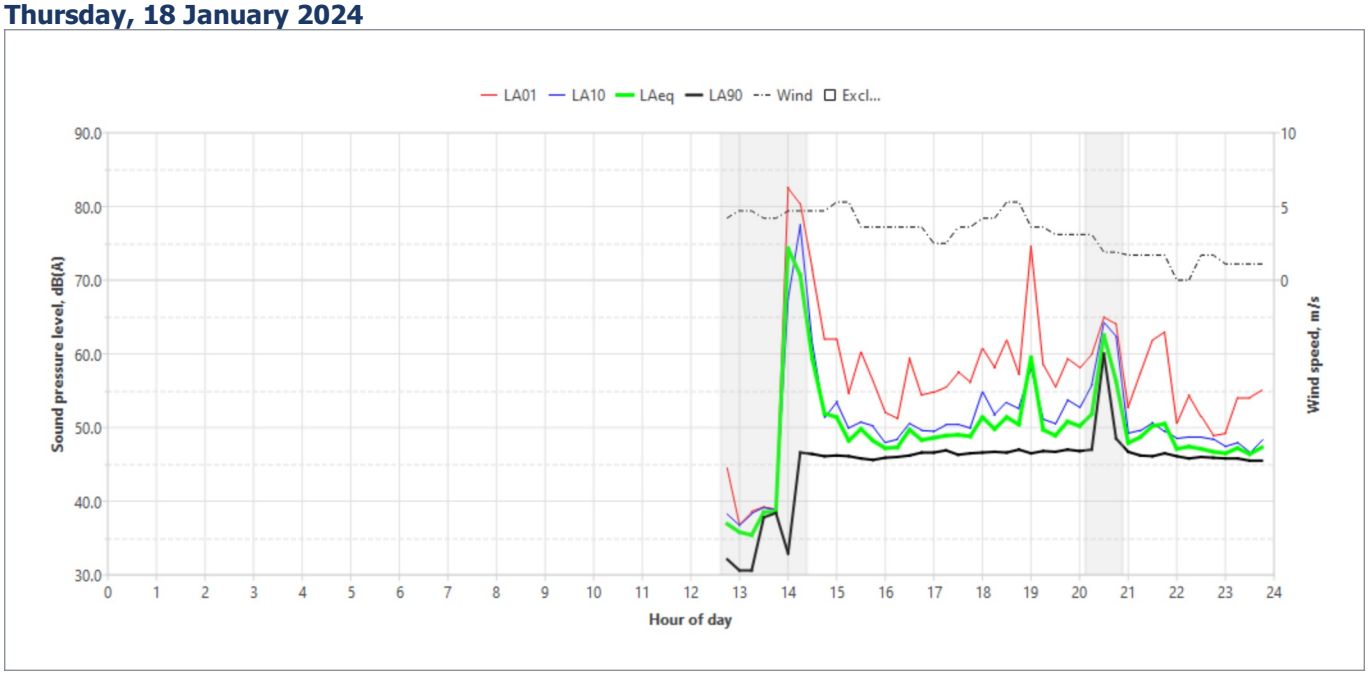


Logger deployment photo

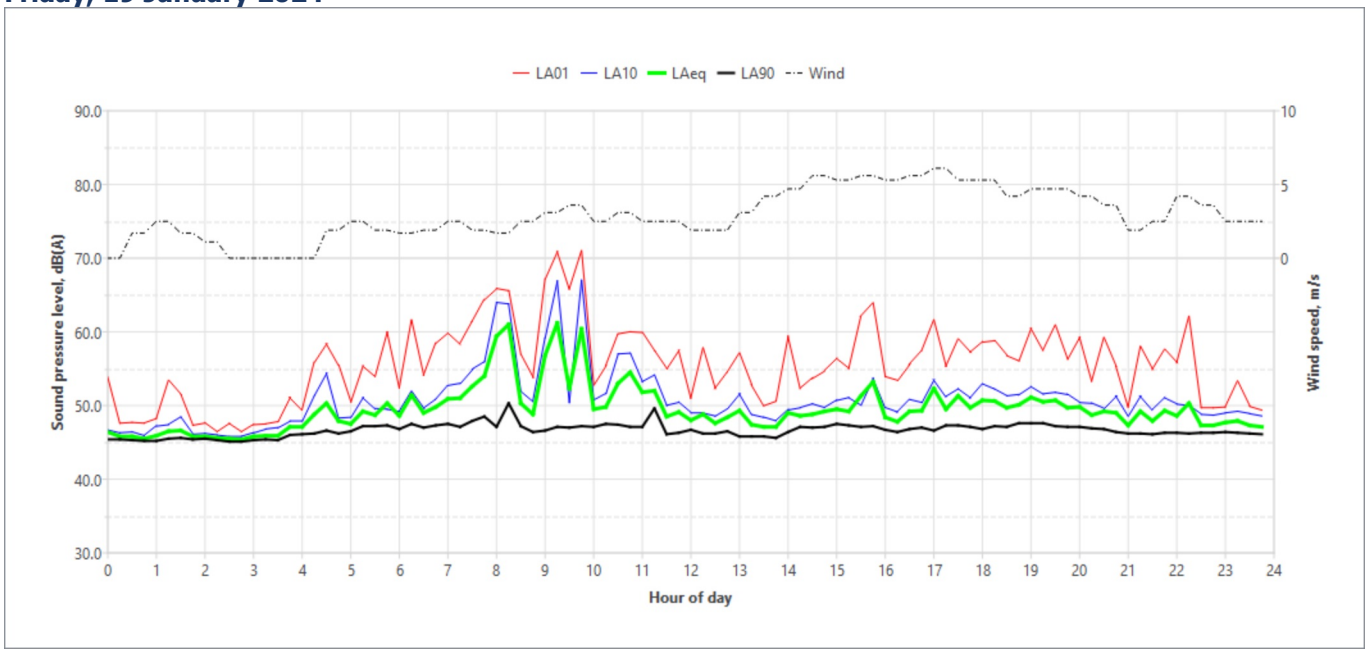
