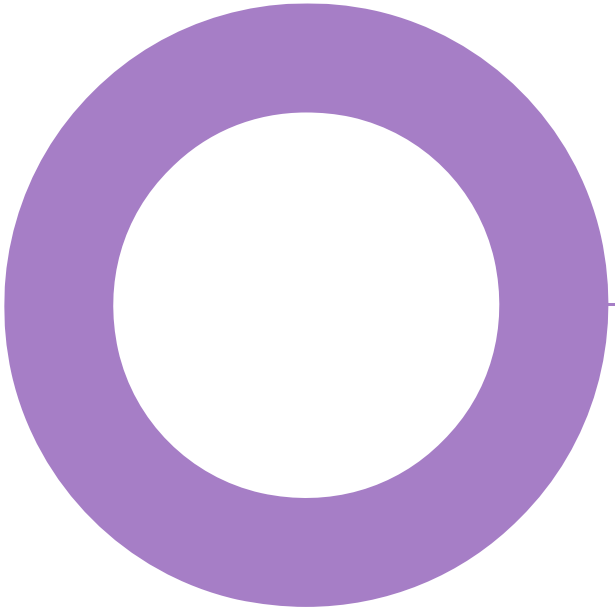
HOARE LEA

Wrexham Gateway Eastern Zone.
Wrexham.
Wrexham County Borough Council.

ACOUSTICS
NOISE ASSESSMENT PLANNING REPORT

REVISION 02 – 03 JULY 2025



Audit sheet.

Rev.	Date	Description of change / purpose of issue	Prepared	Reviewed	Authorised
00	28/02/2025	First issue	AP	PM	PM
01	05/03/2025	Amendments to Section 2.1	AP	PM	PM
02	03/07/2025	Updated based on updated development proposals	AP	PM	PM

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Contents.

Executive summary.

Hoare Lea was commissioned to provide acoustic advice for the proposed mixed-use development at Wrexham Gateway Eastern Zone, comprising a new office building, brewery conversion, and taproom/museum within former railway sheds. An environmental noise survey was conducted over six days in early 2025 to establish existing background sound levels and inform permissible noise limits for plant and machinery associated with the development.

The site is located within a mixed residential and commercial area, with noise primarily dominated by road traffic and occasional railway noise. Following Welsh national policy and relevant standards, the assessment is based on BS 4142:2014, which sets criteria to limit noise impact on nearby sensitive receptors by ensuring plant noise does not exceed existing background levels.

Survey results indicated representative background sound levels of 42 dB $L_{A90,15min}$ during daytime and 32 dB $L_{A90,15min}$ at night. Based on these levels, maximum permissible plant noise limits are set accordingly to avoid adverse impact, with additional penalties to be applied if tonal or impulsive noise characteristics are present. Further targeted noise surveys are recommended around the brewery and taproom areas to refine limits due to their proximity to sensitive receptors.

For the proposed brewery operations, noise sources such as loading/unloading and vehicle movements will be assessed further, with recommendations for containment and additional acoustic screening as needed. Taproom and museum noise considerations are expected to include patron noise and amplified music, with future development to include suitable management plans with regard to limiting noise.

1. Introduction.

Hoare Lea has been appointed to provide acoustic advice for a proposed mixed-use development at Wrexham Gateway Eastern Zone This incorporates a new build office, a warehouse conversion to create a brewery and conversion of former railway sheds to form a taproom and museum.

An environmental noise survey has been carried out on site over 6 days commencing on 30 January 2025. The aim of the survey was to determine the existing sound levels around the site, with the purpose of establishing the representative background sound levels to set maximum noise egress limits for plant and machinery associated with the development.

This report presents the findings of the noise survey and sets out the permissible maximum plant noise egress limits in accordance with BS 4142:2014 guidance. Initial comment on potential noise impact from the brewery and taproom is also provided.

