



Polaris Acoustics | Acoustic Consultants

Noise Impact Assessment

46 High Street, West End
Hatch & Barrel Ltd

P1950-PA-ZZ-REP-01

31st March 2026



Report Detail

Report	Environmental Noise Impact Assessment
Site	46 High Street, West End
Client	Hatch & Barrel Ltd
Reference	P1950-PA-ZZ-REP-01

Revision History

Rev.	Issued Date	Notes	Prepared and checked by
01	31 st March 2026	Original Issue	Mathew Vaughan BA (Hons) MSc MIOA

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Executive Summary

Polaris Acoustics has undertaken an Environmental Noise Impact Assessment in support of the proposed change of use of the ground floor of 46 High Street, West End, Southampton, from retail use to a café/bar use, together with a small ancillary external seating area and replacement condenser plant. The assessment has considered the principal operational noise sources associated with the proposals, namely fixed plant, low-level internal background music, internal patron activity, and limited patron use of the proposed external seating area. The assessment has been undertaken with regard to the need to protect neighbouring amenity, particularly the residential accommodation at and adjacent to the site.

An unattended baseline noise survey was undertaken between 20th and 23rd March 2026 at a location representative of the nearest noise-sensitive receptor façades. The measured acoustic environment was found to be influenced principally by road traffic and general High Street activity. On the basis of the measured operational-hours dataset, a representative background sound level of 41 dB $L_{A90,1hr}$ has been adopted for the daytime/evening plant noise assessment.

Noise from the proposed replacement condenser has been assessed on a performance basis in accordance with BS 4142:2014+A1:2019. The assessment adopts a design criterion requiring the Rating Level, $L_{A,r,T,r}$, from fixed plant not to exceed 41 dB at the nearest residential receptor windows during plant operation. Subject to appropriate plant selection, anti-vibration isolation, suitable mounting and installation detailing, and verification of the final equipment prior to installation, fixed plant noise is expected to have a low impact in BS 4142 terms. That conclusion is necessarily subject to context and to the plant being installed and operated in accordance with the assessed design assumptions.

Amplified music and patron noise have been assessed separately, recognising that music, entertainment and people are outside the formal scope of BS 4142. The assessment has been undertaken on the basis of a modest café/bar operation with background music only and without live music, DJs, promoted events or other entertainment-led use. On that basis, the principal acoustic issue is not an externally propagating entertainment source of the kind associated with late-night licensed premises, but the potential for noise breakout and structure-borne transmission to affect the residential accommodation above and nearby façades.

With regard to internal music and patron activity, the assessment indicates that acceptable acoustic conditions can be achieved only where the separating floor/ceiling treatment assumed in the assessment is installed in full, flanking transmission is appropriately controlled, and the premises operate in the manner assessed. In particular, the conclusions rely upon background music remaining low-level and ancillary to the primary café/bar use and not escalating into an entertainment-led operation.

With regard to external patron noise, the proposed seating area is small and ancillary in scale. The assessment indicates that noise effects can be maintained at an acceptable level within the prevailing mixed-use High Street context provided that the external seating remains limited in



capacity and use, patrons are actively managed, and the operational assumptions set out within the report are secured through day-to-day management. The acceptability of this element is therefore dependent upon operational control as well as physical mitigation.

A cumulative appraisal of plant, music and patron noise has also been undertaken. This indicates that, under the assessed normal operating condition and with the identified mitigation in place, the combined operational noise contribution would not be expected to materially alter the prevailing acoustic environment or give rise to unacceptable adverse effects at neighbouring receptors. This conclusion is based on the assessed use and should not be taken to apply to materially different operating conditions, including louder amplified music, entertainment-led use, materially increased patron numbers, or uncontrolled frontage opening.

Overall, the proposed development is considered capable of operating in an acoustically acceptable manner, without giving rise to unacceptable adverse effects on neighbouring amenity, subject to the implementation and ongoing maintenance of the physical and operational mitigation identified in this report. In particular, this conclusion is contingent upon:

- **compliance with the plant noise design criterion;**
- **installation of the assessed separating floor/ceiling treatment and appropriate flanking control;**
- **operation of the premises as a background-music café/bar rather than an entertainment venue; and**
- **implementation of a proportionate Noise Management Plan governing music levels, patron management, use of the external seating area, and control of openings during operation.**

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1. Introduction

1.1. Overview

Polaris Acoustics has been appointed by Hatch & Barrel Ltd to undertake an Environmental Noise Impact Assessment in support of the proposed change of use of the ground floor of 46 High Street, West End, Southampton, SO30 3DR, from retail use to a café/bar use, together with a small ancillary external seating area and replacement condenser plant. The site lies within the administrative area of Eastleigh Borough Council, which is the Local Planning Authority for the purposes of this assessment.

The purpose of this report is to consider whether the proposed development can operate without giving rise to unacceptable adverse noise effects at nearby noise-sensitive receptors, having regard to the prevailing acoustic environment, the nature of the proposed use, and the mitigation capable of being secured through design and operation. The principal receptors considered within this assessment are the nearby residential properties, including the first-floor residential accommodation associated with the application site, together with nearby adjoining occupiers where relevant to acoustic context. The assessment considers the principal operational noise sources associated with the proposals, namely:

- fixed plant associated with the proposed replacement condenser;
- low-level internal background music;
- internal patron activity; and
- patron use of the proposed ancillary external seating area.

Given the differing acoustic characteristics of these sources, separate assessment approaches have been adopted. Fixed plant noise has been assessed in accordance with BS 4142:2014+A1:2019. Music noise and patron noise are outside the formal scope of BS 4142 and have therefore been considered separately, using an evidence-led source-path-receiver approach informed by the character of the proposed use, the relationship between source and receptor, the building construction, and relevant good-practice guidance. BS 4142 itself is not intended to be applied to indoor sound levels or façade design, and this report therefore distinguishes clearly between the external fixed plant assessment and the separate consideration of internal transmission and breakout associated with the proposed café/bar use.

The assessment has been prepared on the basis of the development proposals made available at the time of writing and reflects the scheme as described by the applicant, namely a modest café/bar operation with background music only and without live entertainment, DJs or other entertainment-led activities. The conclusions of this report should therefore be read in that context.



1.2. Planning Policy and Guidance Framework

This assessment has been undertaken with regard to national planning policy and guidance relating to noise, including the National Planning Policy Framework, Planning Practice Guidance on Noise, and the Noise Policy Statement for England. Taken together, these documents require noise to be considered as part of the overall planning balance and seek to ensure that development is appropriate for its location and does not give rise to unacceptable adverse effects on health, quality of life, or neighbouring amenity. The IEMA guidance similarly recognises that noise impact assessment within the planning system is not a purely formulaic exercise and requires transparent professional judgement in the application of standards and guidance to the circumstances of the site.

At a local level, the assessment has had regard to the adopted Eastleigh Borough Local Plan (2016–2036), in particular Policy DM23 (Pollution and Contamination), which requires that development does not result in unacceptable adverse effects arising from pollution, including noise, and that appropriate mitigation is incorporated where necessary to protect amenity. The report is therefore directed toward the central planning question of whether the proposed use, with mitigation, is acoustically acceptable in its context.

The technical assessment of fixed plant has been undertaken with reference to BS 4142:2014+A1:2019, which provides the recognised method for rating and assessing sound of an industrial and commercial nature at external receptors. In accordance with that standard, the plant assessment considers the relationship between Rating Level and representative background sound level, together with relevant contextual factors including the character of the sound, the prevailing acoustic environment, and the sensitivity of the receptor. Where the Rating Level does not exceed the background sound level, BS 4142 indicates this to be an indication of low impact, depending on context.

As BS 4142 does not provide the appropriate framework for assessing entertainment noise, people noise, or internal acoustic design, those matters have been considered separately. In that regard, reference has been made, where relevant, to BS 8233:2014 in relation to acoustic design principles and internal noise control, to the Control of Noise from Pubs and Clubs guidance in relation to music noise, and to the IEMA Guidelines for Environmental Noise Impact Assessment in relation to the assessment of wider noise effects and professional judgement. BS 8233 itself makes clear that the design process should identify relevant sources, establish design noise criteria, determine sound insulation and ventilation requirements, and implement appropriate control measures as part of an integrated approach.

Where propagation calculations have been required, these have been undertaken on a conservative basis using recognised acoustic principles appropriate to planning-stage assessment.

1.3. Fundamentals of Environmental Noise

Noise is commonly defined as sound that is unwanted by the recipient. While nuisance cannot be measured directly, the loudness, frequency spectrum, and character of sound can be quantified. Loudness is determined by both sound pressure and frequency, which can be measured instrumentally.

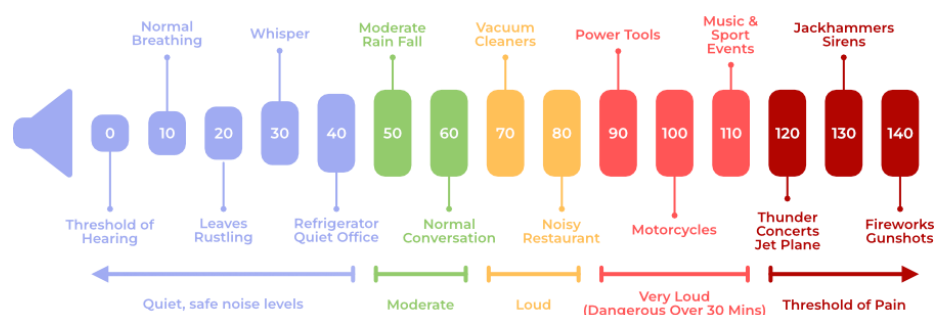
The human ear is sensitive to an exceptionally wide range of sound levels: the threshold of pain is more than one million times greater in sound pressure than the quietest audible sound. To accommodate this range, sound levels are expressed on a logarithmic decibel scale (dB), referenced to the threshold of hearing.

Because the ear does not respond equally across all frequencies, measured sound levels are typically frequency-weighted to approximate human hearing sensitivity. The most widely used metric is the A-weighted decibel, dB(A), which correlates closely with subjective human perception. In terms of perceptibility:

- An increase of 10 dB(A) (e.g. 60 → 70 dB(A)) is generally perceived as a doubling of loudness.
- A reduction of 10 dB(A) is perceived as a halving of loudness.
- A change of around 3 dB(A) is generally regarded as the minimum perceptible difference.

In addition to loudness, the character of noise plays an important role in perception. Sounds with tonal (distinct pitch), impulsive (sudden or sharp), or irregular features may be more intrusive than steady, broadband noise of the same level. Such characteristics are explicitly recognised in assessment methodologies, for example BS 4142, where penalties are applied to reflect their increased impact. **Figure 1.1** presents typical noise levels for context, and a glossary of acoustic terms is provided in **Appendix 1**.

Figure 1.1: Decibel Chart



2. Site Description

The application site comprises the ground floor of 46 High Street, West End, Southampton, SO30 3DR, located within an established mixed-use High Street environment in the administrative area of Eastleigh Borough Council. At the time of survey and assessment, the ground floor was in retail use as Mountbatten West End, with separate residential accommodation present at first-floor level above part of the building.

The proposals comprise the change of use of the ground floor from retail use within Use Class E(a) to a café/bar use operated by Hatch & Barrel Ltd. For the purposes of this assessment, the proposed use has been treated as a café/bar incorporating a drinking establishment element, rather than a standard retail or café-only use. The assessment has, however, been undertaken on the basis of the use as described by the applicant, namely a modest-scale operation with background music only and without live music, DJs, promoted events, or other entertainment-led activities. The conclusions of this report are therefore specific to that form of operation.

The proposed development would largely retain the existing built form. No significant external alterations are understood to be proposed other than the provision of a small ancillary seating area to the right-hand side of the frontage and the future replacement of the existing wall-mounted condenser unit on the western side elevation. Internally, the existing building structure is understood to remain largely unchanged, other than minor internal fit-out works including partitions toward the rear of the premises. The development proposals also indicate ancillary building services and commercial equipment associated with the operation, including refrigeration equipment and dispense systems, although the principal external plant item relevant to this assessment is the replacement condenser unit.

Based on the information made available at the time of writing, the intended opening hours are anticipated to be:

- Monday to Wednesday: 07:00 to 18:00, with potential extension to 21:00;
- Thursday: 07:00 to 21:00;
- Friday to Saturday: 07:00 to 22:00;
- Sunday: 08:00 to 20:00.

For acoustic assessment purposes, the principal operational noise sources associated with the proposals are considered to be:

- fixed plant associated with the replacement condenser unit;
- internal amplified sound in the form of low-level background music only;
- internal patron activity associated with café/bar use; and
- external patron activity associated with the proposed ancillary seating area.

The surrounding area is characterised by a mixed commercial and residential townscape. High Street activity, road traffic, pedestrian movement, and nearby commercial uses all contribute to the prevailing acoustic environment. Notwithstanding that mixed-use context, the site is acoustically sensitive because noise-sensitive residential receptors are located in very close proximity to the proposed use, including residential accommodation immediately above the premises and neighbouring residential property to the east. In practical terms, this means that the key acoustic issues for the scheme are not limited to external environmental propagation, but also include vertical transmission through the separating structure, possible breakout through the building envelope and openings, and direct short-range conversational noise from the seating area.

The nearest and most relevant noise-sensitive receptors for the purposes of this assessment are identified as follows:

- R1: 46A High Street – first-floor residential accommodation associated with / above the application site;
- R2: 48 High Street – nearby residential property to the east; and
- R3: 44 High Street – adjoining office premises to the west, considered on a precautionary contextual basis due to proximity, although not treated as the principal controlling receptor for residential amenity assessment.

Of these receptors, the first-floor residential accommodation at 46A High Street is considered particularly important because of its immediate relationship with the proposed use and its potential exposure to structure-borne and airborne noise arising from internal operation of the premises. The nearby residential property at 48 High Street is also relevant in relation to external plant noise and noise from the proposed frontage / seating area. Whilst the adjacent office at 44 High Street is less sensitive than residential accommodation in planning noise terms, it has been identified within the report to reflect the close physical relationship between the neighbouring occupiers and the application site.

The site location plan and receptor plan are provided in **Figures 2.1** and **2.2** respectively.

