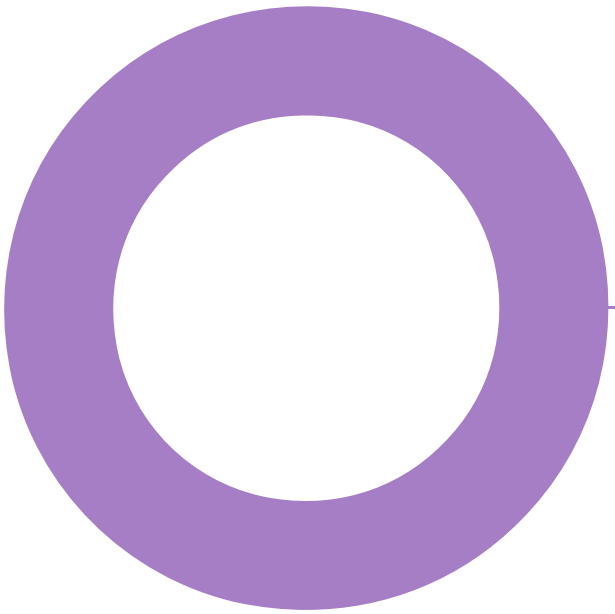
HOARE LEA

Millom Leisure Centre.
Millom.
Cumberland Council.

ACOUSTICS
NOISE ASSESSMENT REPORT

REVISION 1 – 18 MAY 2023



Audit sheet.

Rev.	Date	Description of change / purpose of issue	Prepared	Reviewed	Authorised
0	19/04/2023	Draft issue.	SG	AP	PM
1	18/05/2023	Amended Client Name.	SG	PM	PM

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Contents.

Executive summary.

Hoare Lea has been appointed to provide acoustic advice for the proposed Millom Leisure Centre in Millom, within the area administered by Cumberland Council (formerly Borough of Copeland).

An environmental noise survey has been carried out between Thursday 30th March 2023 and Monday 3rd April 2023.

The representative background sound levels measured during the survey were 33 dB $L_{A90,T}$ during the daytime (07:00 to 23:00 hrs) and 23 dB $L_{A90,T}$ at night-time (23:00 to 07:00 hrs).

Based on BS 4142:2014 guidance, all new plant, equipment and machinery associated with the development shall be controlled to ensure that the overall sound pressure levels at 1 m from the façade of the nearest noise sensitive premises do not exceed 33 dB $L_{Ar,Tr}$ during the daytime (07:00 to 23:00 hrs) and 23 dB $L_{Ar,Tr}$ during the night (23:00 to 07:00 hrs). If the plant contains any tonal characteristics a further correction will be required.

1. Introduction.

Hoare Lea LLP has been appointed to prepare a noise assessment for the proposed Millom Leisure Centre in Millom.

An environmental noise survey has been carried out on site over five days commencing on Thursday 30th March 2023. The aim of the survey was to determine the existing noise levels around the site, with the purpose of establishing the prevalent ambient and representative background noise 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.

2. Site and development details.

The site is within the grounds of Millom School. The proposal is for the demolition of existing outdoor changing rooms and bungalow, to be replaced with a leisure centre (formed as an extension to the existing school sports hall), additional parking spaces, a new substation and associated landscaping.

The school site is surrounded predominantly by residential dwellings to the south and west sides, with playing fields to the north east and a railway line directly to the south east boundary.

The closest noise-sensitive receptors are considered to be the houses to the south and west.

The site location in relation to the nearby noise sensitive premises is presented in Figure 1.