2. Site and development details.

2.1 Site location and proposals.

The overall site includes Wrexham General train station and Station Approach access road and car park associated with the station. The site also includes a cleared plot of land to the east and former Jewson's industrial site to the northeast, both of which are currently disused.

Outline planning is sought for new commercial office building, creation of public realm and landscaping, conversion of existing buildings to brewery, with associated museum and taproom/restaurant, accessibility improvements including new highway infrastructure and pedestrian footbridge, including parking facilities and coach/taxi drop off, with all matters reserved except for access

The site is located in a mixed residential and commercial area, with dwellings located close to the site boundary on the east side. The proposed site is shown below along with proposed uses and key noise sources that will need to be considered. The nearest noise sensitive receptors are also highlighted.

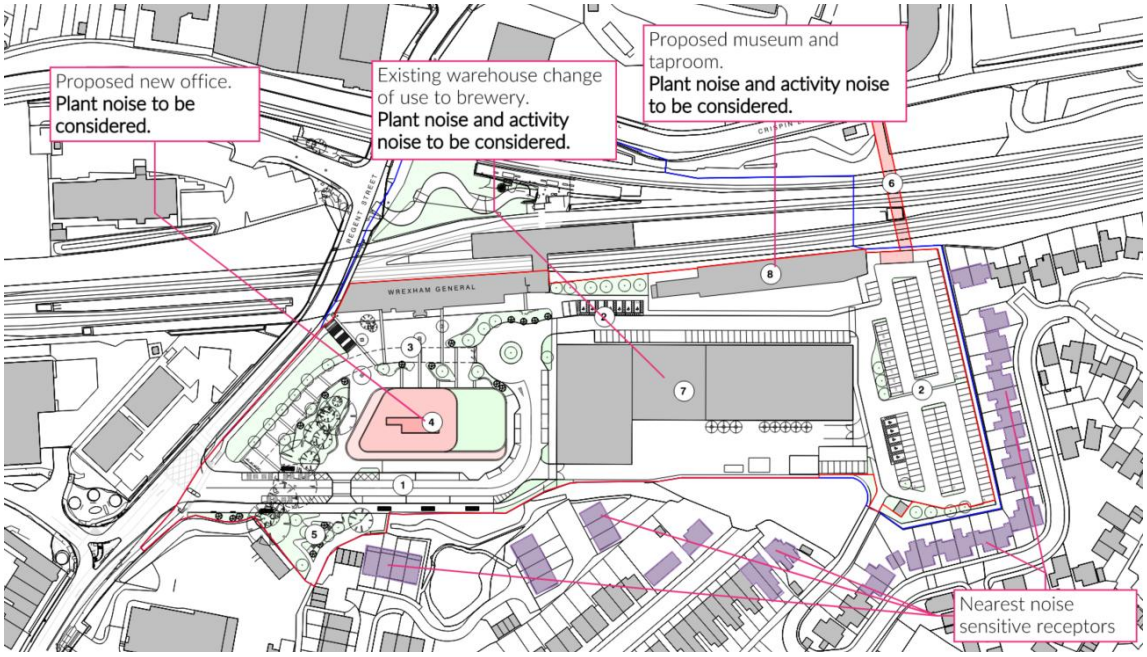


Figure 1 Aerial photograph indicating nearby noise sensitive premises (courtesy of Google Earth)

2.2 Surrounding area & noise climate.

The existing noise climate was dominated by road traffic noise, with occasional noise associated with the nearby railway line.

3. Acoustic criteria.

3.1 Local Authority planning guidance.

There is understood to be no specific Wrexham County Borough Council requirements in relation to plant or activity noise emissions.

Welsh national policy *Technical Advice Note 11: Air Quality, Noise and Soundscape* (TAN 11) refers to assessment in line with BS 4142 where the development is to include sound of an industrial or commercial nature.

It is therefore proposed that BS 4142 forms the basis of the assessment. This is summarised in the subsequent section.