Figure 2.1: Site Location Plan

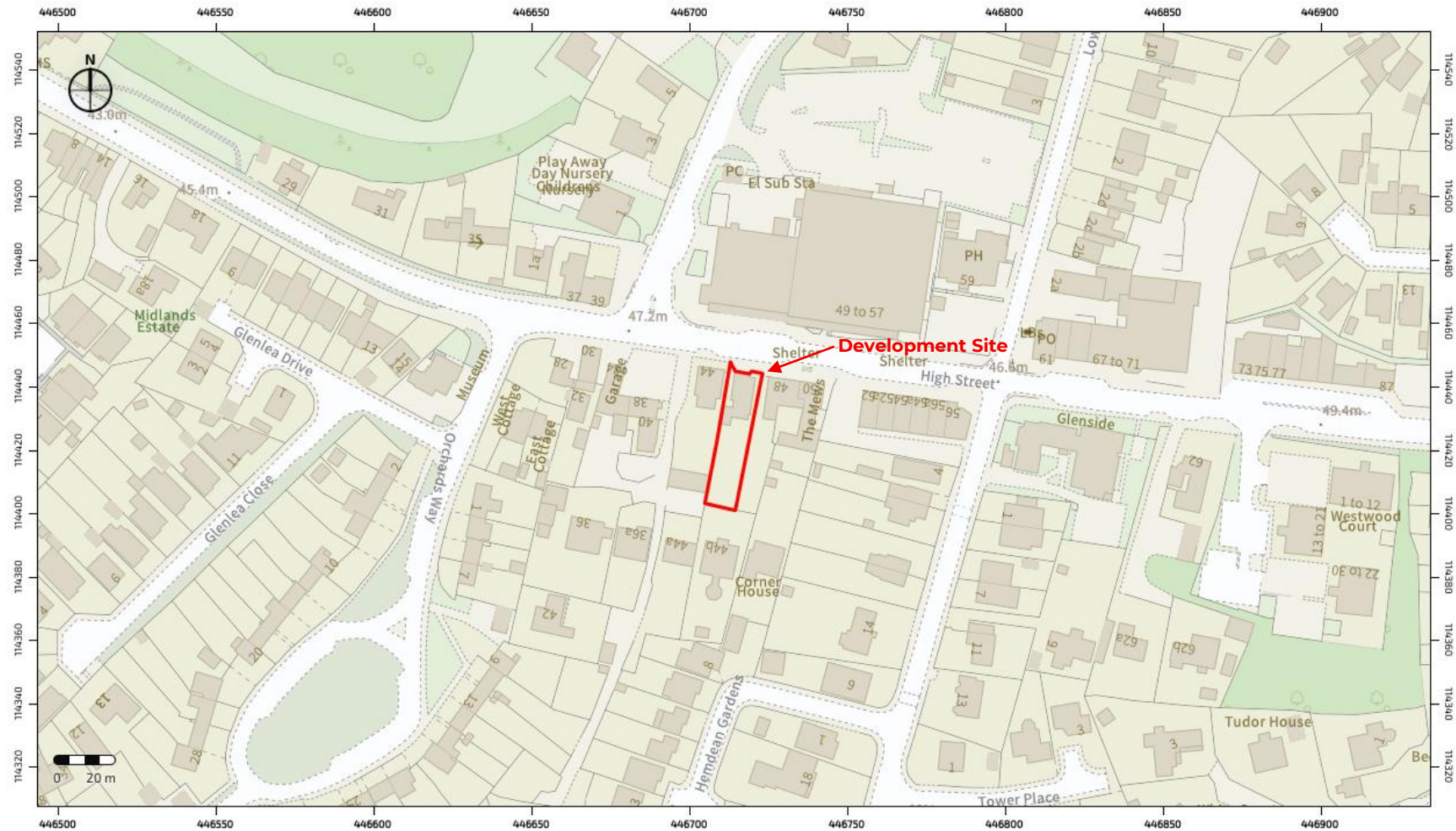
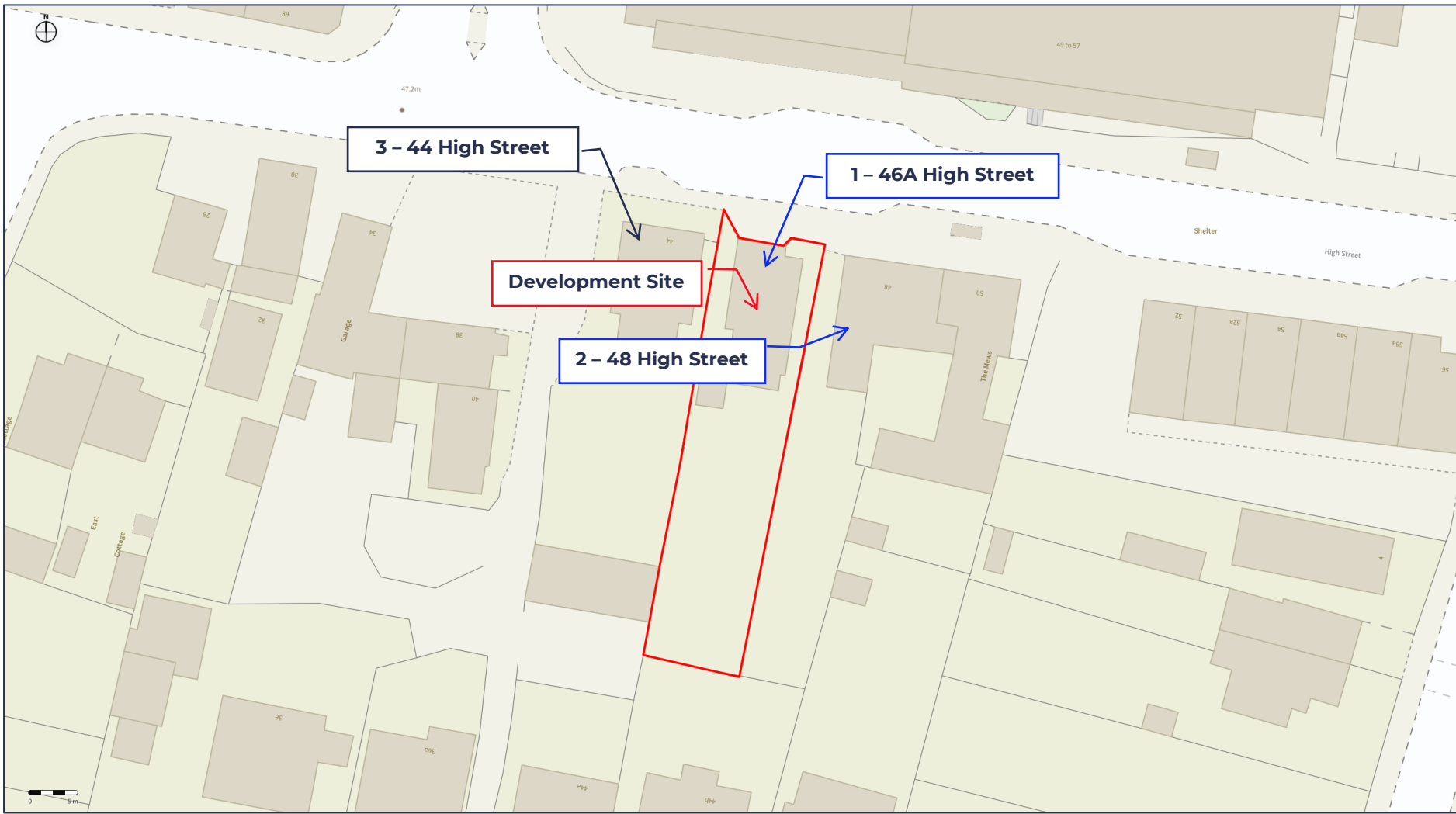


Figure 2.2: Site Layout and Receptor Locations



3. Noise Survey

3.1. Overview

To inform the acoustic assessment, an environmental noise survey was undertaken by Polaris Acoustics to establish the prevailing ambient and background sound climate at a location representative of the nearest and most relevant noise-sensitive receptors. The survey was undertaken between Friday 20th March 2026 and Monday 23rd March 2026 and was designed to capture both weekday and weekend conditions during the periods relevant to the proposed operation of the development.

The purpose of the survey was twofold. First, it was used to characterise the existing acoustic environment at and around the site, including the influence of road traffic and general High Street activity. Second, it was used to derive a representative background sound level for the BS 4142 assessment of the proposed replacement condenser unit. In accordance with BS 4142, the survey was therefore directed toward the period during which the proposed fixed plant may operate, rather than being treated as a generic environmental noise exercise.

The nearest and most relevant receptors in acoustic terms are the residential accommodation at 46A High Street and the nearby residential property at 48 High Street. The adjacent office at 44 High Street was also considered when selecting the survey position, given its proximity to the application site, although it is not the principal controlling receptor for residential amenity assessment.

3.2. Instrumentation and Methodology

All measurements were undertaken using an ACOEM Fusion 4G sound level meter (serial no. 14844), which conforms to the requirements for a Class 1 precision sound level meter. The instrument was field calibrated before and after deployment using an ACOEM/01dB Cal 01 acoustic calibrator (serial no. 990456) generating a reference level of 94 dB at 1 kHz. No significant calibration drift was observed over the survey period. Calibration certification and equipment details are provided in **Appendix 2**.

The survey was undertaken in general accordance with BS 7445-2:1991 for the acquisition of environmental noise data relevant to land use planning. The approach also reflects the general principles of BS 4142 in relation to obtaining representative background sound data for the period of interest, including the need to understand the prevailing acoustic environment, select a representative location, and obtain sufficient data to describe the range of measured background sound levels.

The logger was configured for unattended environmental noise monitoring with suitable weather protection and windshield. Broadband indices and spectral data were recorded to allow subsequent review of overall sound levels, background sound levels, temporal variation



and octave-band content. This is consistent with the general good-practice approach described in the ANC technical note, which recognises the value of logged parameters and time-history review in understanding the sources contributing to the measured sound climate.

3.3. Survey Details

Baseline measurements were undertaken at Measurement Position MP1, shown on **Figure 3.1**. MP1 was located within the side accessway adjacent to the application site and was selected as the most representative practicable position for the nearest relevant receptor façades, namely 46A High Street, 48 High Street, and, on a contextual basis, 44 High Street.

The monitoring position was chosen because it is influenced by the same local sound field affecting the nearest side-elevation receptor windows, including sound propagating from High Street and associated local activity. It is therefore considered appropriate for characterising the prevailing acoustic environment relevant to the assessment. However, the position is not a perfect free-field surrogate for every receptor window, nor is it directly façade-mounted. In accordance with BS 4142, where measurements are not undertaken at the exact assessment location, the key requirement is that the residual sound climate should be acoustically comparable and that the reasoning for the chosen position is clearly reported. That is the basis on which MP1 has been adopted.

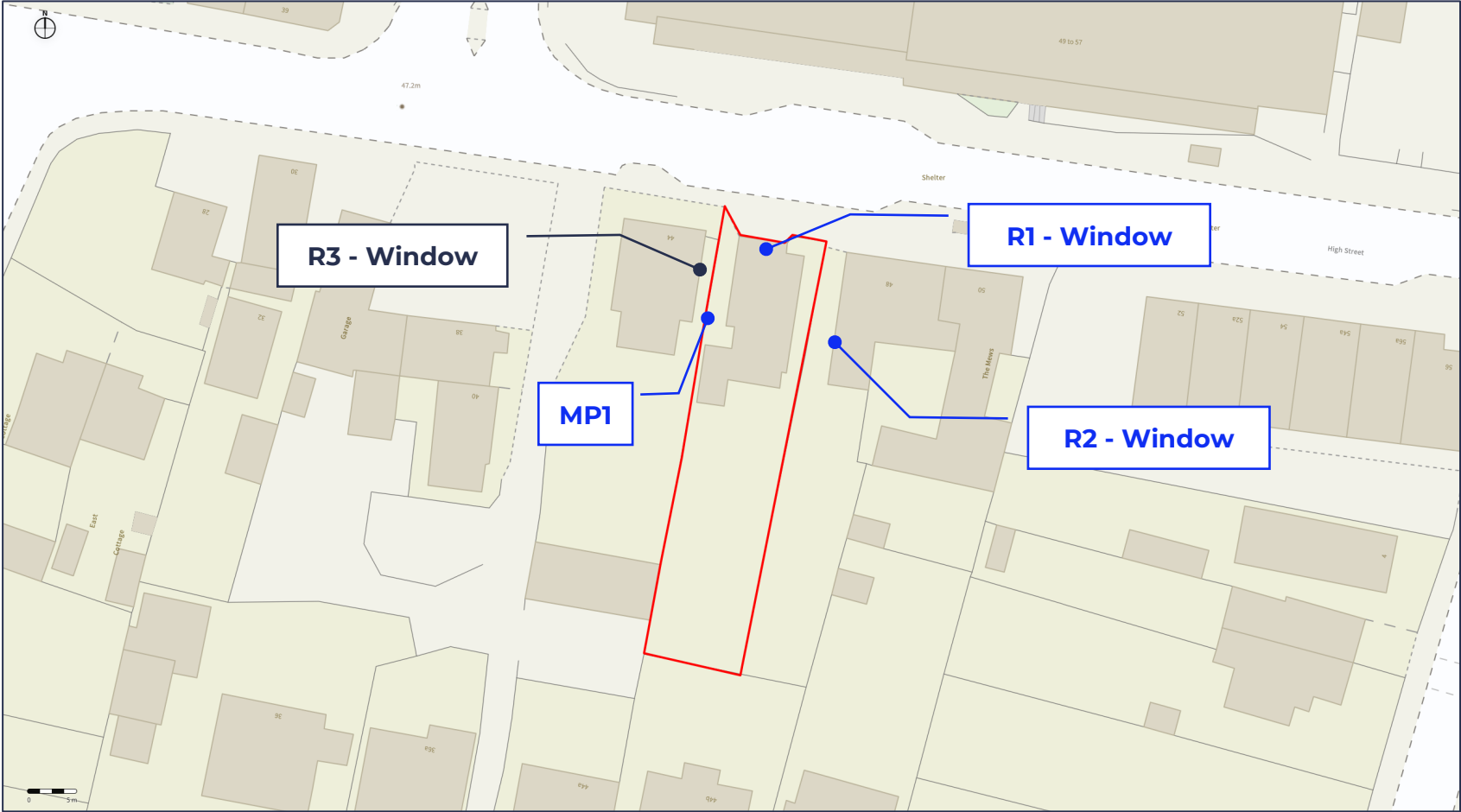
In view of the local geometry and the absence of a standardised façade-monitoring arrangement at the relevant assessment position, the measured sound levels have been adopted on an as-measured basis. No generic façade correction has been applied. This is considered the most robust and transparent approach in the circumstances, as it avoids introducing an assumed correction that may not properly reflect the actual propagation conditions within the side accessway and at the nearby receptor façades.

The sound level meter was mounted on a tripod at a height of approximately 1.2 m above local ground level. The prevailing sound environment at the measurement position was observed to be dominated primarily by road traffic along High Street and surrounding roads, together with intermittent contributions from pedestrian activity. In accordance with BS 4142, the sources comprising the acoustic environment have been described so that the context of the subsequent plant assessment is clear.

The survey was undertaken by Mathew Vaughan, Acoustic Consultant trading as Polaris Acoustics. Mathew holds a BA (Hons) in Digital Music and an MSc in Applied Acoustics from Southampton Solent University and is a Full Member of the Institute of Acoustics (MIOA). He has several years' professional experience in environmental acoustics and over a decade of experience in sound measurement and analysis.



