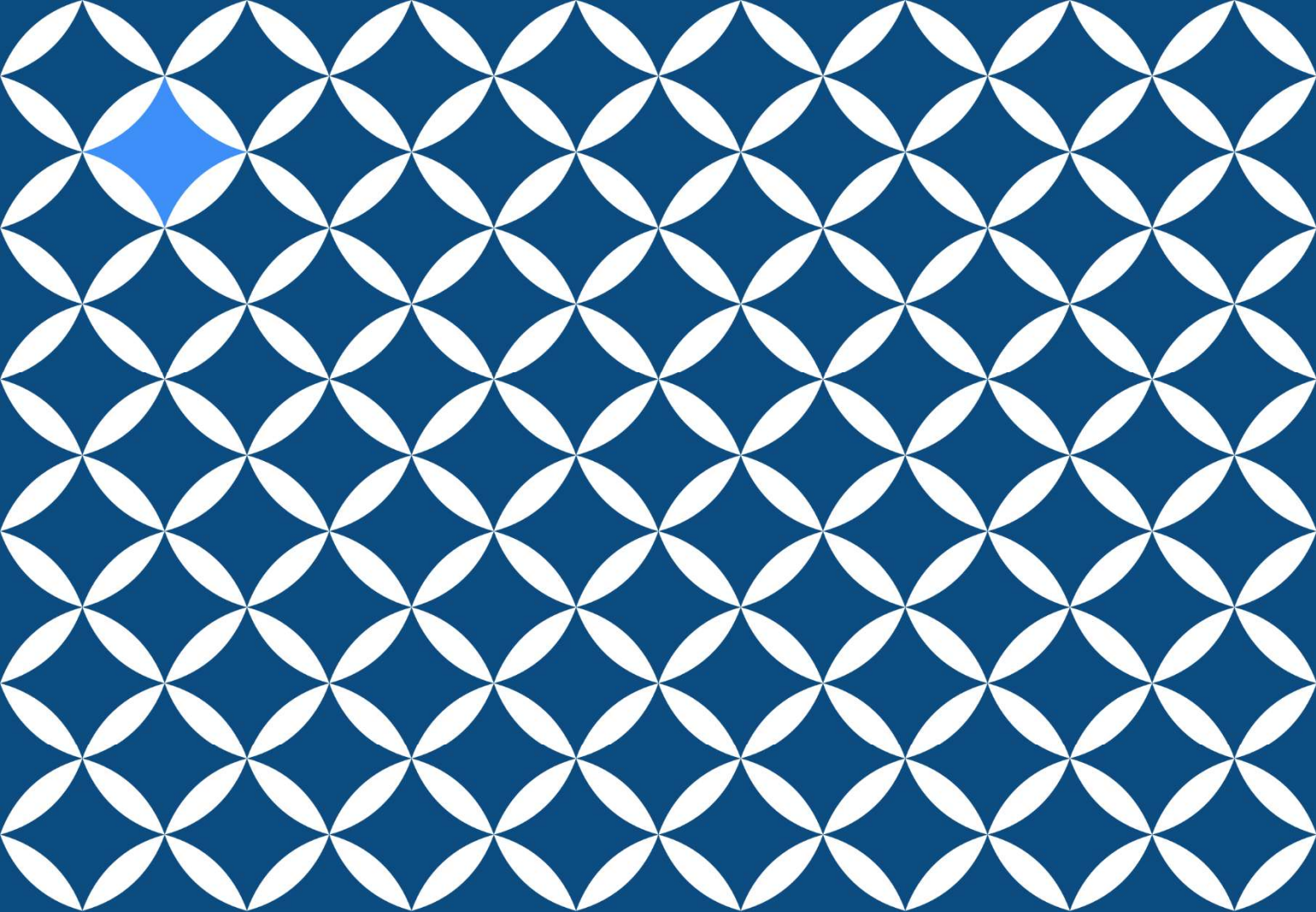




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113-115 Portland Street

Noise Impact Assessment

P2610-RP-1-JLS P02

26 June 2026

PROJECT 113-115 Portland Street
Noise Impact Assessment

CLIENT Bruntwood AV Ltd

**DOCUMENT
REFERENCE** P2610-RP-1-JLS P02

SIGNED



Joe Sinker

CHECKED



Mike Hartley

DATE 26 / 06 / 2026

REVISIONS

Issue No.	Reviewer	Authorised by	Approval Date	Summary of Revisions
P02	MFH	MFH	26/06/2026	Revised to reflect changes to soffit strategy