3.2 BS 4142:2014.

Noise egress from any plant and machinery associated with the development should not cause disturbance at nearby sensitive premises.

The rating level for all new plant and machinery should be no more than equal to the existing representative background sound levels.

Further corrections should be applied if the plant or activity noise contains tonal and/or impulsive characteristics. The magnitude of these corrections is dependent upon the subjective perceptibility of the tones/impulses present.

Where the Rating Level exceeds the background, the level of impact increases as shown below.

Table 1 BS 4142 assessment criteria

Comparison with background	Indicative assessment
+0 dB or below measured background	Low impact
+ 5 dB	Adverse impact
+ 10 dB or more above measured background	Significant adverse impact

3.3 Proposed assessment basis.

To ensure 'low impact' in line with BS 4142, it is proposed that the rating noise level from all new plant and machinery does not exceed the existing measured background sound level.

For activity noise associated with brewery activities, BS 4142 is again proposed to be used as the basis, with suitable penalties applied to the rating noise level considering the impulsive or otherwise attention catching nature that would typically be expected for such noise sources. Further information on penalties for attention catching features is provided in Appendix B.

4. Environmental noise survey.

4.1 Summary.

An initial environmental noise survey was carried out on site over a period of 6 days between 30 January and 5 February 2025. During this time, long-term unattended measurements were carried out. Full details of the equipment used, as well as weather information are provided in Appendix B. Detailed survey results are presented in Appendix C.

The survey measurement position is presented in the annotated aerial photograph presented in Figure 2.

Figure 2 Aerial photograph indicating measurement positions and prevalent sound levels (courtesy of Google Earth)

In line with BS 4142:2014, for the purpose of analysis and establishing representative background sound levels during the periods of interest, the background sound levels have been quantified using statistical analysis from the continuous logging measurements. These are presented in Appendix D.

From the analysis carried out, the representative background sound levels measured at the survey location were respectively 42 dB $L_{A90,15min}$ during the daytime period, and 32 dB $L_{A90,15min}$ during the night-time period.

4.2 Observations.

The dominant background noise source on site was noted to be due to road traffic noise. There was occasional increased noise associated with the railway, but this did not affect the background noise which is driven by more constant noise sources.

4.3 Future noise survey works.

The survey detailed above is considered suitable for setting plant noise limits associated with the proposed new office building.

To ensure robust noise limits for sensitive receptors closer to the proposed brewery and museum / taproom, a further noise survey is recommended with additional noise monitoring around the northern extent of the site.

5. Plant noise emissions.

5.1 Plant noise limits.

Based on the criteria set out in Section 3 and the survey results, the cumulative maximum sound pressure levels for fixed plant, equipment and machinery associated with the proposed office development shall not exceed the levels presented in Table 2 at 1 m from the nearest noise sensitive premises.

Table 2 Maximum permissible sound pressure levels at 1m from the nearest noise sensitive premises

Time of day	Maximum rating level at 1 m from the nearest noise sensitive premises ($L_{Ar,Tr}$, dB) *
07:00 to 23:00 hours	42
23:00 to 07:00 hours	32

*If plant noise contains any tonal or impulsive characteristics, the rating level shall include a suitable correction in accordance with BS 4142:2014.

Suitable noise limits will need to be developed for plant associated with the brewery and taproom based on the future noise surveys discussed in Section 4.3.

5.2 Proposals and noise attenuation measures.

All noise generating plant and equipment associated with the development will be designed to ensure that the noise egress limits specified above are achieved.

The specific attenuation measures will depend on the type and location of the plant items but typical measures to be considered include in-duct attenuation, acoustic screening or enclosures, low noise equipment, acoustic lagging, and acoustically rated louvres.

6. Brewery activity noise emissions.

6.1 Noise sources.

It is anticipated that noise sources would include unloading / loading of barrels and goods along with HGV movement.

To ensure a robust assessment, it is recommended that measurements of existing brewery operation activities be carried out. These noise source would then form the source noise level basis for assessment of potential impact on the surrounding noise sensitive receptors.