Figure 3.1: Noise Monitoring Position and Nearest NSR Windows



3.4. Meteorological Conditions

Meteorological conditions during the survey period were suitable for environmental noise measurements, with conditions generally characterised by dry weather and light winds.

As direct measurement of meteorological parameters at the monitoring location was not undertaken, reference has been made to data obtained from a representative nearby weather station. This indicates that wind speeds were consistently low throughout the survey period, typically in the range of approximately 1–3 m/s, and did not exceed 5 m/s.

No precipitation was observed during the monitoring period, and site observations confirmed that conditions remained stable and suitable for noise measurement, with no adverse meteorological influences affecting the recorded data.

The measurement system was fitted with an environmental windshield and appropriate weather protection to minimise the influence of wind-induced noise.

A summary of the prevailing meteorological conditions is provided in **Table 3.1**.

Table 3.1: Summary of Weather Conditions

Parameter	Summary
General	Dry and stable conditions representative of the time of year
Temperature	Approximately 0°C to 14°C
Wind Speed	Light winds, typically 1–3 m/s
Precipitation	No precipitation observed during monitoring

3.5. Measurement Results

Table 3.2 summarises the measured broadband noise levels recorded at MPI over the monitoring period. **Table 3.3** presents the corresponding time-averaged ambient sound levels together with the measured octave-band sound pressure levels. The full logged dataset is provided in **Appendix 3**, and the overall time history is illustrated in **Figure 3.2**.

Table 3.2: Summary of the measured broadband noise levels

Measure Period	Daytime (07:00 – 23:00)		Nighttime (23:00 – 07:00)		
	Ambient dB $L_{Aeq,1hr}$	Background dB $L_{A90,1hr}$	Ambient dB $L_{Aeq,15min}$	Maxima dB L_{AFmax}	Background dB $L_{A90,15min}$
20/03/2026 to 21/03/2026	53.2 – 58.0	39.2 – 49.5	42.3 – 55	66.6 – 80.2	30.8 – 40.7
21/03/2026 to 22/03/2026	53.1 – 58.9	39.7 – 48.6	41.0 – 54.4	54.0 – 81.5	31.6 – 42.8
22/03/2026 to 23/03/2026	50.8 – 58.3	36.5 – 47.7	40.4 – 58.3	62.6 – 76.7	31.0 – 47.1
23/03/2026	56.5 – 61.5	46.9 – 49.4	-	-	-

Table 3.3: Summary of the ambient and 1/1 octave band noise levels

Period (Hours)	Ambient SPL dB $L_{Aeq,T}$	Unweighted Sound Pressure Level dB, $L_{eq,T}$ @ Octave Band Centre Frequency, Hz							
		63	125	250	500	1k	2k	4k	8k
Measurement Position 1 (MP1) ~ 20/03/2026 – 21/03/2026									
Daytime (07:00 – 23:00)	56.5	63.4	60.1	57.2	52.5	54.6	49.3	39.6	21.8
Nighttime (23:00 – 07:00)	50.8	52.5	50.0	51.2	45.7	49.4	44.4	35.6	21.3
Measurement Position 1 (MP1) ~ 21/03/2026 – 22/03/2026									
Daytime (07:00 – 23:00)	57.5	62.8	60.5	58.4	53.4	55.6	50.6	41.9	21.5
Nighttime (23:00 – 07:00)	50.0	52.0	46.8	46.2	44.4	48.8	43.7	35.7	21.1



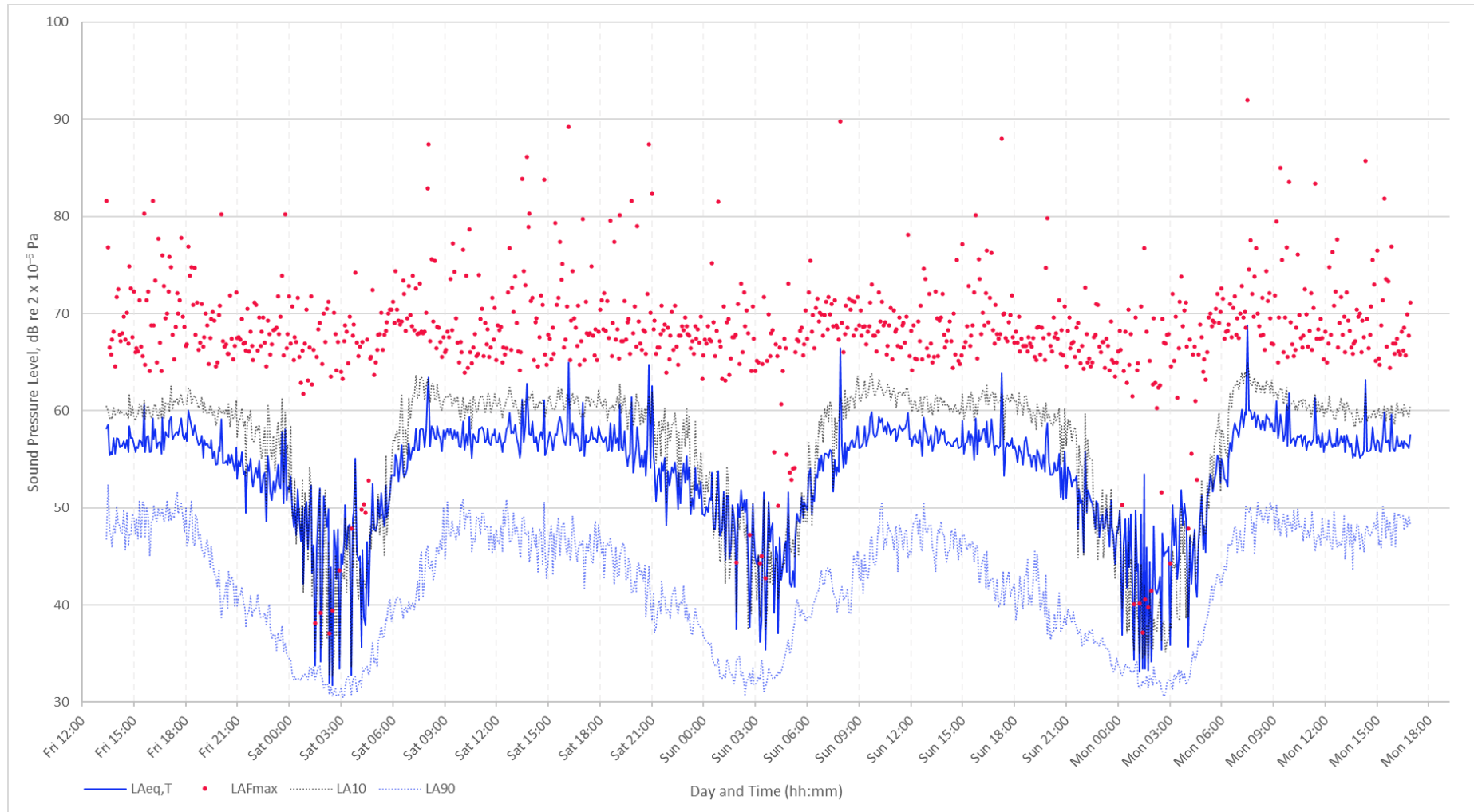
Period (Hours)	Ambient SPL dB $L_{Aeq,T}$	Unweighted Sound Pressure Level dB, $L_{eq,T}$ @ Octave Band Centre Frequency, Hz							
		63	125	250	500	1k	2k	4k	8k
Measurement Position 1 (MP1) ~ 22/03/2026 – 23/03/2026									
Daytime (07:00 – 23:00)	56.7	61.3	58.6	55.4	51.8	55.3	50.1	40.1	21.0
Nighttime (23:00 – 07:00)	50.5	52.8	49.2	46.8	45.3	49.2	44.0	35.1	21.2
Measurement Position 1 (MP1) ~ 23/03/2026									
Daytime (07:00 – 09:00)	58.1	64.1	59.8	57.1	54.4	56.4	51.4	41.6	20.5

The measured data indicate that the site is principally influenced by road traffic noise associated with High Street and the surrounding road network. This source governs both the ambient and background sound climate and produces a relatively consistent underlying noise floor across the daytime and evening periods. Local pedestrian activity and general High Street commercial activity contribute intermittently, but do not appear to dominate the overall measured acoustic environment.

Across the monitored daytime periods, ambient sound levels were typically in the order of the low-to-upper 50 dB $L_{Aeq,T}$, with background sound levels generally falling within the upper 30s to upper 40s dB $L_{A90,T}$. During the quieter night-time periods, ambient levels reduced but remained influenced by the same underlying traffic-dominated sound climate, with intermittent maxima associated principally with discrete vehicle movements and other short-duration local events. The measured maximum sound levels were not persistent and did not define the prevailing sound environment.

The time-history data show a clear diurnal pattern, with elevated and relatively stable sound levels during the daytime, followed by a reduction overnight. Importantly, whilst quieter periods do occur, the monitoring does not indicate prolonged very low-noise conditions of the kind sometimes associated with highly sheltered or rural environments. That finding is relevant to the interpretation of likely operational effects and supports the characterisation of the site as an existing mixed-use, traffic-influenced High Street location.

Figure 3.2: Noise Measurements



3.6. Background Sound Levels

3.6.1. Overview

Background sound levels have been determined in accordance with BS 4142:2014+A1:2019, with reference to the Institute of Acoustics Little Red Book of Acoustics (4th Edition, 2024), which describes the “LRB Method” for selecting representative background sound levels from measured datasets.

BS 4142 recognises that background sound level, $LA_{90,T}$, is inherently variable and does not comprise a single fixed value. Clause 8.1.4 states that “there is no ‘single’ background sound level as this is a fluctuating parameter” and that the value adopted for assessment should be representative of the period being assessed. The Standard further advises that the selected value should reflect the distribution of measured data and not be based solely on minimum, average, or modal values.

3.6.2. Definition of Assessment Period

For this assessment, the relevant operational period has been defined as 07:00 to 22:00, reflecting the proposed hours of operation:

- Monday to Wednesday: 07:00 to 18:00, with potential extension to 21:00;
- Thursday: 07:00 to 21:00;
- Friday to Saturday: 07:00 to 22:00;
- Sunday: 08:00 to 20:00.

To derive a representative background sound level for this operational period, all measured hourly $LA_{90,1hr}$ values between 07:00 and 22:00 were extracted from the survey period spanning Friday 20 March 2026 to Monday 23 March 2026 and analysed as a single dataset.

This approach ensures that the adopted value reflects the overall operational sound climate, incorporating both weekday and weekend conditions. No evidence was identified to indicate materially different background sound environments between individual days that would justify subdivision of the dataset. Accordingly, analysis of the combined dataset is considered the most robust and representative approach in accordance with BS 4142.

3.6.3. Application of the LRB Method

Figure 3.3 presents the distribution of measured $LA_{90,1hr}$ values across the defined operational period. The dataset indicates that background sound levels span a range of approximately 40 dB to 49 dB $LA_{90,1hr}$, with a concentration of values in the mid-to-upper part of this range.

In accordance with the LRB Method, candidate background sound levels have been assessed using the 45% test, whereby a candidate value is rejected if more than 45% of measured values fall below that level. This approach ensures that the selected value is not positioned

disproportionately high within the dataset and is representative of typical background conditions.

Candidate values were considered sequentially across the distribution. Values within the range 42 dB to 49 dB(A) were found to exceed the 45% threshold and were therefore rejected, as a substantial proportion of measured values fall below these levels.

A candidate value of 41 dB(A) is the first value within the measured distribution that satisfies the 45% criterion, with no more than 45% of measured values falling below this level. In accordance with the LRB Method, this value is therefore considered representative of the prevailing background sound climate during the operational period.

3.6.4. Adopted Background Sound Level

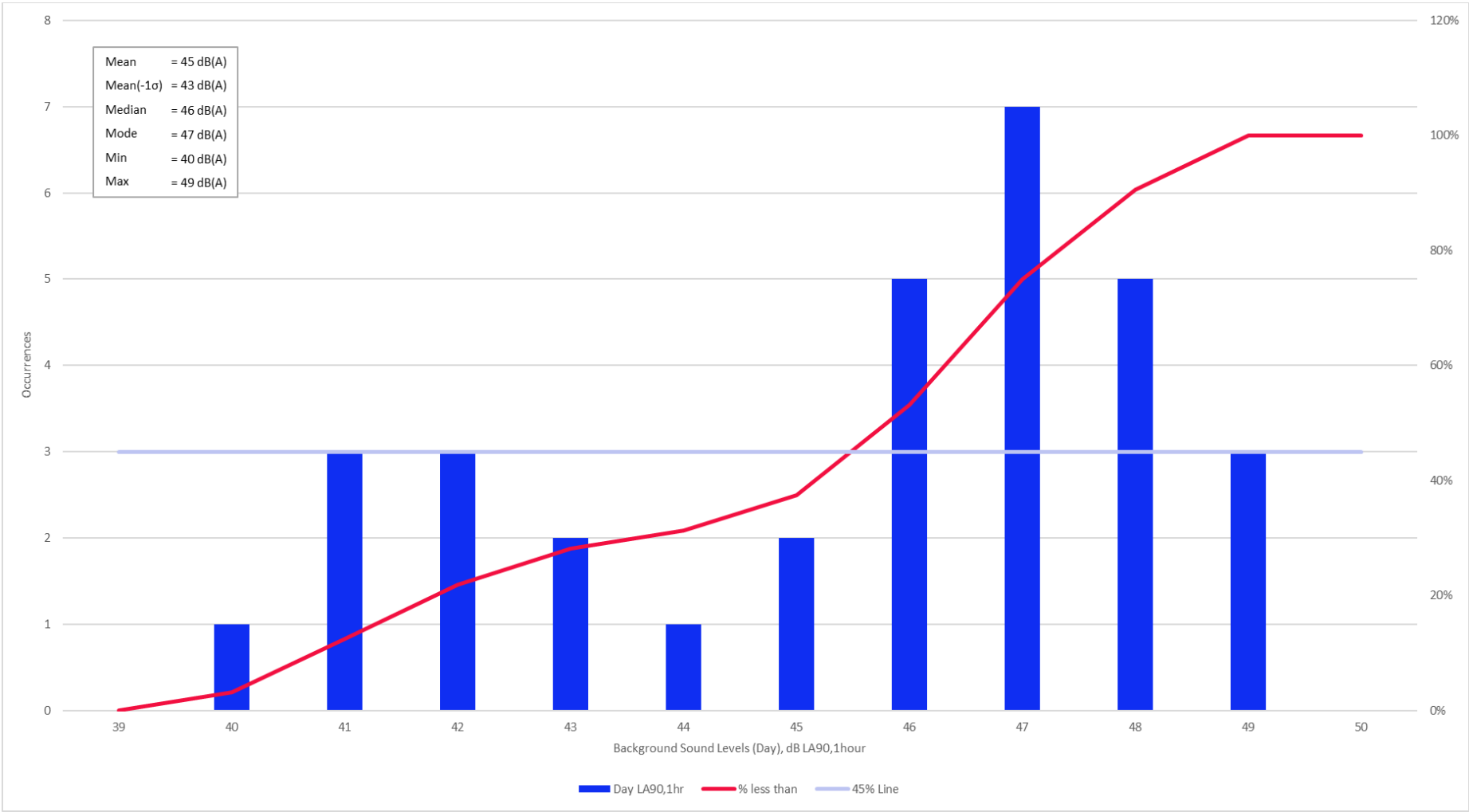
Accordingly, the representative background sound level adopted for the purposes of the BS 4142 assessment is:

Representative Background Sound Level = 41 dB $L_{A90,1hr}$

This value has been derived from the full operational-hours dataset using a structured and transparent methodology. Whilst higher values occur more frequently within the dataset, adoption of such values would not satisfy the 45% criterion and would therefore not be consistent with the LRB Method. The selected value is considered to provide a robust and policy-compliant basis for the assessment.