Typical Day



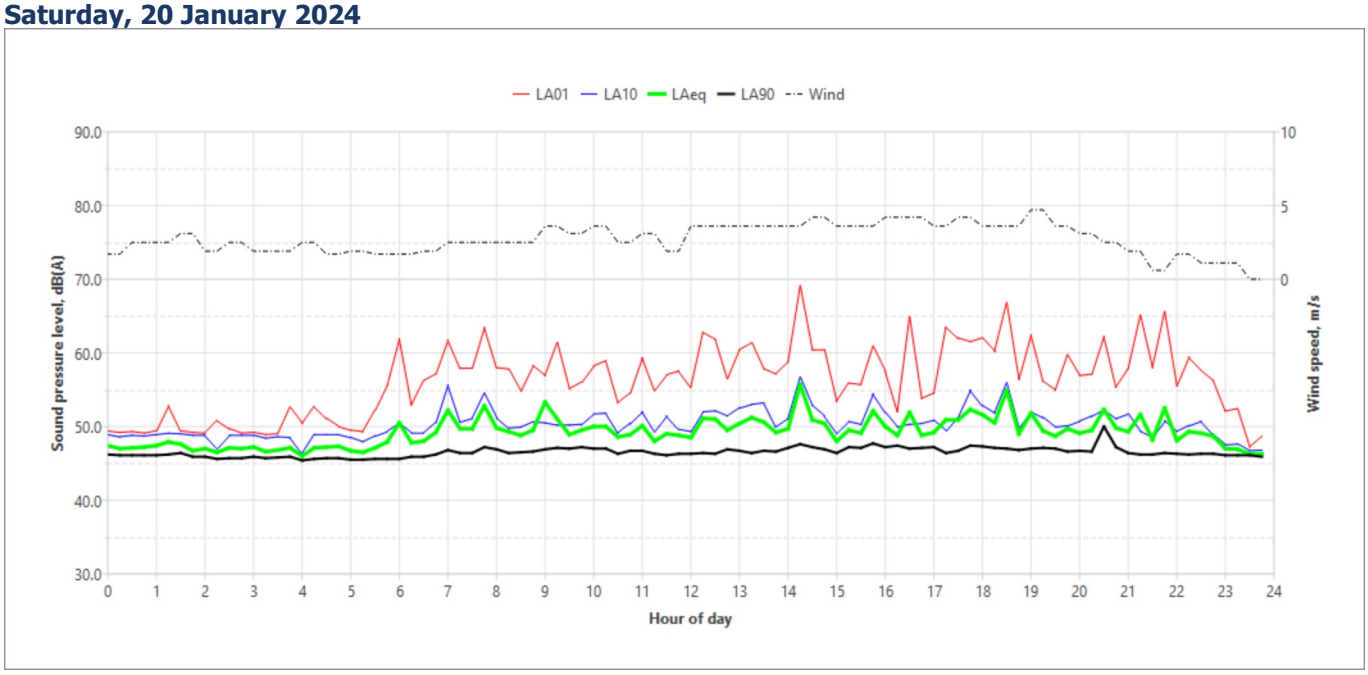
Thursday, 18 January 2024