6.2 Outline mitigation.

The following outline mitigation is recommended to be considered at this stage, subject to further assessment based on measurement noise source data:

- Site planning –
  - Where possible, ensure that areas for noisier activities are situated away from the nearby sensitive receptors.
  - The area to the north of the site is currently proposed as car parking which works acoustically to provide a quieter area directly adjacent to the residences.
  - Use the inherent acoustic screening provided by the buildings to reduce noise levels affecting the nearby sensitive receptors.

- Contain noisier activities inside the building –
  - To minimise noise breakout to the surroundings, carry out nosier activities inside the building wherever possible.
  - Depending on the final proposals, it may be necessary to close off the open part of the façade which faces the nearby sensitive premises (shown below) to reduce noise breakout from noisy activities.
- Additional mitigation –
  - If necessary, additional mitigation could be considered. This is likely to take the form of acoustic screening, either localised to noisy areas or at the site boundary.

It is worth noting that the existing use of the building is for an industrial unit, so industrial type noise source emissions would have been expected from the site previously.

Figure 3 Sketch indicating initial principles to reduce noise impact on surrounding sensitive premises

7. Taproom / museum activity noise emissions.

Proposals for the taproom / museum space are not yet developed. However, possible noise sources could include conversation / patron noise and amplified music.

Consideration will need to be given to any external seating or patron areas with a suitable 'Security and Crowd Management Plan' developed. Low level background music is expected to be acceptable.

Appendix A: Policy and guidance.

National policy.

Technical Advice Note 11: Air Quality, Noise and Soundscape (TAN 11)

TAN 11 states the following:

'For the sound environment, the national default site acceptability criteria for pollution-sensitive development are as follows:

1. The day-evening (0700-2300) average noise level Lday-evening = LAeq,16h (plus any relevant BS 4142 character correction for industrial/commercial sound) from all sound sources combined should not exceed 72 dB.

2. The night-time (2300-0700) average noise level Lnight (plus any relevant BS 4142 character correction for industrial/commercial sound) from all sound sources combined should not exceed 66 dB. (Not applicable to noise-sensitive developments unoccupied at night-time.)

3. The maximum noise level LAmax,F should not exceed and should be unlikely to exceed 80 dB on more than 20 occasions per night. (Not applicable to noise-sensitive developments unoccupied at night-time.)

4. For sound of an industrial or commercial nature within the scope of BS 4142, including any domestic air source heat pump sound, an assessment carried out in accordance with that standard and regulator guidance should not indicate that significant adverse impacts are likely.

5. None of the main sources of sound that are currently identifiable by a listener on site should already be associated with a history of complaints from nearby building occupants who are currently subject to levels of exposure similar to or lower than those likely to be experienced by future occupants of the proposed development.'

Recognised guidance.

British Standard 4142.

Current Government advice to Local Planning Authorities in both England and Wales refers to British Standard 4142:2014 (BS 4142) as being the appropriate guidance for assessing commercial operations and fixed building services plant noise. The British Standard provides an objective method for rating the significance of impact from industrial and commercial operations. It describes a means of determining sound levels from fixed plant installations and determining the background sound levels that prevail on a site.

The assessment of the impacts is based on the subtraction of the pre-existing background sound level ($L_{A90,T}$) from the rating level ($L_{Ar,Tr}$).

The standard does not give a definitive method for determining the background sound level but instead, as a commentary, states that *"the objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods"*.

Clause 8.1.4, which discusses the monitoring duration, states *"there is no "single" background sound level as this is a fluctuating parameter. However, the background sound level used for the assessment should be representative of the period being assessed."* As a note to this clause the following commentary is given on obtaining a representative backgrounds sound level:

"To obtain a representative background sound level a series of either sequential or disaggregated measurements ought to be carried out for the period(s) of interest, possibly on more than one occasion. A representative level ought to account for the range of background sound levels and ought not automatically to be assumed to be either the minimum or modal value."