It is acknowledged that the modal and median values within the dataset are higher than the adopted value. However, BS 4142 does not require the background sound level to reflect the most frequently occurring condition; rather, it must be representative of the overall distribution. The LRB Method provides an objective means of achieving this by preventing selection of values that sit disproportionately high within the dataset. The adopted value of 41 dB(A) therefore reflects a compliant and methodologically robust interpretation of the measured data.

Figure 3.3: Background Sound Levels – Operational Hours – $L_{A90,1hr}$



4. Noise Impact Assessment

4.1. Overview and Scope

This section sets out the methodology adopted to assess the likely operational noise effects associated with the proposed café/bar use at 46 High Street, West End. The assessment considers the principal noise sources arising from the operation of the development and evaluates their likely effect on the nearest and most relevant noise-sensitive receptors. The purpose of the assessment is to determine whether the proposed use, operating in the manner described by the applicant and subject to appropriate mitigation, would give rise to unacceptable adverse effects on neighbouring amenity.

The principal operational noise sources considered are:

- fixed plant associated with the proposed replacement condenser unit;
- internal amplified sound in the form of low-level background music only;
- internal patron activity associated with the normal operation of the café/bar; and
- patron use of the proposed ancillary external seating area.

These sources differ materially in acoustic character, transmission pathway and regulatory treatment. Accordingly, they have not been forced into a single assessment framework. Fixed plant associated with building services equipment has been assessed in accordance with BS 4142:2014+A1:2019, which provides the recognised method for rating and assessing sound of an industrial and commercial nature at external receptors. Music noise and patron noise fall outside the formal scope of BS 4142 and have therefore been considered separately using a source–path–receiver approach informed by the scale and character of the proposed use, the relationship between the premises and the surrounding receptors, the likely acoustic performance of the building envelope and separating structure, and relevant supporting guidance.

For fixed plant noise, the key issue is the potential for externally radiated sound from the replacement condenser to affect nearby residential façades. That element of the assessment is therefore based on comparison of the BS 4142 Rating Level with the representative background sound level established from the baseline survey, together with relevant consideration of acoustic character and context.

For internal music and internal patron activity, the principal issue is different. In this instance, the controlling receptor is the residential accommodation at 46A High Street above the premises, and the key acoustic pathway is transmission through the separating floor/ceiling construction together with any associated flanking transmission. Breakout via the shopfront and entrance door is also relevant but is secondary to the issue of short-range transmission to the immediately adjoining residential accommodation. The assessment of these sources

has therefore focused on whether the stated form of operation can be accommodated within the building, rather than treating the premises as though it were a detached external entertainment source.

For the proposed external seating area, the relevant issue is the potential for direct conversational noise to affect nearby receptors within the existing mixed-use High Street context. The acceptability of this element depends not only on source level, but also on the modest scale of the seating area, the duration and pattern of use, the local acoustic context, and the extent to which the use is controlled in practice. In this regard, professional judgement is required, consistent with the broader principles of the IEMA guidance, which recognises that the extent of effect cannot always be determined solely by reference to a single numerical threshold and must instead be justified by reference to receptor sensitivity, noise character and behavioural consequence.

The assessment has been undertaken on the basis of the development as currently described by the applicant, namely a modest café/bar use with background music only and without live music, DJs, subwoofers, promoted events or other entertainment-led activity. The conclusions of this section are therefore contingent upon the premises operating in that manner. They should not be taken to apply to materially different operating conditions or to a more intensive licensed entertainment use.

The following sub-sections consider each source in turn before drawing the findings together in a cumulative appraisal of likely overall operational effect.

4.2. Plant Noise

4.2.1. Assessment Basis

Noise from the proposed replacement condenser unit has been assessed in accordance with BS 4142:2014+A1:2019, which provides the recognised method for rating and assessing sound of an industrial and commercial nature, including fixed building services plant, at external receptors in residential and mixed-use environments. The assessment considers the likely Rating Level, $L_{A,r,T,r}$, of the proposed plant at the nearest relevant residential receptors and compares that value with the representative background sound level derived from the baseline survey.

For the purposes of this assessment, the representative background sound level for the relevant daytime/evening plant operating period has been adopted as 41 dB $L_{A90,1hr}$, as set out in Section 3.6. In BS 4142 terms, where the Rating Level does not exceed the representative background sound level, this is an indication of low impact, subject to consideration of acoustic context. The plant assessment has therefore been framed around a receptor-based design criterion requiring compliance with that benchmark.

4.2.2. Existing and Proposed Plant

An existing wall-mounted condenser unit is present on the western side elevation of the building. The applicant has advised that this unit is decommissioned and will not be returned to service, and that any future operation of the premises would instead be served by a replacement condenser of similar duty. At the time of writing, no final make, model, duty schedule or manufacturer acoustic data for the replacement unit has been made available.

In the absence of confirmed product data, the assessment has been undertaken on a performance-based basis. This is the appropriate approach at planning stage, as it avoids undue reliance on unverified assumptions regarding a redundant existing unit and instead defines a clear acoustic design requirement that any replacement plant must satisfy. The purpose of the assessment is therefore not to approve a specific item of equipment, but to establish the maximum acceptable plant noise performance at the nearest relevant receptors.

4.2.3. Identification of Receptors

The principal receptors for the purposes of the plant noise assessment are the nearby residential properties at 46A High Street and 48 High Street. These receptors are considered to represent the most sensitive and appropriate assessment locations, having regard to the nature of the source, the proximity of the residential windows to the proposed plant location, and the planning requirement to protect neighbouring residential amenity.

An adjacent office use at 44 High Street is located in closer proximity to the proposed condenser position and has been considered on a precautionary basis when reviewing the site layout. However, it has not been adopted as the controlling receptor for the BS 4142 assessment. In this case, the residential receptors remain the most appropriate assessment locations because they are materially more sensitive to external fixed plant noise than the adjoining office use. In addition, the office is occupied primarily during daytime periods and sits within an existing commercial High Street setting. In context, a condenser designed to satisfy the residential plant noise criterion is not expected to give rise to material adverse effects at that office location.

4.2.4. Plant Noise Criterion

Any replacement condenser shall be selected, installed and operated such that the BS 4142 Rating Level, $L_{A,r,T,r}$, does not exceed 41 dB at the nearest residential receptor windows during the relevant operating period. This represents the controlling plant noise design criterion for the development.

For the avoidance of doubt, the above requirement relates to the Rating Level of the specific sound, inclusive of any relevant acoustic feature correction for tonality, impulsivity, intermittency or other acoustically distinguishing characteristic, where such characteristics are perceptible at the receptor in accordance with BS 4142. The criterion is therefore not merely a source sound power target or a simple sound pressure threshold at the unit itself, but a receptor-based operational performance standard.

To achieve compliance with this criterion, the following minimum requirements shall apply:

- the condenser shall operate only during the permitted operational hours of the premises and shall not run during night-time periods unless a separate night-time acoustic assessment demonstrates compliance with an appropriate night-time criterion;
- any final plant selection shall be verified against the above receptor-based limit using manufacturer acoustic data and a site-specific propagation assessment prior to installation;
- the verification shall consider the maximum normal operating duty likely to occur in practice, including any condition in which the unit may operate at elevated load;
- the unit shall be mounted on suitable anti-vibration isolation brackets or equivalent proprietary isolators;
- all associated pipework, fixings and penetrations shall be detailed to minimise structure-borne vibration and regenerated noise within the building fabric; and
- where tonal, impulsive or other acoustically distinguishing characteristics are present at the receptor, the relevant BS 4142 acoustic feature correction shall be applied.

4.2.5. Indicative Plant Selection Guidance

The existing condenser position on the western side elevation appears capable, in principle, of accommodating a suitably selected modern replacement unit, subject to compliance with the receptor-based criterion set out above. The principal residential receptor windows are not understood to directly overlook the plant position, and the local building form provides at least some degree of geometric screening to the most relevant residential façades. In addition, the prevailing acoustic environment is not one of very low residual sound, but rather an existing mixed-use, traffic-influenced High Street setting.

On that basis, and for the purposes of plant selection only, it is considered reasonable to expect that a replacement condenser with a maximum external noise emission broadly in the region of 44 dB(A) sound pressure level at 1 metre or approximately 63 dB(A) sound power level may be capable of meeting the receptor-based requirement, subject to the final installation arrangement, acoustic character and propagation path. However, this should be treated as indicative guidance only and not as a compliance limit in its own right. Acceptability ultimately depends on the sound at the receptor, not on the nominal level quoted at source.

4.2.6. Assessment of Likely Effect

On the basis of the adopted representative background sound level of 41 dB $L_{A90,1hr}$, the mixed-use High Street context of the site, and the ability to impose a receptor-based performance limit on the replacement condenser, the proposed plant is considered capable of being designed and installed such that its noise impact is low in BS 4142 terms. This conclusion is contingent upon the final plant selection and installation satisfying the Rating Level criterion at the nearest residential receptor windows, including any applicable acoustic feature correction.

The conclusion is also supported by the broader acoustic context. The baseline survey indicates an existing environment influenced principally by road traffic and general High Street activity, with typical daytime ambient sound levels materially above the adopted background sound level. In that context, a suitably selected and correctly installed condenser operating only during the assessed daytime/evening period would not be expected to materially alter the existing acoustic character or give rise to unacceptable adverse effects on neighbouring amenity.

Accordingly, subject to compliance with the above criterion and installation requirements, replacement condenser noise is considered acoustically acceptable in planning terms.

4.3. Music Noise

4.3.1. Assessment Basis

Noise associated with amplified music has been considered separately from the fixed plant assessment, recognising that music and other entertainment noise fall outside the formal scope of BS 4142:2014+A1:2019 and require a different assessment approach. In this instance, the principal concern is not long-range environmental propagation of entertainment noise, but the potential for airborne and structure-borne transmission of internal background music to affect the residential accommodation at 46A High Street, located immediately above the premises.

The assessment has therefore been undertaken on a source–path–receiver basis. In broad terms, this considers:

- the likely internal music source level within the proposed premises;
- the likely performance of the separating floor/ceiling construction between the commercial unit and the residential accommodation above; and
- the extent to which the resulting transmitted level would be likely to affect amenity, having regard to the modest scale and intended operating character of the use, together with relevant contextual benchmarks.

The assessment is based on the use as described by the applicant, namely a modest café/bar operation with background music only, and without live music, DJs, dancefloor use, subwoofers, or other entertainment-led amplification. The conclusions set out below are contingent upon the premises operating in that manner and should not be taken to apply to a more intensive licensed entertainment use.

4.3.2. Internal Music Source Level

At the time of writing, no final loudspeaker specification or sound system layout has been made available. For the purposes of a robust design-stage appraisal, an internal music level of 72 dB $L_{Aeq,1hr}$ has therefore been adopted as a reasonable upper-bound source assumption representative of background amplified music within a modest seated café/bar environment. This source level is not intended to represent nightclub, late-bar or entertainment-led operation; rather, it reflects a conservative planning-stage input for a venue where music is ancillary to normal customer use.

That source assumption is considered reasonable in the present context and is intended to represent a conservative upper-bound operating scenario for the most noise-intensive normal use reasonably associated with the proposed background-music café/bar, and the assessment does not rely upon average or lightly occupied conditions in order to demonstrate acceptability.



The Institute of Acoustics pubs and clubs literature demonstrates that measured internal music levels in entertainment-led venues are often materially higher, commonly in the region of 90 to 95 dB $L_{Aeq,T}$ during busy periods and substantially above that in nightclub settings. The proposed development is not of that character, and the adoption of 72 dB $L_{Aeq,1h}$ therefore represents a cautious but proportionate design basis for the type of use being assessed.

To minimise the risk of structure-borne transmission, any loudspeakers installed within the premises should not be fixed directly to the existing separating ceiling or other elements likely to excite the floor/ceiling structure serving the flat above. Ceiling-mounted loudspeakers should be avoided. Any installed system should be modest in scale and detailed so as to minimise direct structural excitation and low-frequency breakout.

Whilst patron activity and low-level amplified sound are inherently more variable than fixed mechanical plant, the assessment has been undertaken on the basis of a conservative upper-bound operating scenario representative of the most noise-intensive normal use reasonably associated with the proposed café/bar. The assessment is therefore intentionally precautionary and does not rely upon average, lightly occupied, or especially benign operating conditions in order to demonstrate acceptability. The conclusions reached should be read in the context of the use as proposed, namely a modest café/bar operation with background music only and without entertainment-led activity.

4.3.3. Separating Floor and Ceiling Construction

The applicant has advised that the existing ceiling will be retained and that a new double-boarded MF ceiling will be installed below the existing joists using acoustic hangers, with approximately 200 mm mineral wool infill, and with the hanger arrangement passing through via access hatches without rigid contact with the existing ceiling boards. On the information currently available, that upgraded construction forms the principal mitigation measure controlling transmission of internal music noise to the residential accommodation above.

A design-stage sound insulation appraisal has been undertaken using INSUL, as included at **Appendix 4**. The modelled scenario indicates airborne sound insulation performance in the order of R_w 56 dB, with $C = -1$ dB and $C_{tr} = -3$ dB, for a construction comprising a 22 mm particle board floor, solid joists with acoustic hangers, approximately 200 mm mineral wool infill, and a double 15 mm dB board ceiling lining. In music-noise terms, the more relevant single-number indicator is $R_w + C$, equating in this case to approximately 55 dB.

However, the INSUL output should be treated only as a design-stage indication of likely performance and not as a guarantee of as-built acoustic separation. BS 8233 makes clear that the sound insulation of a building element is influenced not only by the direct construction

itself, but also by airtightness, workmanship, junction detailing, penetrations, access hatches, and flanking transmission through adjoining elements and air paths. It also notes that flanking transmission can in some cases exceed direct transmission and can become the limiting factor where higher performance is required.