Disclaimer

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Name of Organisation Sol Acoustics Limited

Company Registration Number 4218702

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1 Introduction

- 1.1 Sol Acoustics Ltd ("Sol") has been commissioned by Bruntwood AV Ltd ("Bruntwood") to undertake noise impact assessment to supporting the planning applications for the refurbishment and fit-out of the existing ground and lower ground floor retail space at 113-115 Portland Street in Manchester.
- 1.2 The proposals comprise refurbishment and fit-out of the existing ground and lower ground floor retail space to form new dedicated office/studio space and a single Class E(a, d) (retail, indoor sport, recreation and fitness) unit within the lower ground floor.
- 1.3 Manchester City Council have provided the following request for a noise assessment:

"A noise assessment is required due to the inclusion of the E(a, d) (retail, indoor sport, recreation and fitness) (Basement) within the basement and the new plant areas."
- 1.4 The purpose of this report is to establish suitable plant noise egress limits for the development, in line with MCC's standard requirements, as well as setting suitable operational noise and vibration transfer limits for the proposed retail unit at lower ground floor.
- 1.5 Please refer to the main report and appendices for further details

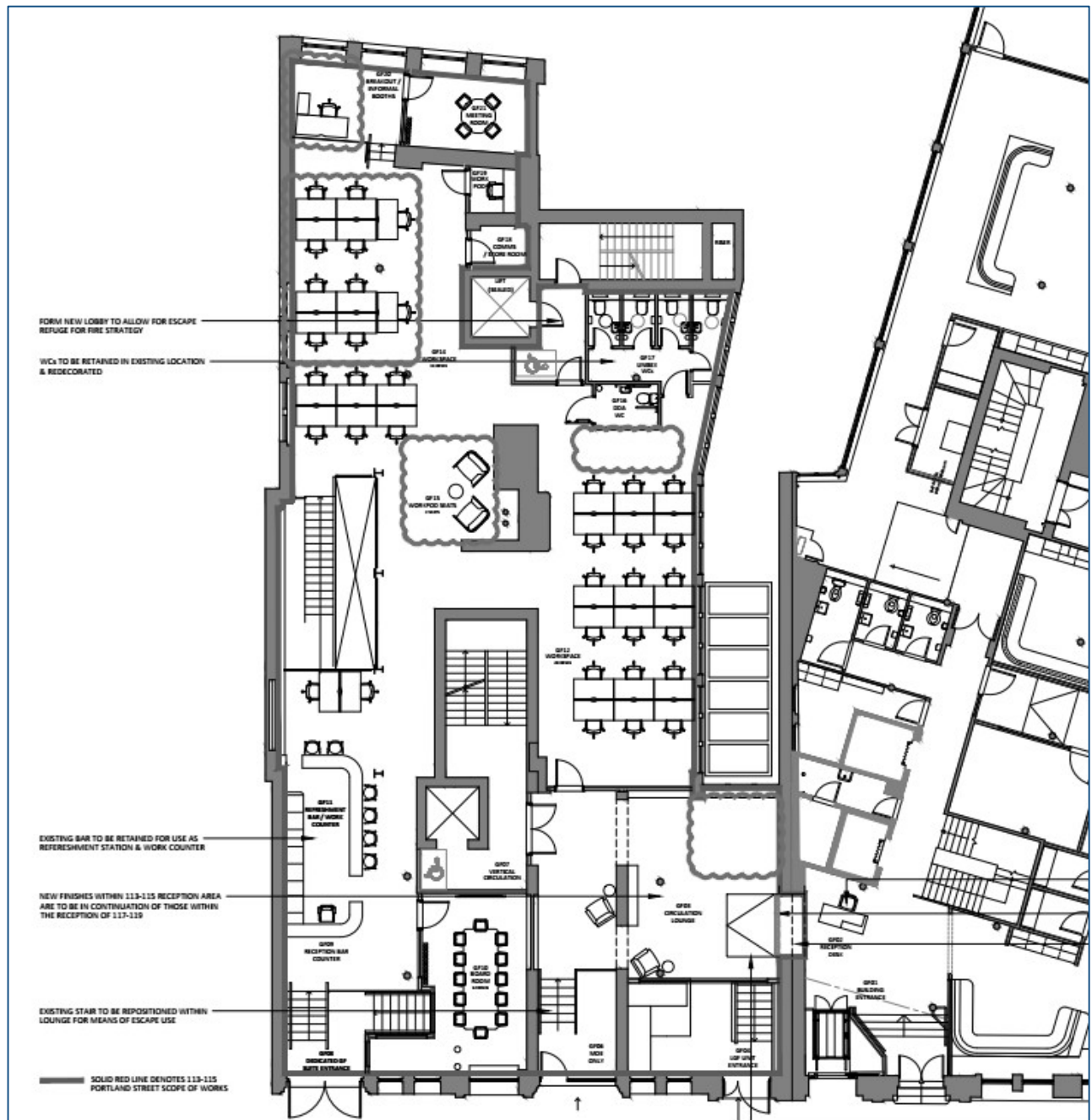


Figure 2: Proposed Ground Floor Plan (c/o AXI)

- 2.3 As the existing timber floor structure between lower ground and ground floor is considered to be of high significance, it is currently proposed to leave the soffit exposed with the potential for a non-destructive enhancement (mass barrier ceiling) to be installed by an incoming tenant that is specific to their needs and proposed operation.

2.1 General Overview of the Site and Surroundings

- 2.1.1 The development site is located on Portland Street, Manchester.
- 2.1.2 The site is located amidst a number of commercial premises, to the northwest and west the site is bound by Portland Street. The nearest noise sensitive receptors are identified as the windows of the residential premises on Harter Street to the southeast, and the hotel windows of the Novotel to the north across Portland Street
- 2.1.3 An overview of the site and the surroundings is presented in Figure 3.