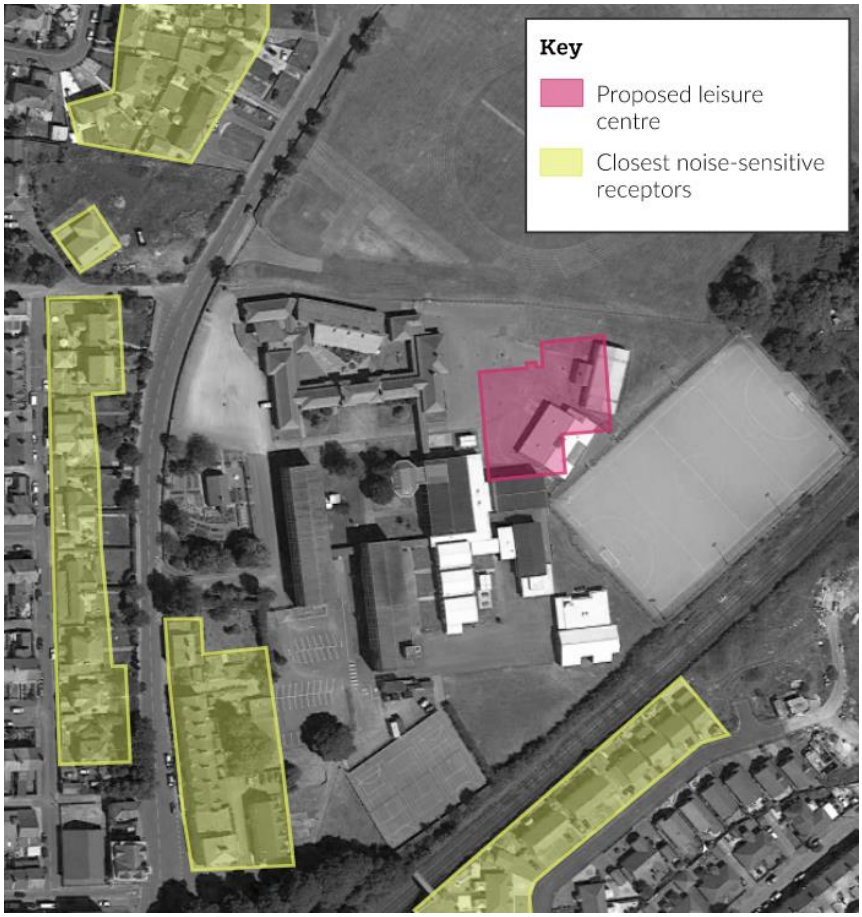


Figure 1: Site location plan indicating nearby noise sensitive premises.

3. Plant noise limits.

3.1.1 Local Authority planning guidance.

The Local Authority do not have any published policy specifically relating to noise egress, applicable to this development. On this basis, it is proposed that an assessment in accordance with BS 4142:2014 is undertaken to determine the potential impact of this development on the existing nearby residences.

Relevant local and national guidance and policy is presented within Appendix A.

3.1.2 BS 4142:2014.

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

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

Table 1: BS 4142 assessment criteria.

Full details of the standard are provided within Appendix A.

4. Environmental noise survey.

4.1 Summary.

An environmental noise survey has been carried out at the proposed site to establish the prevailing environmental noise conditions local to the site. The survey was undertaken to determine building services plant noise limits.

The unattended survey comprised five days of continuous logging by a sound level meter to the east side of the site, close to the existing all-weather pitch and small wooded area (Position L1). This position is considered to be representative of the sheltered rear facing elevations of the nearby houses.

The measurements were considered free field as they were taken more than 3.5 metres from any acoustically reflecting surface other than the roof and were at a height of approximately 1.4 metres above ground level.

Measurements recorded consisted of five-minute samples of ambient sound levels ($L_{Aeq,5min}$ in dB), and background sound levels ($L_{A90,5min}$ in dB) over a five-day period between Thursday 30th March 2023 and Monday 3rd April 2023.

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 and prevalent sound levels are summarised in the annotated aerial photograph presented in Figure 2.

Figure 2: Aerial photograph indicating measurement position 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 C.

From the analysis carried out, the representative background sound levels measured during the survey were respectively 33 dB $L_{A90,5min}$ during the daytime period, and 23 dB $L_{A90,5min}$ during the night-time period.