Accordingly, the acceptability of the proposals does not depend simply on nominal board layers or an isolated laboratory-style calculation. It depends on the upgraded ceiling being installed in full accordance with the assessed build-up, with effective perimeter sealing, careful treatment of penetrations and access hatches, no rigid bridging across resilient elements, and appropriate control of flanking transmission via adjoining walls, voids and service paths. These matters are acoustically material and are central to the planning conclusion reached below.

4.3.4. Contextual Considerations

The residential accommodation at 46A High Street is the principal receptor in relation to internal music noise. In contextual terms, BS 8233 identifies guideline internal ambient noise levels for dwellings of 35 dB $L_{Aeq,T}$ for living rooms during daytime and evening use and 35 dB $L_{Aeq,T}$ for bedrooms during daytime resting. Whilst these values are not direct compliance criteria for assessing music transmission from a neighbouring commercial use, they do provide an appropriate contextual benchmark and illustrate why a robust separating floor/ceiling treatment is necessary in a mixed commercial and residential building of this type.

The character of the source is also relevant. The proposed operation is not entertainment-led, and no subwoofer or dedicated low-frequency reinforcement has been identified. That is acoustically significant, because low-frequency content is often the most problematic component of music noise in mixed-use buildings, owing to its greater tendency to transmit through building elements and remain perceptible within adjoining residential spaces. The absence of low-frequency reinforcement materially improves the likelihood that the proposed use can be accommodated without unacceptable adverse effect, subject to the physical mitigation identified.

BS 8233 also notes that electronic sound limiting equipment can be used to control the level of amplified music. In the present case, such equipment would provide an additional layer of control by preventing music levels from increasing above the design assumptions adopted within this assessment. Whilst the use of a limiter is addressed further within the mitigation section, its availability is relevant to the robustness of the overall assessment.

4.3.5. Assessment of Likely Effect

On a simple design-stage basis, application of the modelled $R_w + C$ performance to the adopted internal music source level of 72 dB $L_{Aeq,1h}$ indicates that the separating construction has the potential to reduce transmitted music noise to a low internal level within the residential accommodation above. Accordingly, an indicative internal noise level in the order of 17 to 23 dB $L_{Aeq,1h}$ may be expected within the flat above, subject to normal design-stage uncertainty. That broad result is useful as an order-of-magnitude check, but it should not be presented as a precise in-situ prediction.

The more important planning conclusion is that, for a modest café/bar use operating with background music only, the upgraded separating floor/ceiling treatment described above appears capable, in principle, of providing sufficient attenuation to control music noise to an acceptable level at the residential accommodation above, provided that:

- the assessed MF ceiling and lining build-up is installed in full;
- acoustic hangers and resilient elements are not short-circuited by rigid fixings or poor detailing;
- penetrations, access hatches and perimeter junctions are carefully sealed and detailed;
- flanking transmission is specifically addressed during installation;
- no ceiling-mounted loudspeakers or low-frequency reinforcement are used; and
- music remains ancillary background music only and does not escalate into an entertainment-led use.

Subject to those assumptions and mitigation measures, internal music noise is considered capable of being controlled to an acceptable level in planning terms. However, because the assessment is necessarily design-stage in nature and because the actual performance of the separating construction will depend materially on workmanship and final detailing, this conclusion should be read as conditional upon implementation of the specified acoustic build-up and associated mitigation, rather than as an unconditional endorsement of any form of amplified music within the premises.

4.4. Patron Noise

4.4.1. Assessment Basis

Patron noise associated with the proposed development may arise from normal conversation, raised speech, laughter, chair movement and general customer activity both within the premises and within the proposed external seating area. Such sound is inherently variable, human in character, and falls outside the scope of BS 4142:2014+A1:2019, which expressly excludes music and other entertainment and people, and is not intended to be applied to indoor sound levels. Patron noise has therefore been assessed separately using a source–path–receiver approach, informed by the scale and character of the proposed use, conservative source assumptions, and the prevailing acoustic environment.

The proposed external seating area is small in scale and clearly ancillary to the primary indoor use. Its likely acoustic effect is inherently constrained by its limited size and capacity, its ancillary function, and its location within an existing mixed-use High Street environment in which some degree of pedestrian and commercial activity already forms part of the prevailing sound climate. Use of the space would also be intermittent in nature, with the greatest potential for activity arising during busier fair-weather periods rather than on a continuous basis. On that basis, and subject to appropriate operational management, the external seating area would not be expected to give rise to unacceptable adverse effects on neighbouring amenity.

The assessment distinguishes between:

- internal patron noise affecting the residential accommodation at 46A High Street above; and
- external patron noise associated with the proposed ancillary seating area and frontage.

This distinction is necessary because the relevant acoustic pathways differ. Internal patron noise is governed principally by the separating floor/ceiling construction and flanking transmission. External patron noise is governed principally by direct propagation, the number of simultaneous talkers, the local acoustic context, and operational management.

4.4.2. Internal Patron Noise

For the internal area, a maximum occupancy of 35 patrons has been assumed. Applying a conservative assumption that approximately 50% of patrons are vocalising at any one time during a representative busy hour gives 18 simultaneous talkers.

Reference has been made to the WHO Guidelines for Community Noise (1999) for indicative speech source levels. The following source levels have been adopted for assessment purposes:



- casual voice: 50 dB(A) at 1 metre
- raised voice: 55 dB(A) at 1 metre
- loud or strained voice: 65 dB(A) at 1 metre
- shouting: 75 dB(A) at 1 metre

For a robust worst-case internal busy hour, the 18 simultaneous talkers have been apportioned as follows:

- 9 talkers at 50 dB(A)
- 5 talkers at 55 dB(A)
- 3 talkers at 65 dB(A)
- 1 talker at 75 dB(A)

Using logarithmic summation, this gives a composite internal patron source level of approximately 78.2 dB $L_{Aeq,1h}$. This should be regarded as a deliberately robust upper-bound source term for internal patron activity and not as the expected average level throughout normal trading.

4.4.3. Noise Transfer to Residential Accommodation Above

The principal receptor in relation to internal patron noise is the residential accommodation at 46A High Street above the premises. As set out in Section 4.3, the applicant has confirmed that the ceiling treatment will comprise a new double-boarded MF ceiling with acoustic hangers and mineral wool infill beneath the existing joisted floor. The design-stage INSUL appraisal indicates airborne sound insulation performance in the order of R_w 56 dB, with $C = -1$ dB, giving a relevant indicative music / general activity reduction of approximately $R_w + C = 55$ dB.

Applying that indicative reduction to the derived internal patron source level of 78.2 dB $L_{Aeq,1h}$ gives a simple design-stage transmitted level in the order of 23.2 dB $L_{Aeq,1h}$. Accordingly, the indicative patron-noise contribution within the residential accommodation above is taken to be approximately 23 dB $L_{Aeq,1h}$ on a simple direct-transfer basis.

As with the music noise assessment, this should not be treated as a precise in-situ prediction. A degree of uncertainty necessarily remains at planning stage in relation to workmanship, penetrations, access hatches, junction detailing and flanking transmission. However, even allowing reasonable design-stage uncertainty, the predicted transferred level from internal patron activity remains materially below the 35 dB $L_{Aeq,T}$ dwelling guideline values cited in BS 8233 for living rooms and bedrooms during daytime and evening use, and is therefore considered acceptable in principle for the stated use.

4.4.4. External Seating Area

For the proposed external seating area, the scheme identifies three seating clusters:

- ES1 – Southern seating cluster: 6 patrons
- ES2 – Central seating cluster: 7 patrons
- ES3 – Northern seating cluster: 7 patrons

Consistent with the conservative approach adopted elsewhere, it has been assumed that approximately 50% of patrons are vocalising at any one time during a representative busy hour. This gives the following simultaneous talker assumptions:

- ES1: 3 simultaneous talkers
- ES2: 4 simultaneous talkers
- ES3: 4 simultaneous talkers

Reference has again been made to the WHO speech source levels, with the external seating groups derived primarily from casual and raised voice levels, rather than assuming sustained loud voice or shouting across the whole seating area, which would not be representative of the proposed modest seated café/bar operation. Using logarithmic summation, the assessment derives the following composite source terms at 1 metre.

Table 4.1: External Seating Source Levels

External Seating Source Group	Assumed Patrons	Simultaneous Talkers	Composite Source Level at 1 m
ES1 – Southern cluster	6	3	57.1 dB LAeq,1h
ES2 – Central cluster	7	4	58.4 dB LAeq,1h
ES3 – Northern cluster	7	4	58.4 dB LAeq,1h

These source terms are considered robust but reasonable for the proposed seating use. They represent a busy trading hour with half of all occupants vocalising at any one time, whilst avoiding unrealistic assumptions of sustained shouting or entertainment-led behaviour across the entire external area.

For an additional upper-bound check, the whole external seating area has been considered on the basis of a worst-case 20-patron scenario, again assuming 50% vocalisation, giving 10 simultaneous talkers apportioned as:

- 5 talkers at 50 dB(A)
- 3 talkers at 55 dB(A)
- 1 talker at 65 dB(A)

- 1 talker at 75 dB(A)

Using logarithmic summation, this gives a composite external patron source level of approximately 74.2 dB $L_{Aeq,1h}$ at 1 metre. This is a deliberately robust source term, incorporating a limited shouting component notwithstanding that the proposals relate to a modest seated café/bar rather than an entertainment-led venue.

4.4.5. Contextual Appraisal of External Patron Noise

The baseline survey indicates that the site is already influenced by road traffic and general High Street activity, with measured daytime ambient noise levels typically in the range of approximately 51 to 58 dB $L_{Aeq,T}$ at the monitoring position. Against that context, low-level to moderate conversational activity associated with a small ancillary seating area would not be introduced into an otherwise quiet or acoustically pristine environment.

That said, the residential sensitivity of the site remains important, particularly given the proximity of nearby receptors including 46A High Street. The numerical exercise above should therefore be treated as a robust indication of source strength rather than a standalone determinant of acceptability. The effect of external patron noise will depend not only on source level, but also on behaviour, time of day, number of patrons present, and whether the use remains within the modest ancillary scenario assessed.

4.4.6. Assessment of Likely Effect

Having regard to:

- the derived internal patron source level of 78.2 dB $L_{Aeq,1h}$;
- the indicative transferred internal level of approximately 23 dB $L_{Aeq,1h}$ at the residential accommodation above;
- the derived external seating source terms of 57.1 to 58.4 dB $L_{Aeq,1h}$ at 1 metre for the individual seating clusters; and
- the robust whole-area upper-bound source term of 74.2 dB $L_{Aeq,1h}$ at 1 metre,

patron noise associated with the proposed development is considered capable of being controlled to an acceptable level, subject to the assumed acoustic ceiling treatment and proportionate operational management.

In relation to the residential accommodation above, the quantitative appraisal indicates that internal patron noise transfer would remain at a low level, below the BS 8233 dwelling guideline values used as contextual benchmarks. In relation to the external seating area, the quantitative source terms, when considered alongside the existing traffic-influenced High Street sound climate and the modest ancillary nature of the seating, indicate that the proposals would not be expected to materially alter the prevailing acoustic environment during normal operation.

This conclusion is contingent upon the development operating in the manner assessed. In particular:

- the external seating area shall remain ancillary in nature and of modest scale;
- the premises shall operate as a seated café/bar use and shall not become entertainment-led without further acoustic review;
- the acoustic ceiling treatment assumed in the assessment shall be installed in full;
- flanking transmission via walls, junctions, penetrations and access hatches shall be carefully controlled; and
- the frontage and entrance door shall be managed such that they are not left open for prolonged periods during busy operation where amplified background music and high patron activity coincide.

Subject to those measures, patron noise is not expected to give rise to unacceptable adverse effects on neighbouring amenity, including the residential accommodation at 46A High Street above.

4.5. Cumulative Noise Impacts

4.5.1. Assessment Basis

Sections 4.2, 4.3 and 4.4 consider plant noise, music noise and patron noise separately, reflecting the differing source characteristics, propagation pathways and assessment methodologies applicable to each. This section draws those findings together in order to consider the likely overall operational acoustic effect of the development under the assessed normal operating condition.

In this instance, a proportionate cumulative assessment is required because the principal controlling receptor for internal music and internal patron activity is the residential accommodation at 46A High Street above the premises, whereas the relevant assessment locations for external plant noise and façade breakout are the nearby residential façades. Accordingly, the cumulative assessment has been considered under the following headings:

- aggregate internal activity noise affecting the residential accommodation above; and
- aggregate external operational noise affecting the nearest relevant façade.

This approach is consistent with the broader IEMA principle that cumulative and residual effects should be considered in a way that reflects how noise is actually perceived at the relevant receptors, rather than simply combining unlike effects without regard to pathway or receptor context.

4.5.2. Aggregate Internal Noise Level at 46A High Street

For the residential accommodation at 46A High Street, the principal internal operational sources are:

- background music within the premises; and
- patron noise associated with normal customer activity.

As set out in Sections 4.3 and 4.4, a robust internal music source level of 72 dB $L_{Aeq,1h}$ has been adopted, and a robust upper-bound internal patron source term of approximately 78.2 dB $L_{Aeq,1h}$ has been derived using conservative speech assumptions. Logarithmic combination of those two internal activity sources gives a combined internal activity level of approximately 79.1 dB $L_{Aeq,1h}$.

Using the modelled design-stage INSUL scenario set out in Appendix 4, and adopting $R_w + C \approx 55$ dB as the relevant indicative airborne reduction for music and general patron activity, this gives a simple transferred level to the residential accommodation above of approximately 24.1 dB $L_{Aeq,1h}$.

Accordingly, the indicative cumulative received level within the flat above is taken to be approximately 24 dB $L_{Aeq,1h}$. Allowing for normal planning-stage uncertainty associated with

workmanship, penetrations, access hatches, junction detailing and flanking transmission, a more realistic indicative in-situ level would reasonably be expected to lie within the broad range of approximately 24 to 30 dB $L_{Aeq,1h}$.

In contextual terms, BS 8233:2014 identifies guideline indoor ambient noise levels for dwellings of 35 dB $L_{Aeq,T}$ for living rooms during daytime and evening use and 35 dB $L_{Aeq,T}$ for bedrooms during daytime resting. Whilst these are not direct compliance criteria for cumulative entertainment-related transfer within an existing mixed-use building, they are appropriate contextual benchmarks. On that basis, the aggregate internal activity noise transfer to the flat above would remain below those benchmark levels and is therefore considered acceptable in principle for the stated use.

4.5.3. Aggregate External Noise Impacts at the Nearest Façade

At nearby façades, the relevant operational sources comprise:

- the proposed replacement condenser;
- music breakout from the front shopfront glazing and entrance door; and
- patron-related breakout from within the premises.

For the purposes of this cumulative appraisal, a closed-façade operational condition has been assumed. As the final glazing and entrance door specification is not currently known, an effective closed-façade breakout reduction of 22 dB has been adopted as a cautious but reasonable whole-frontage design-stage assumption for a standard glazed shopfront with a closed entrance door. This is not intended to represent a laboratory-rated performance value for a specific element; rather, it is an effective planning-stage breakout assumption for the frontage as a whole.