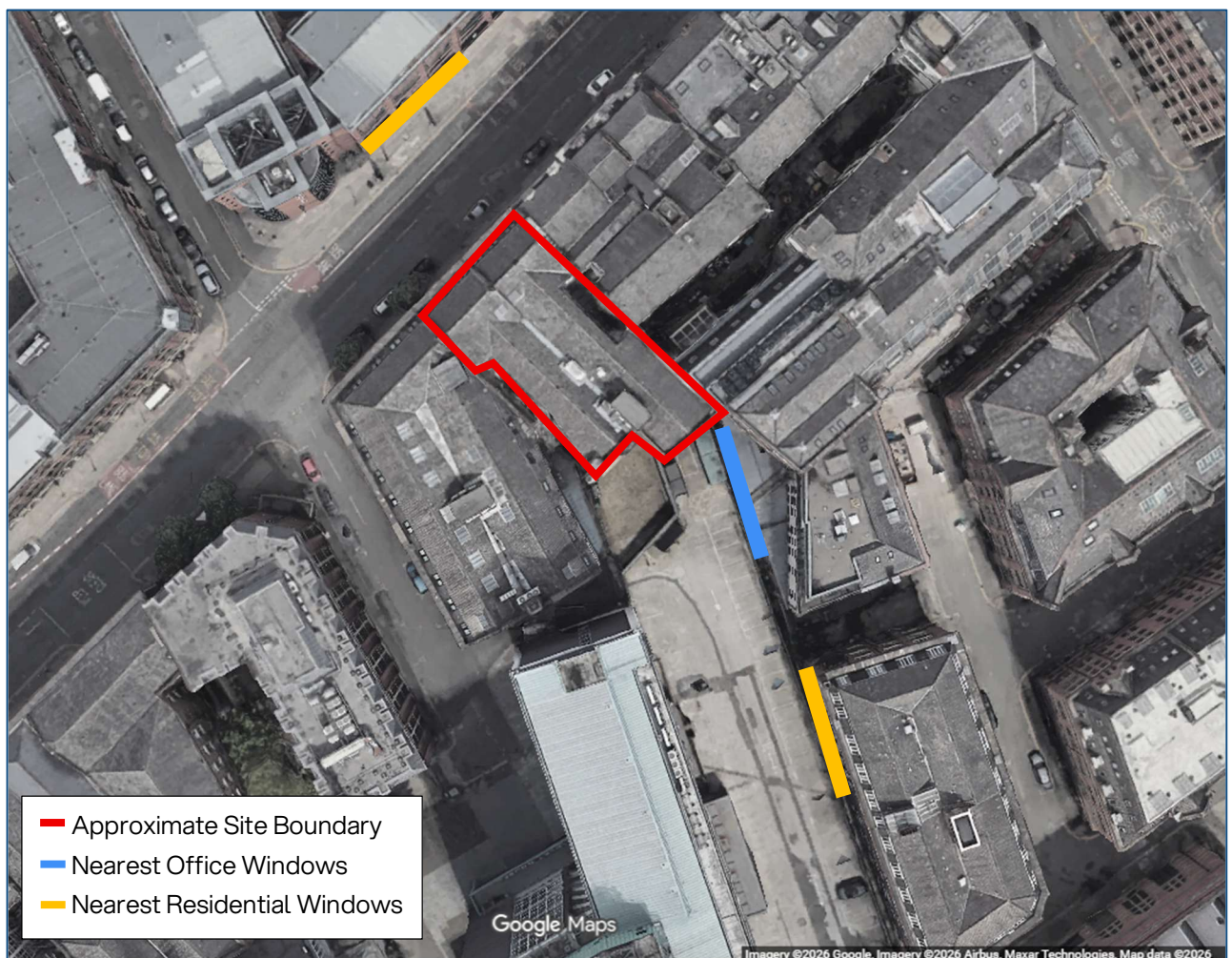


Figure 3: Proposed Development Site and Surroundings (Google Maps, 2026)

3 Relevant Standards and Guidance

3.1 Manchester City Council

3.1.1 Manchester City Council's 'Planning and Noise Technical Guidance' document published in October 2022 provides guidance on the assessment of noise and vibration impacts associated with various types of development within Manchester.

3.1.2 With regards to noise from commercial development it states:

"...The development should be designed so as to achieve a rating level of 5dB (LAeq) below the typical background (LA90) level at the nearest noise sensitive location..."

3.1.3 With regards to noise from fixed building services plant it states:

"...Externally mounted ancillary plant, equipment and services shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (LAeq) below the typical background (LA90) level at the nearest noise sensitive location..."

3.1.4 With regards to noise from entertainment sources it states:

"Entertainment noise (LAeq,5min) should be controlled to 5dB below the typical background noise level (LA90) in each octave band at the nearest noise sensitive location'.

3.1.5 As the proposed lower ground floor commercial unit is subterranean it is considered that commercial or entertainment (music) noise breakout to external receptors should not be a concern. However, the use of the proposed commercial unit will have the potential to give rise to noise and vibration transfer to other parts of the building, in particular, the adjacent spaces at lower ground and ground floor level.

3.1.6 Based on the proposed Use Class E(a, d) and based on recent experience working with Manchester City Council on similar developments, it is considered appropriate to adopt the noise and vibration transfer criteria and subsequent guidance set out in the ProPG: Gym Acoustic Guidance.

3.1.7 Although the potential scope of use of the proposed retail unit is not limited to a gym only, it is considered that the ProPG Gym Acoustic Guidance design criteria are a suitably robust design target for airborne noise transfer into commercial office space and the targets for vibration and airborne noise associated with heavy impact excitation are suitable for the worst-case use of the unit as a gym.

3.2 ProPG: Gym Acoustics Guidance (GAG)

3.2.1 The ProPG: Gym Acoustic Guidance (GAG) was published in March 2023 by the Association of Noise Consultants, Institute of Acoustics, and Chartered Institute of Environmental Health.

3.2.2 The GAG provides various good practice guidance and suggested criteria for the assessment and design of gym and fitness spaces.

3.2.3 Figure 4 shows the recommended criteria for noise transfer from gym activity to other internal areas set out in the GAG.

3.2.4 Figure 5 shows the recommended criteria for vibration transfer from gym activity to other internal areas set out in the GAG.