The rating level is defined objectively as the specific source noise level in question (either measured or predicted) with graduated corrections for tonality (up to +6 dB(A)), impulsivity (up to +9 dB(A)), intermittency

(+3 dB(A)) and other sound characteristics (+3 dB(A)) which may be determined either subjectively or objectively, if necessary.

The background sound level is subtracted from the rating level. The following is considered when evaluating the potential impact:

- A difference of around +10 dB is likely to be an indication of a significant adverse impact, depending on context;
- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on context; and
- A difference of +0 dB or less is an indication of the specific sound source having a low impact, depending on the context.

It also states '*where background sound levels and rating levels are low, absolute levels might be as, or more, relevant that the margin by which the rating level exceeds the background. This is especially true at night.*'.

Appendix B: Survey and equipment details.

Equipment details

The details of the equipment used during the environmental noise survey.

All equipment used was within dates of calibration and calibration certificates are available on request.

Table 3 Equipment used during environmental noise survey

Description	Serial Number	Calibration Date
Rion - Sound Level Meter: NL-52 Rion - Microphone: UC-59 Rion - Pre-amplifier: NH-25	00297868 14887 88079	14/04/2023

Weather information

Weather reports for the area indicate that temperatures ranged between approximately 1 °C to 11 °C. Wind speeds were low and periods of rain were not sufficiently long to adversely affect the measurement results.

The measured data is therefore considered suitable as being representative of typical conditions.

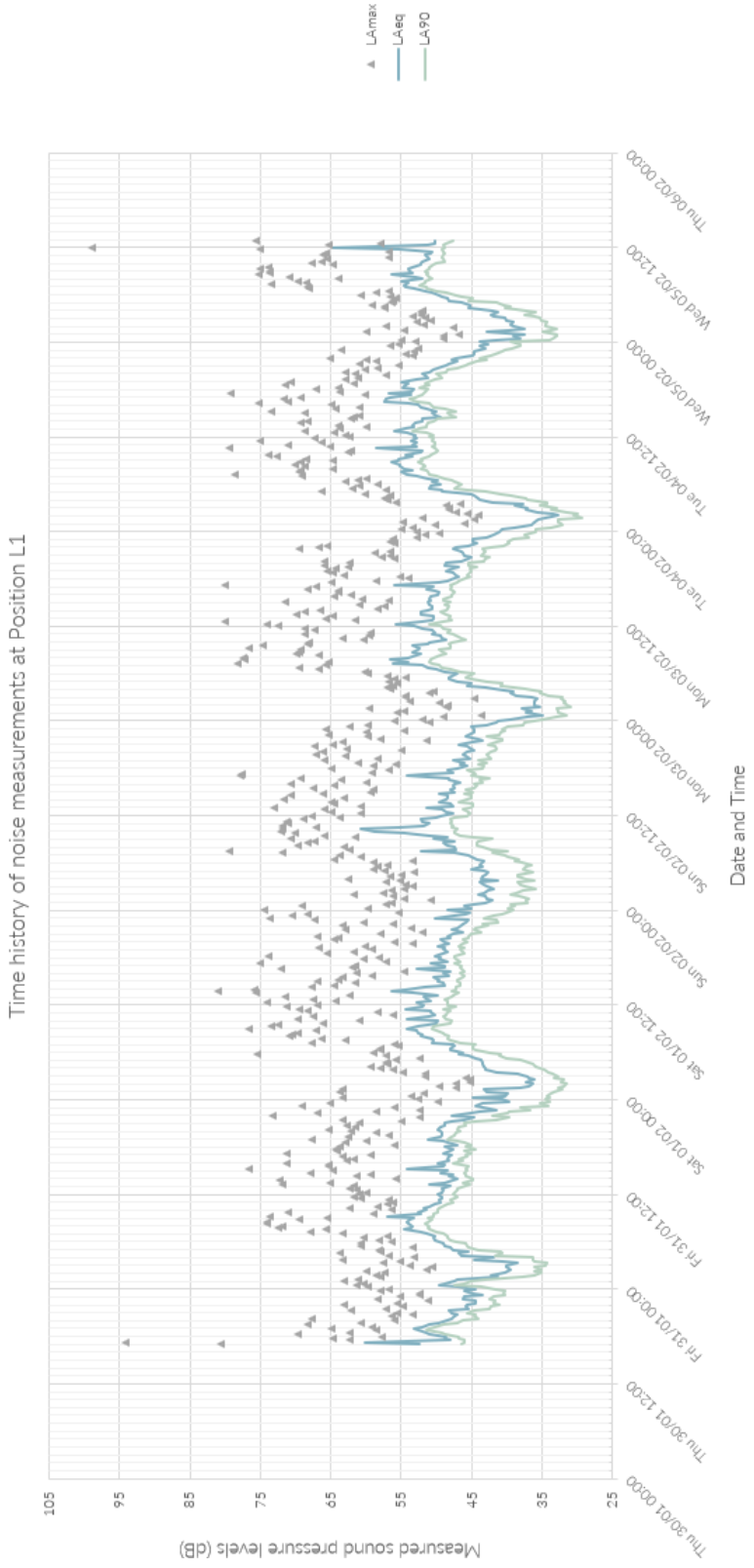
Appendix C: Detailed survey results.