Applying that assumption to the combined internal activity level of 79.1 dB $L_{Aeq,1h}$ gives an external breakout level immediately outside the frontage of approximately 57.1 dB $L_{Aeq,1h}$. Applying simple geometric spreading over an estimated source-to-window distance of approximately 2.5 metres to the nearest first-floor residential window above the frontage gives an aggregate music and patron breakout contribution at that window of approximately 49.1 dB $L_{Aeq,1h}$.

The replacement condenser is separately controlled through the requirement that the BS 4142 Rating Level, $L_{A,r,Tr}$, does not exceed 41 dB at the nearest residential receptor windows. For the purposes of this cumulative external check, that plant contribution has been added logarithmically to the above breakout level, giving a combined external operational contribution in the order of approximately 49.7 dB at the nearest first-floor window.

This cumulative operational contribution has then been considered against the lowest measured daytime ambient sound level of 50.8 dB $L_{Aeq,1h}$ from the baseline dataset.

Logarithmic combination indicates an overall uplift in the order of +2.6 dB above the prevailing ambient sound climate under the assessed closed-façade operating condition.

4.5.4. Interpretation of Cumulative External Effect

A cumulative increase of approximately 2.6 dB is below the level commonly regarded as a clearly perceptible change in the prevailing sound climate and also falls within the “Not Significant” category in the example IEMA magnitude framework, which identifies changes of less than 2.9 dB as not significant in purely relative level-difference terms. That comparison is useful as a contextual cross-check only; it is not a substitute for professional judgement on character, timing and receptor sensitivity.

In practical terms, the cumulative arithmetic indicates that, under the assessed normal closed-frontage operating condition, the combined contribution from plant, internal breakout and patron-related activity would remain close to, and slightly below, the prevailing measured daytime ambient sound climate at the nearest façade. That supports the conclusion that the proposed operation would not be expected to materially alter the existing daytime/evening acoustic environment in a mixed-use High Street context.

That conclusion should, however, be read with appropriate caution. The cumulative check is intentionally proportionate and is based on the assessed operating model. It does not displace the need for the separate source-specific conclusions in Sections 4.2 to 4.4, and it should not be interpreted as demonstrating that all operating scenarios are benign. In particular, the more onerous sensitivity cases associated with uncontrolled frontage opening, materially increased patron activity, or a departure from the assumed background-music-only use remain relevant as cautionary scenarios, even though they are not considered representative of normal operation.

4.5.5. Overall Cumulative Assessment

Having regard to:

- the aggregate internal activity noise level of approximately 24 to 30 dB LAeq,1h within the residential accommodation above;
- the aggregate external breakout contribution of approximately 49.1 dB LAeq,1h at the nearest first-floor window;
- the combined external operational contribution of approximately 49.7 dB including plant; and
- the resulting cumulative uplift of approximately +2.6 dB above the prevailing ambient sound climate under the assessed closed-façade case,

the development is not expected to give rise to unacceptable adverse aggregate noise effects, provided that the scheme is implemented and operated in accordance with the assumptions adopted within this report.

In particular, this conclusion is contingent upon the following:

- the replacement condenser being selected and installed such that the BS 4142 plant criterion is achieved at the nearest residential receptor windows;
- the assessed separating floor / ceiling treatment being installed in full accordance with the assumed design intent;
- flanking transmission being appropriately controlled through detailing, sealing and workmanship;
- music remaining limited to background music only;
- no ceiling-mounted loudspeakers or subwoofers being installed; and
- the frontage and entrance door being managed normally and not left open for prolonged periods during busy operation.

Subject to those measures, the aggregate operational noise impact of the development is considered capable of being controlled to an acceptable level in planning terms and is not expected to give rise to material harm to neighbouring residential amenity.

5. Additional Mitigation

5.1. Embedded and Additional Mitigation Measures

5.1.1. Overview

The assessment set out in Section 4 demonstrates that the proposed development is capable of operating without giving rise to unacceptable adverse noise effects, provided that the physical and operational mitigation measures assumed within the assessment are implemented in full and maintained thereafter. The conclusions of this report are therefore contingent upon the mitigation identified below and should not be read independently of those measures.

For clarity, the mitigation strategy for the development comprises both embedded physical mitigation, which has been assumed as part of the acoustic assessment, and operational management controls, which are required to ensure that the premises continue to operate within the scope of the assessed use.

Subject to the below measures, the development is considered capable of operating in accordance with the assumptions adopted in this assessment.

5.1.2. Fixed Plant

Any replacement condenser shall be selected, installed and operated such that the BS 4142 Rating Level, $L_{A,T,r}$, does not exceed 41 dB at the nearest residential receptor windows during the relevant operating period. Compliance with this criterion shall be demonstrated using manufacturer acoustic data and a site-specific propagation review prior to installation.

The plant shall be mounted on suitable anti-vibration isolation brackets or equivalent proprietary isolators, and all associated pipework, fixings and penetrations shall be detailed so as to minimise structure-borne vibration and regenerated noise. The plant shall not operate during night-time periods unless separate assessment demonstrates that an appropriate night-time criterion can be achieved.

5.1.3. Separating Floor and Ceiling Treatment

The acoustic acceptability of internal music and patron activity relies upon the upgraded separating floor/ceiling treatment assumed within the assessment being installed in full. This includes the double-boarded MF ceiling, acoustic hanger system, mineral wool infill, and associated resilient installation details. The construction shall be installed so as to avoid rigid bridging of resilient elements, and all perimeter junctions, penetrations, service routes and access hatches shall be sealed and detailed to minimise airborne leakage and flanking transmission. The assessment conclusions do not apply to an alternative or downgraded ceiling treatment.

5.1.4. Internal Sound System

Any amplified sound system installed within the premises shall remain modest in scale and be consistent with a background music only café/bar operation. No live music, DJs, amplified performances, subwoofers or other dedicated low-frequency reinforcement shall form part of the use assessed by this report. Loudspeakers should not be fixed directly to the separating ceiling or other structural elements likely to increase structure-borne transmission to the residential accommodation above. Ceiling-mounted loudspeakers should be avoided. Where installed, amplified sound equipment should be set up and operated so as to minimise low-frequency build-up and vibration transfer through the structure.

5.1.5. Frontage and Breakout Control

The cumulative and breakout assessments in Section 4 are based on the premises operating under a normal closed-frontage condition. Accordingly, the entrance door and front opening elements shall not be left open for prolonged periods during busy operation where amplified background music and elevated internal patron activity coincide. Normal customer access and egress is not problematic in itself; however, the premises should be managed such that the frontage does not effectively operate as an open-fronted venue during periods of peak use.

5.1.6. External Seating Area

The proposed external seating area shall remain small and ancillary to the primary indoor café/bar use. It shall not function as a separate drinking terrace or enlarged external hospitality area materially different from that assessed in this report. Seating numbers should remain consistent with the assessed arrangement, and patrons should not be permitted to stand and congregate externally beyond the defined seating layout. External use shall be subject to active staff management, particularly during busier periods where voices may become raised.

5.1.7. Complaints Response

The operator shall maintain a simple and proportionate procedure for recording and responding to any noise complaints associated with the use. Where a substantiated complaint indicates that operation is diverging materially from the assumptions made in this report, the operator shall review the relevant element of the operation and implement corrective measures as necessary, including adjustment of music levels, staff supervision of external areas, or review of door / frontage management.



5.2. Noise Management Plan

5.2.1. Overview

A proportionate Noise Management Plan (NMP) should be implemented as part of the operation of the premises in order to ensure that the development continues to operate within the scope of the acoustic assessment. The purpose of the NMP is not to regulate routine café and premises activity unnecessarily, but to provide a clear operational framework for controlling the specific aspects of the use that have acoustic relevance in planning terms.

The NMP should include the following minimum provisions.

5.2.2. Nature of Use

The premises shall operate as a modest café/bar with background music only, consistent with the use assessed in this report. The NMP does not support live music, DJs, karaoke, promoted entertainment events, or any materially more intensive entertainment-led operation without further acoustic review.

5.2.3. Music Management

Background music levels shall be maintained at a level consistent with ancillary café/bar use and shall not be increased beyond the general assumptions adopted in this report. No subwoofers or other dedicated low-frequency reinforcement shall be used. Consideration should be given to the use of an electronic sound limiter or equivalent management control to prevent music levels from increasing beyond the assessed design basis. Speakers shall be positioned and isolated so as to minimise vibration transfer and local excitation of the separating structure.

5.2.4. External Seating and Patron Management

The external seating area shall remain ancillary in scale and shall be monitored by staff during operation. Patrons shall not be encouraged to stand and linger outside the defined seating area, and any emerging noisy behaviour should be addressed promptly and courteously by staff. The operator should ensure that glasses, bottles and furniture are handled reasonably and that the external area is managed as a seated customer area rather than an overspill drinking space.

5.2.5. Door and Frontage Management

The entrance door and frontage shall be managed so that the premises do not operate for prolonged periods as an open-fronted venue during busy operation. Staff should be aware that prolonged open-door operation can materially reduce the acoustic benefit of the building frontage and increase the potential for breakout.

5.2.6. Deliveries, Waste and External Handling

Deliveries, waste handling, bottle disposal and similar external servicing activities should be limited to reasonable daytime hours wherever practicable and undertaken with due regard to nearby residential amenity. External handling of bottles or waste late in the evening should be avoided.

5.2.7. Staff Awareness and Complaints Procedure

Staff should be made aware of the key acoustic sensitivities of the site, particularly the presence of residential accommodation immediately above and nearby. A simple complaints log should be maintained to record any noise complaints, the time and nature of the complaint, the circumstances of operation at that time, and any action taken in response. Where complaints indicate a recurring issue, the relevant aspect of operation should be reviewed and corrective action implemented.

5.2.8. Review and Continuous Improvement

The NMP should be kept under periodic review by the operator, particularly during the initial period of occupation and following any complaint or operational change relevant to noise generation.

6. Conclusion

Polaris Acoustics has undertaken an Environmental Noise Impact Assessment in support of the proposed change of use of the ground floor of 46 High Street, West End, Southampton, from retail use to a café/bar use, together with a small ancillary external seating area and replacement condenser plant. The assessment has considered the principal operational noise sources associated with the development, namely fixed plant, internal background music, internal patron activity, and patron use of the proposed external seating area, having regard to the proximity of nearby noise-sensitive receptors, including the residential accommodation at 46A High Street above the premises.

An unattended baseline noise survey undertaken between 20th and 23rd March 2026 indicates that the prevailing acoustic environment is influenced principally by road traffic and general High Street activity. On the basis of the operational-hours dataset, a representative background sound level of 41 dB $L_{A90,1hr}$ has been adopted for the assessment of fixed plant noise.

Noise from the proposed replacement condenser has been assessed on a performance basis in accordance with BS 4142:2014+A1:2019. Subject to the requirement that the BS 4142 Rating Level, $L_{Ar,Tf}$, does not exceed 41 dB at the nearest residential receptor windows, and subject to appropriate plant selection, anti-vibration isolation, installation detailing and pre-installation verification, fixed plant noise is considered capable of achieving a low impact in BS 4142 terms and is not expected to give rise to unacceptable adverse effects on neighbouring residential amenity.

Amplified music and patron noise have been assessed separately, recognising that these sources fall outside the formal scope of BS 4142. The assessment has been undertaken on the basis of a modest café/bar operation with background music only, and without live music, DJs, subwoofers, promoted events or other entertainment-led activity. On that basis, the principal acoustic issue is the potential for transmission through the separating floor/ceiling structure to affect the residential accommodation above, together with breakout and external conversational noise affecting nearby façades.

The assessment indicates that internal music and patron activity can be controlled to an acceptable level, provided that the separating floor/ceiling treatment assumed within the assessment is installed in full, flanking transmission is appropriately controlled, and the premises operate in the manner assessed. In particular, the assessment relies upon the upgraded MF ceiling treatment, appropriate sealing and detailing, avoidance of rigid bridging, and the continued operation of the premises as a background-music café/bar rather than an intensified entertainment venue.



In relation to patron noise, the assessment indicates that the proposed external seating area is capable of operating without giving rise to unacceptable adverse effects, provided that it remains small and ancillary in scale, that patron numbers and behaviour are actively managed, and that the frontage is not left open for prolonged periods during busy operation. The acceptability of this element therefore depends upon both physical mitigation and day-to-day operational control.

A cumulative appraisal of plant, music and patron noise has also been undertaken. This indicates that, under the assessed normal operating condition and with the identified mitigation in place, the combined operational noise contribution would not be expected to materially alter the prevailing acoustic environment or give rise to unacceptable aggregate noise effects at neighbouring receptors. That cumulative conclusion is based on the assessed use and operating assumptions and should not be taken to apply to materially different operating conditions, including louder amplified music, entertainment-led use, materially increased patron numbers, or uncontrolled frontage opening.

Overall, on the basis of the survey data, assessment methodology and mitigation identified in this report, the proposed development is considered capable of operating without giving rise to unacceptable adverse effects on neighbouring amenity, subject to the implementation and ongoing maintenance of the physical and operational controls identified within this report and Noise Management Plan. In particular, this conclusion is contingent upon:

- compliance with the fixed plant noise criterion;
- installation of the assessed separating floor/ceiling treatment and associated flanking control measures;
- operation of the premises as a modest background-music café/bar rather than an entertainment-led venue; and
- implementation and maintenance of the Noise Management Plan governing music levels, patron behaviour, use of the external seating area, and frontage / door management.

Subject to the mitigation identified in this report and its securement by appropriately worded planning conditions where necessary, the proposed development is considered acoustically acceptable in planning terms and consistent with the relevant national and local planning policy and guidance relating to noise, including the National Planning Policy Framework, Planning Practice Guidance, the Noise Policy Statement for England, and Eastleigh Borough Local Plan Policy DM23.

7. Reference Documents

7.1. National and Local Planning Policy Context

7.1.1. National Planning Policy Framework (NPPF) (2024)

The National Planning Policy Framework (NPPF), first published in 2012 and most recently updated in December 2024, sets out the Government's planning policies for England and how they should be applied. It establishes the framework for Local Planning Authorities (LPAs) to prepare local and neighbourhood plans, which must reflect the needs and priorities of their communities.

The NPPF confirms: *"The purpose of the planning system is to contribute to the achievement of sustainable development, including the provision of homes, commercial development, and supporting infrastructure in a sustainable manner"* (Paragraph 7). Sustainable development should be delivered across the economic, social and environmental dimensions (P. 8).

A presumption in favour of sustainable development lies "at the heart of the Framework" (Paragraph 10). In relation to the environment, the NPPF requires:

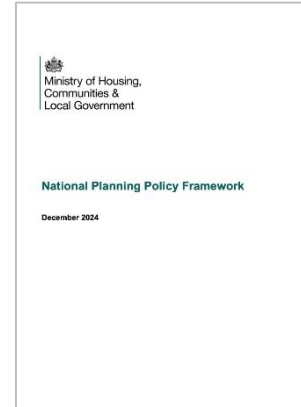
"Planning policies and decisions should contribute to and enhance the natural and local environment by... preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability" (Paragraph 187).