Table 2: Guidance Internal Sound Target Criteria for Gym Activity – Residential & Other Areas

Receptor type	Guide Criteria (for third octave band values plots against the stated G curve - see Figure 2)	
	Airborne Sound (e.g., music) $L_{eq,T}$ (31.5Hz to 8kHz)	Heavy Impact Sound $L_{max,T}$ (31.5Hz to 8kHz)
Commercial Offices	G25-G35	G35-G45
Retail Areas	G30-G45	G35-G50
Residential Areas	G15-G25 (day) G10-G20 (night)	G20-G25 (day) G15-G20 (night)

Table 2 Notes:

1. The Working Group generally found in their experience that levels below the upper values tended to avoid significantly adverse impacts (SOAEL) occurring and higher levels than these should generally be avoided, but this is highly dependent on context. The background and ambient noise levels at any given site can fluctuate (e.g., a building in an urban setting adjacent to busy infrastructure versus a building shielded from external adverse noise intrusions and/or quieter location). This variation will also cause a subjective variance in relation to the perceived noise impact, both during the design phase and the completed development and the SQA should be cognisant of which target criteria would be most appropriate to their Gym scheme.
2. In rooms with low background noise levels (below ~20 dB $L_{A90,5minutes}$), the criteria should be carefully considered and fully justified. It has been noted that the subjective impression of low frequency noise could still cause issues of disturbance, despite meeting the above target ranges. Therefore, it is recommended that resulting heavy impact noise levels at frequencies 80Hz and below, do not exceed a level of 20dB above the existing background noise dB $L_{A90,5minutes}$ within commercial and retail adjacencies (without source/Gym related activities). Where good sound insulation and closed windows results in very low background sound levels this can result in the loss of masking sound making intruding low frequency sound from Gyms more prominent and so potentially more likely to cause disturbance
3. For heavy impact noise at least 1/3 octave bands analysis is desirable over the audible range from 31.5Hz, although measuring down to 20Hz is desirable to cover the audible range and may assist in identifying outlying peaks of energy.
4. For music noise, particular care should be given to controlling noise in the low frequency region, in the range 31.5Hz to 200Hz and $L_{max,F}$, L_1 , L_{10} may also be used as parameters as a substitution for $L_{eq,T}$.

Figure 4: ProPG GAG Suggested Noise Criteria

Table 3: Guidance Internal Vibration Target Criteria for Gym Activity – Residential & Other Areas

Receptor type	Guide Criteria (see Figure 3)		
	Tactile Vibration (point of entry to the body) Acceleration (mm/s ²)		
Commercial Offices	rms 20mm/s ² W _g	Peak 40mm/s ² W _g	base curve multiplier of 4 (ref. BS 6472:1992)
Retail Areas	rms 20mm/s ² W _b	Peak 60mm/s ² W _b	base curve multiplier of 4 (ref. BS 6472:1992)
Residential Areas	rms 7mm/s ² W _b	Peak 21mm/s ² W _b	base curve multiplier of 1.4 (ref. BS 6472:1992)

Table 3 Notes:

1. When measuring vibration, a similar approach down to at least 6Hz is recommended;
2. For facilities that are particularly sensitive (like scientific facilities) a specific methodology might be appropriate

Figure 5: ProPG GAG Suggested Vibration Criteria

3.2.5 Based on the above guidance it is proposed to target the gym activity noise and vibration criteria as set out in Table 1 below.

Adjacent Space	Gym Activity Noise Criteria	Gym Activity Vibration Criteria
Work Pod, Hot Desks, Workspace	$\leq G35 L_{eq,T}$ $\leq G45 L_{max,F}$	rms 20mm/s ² W _g Peak 40mm/s ² W _g base curve multiplier of 4 (ref BS 6472:1992)
Plant	N/A	N/A

Table 1: Summary of Proposed Gym Activity Noise and Vibration Criteria

3.3 BS 4142:2014+A1:2019

- 3.3.1 BS 4142:2014+A1:2019: 'Method for rating and assessing industrial and commercial sound' is intended to be used to assess noise of an industrial nature, which includes sound from fixed installations comprising of mechanical and/or electrical plant and equipment. The methods prescribed in this British Standard use outdoor sound levels in order to assess the likely effects of sound on people who might be inside or outside a dwelling or premises that is used for residential purposes upon which sound is incident.
- 3.3.2 The procedure contained in BS 4142:2014+A1:2019 for assessing environmental noise impact is to compare the measured or predicted noise level from the source in question - the "Specific Sound Level" immediately outside the noise sensitive premises - with the corresponding "Background Sound Level". Where the noise contains attention attracting characteristics such as tonal, impulsive and/or intermittent elements, it may be appropriate to apply a correction to the Specific Sound Level in order to obtain the "Rating Level."
- 3.3.3 BS 4142:2014+A1:2019 states that the significance of sound arising from an industrial and/or commercial nature depends upon both the margin by which the Rating Level of the specific sound source exceeds the Background Sound Level, and also the context in which the sound occurs:
- 3.3.4 Typically, the greater this difference, the greater the magnitude of the impact.
- 3.3.5 A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- 3.3.6 A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.
- 3.3.7 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 or a significant adverse impact. Where the Rating Level does not exceed the Background Sound Level, this is an indication of the specific sound source having a low impact, depending on the context.
- 3.3.8 For the daytime, the assessment is conducted over a one-hour period, and over a 15-minute period at night. The daytime and night time periods are defined as occurring between 07:00 hours to 23:00 hours, and 23:00 hours to 07:00 hours, respectively.