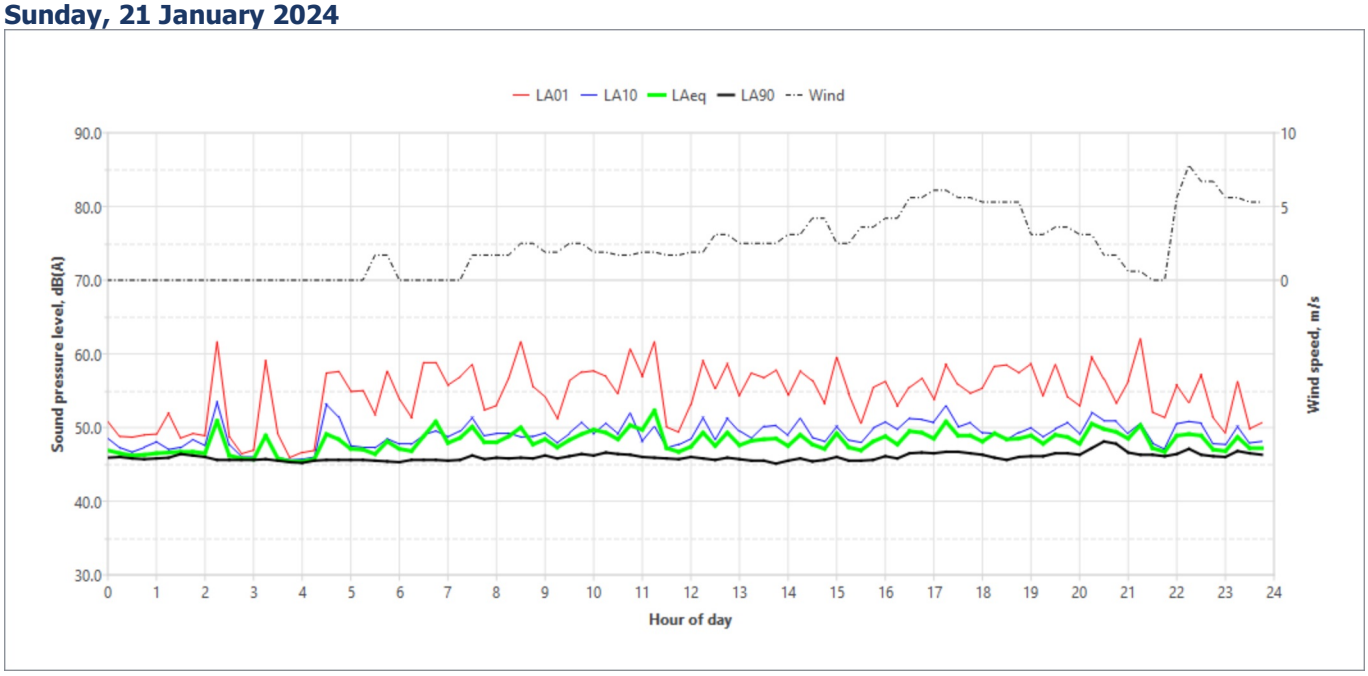
Friday, 19 January 2024



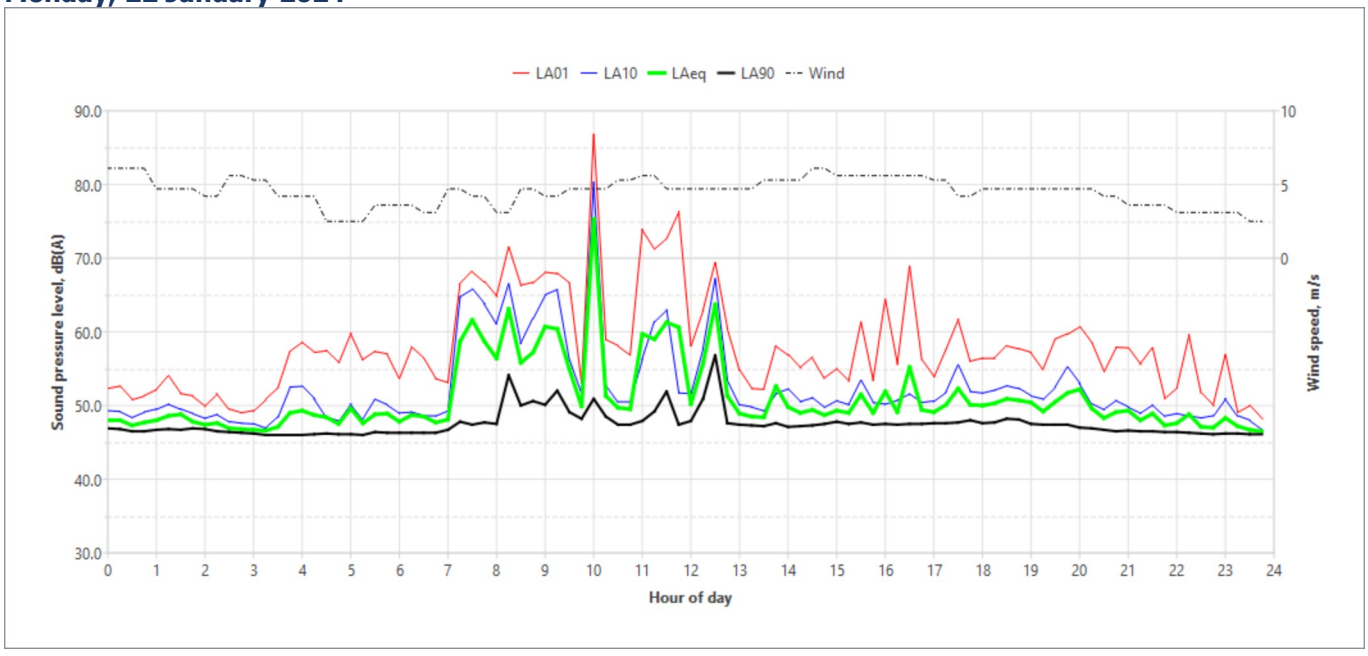