With regard to noise, Paragraph 198 specifies that planning should:

- *"Mitigate and reduce to a minimum potential adverse impact(s) resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
- *identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value..."*

Paragraph 200 also highlights the "Agent of Change" principle, ensuring that:

"New development can be integrated effectively with existing businesses and community facilities... Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established... the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed."

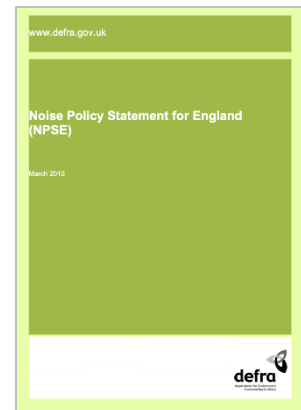


7.1.2. Noise Policy Statement for England (NPSE) (2010)

The Noise Policy Statement for England (NPSE) provides additional guidance relevant to the NPPF. It states:

“Within the context of sustainable development:

- *avoid significant adverse impacts on health and quality of life;*
- *mitigate and minimise adverse impacts on health and quality of life; and*
- *where possible contribute to the improvement of health and quality of life.”*



The NPSE introduces three key concepts, adapted from toxicology and applied to noise impacts:

- **NOEL – No Observed Effect Level:** the level of noise below which no effect can be detected. In other words, noise at or below this level has no observable impact on health or quality of life.
- **LOAEL – Lowest Observed Adverse Effect Level:** the level of noise above which adverse effects on health and quality of life can be detected.
- **SOAEL – Significant Observed Adverse Effect Level:** the level above which significant adverse effects on health and quality of life occur.

The NPSE further notes: *“it is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available.”*

7.1.3. Planning Practice Guidance (PPG)

The Noise Planning Practice Guidance (NPPG), first published in 2014 and most recently updated in July 2019, provides supporting guidance to the NPPF. It expands on the concepts of NOEL, LOAEL and SOAEL introduced in the NPSE and sets out how noise should be considered in planning decisions.

The NPPG states: *“Local planning authorities’ plan-making and decision taking should take account of the acoustic environment and in doing so consider:*

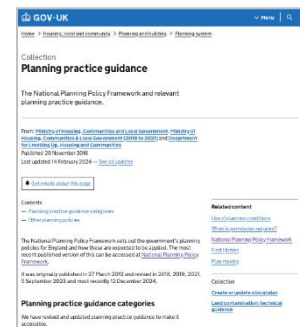
- *whether or not a significant adverse effect is occurring or likely to occur;*
- *whether or not an adverse effect is occurring or likely to occur; and*
- *whether or not a good standard of amenity can be achieved.”*

The guidance highlights the **subjective nature of noise**, noting that impacts depend on factors such as the source and timing of noise, its frequency, tonal or spectral content, and the sensitivity of the local context. It also advises that cumulative impacts, external amenity areas, and specific site characteristics should be considered.

The NPPG introduces a noise impact hierarchy, showing how effects relate to NOEL, LOAEL and SOAEL. Importantly, only noise that is *“noticeable and very disruptive”* is considered unacceptable and should be prevented. Other outcomes may be acceptable depending on the level of mitigation proposed.

In relation to existing businesses, the NPPG reinforces the *“Agent of Change”* principle from the NPPF:

“The applicant (or ‘agent of change’) will need to clearly identify the effects of existing businesses that may cause a nuisance (including noise...) and the likelihood that they could have a significant adverse effect on new residents/users... The agent of change will also need to define clearly the mitigation being proposed to address any potential significant adverse effects.”

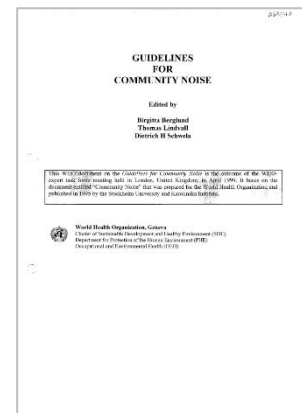


7.2. Technical Standards and Guidance

7.2.1. WHO Guidelines for Community Noise (1999)

The World Health Organisation's (WHO) 1999 Guidelines for Community Noise provide recommended maximum internal and external noise levels for a range of situations. These values were developed from a comprehensive review of the scientific evidence on community noise exposure and its associated health and social effects.

Although not adopted as formal policy, the 1999 guidelines have been widely cited and have strongly influenced subsequent national and international standards. In particular, their recommendations form the basis of the criteria set out in BS 8233:2014 (Guidance on sound insulation and noise reduction for buildings) and other related guidance documents. A summary of the 1999 guideline values is presented in **Table 7.1**.



In 2018, the WHO issued the Environmental Noise Guidelines for the European Region, lowering several recommended limits—particularly for transport noise—based on evidence of links to cardiovascular disease, sleep disturbance, and reduced quality of life. However, BS 8233:2014 remains based on the 1999 WHO guidance and does not incorporate the 2018 updates, creating a gap between UK practice and the more precautionary WHO recommendations.

Table 7.1: Summary of WHO Noise Criteria

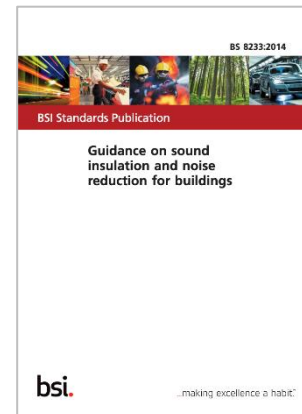
Residential Environment	Critical Health Effect	L _{Aeq}	L _A F _{max}	Time Base
Outdoor living area	Serious annoyance, daytime and evening	55	-	07:00-23:00
	Moderate annoyance, daytime and evening	50	-	07:00-23:00
Dwelling, indoors	Speech intelligibility and moderate annoyance, daytime and evening	35	-	07:00-23:00
Inside bedrooms	Sleep disturbance, night-time	30	45	23:00-07:00
Outside bedrooms	Sleep disturbance, window open (outdoor values)	45	60	23:00-07:00

7.2.2. BS 8233:2014

British standard BS 8233:2014 'Guidance on sound insulation and noise reduction for buildings' was originally published in 1999. The current version of the standard was published in 2014.

BS 8233:2014 indicates that to control external noise ingress into a proposed development, a number of planning stages should occur as follows:

1. Site Assessment:
 - a. Identify significant existing and potential noise sources
 - b. Measure and/or estimate noise levels
 - c. Evaluate layout options of the proposed scheme.
2. Establish design noise levels for internal and external spaces.
3. Determine the building envelope performance, including sound insulation and the ventilation strategy.



BS 8233:2014 also provides recommended design noise levels for different types of buildings. For dwellings, flats, and other residential rooms (when unoccupied), the values are given in **Table 7.2** below (reproduced from Table 4, Section 7.7.2 of BS 8233:2014).

The guidance states: "In general, for steady external noise sources, it is desirable that the internal ambient noise level does not exceed the guideline values."

Table 7.2: BS 8233:2014 – Indoor Ambient Noise Levels for Dwellings

Activity	Locations	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 dB $L_{Aeq,16hr}$	–
Dining	Dining room/area	40 dB $L_{Aeq,16hr}$	–
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hr}$	30 dB $L_{Aeq,8hr}$
Night-time Maxima Events	Bedroom	–	45 dB L_{Amax} ^{NOTE}

NOTE: In noise sensitive rooms at night (e.g. bedrooms), individual noise events (from all sources) should not normally exceed 45 dB L_{Amax} more than 10 times at night.

When considering the internal and external noise criteria set out in BS 8233, the following points should be noted:

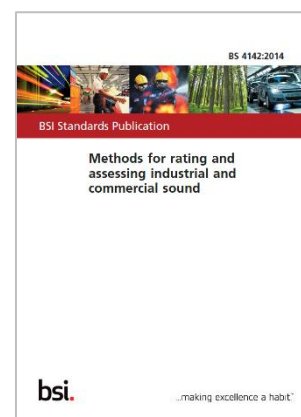
1. BS 8233:2014 advises that its criteria should be applied flexibly. *“Where development is considered necessary or desirable... the internal target level may be relaxed by up to 5 dB and reasonable internal conditions still achieved.”*
2. The quoted noise levels are annual averages and *“do not need to be achieved in all circumstances”* (e.g. New Year’s Eve, fireworks night).
3. The internal values apply primarily to steady external noise sources (e.g. traffic, fixed plant). Unlike BS 8233:1999, the 2014 version does not prescribe criteria for maximum noise events. Instead, it notes: *“Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,F}$, depending on the character and number of events per night. Sporadic noise events could require separate values.”* For sites affected by such events, it is appropriate to refer to the WHO Guidelines on Community Noise, which advise that good sleep is generally protected where internal L_{AFmax} does not exceed 45 dB more than 10–15 times per night.
4. Where compliance with BS 8233 relies on closed windows, the standard emphasises the need for *“appropriate alternative ventilation that does not compromise the facade insulation or resulting noise level.”*
5. BS 8233 also provides guidance on external amenity spaces, stating: *“It is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments.”* However, it recognises this is not always achievable. In locations such as city centres or near strategic transport corridors, a balance may be required between higher external noise levels and other planning considerations. In such cases, development should aim for the lowest practicable external levels, but noise should not be a barrier to development.

7.2.3. BS 4142:2014+A1:2019

British Standard BS 4142:2014+A1:2019 ‘Methods for rating and assessing industrial and commercial sound’, sets out how to measure and rate industrial or industrial-type noise against background levels outside dwellings in mixed residential/industrial areas. The rating level is applied to the *“specific noise source”* and compared with the background level to indicate the likelihood of complaints.

The guidance states:

- *“A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.”*



- *“A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.”*
- *“The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact ... Where the rating level does not exceed the background sound level, this is an indication of ... low impact, depending on the context.”*

“Adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact.”

BS 4142 further notes:

“Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night.”

Accordingly, assessments should also consider absolute noise levels at the receptor, with reference to the relevant BS 8233 and WHO guidelines.

7.2.4. **BS 4142:2014+A1:2019 Technical Note (2020)**

In March 2020, the Association of Noise Consultants (ANC) published a Technical Note to support BS 4142. The Note recognises “concerns for some users of BS 4142” and aims “to assist readers with a reasonable interpretation and application of BS 4142 as a whole.” While not official guidance, it provides clarification and examples of best practice. The following points are most relevant to this assessment.



Internal Noise Levels

The Note confirms that BS 4142 *“is not intended to be applied to the assessment of indoor sound levels”* and therefore cannot be used for façade design. While BS 4142 can help assess the likelihood of adverse impacts, internal design and mitigation should be guided by other standards, notably BS 8233, subject to its scope and limitations.

New Noise-Sensitive Receptors

A limitation of BS 4142 is its lack of differentiation between new noise sources and new receptors. Subclause 8.5 acknowledges that when introducing a new receptor, existing industrial/commercial sound is part of the acoustic environment, and *“other guidance and criteria ... can also inform the appropriateness”* of development and mitigation.

The Technical Note advises maintaining BS 4142's core principles while supplementing with other standards where appropriate, for example:

- **BS 8233:** where continuous industrial/commercial sound is present near new housing;
- **ProPG:** where night-time maxima are critical;
- **DMRB:** where traffic changes dominate;
- **BS 5228:** for temporary/construction-type activity.

It cautions that using BS 4142 for new receptors can be problematic, as separating *“legitimate commercial residual sources”* from background may exaggerate adverse outcomes. In such cases, *“alternative guidance and standards should be referenced,”* with careful regard to their scope. Different approaches may be required depending on whether the source is continuous, intermittent, or dominated by one premises.

Background Sound Levels

BS 4142 gives no fixed method for determining background sound levels. The Technical Note similarly avoids prescribing one but advises that a single value may not always be appropriate. Instead, *“a range of values over one or more time periods may be more appropriate,”* with assessments focusing on the period of greatest interest (e.g. quietest night period or complaint time).

It stresses that background levels must be representative of typical conditions, supported by time histories, histograms, and cumulative data. The ANC Working Group noted that *“there are no ‘correct’ answers, only judgement and justification.”*

Context

BS 4142 requires consideration of context but provides little detail. The Technical Note clarifies that absolute sound levels may outweigh relative differences when both background and rating levels are low. For instance, a 30 dB rating level exceeding a 20 dB background (normally indicating a significant adverse impact) may in practice be acceptable. Conversely, low absolute levels could sometimes worsen perceived impact.

Although BS 4142 does not define *“low,”* the 1997 version suggested <30 dB L_{A90} as very low background and <35 dB $L_{A,T,r}$ as low rating levels. The Working Group noted these values *“would not be unreasonable”* but should be applied with professional judgement.

Other contextual factors include:

- neighbourhood character;
- legitimacy of the industrial use (e.g. planning consent, permits);
- implementation of best practicable means;

Examples highlight how context may alter conclusions, such as recent vs historic industrial activity, or a drive-thru adjacent to a busy road where baseline noise already masks impacts.

7.2.5. The Little Red Book of Acoustics (4th ed., 2024)

First published in 2007, The Little Red Book of Acoustics: A Practical Guide remains a widely used reference, valued for its clarity and inclusion in Institute of Acoustics reading lists.

The 4th edition (2024) incorporates updates to BS 8233 and BS 4142 and introduces the LRB Method for determining representative background sound levels under BS 4142. Recognising the absence of a fixed method in BS 4142, the LRB Method applies a modal approach with a distribution threshold:

1. Count the frequency of each background sound level value.
2. Start with the most common value (or lowest if multiple are tied).
3. Test whether $\leq 45\%$ of data fall below it.
 - a. If more than 45% fall below, reject the candidate.
 - b. If $\leq 45\%$, accept it as the representative level.

This method provides a structured approach to identifying representative background sound levels while aligning with the principles of BS 4142.

Appendices

Appendix 1: Glossary of Acoustics Terminology

Term	Explanation
Absorption Coefficient	Fraction of incident sound absorbed by a material (0 = none, 1 = complete absorption).
AD-F (Approved Document F)	UK Building Regulations guidance on ventilation. Formerly described “Systems 1–4”; now uses descriptive names (Natural Ventilation, MEV, MVHR).
AD-O (Approved Document O)	UK Building Regulations guidance on overheating. Requires mitigation strategies that consider external noise constraints on open windows.
Ambient Noise	All-encompassing background sound at a location, including natural and man-made sources.
Background Sound Level	In BS 4142, the A-weighted sound level exceeded for 90% of the time, representing the underlying sound environment.
BS 8233	<i>Guidance on Sound Insulation and Noise Reduction for Buildings</i> . Provides internal and external noise criteria for residential and non-residential buildings.
BS 4142	<i>Methods for rating and assessing industrial and commercial sound</i> . Describes how to assess industrial/commercial noise against background levels.
Context	In BS 4142, consideration of wider acoustic and site-specific factors beyond numerical results.
dB(A)	A-weighted decibels. Adjusts measurements to reflect the sensitivity of human hearing. Standard in environmental noise assessment.
Decibel (dB)	Logarithmic unit for sound level, expressing a ratio relative to a reference pressure (20 µPa). Used for sound pressure levels, changes in level, and sound insulation.
$D_{n,e,w}$	Weighted element-normalised level difference. Field measure of façade or external element sound insulation.