It is worth noting that 5-minute sample periods were used in lieu of the 1 hour or 15-minute reference periods recommended within BS 4142:2014. As a statistical analysis has been used to determine a suitable lower background sound level, the shorter time period is considered to provide a more conservative assessment.

4.2 Observations.

The dominant noise source on site was noted to be due to bird song and general road traffic from the local road network. Occasional trains are likely to be present within the noise climate when passing, but no trains were observed whilst on site. It is unlikely these will have a significant impact on the background sound levels captured due to the relatively short duration.

5. Plant noise egress.

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 development shall not exceed the levels presented in Table 2 at 1 m from the nearest noise sensitive premises.

Some items of plant, such as generators and smoke extract fans, may only be operational in case of emergency or during testing. On this basis that testing is only to be carried out during week days, and only periodically, it is

considered reasonable to allow a relaxation in the plant noise limit. A typical relaxation of 10 dB is considered to be appropriate.

Time of day	Maximum sound pressure level at 1m from the nearest noise sensitive premises ($L_{Ar,Tr}$, dB) *
07:00 to 23:00 hours	33
23:00 to 07:00 hours	23
Emergency plant (daytime testing)	43
*If plant noise contains any tonal or impulsive characteristics, a further correction shall be applied to the levels set out above in accordance with BS 4142:2014.	

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

5.2 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.

Appendix A: Policy and guidance.

National policy.

Noise Policy Statement for England.

The *Noise Policy Statement for England* (NPSE) advises that noise impacts should be assessed on the basis of adverse and significant adverse effects but does not provide any specific guidance on assessment methods or noise limits.

The NPSE introduces the concepts summarised in Table 3 that can be applied when considering the significance of noise impacts, which are applied by the World Health Organization.

The document advises that it is not possible to have '*a single objective noise based measure…. that is applicable to all sources of noise in all situations*'. It further advises that the sound level at which an adverse effect occurs is likely to be different for different noise sources, for different receptors at different times.

Effect Level	Description
No Observed Effect Level (NOEL)	This is the noise level below which no effect can be detected. In simple terms, below this level of noise, there is no detectable effect on health and quality of life due to the noise being assessed.
Lowest Observed Adverse Effect Level (LOAEL)	This is the level of noise above which adverse effects on health and quality of life can be detected.
Significant Observed Adverse Effect Level (SOAEL)	This is the level of noise above which significant adverse effects on health and quality of life occur.

Table 3: NPSE observed effect levels.

National Planning Policy Framework.

National Planning Policy Framework (NPPF) sets out the Government's planning policies and how these are expected to be applied. In relation to noise and vibration, NPPF section 15 paragraphs 170, 180 and 182 are presented below:

'*170. Planning policies and decisions should contribute to and enhance the natural and local environment by:*

e. preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability'

'*180. Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:*

1. *mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
2. *identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason;*

and

3. *limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.*

'*182. Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs).*

Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed.'

Planning Practice Guidance.

Online Planning Practice Guidance (PPG) has been published to provide greater details in relation to the relevance of noise to the planning process following the introduction of the NPPF and NPSE.

This guidance states, under the heading *'How to Determine the Noise Impact'*, that the following should be considered by Local Authorities:

- *'whether or not a significant adverse effect is occurring or likely to occur;*
- *whether or not an adverse effect is occurring or likely to occur; and*
- *whether or not a good standard of amenity can be achieved.'*

In line with NPSE, this includes identifying where noise exposure is above or below the significant observed adverse effect level and the lowest observed adverse effect level for a given situation during the operation of the Proposed Development.

Further guidance on each of the various observed effect levels set out in the NPSE is provided in the table detailed in the section headed 'How to Recognise when Noise could be a concern?' which is reproduced in Table 4.

It is important to note that no specific noise parameters are defined in the text or target noise levels provided. Under the heading 'What factors influence whether noise could be a Concern?', the subjective nature of noise is discussed. It is stated that there is no simple relationship between noise levels and the impact on those affected. This depends on how various factors combine in particular situations.