Saturday, 20 January 2024



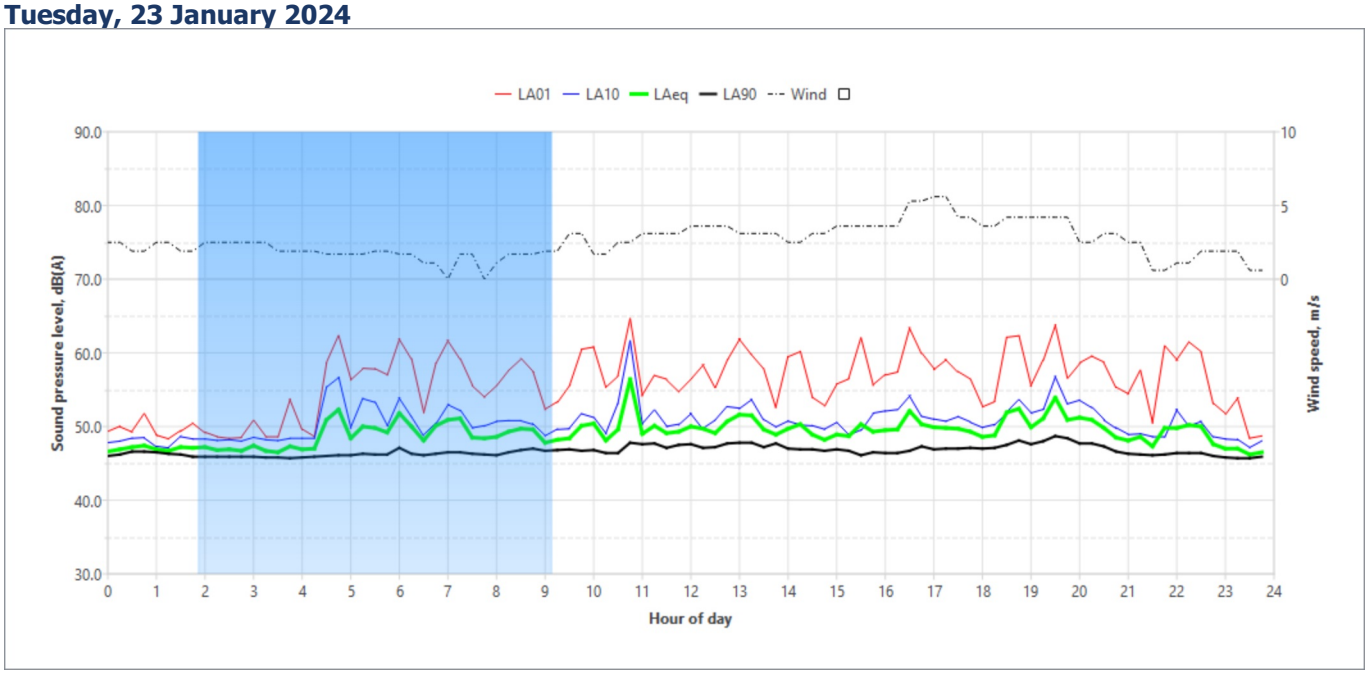
Sunday, 21 January 2024