$D_{nT,w}$	Weighted standardized level difference. Field measure of airborne sound insulation between rooms.
Frequency (Hz)	Unit of frequency, equal to one cycle per second. Determines pitch.
Hertz (Hz)	See <i>Frequency</i> .
$L_{A10,T}$	A-weighted sound level exceeded for 10% of the period. Historically used to describe road traffic noise.
$L_{A90,T}$	A-weighted level exceeded for 90% of the period. Used as background sound level in BS 4142.
$L_{Aeq,T}$	Equivalent continuous A-weighted sound level over a given period T. Represents the energy-averaged noise level. Used in BS 8233 and ProPG.
L_{AFmax}	Maximum A-weighted sound level recorded during a measurement period. Relevant to sleep disturbance criteria.
LOAEL	Lowest Observed Adverse Effect Level – where adverse effects begin to be observed.
SOAEL	Significant Observed Adverse Effect Level – where significant adverse effects begin to be observed.
NOAEL	No Observed Adverse Effect Level – below which no adverse effects are observed.
ProPG	<i>Professional Practice Guidance on Planning and Noise</i> (2017). Provides staged risk-based approach for residential noise assessment.
Rating Level (LA_r,Tr)	In BS 4142, the specific sound level with penalties for acoustic features (e.g. tonality, impulsivity).
Reverberation Time (RT60 / T60)	Time for sound to decay by 60 dB after the source stops. Indicates room “liveliness.”
R_w (or SRI)	Weighted sound reduction index. Laboratory measure of a building element’s sound insulation. Higher = better.

Appendix 2: Schedule of Equipment

Equipment Type	Manufacturer	Serial Number	Calibration Type	Date of Last Calibration Check	Date of Next Calibration Check
Fusion 4G Sound & Vibration Analyser	ACOEM	14388	Manufacturer Traceable Calibration to: Class 1 IEC 61672-3	24 th October 2024	October 2026
40CD Microphone Capsule	G.R.A.S.	470605		24 th October 2024	October 2026
PRE22 Pre-Amplifier	ACOEM	2138080		24 th October 2024	October 2026
CAL-01 Calibrator (Class 1)	ACOEM	990456		24 th October 2025	October 2026
DMK01 Weather Protection Kit	ACOEM	Not Applicable			
RAL 135-5M 5m Cable for PRE 22	ACOEM/LEMO	Not Applicable			



Tests report

TR-REP-10875.xls

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Name and location of the laboratory of tests:

Acoustic1 - Overdale Manordeilo, Llandeilo
Carmathenshire UK SA19 7BD

TESTED INSTRUMENT

Designation : Integrator Sound Level Meter

Manufacturer : 01dB

Type : FUSION + DMK Serial number : 14388

Identification number :

Date of issue : 24/10/2024

This report includes 7 pages

The measurements are performed according to the IEC 61672-3, Electroacoustics, - Sound level meters – Part 3: Periodic tests.

Steve THOMAS

Head of calibration laboratory at Acoustic 1

THIS REPORT is compliant with THE FD X 07-012 STANDARD DOCUMENTATION

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Instruments used for tests:

Designation	Manufacturer	Type	Serial number	Identification number
Insulated chamber	SKC Acoustic	-	-	-
Waveform generator	KEYSIGHT	33500B	MY57301384	-
Programmable Attenuator	ACOEM	OUT1694000	17-10-208	-
Electrostatic actuator	GRAS	14AA	288498	-
Thermometer, hygrometer, barometer	TESTO	622	39517641/806	-
Calibrator	ACOEM	CAL 21	34675324	-

Results:

Mentioned expanded uncertainties correspond to two standard uncertainty types ($k=2$). Standard uncertainties are calculated including different uncertainty components, reference standards, instruments used, environmental conditions, calibrated instrument contribution, repeatability...

The indicated Maximum Permissible Errors (M.P.E.) are the ones defined in the standard 61672-1 for a class 1 sound level meter.

Indication at the calibration check frequency

Initial indication	Correction	Adjusted indication	Tolerance
(dB)	(dB)	(dB)	(dB)
93.6	0.4	93.8	+/- 1.0

Self-generated noise

0° RA208 + short windscreen

Microphone replaced by the electrical input-signal device	Nominal value (dB)	Displayed value (dB)
Leq dBA	< 14	9.9
Leq dBB	< 15	9.8
Leq dBC	< 20	11.6
Leq dBZ	< 21	17.8

Microphone installed	Nominal value (dB)	Displayed value (dB)
Leq dBA	< 20	15.4

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Acoustical signal tests of a frequency weightings

0° RA208 + short windscreen	Measurement error		Uncertainty (dB)	Maximum Permissible Error (dB)
	C (dB)			
125 Hz	-0.1		0.3	+/- 1,0
1000 Hz	0.0		0.3	+/- 0,7
8000 Hz	-1.2		0.5	-2,5 ; +1,5

Electrical signal tests of frequency weightings

0° RA208 + short windscreen	Measurement error			Uncertainty (dB)	Maximum Permissible Error (dB)
	Z (dB)	A (dB)	C (dB)		
63 Hz	-0.2	-0.2	-0.2	0.4	+/- 1,0
125 Hz	-0.2	-0.3	-0.1	0.4	+/- 1,0
250 Hz	-0.1	-0.2	-0.1	0.4	+/- 1,0
500 Hz	0.0	-0.1	0.0	0.4	+/- 1,0
1000 Hz	0.0	0.0	0.0	0.4	+/- 0,7
2000 Hz	0.1	0.1	0.1	0.4	+/- 1,0
4000 Hz	0.5	0.5	0.5	0.6	+/- 1,0
8000 Hz	-0.5	-1.0	-1.0	0.6	-2,5 ; +1,5
16000 Hz	-3.1	-8.4	-8.4	0.4	-16,0 ; +2,5

Frequency and time weightings at 1 kHz

0° RA208 + short windscreen	Displayed value (dB)	Measurement error (dB)	Uncertainty (dB)	M.P.E. (dB)
Lp dBA / 1000 Hz Fast	94.1	Reference	0.0	
Lp dBA / 1000 Hz Slow	94.1	0.0	0.0	+/- 0,1
LEQ dBA / 1000 Hz	94.0	0.1	0.0	+/- 0,1
Lp dBC / 1000 Hz Fast	94.1	0.0	0.0	+/- 0,2
Lp dBZ / 1000 Hz Fast	94.1	0.0	0.0	+/- 0,2

Long-term stability

0° RA208 + short windscreen

Displayed value (dB)		Measured deviation (dB)	Uncertainty (dB)	Maximum Permissible Error (dB)
Initial indication	Final indication			
94.0	94.0	0.0	0.1	+/- 0,1

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Conclusion

CEI 61672-3 CEI:2013 Chapter:	Tests	Results
5	Preliminary inspection	Compliant
7	Environmental conditions	Compliant
10	Indication at the calibration check frequency	Compliant
11	Self-generated noise	Compliant
12	Acoustical signal tests of a frequency weighting	Compliant
13	Electrical signal tests of frequency weightings	Compliant
14	Frequency and time weightings at 1 kHz	Compliant
15	Long-term stability	Compliant
16	Level linearity on the reference level range	Compliant
18	Toneburst response	Compliant
19	C-weighted peak sound level	Compliant
20	Overload indication	Compliant
21	High-level stability	Compliant

FUSION user manual	DOC1131 version M February 2018
Type-approval certificate	France: LNE-27092 revision 2 dated 04/04/2017 Deutschland: DE-16-M-PTB-0006 dated 28/09/2016

#REF!

End of tests report

Sound Calibrator Certificate



Calibrator: 01dB 01DB CAL 01

Serial no: 990456
Level: 94.02 dB
Frequency: 1000.03 Hz

Reference conditions:

Pressure: 101.325 kPa
Temperature: 23.0 °C
Relative humidity: 50 %RH

The stated level is valid at measurement conditions.
Frequency stability: 0.00 %

Measurement conditions:

Pressure: 99.845 ± 0.005 kPa
Temperature: 23.3 ± 1.0 °C
Relative humidity: 51.5 ± 2.0 %RH

Measured according to IEC 60942.

The stated level is relative to 20µPa.

All results quoted are directly traceable to the National Physical Laboratory, London
with a calculated uncertainty less than 0.10 dB (2×sd).

Appendix 3: Summary of Noise Measurement Results

Time	dB $L_{Aeq,T}$	dB L_{AFmax}	dB L_{A10}	dB L_{A50}	dB L_{A90}
13:00	56.7	81.6	59.8	54.4	48.1
14:00	56.7	74.9	59.8	54.8	48.1
15:00	57.4	81.6	60.0	55.0	48.7
16:00	57.6	77.7	60.4	55.4	49.4
17:00	58.2	77.8	61.1	56.0	49.3
18:00	57.0	74.7	60.6	54.4	46.5
19:00	55.9	80.2	59.9	50.1	42.5
20:00	54.7	72.2	59.4	48.1	41.4
21:00	53.4	71.1	57.7	44.8	39.5
22:00	52.8	71.8	56.5	42.3	37.9
23:00	53.4	80.2	54.9	38.9	34.8
00:00	49.2	71.8	48.4	34.7	32.7
01:00	47.8	71.2	42.0	34.1	32.4
02:00	45.8	70.1	40.8	32.3	31.1
03:00	48.1	74.2	43.6	34.3	32.2
04:00	48.6	72.4	47.2	38.3	34.7
05:00	52.5	74.4	53.0	41.8	39.2
06:00	55.5	73.9	59.4	45.4	39.8
07:00	58.9	87.4	62.4	51.4	43.6
08:00	57.5	75.4	61.3	54.6	46.6
09:00	57.2	77.2	60.4	55.4	48.6
10:00	57.6	78.7	60.6	55.6	48.3
11:00	57.2	71.6	60.7	55.0	46.9
12:00	57.7	76.7	60.8	55.6	48.0
13:00	58.7	86.1	60.8	55.4	46.9
14:00	57.3	83.8	60.6	54.0	46.0
15:00	59.1	89.2	61.1	55.1	46.6

Time	dB $L_{Aeq,T}$	dB L_{AFmax}	dB L_{A10}	dB L_{A50}	dB L_{A90}
16:00	57.5	79.7	60.7	54.3	45.9
17:00	57.3	74.9	60.9	54.9	46.2
18:00	57.3	80.1	60.5	53.2	45.1
19:00	56.7	81.6	60.0	50.8	43.2
20:00	58.0	87.4	59.3	47.7	40.7
21:00	53.6	70.8	57.7	45.6	40.4
22:00	52.9	69.6	56.1	43.2	39.3
23:00	51.2	69.7	53.5	40.5	37.5
00:00	50.4	81.5	49.3	36.3	33.7
01:00	49.2	73.1	47.0	36.1	33.2
02:00	46.6	70.7	43.1	35.0	32.4
03:00	46.8	71.7	43.6	35.8	32.7
04:00	45.9	73.1	45.7	38.9	35.6
05:00	50.8	75.4	50.1	41.4	39.2
06:00	54.7	71.7	58.1	45.6	42.4
07:00	58.1	89.8	59.1	45.9	41.0
08:00	56.8	71.7	61.6	49.5	43.0
09:00	58.3	73.0	62.4	54.7	46.1
10:00	58.0	70.6	61.8	56.2	46.9
11:00	57.9	78.1	61.2	56.1	47.0
12:00	57.3	74.6	60.5	55.2	47.4
13:00	57.3	72.3	60.8	55.2	46.5
14:00	56.9	77.1	60.3	54.5	46.4
15:00	57.3	80.1	60.9	53.5	44.7
16:00	58.3	88.0	61.3	51.6	42.0
17:00	56.1	71.9	60.8	49.9	41.4
18:00	55.6	68.5	60.1	50.2	42.4
19:00	55.2	79.8	59.4	47.1	39.3

Time	dB $L_{Aeq,T}$	dB L_{AFmax}	dB L_{A10}	dB L_{A50}	dB L_{A90}
20:00	53.6	71.4	58.0	44.2	38.6
21:00	51.9	72.7	54.2	40.9	37.2
22:00	49.4	71.0	49.5	38.3	36.2
23:00	47.5	69.2	46.5	35.7	33.8
00:00	46.4	70.7	40.7	34.6	33.1
01:00	45.5	76.7	37.5	33.8	32.3
02:00	45.9	72.0	39.2	33.8	31.8
03:00	47.6	73.8	43.4	35.3	32.9
04:00	49.2	70.0	48.5	40.5	37.0
05:00	53.6	72.6	56.2	45.5	42.8
06:00	58.1	72.8	62.3	53.4	46.7
07:00	61.5	92.0	63.0	57.1	48.9
08:00	58.7	79.5	62.2	56.1	49.2
09:00	58.3	85.0	61.0	54.7	48.2
10:00	56.9	76.1	60.5	54.7	48.0
11:00	57.5	83.4	60.4	54.9	47.0
12:00	56.9	77.6	60.1	54.5	46.9
13:00	57.3	85.7	59.5	54.1	46.8
14:00	56.5	76.5	59.6	54.4	47.7
15:00	57.2	81.8	59.8	54.8	48.1
13:00	56.7	81.6	59.3	54.4	48.0
14:00	56.5	74.9	59.7	54.2	48.3
15:00	57.4	81.6	60.0	55.0	48.7
16:00	57.6	77.7	60.4	55.4	49.4

Appendix 4: INSUL Ceiling Construction

Sound Insulation Prediction (v10.0.7)

Program copyright Marshall Day Acoustics 2023 | Margin of error is generally within $R_w \pm 3$ dB

Date: 31/03/2026

Job Name:

 **R_w 56 dB****C -1 dB****Ctr -3 dB**

System description

Panel 1 1 x 22 mm Particle Board
 Frame Solid Joist with Gyproc acoustic hanger (87 mm x 45 mm), Stud spacing 600 mm, Cavity Width 200 mm + 200 mm Rockwool (48kg/m³)
 Panel 2 2 x 15 mm Siniat GTEC dB Board 15mm
 Details Panel Size 2.7 m x 4.0 m, Partition surface mass = 50.1 kg/m², Mass-air-mass resonant frequency = : 37 Hz

freq. (Hz)	R (dB)	Roct (dB)
50	21	
63	27	24
80	34	
100	39	
125	43	42
160	46	
200	47	
250	48	48
315	50	
400	52	
500	54	54
630	56	
800	58	
1000	59	58
1250	58	
1600	54	
2000	55	55
2500	58	
3150	63	
4000	68	66
5000	74	