4 Baseline Environmental Noise

4.1 Methodology

- 4.1.1 An environmental noise survey was previously conducted by Sol Acoustics for the neighbouring site at 117-119 Portland Street between 12th January and 16th January 2024 which included a measurement position along Portland Street that is considered to be suitable for use as the basis of establishing a typical background noise level representative of the nearest noise sensitive receptors along Portland Street.
- 4.1.2 An additional environmental noise survey was conducted by Sol between approximately 12:00 on Thursday 23 April and 11:00 hours on Monday 27 April 2026 comprising a single measurement position at the rear of 113 Portland Street in a position considered to be representative of the nearest office and residential windows at the rear of the premises along Harter Street.
- 4.1.3 During the survey periods weather conditions were favourable with wind speeds less than 5m/s and rainfall less than 2mm/h.
- 4.1.4 The two measurement positions are shown in Figure 6 and described in Table 2:

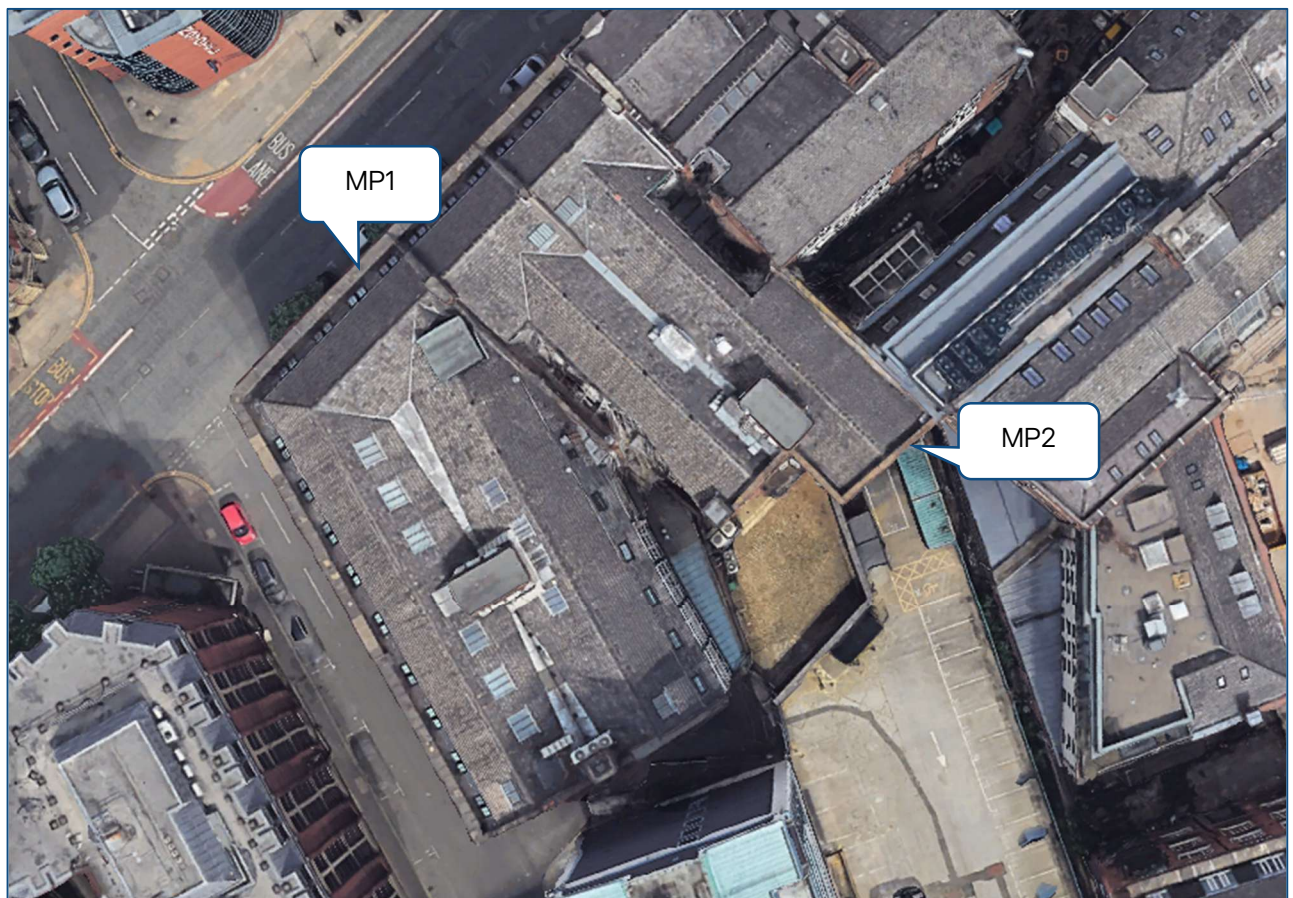


Figure 6: Aerial image showing baseline environmental noise monitoring locations (Google Maps, 2026)

Measurement Position	Description
MP1 (2024)	Pole-mounted microphone sited in "façade" conditions, at first floor level c.5.5 metres above local ground level. Positioned along the Portland Street elevation.
MP2 (2026)	Pole-mounted microphone sited in "façade" conditions, at second floor level c.8.5 metres above local ground level. Positioned along the rear car park elevation.

Table 2: Summary of noise monitoring measurement positions

4.2 Table 3 provides a basic summary of the free-field baseline environment noise levels measured during the surveys:

Measurement Location	Typical Measured Noise Level (dB, Range $L_{A90,15min}$)	
	Daytime (07:00 – 23:00)	Night-time (23:00 – 07:00)
MP1	51-68	56-63
MP2	43-51	43-48

Table 3: Summary of typical, measured environmental noise levels, broadband terms