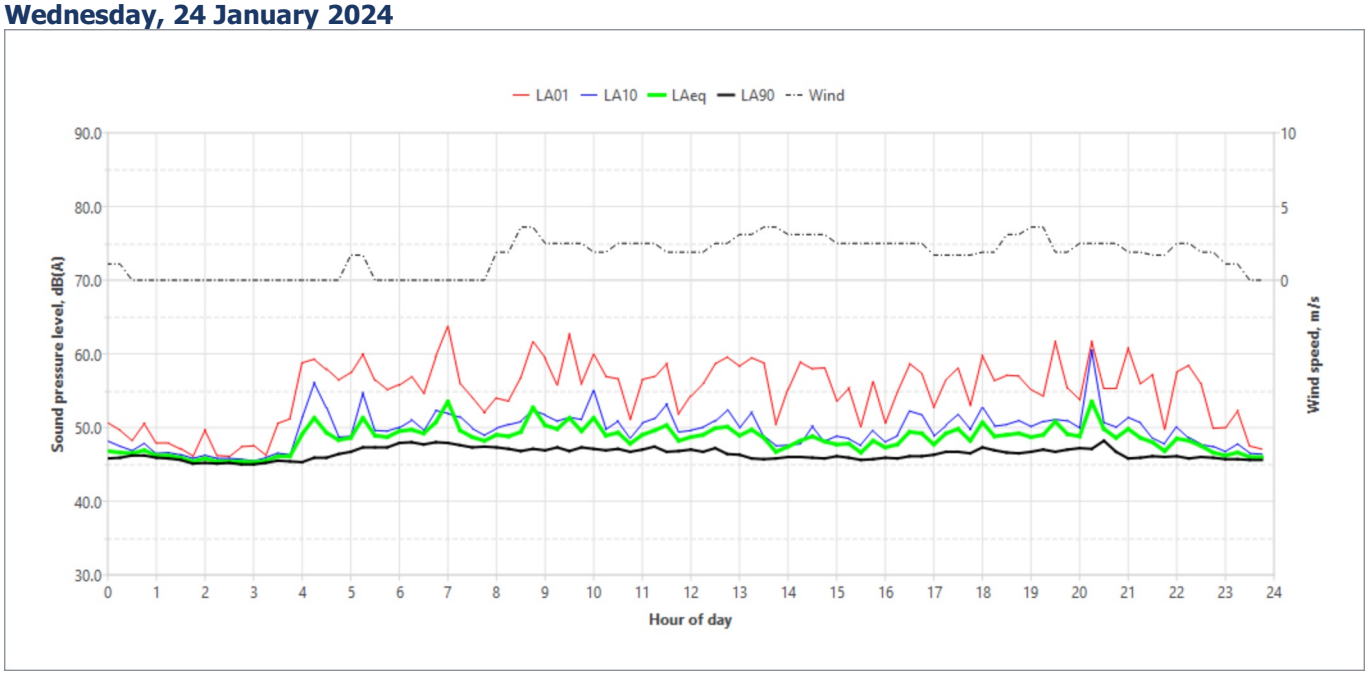
Monday, 22 January 2024



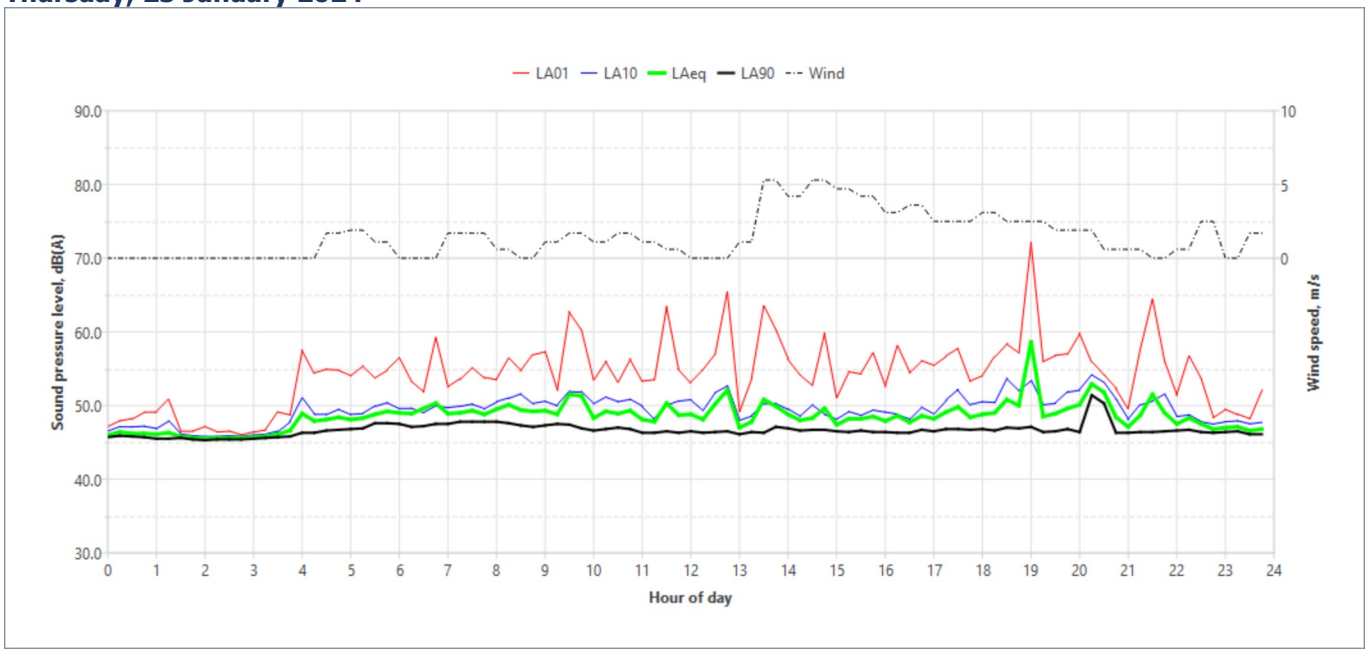