In respect of mixed-use developments, the following guidance is provided:

'When proposed developments could include activities that would be covered by the licensing regime, local planning authorities should consider whether the potential for adverse noise impacts will be addressed through licensing controls (including license conditions). Local planning authorities should not however presume that license conditions will provide for noise management in all instances and should liaise with the licensing authority.'

Perception	Example of outcomes	Increasing effect level	Action
No Observed Effect Level			
Not present	No effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level			
Noticeable and not Intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Noticeable and Intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Noticeable and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect Level	Avoid
Noticeable and disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

Table 4: PPG observed effects.

Local policy.

Copeland Local Plan 2013-2028.

The Copeland Borough Council have recently merged with nearby councils to form Cumberland Council. It is understood however, that the relevant local plan document remains to be the Copeland Borough Council Local Plan until this is formally superseded.

Copeland Borough Council Local Plan 2013-2028: Core Strategy and Development Management Policies DPD was adopted in December 2013. The document outlines the Council's vision and includes planning policies to be followed within the Copeland Borough Council area. The document does not include any policy specific to noise applicable to the proposed development, but it does include two policies which are considered to be relevant. The key paragraphs are presented below:

Policy ST1: Strategic Development Principles
The Strategic Development Principles that inform and underpin the Borough's planning policies are:

C Protect, enhance and restore the Borough's valued assets

i. *Protect and enhance areas, sites, species and features of biodiversity value, landscapes and the undeveloped coast*
ii. *Protect and enhance the Borough's cultural and historic features and their settings*
iii. *Provide and enhance recreational opportunities for the Borough's residents and its visitors, protecting existing provision and ensuring that future development meets appropriate standards in terms of quantity and quality.*
iv. *Manage development pressures to protect the Borough's agricultural assets*
v. *Support the reclamation and redevelopment or restoration of the Borough's vacant or derelict sites, whilst taking account of landscape, biodiversity and historic environment objectives*
vi. *Ensure development minimises air, ground and water pollution*

D Ensure the creation and retention of quality places

i. *Apply rigorous design standards that retain and enhance locally distinctive places, improve build quality and achieve efficient use of land*
ii. *Ensure development provides or safeguards good levels of residential amenity and security*
iii. *Accommodate traffic and access arrangements in ways that make it safe and convenient for pedestrians and cyclists to move around*
iv. *Ensure new development addresses land contamination with appropriate remediation measures*

Planning applications that accord with these principles and relevant Development Management policies, and do not undermine the Spatial Development Strategy, will be approved without unnecessary delay, unless material considerations indicate otherwise.

Policy ER6: Location of Employment
B Outside Whitehaven, the Key Service Centres, and the allocated sites, smaller scale economic development proposals will be considered on their merits, with the following matters being particularly important:

- *justification for rural location*
- *transport impact*
- *vulnerability to flooding*
- *impact on residential amenity and*
- *impact on landscape character, settlement character and biodiversity*

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.

Sound Level Meter, all positions

- Rion Type NL-52 Sound Level Meter (Serial Number 00732162)
- Rion Type NH-25 Pre-Amplifier (Serial Number 32190)
- Rion Type UC-59 Microphone (Serial Number 16798)
- Rion Type NC-74 Sound Calibrator (Serial Number 34172703)

The equipment was calibrated before and after the measurement period, and no significant drift was detected.

During the measurement period, temperatures remained mild and there were no periods of precipitation or winds exceeding 5 m/s.