4.3 From the statistical analysis it is considered that the representative Background Sound Level measured at MP1 was 58dB $L_{A90, 15min}$ during the daytime and 56dB $L_{A90, 15min}$ during the night-time. For MP2, the Background Sound Level was 44dB $L_{A90, 15min}$ during the daytime and 43dB $L_{A90, 15min}$ during the night-time. Histogram plots showing the distribution of measured background noise levels at each measurement position are included in Appendix B.

5 Assessment of Commercial Noise Transfer

5.1 Noise Breakout

- 5.1.1 As stated above as the proposed lower ground floor commercial unit is subterranean it is considered that commercial or entertainment (music) noise breakout to external receptors should not be a concern and as such no assessment of noise breakout has been undertaken at this stage

5.2 Noise Transfer

- 5.2.1 The intermediate floor separating the lower ground and ground floor is understood to comprise historic timber floorboards on timber joists. At this stage no acoustic enhancement is proposed as part of the works to form the unit shell, however it is anticipated that an incoming tenant may wish to install (in a non-destructive manner) a mass-barrier ceiling to permit noisier operations without impacting the office accommodation above, however the specification of this ceiling system would be the responsibility of the incoming tenant.. This floor is considered likely to be the weakest element that will separate the proposed commercial unit from adjacent office space and will therefore determine the limiting noise levels within the unit.
- 5.2.2 Installation of any mass barrier ceiling (if such a need arises) will be subject to separate discussion with Manchester City Council and separate Listed Building Consent(s) if needed.
- 5.2.3 Table 4 below sets out the conservative sound reduction indices predicted for the existing timber floor with no acoustic enhancement.
- 5.2.4 Table 5 sets out the calculated maximum internal noise levels calculated based on the most onerous requirements set out in Table 1

Predicted Sound Reduction Index R at Third Octave Band Centre Frequency (Hz)																			
50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000
8	9	10	12	13	14	16	18	19	21	22	23	25	23	21	21	23	25	27	29

Table 4: Predicted Sound Reduction Indices – Existing timber floor made fire safe