Tuesday, 23 January 2024



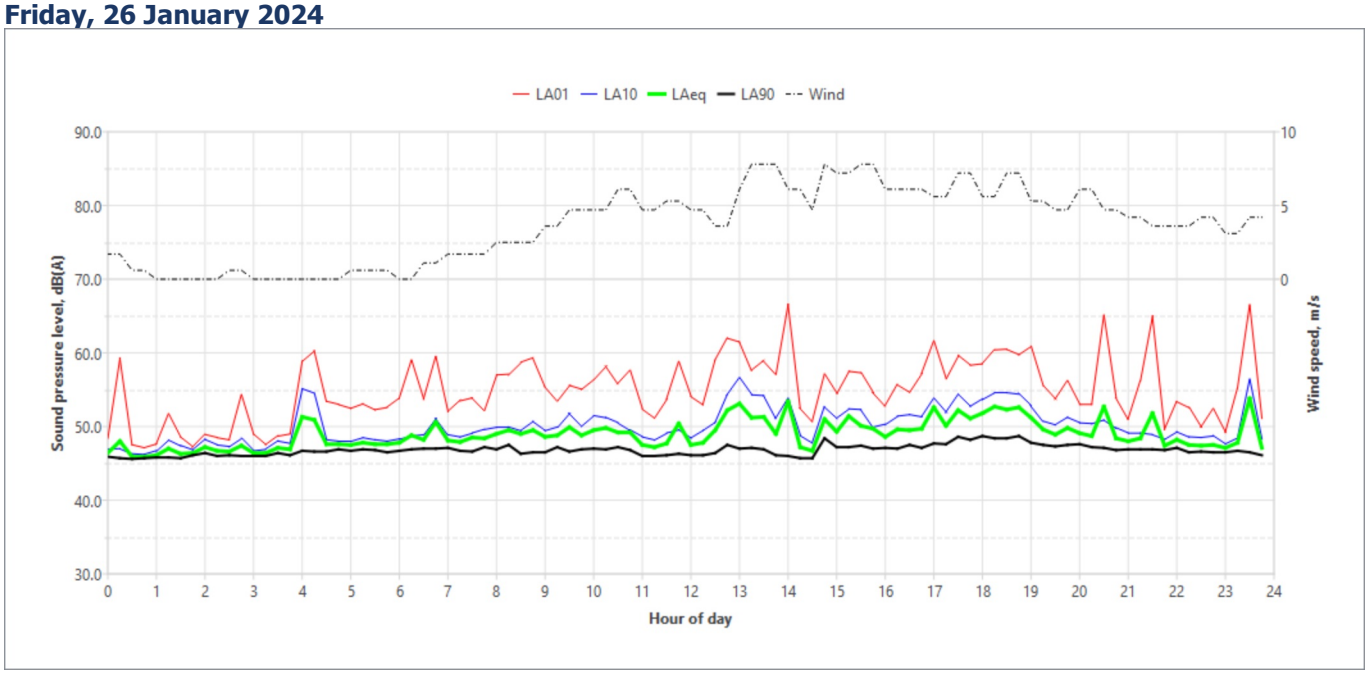
Wednesday, 24 January 2024