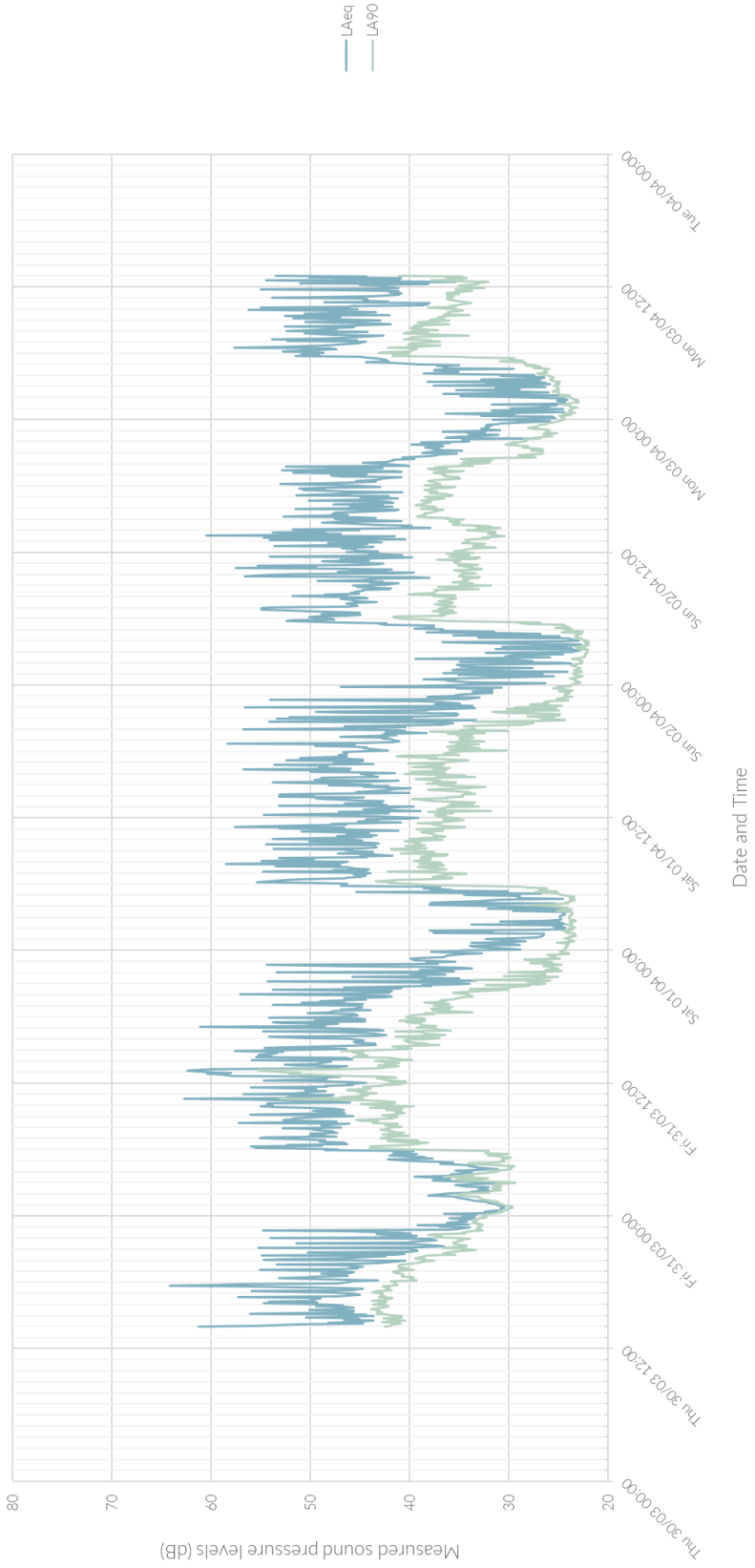
Appendix C: Detailed survey results.

Results.