Results.

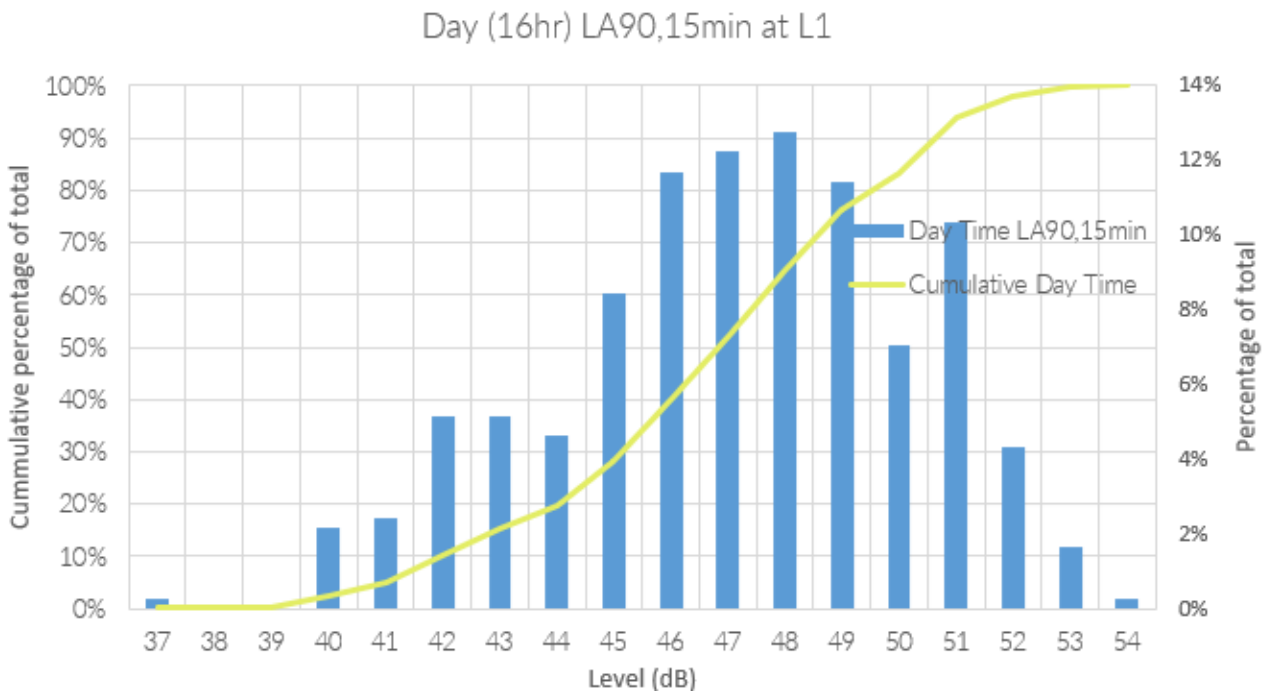
Table B1 Ambient noise levels measured during unattended measurements