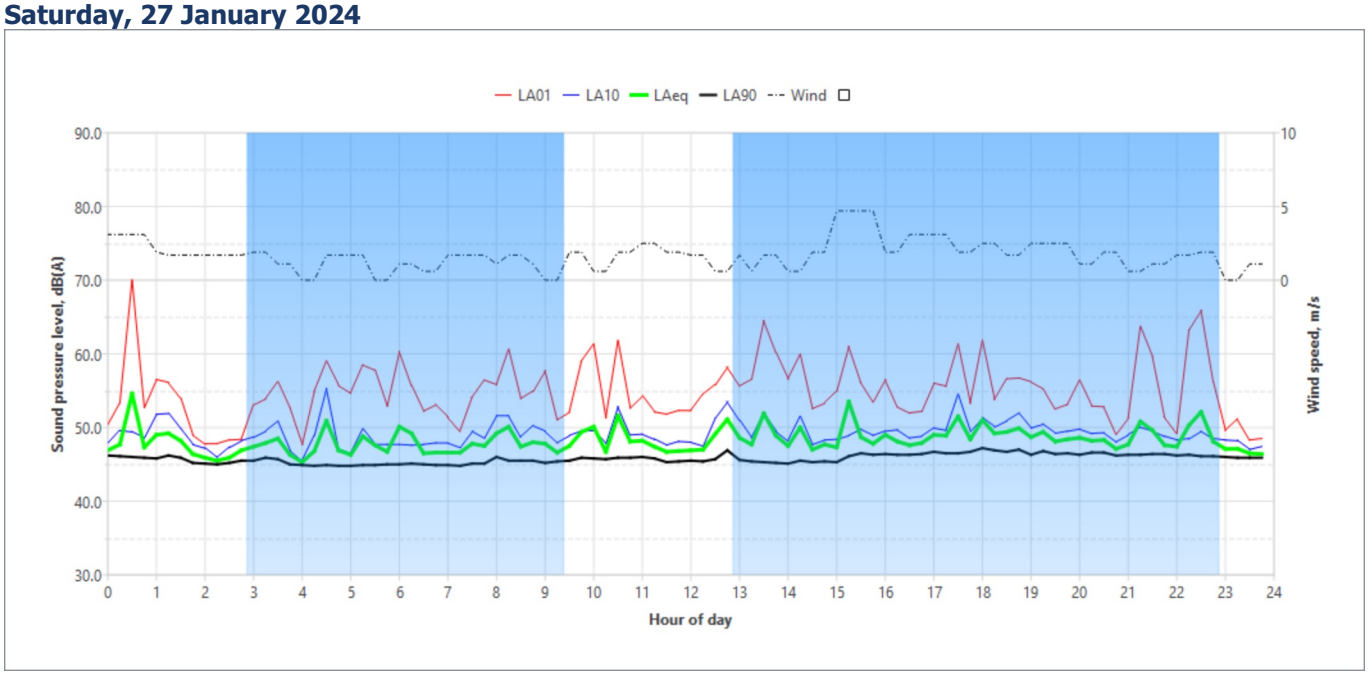
Thursday, 25 January 2024



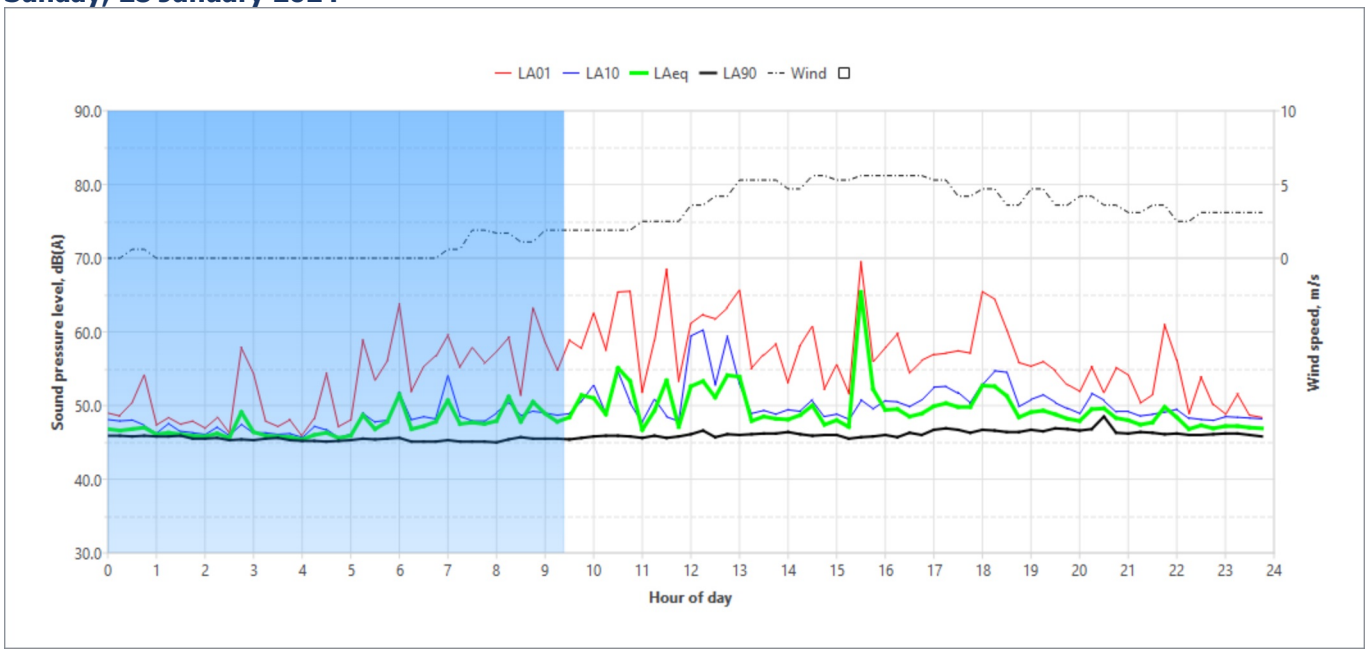
Friday, 26 January 2024



Saturday, 27 January 2024



Sunday, 28 January 2024



Monday, 29 January 2024