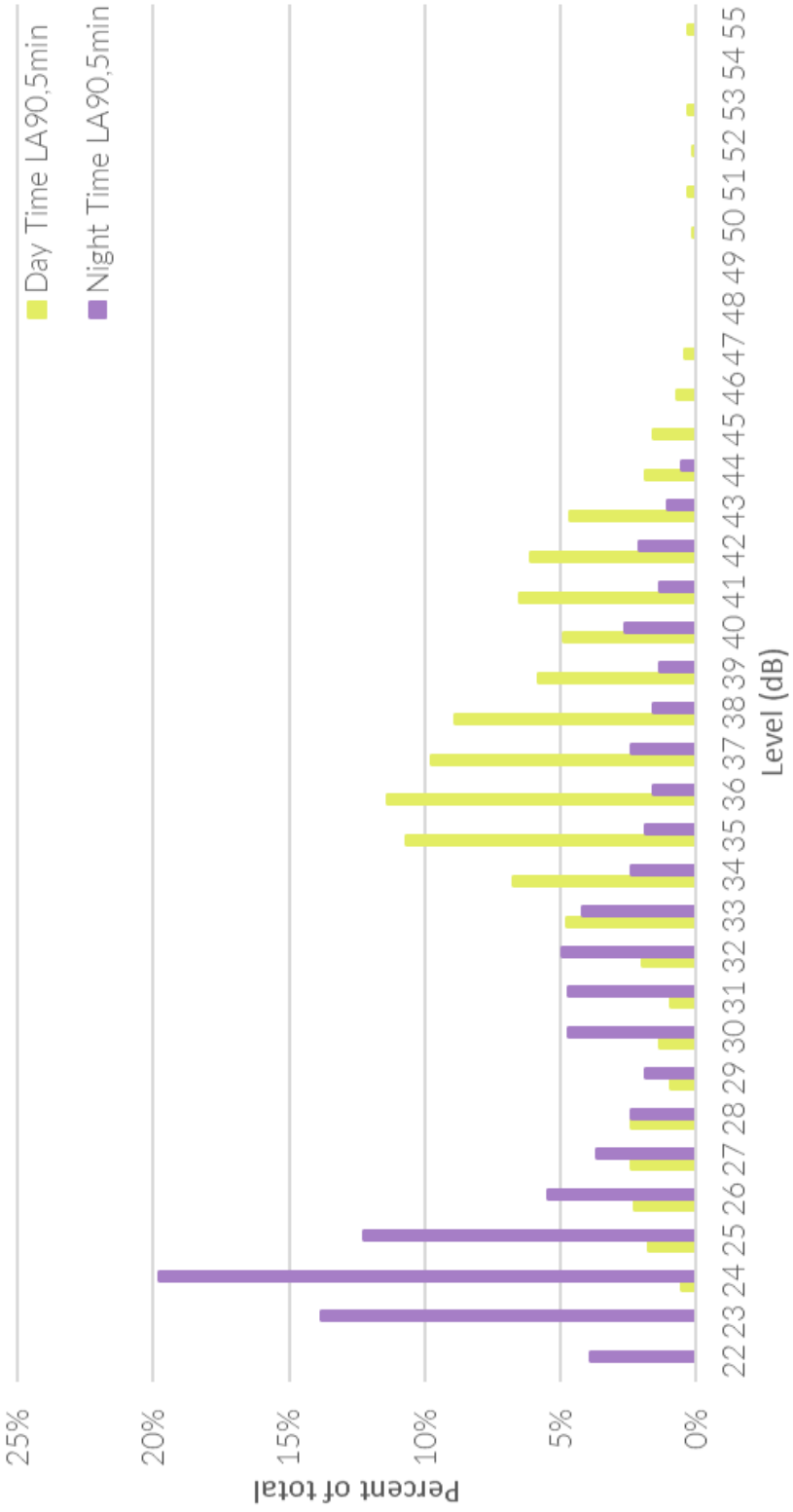
Measurement Date	Ambient sound level, $L_{Aeq,T}$	
	Daytime (0700-2300)	Night-time (2300-0700)
Thursday 30th March 2023	51	43
Friday 31st March 2023	52	42
Saturday 1st April 2023	49	43
Sunday 2nd April 2023	48	44
Monday 3rd April 2023	50	-
Typical	50	43

Table 5: Summary of ambient sound levels captured at Position L1.

Time history graph at unattended Position L1



Statistical analysis of background levels measured at Position L1.



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