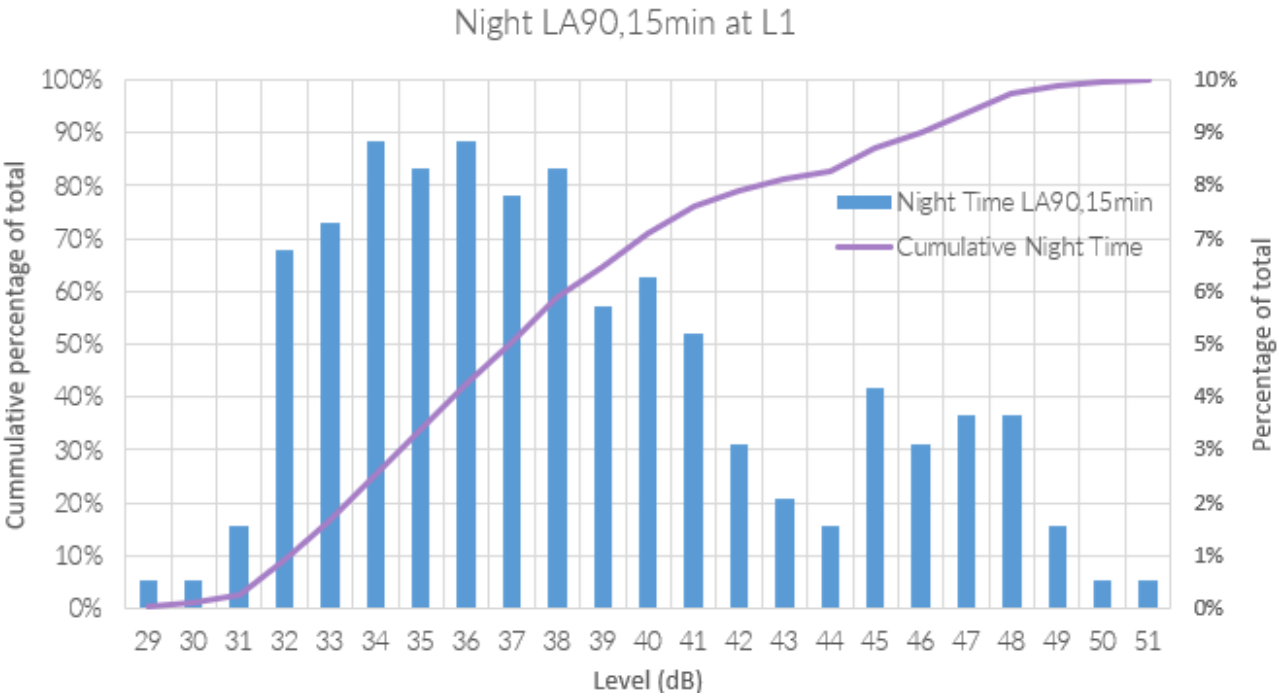
Date	Day time (07:00-23:00)	Night time (23:00 - 07:00)
	$L_{Aeq,16hr}$ (dB)	$L_{Aeq,8hr}$ (dB)
30/01/2025	51	47
31/01/2025	50	43
01/02/2025	51	45
02/02/2025	50	45
03/02/2025	51	46
04/02/2025	53	46
05/02/2025	55	-

Time history graph at unattended position L1



Appendix D: Statistical analysis of background levels measured.





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