Description	Maximum Reverberant Internal Noise Level (dB) at Third Octave Band Centre Frequency (Hz)																				dBA
	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	
$L_{Aeq,5min}$	69	65	62	61	59	58	58	57	56	56	56	56	57	54	51	50	51	52	53	55	66
$L_{Amax,f}$	77	73	70	70	68	67	67	67	66	66	66	66	67	64	61	60	61	62	64	65	76

Table 5: Calculated Maximum Internal Noise Limits within Commercial Unit

- 5.2.5 These limits should be written into the prospective tenant's rental agreement or handbook, and if the prospective tenant expects operational noise levels to exceed the calculated limits, it should be made clear that the tenant would be responsible for enhancement of the unit shell such that the limits set out in Table 1 are not exceeded in the ground floor office spaces above the unit.
- 5.2.6 As it is proposed to leave the existing timber soffit exposed at this stage, these limits are quite onerous and it is considered likely that most incoming tenants will be required to install a mass barrier ceiling to prevent airborne operational noise transfer exceeding the limits set out in Table 1 within the ground floor office spaces above the unit.
- 5.2.7 At this stage it is anticipated that with an appropriately specified mass barrier ceiling configuration the unit could support a wide range of commercial tenants without compromising the acoustic conditions in the ground floor office spaces above.
- 5.2.8 Installation of any mass barrier ceiling (if such a need arises) will be subject to separate discussion with Manchester City Council and separate Listed Building Consent(s) if needed.

5.3 Vibration Transfer

- 5.3.1 The need for specific vibration transfer mitigation would only be expected to be required should the unit be used for a gym or indoor sport type usage. For these types of uses, in order to mitigate the potential for vibration transfer from gym/sports activity in the lower ground floor to adjacent office type spaces it will likely be necessary to install a specialist flooring system capable of dampening the impact from impulsive stimuli such as dropping of weights.
- 5.3.2 In accordance with the GAG, the exact flooring build-up within the unit would be subject to in-situ sample testing undertaken during tenant fit-out in line with either HIR Method 1 (using reference weight drops) or HIR Method 2 (using real non-standardised weight drops if known/available for testing). This again should be written into the prospective tenant's rental agreement or handbook, and it should be made clear that the incoming tenant would be responsible for enhancement of the unit shell such that the vibration transfer limits set out in Table 1 are not exceeded in the adjacent office spaces.
- 5.3.3 At this stage, it is envisaged that an allowance for up to 200mm of varying thicknesses of specialist rubber matting flooring systems dependant on usage and floor areas would likely be sufficient to permit the majority of gym/sport uses but final details of the proposed mitigation will be determined by the final tenant fit-out, specification of equipment, and layout which can be agreed in principle with a suitably worded pre-occupation condition and subsequent validation testing.

6 Plant Noise Emission

6.1 Overview

- 6.1.1 Building services environmental noise emitted by the development should be controlled as not to cause a loss of amenity to nearby noise sensitive properties.

6.2 Criteria

- 6.2.1 In line with the guidance and the requirements set out in Section 3, the total, aggregate environmental noise from all M&E plant, when operating simultaneously, should be limited to a Rating Level at least 5dB below the typical pre-existing background noise level at any noise sensitive façade in L_{A90} terms.
- 6.2.2 Based upon the results of the background noise survey, Table 6 provides the maximum permissible Rating Level to be achieved by the proposed M&E plant associated with the development at the nearest noise sensitive premises:

Location	Maximum permissible Rating Level, dB $L_{A,r,Tr}$	
	Daytime (07:00hrs – 23:00hrs)	Night-time (23:00hrs – 07:00hrs)
Portland Street	53	51
Harter Street	39	38

Table 6: Proposed plant noise rating limits

- 6.2.3 The above noise level limits are specified as Rating Levels and as such it will be necessary to consider the acoustic character associated with any of the proposed M&E plant associated with the scheme when predicting the noise impact expected.
- 6.2.4 Any proposed new plant should, in the first instance, be designed to avoid having any significant tonal, impulsive or intermittent acoustic characteristics. However, where such features are expected to be present, this must be taken into consideration and suitable corrections must be applied to the predicted noise level impact when determining the predicted Rating Level from the development.

7 Conclusion

- 7.1 Sol Acoustics Ltd ("Sol") has been commissioned by Bruntwood AV Ltd ("Bruntwood") to undertake noise impact assessment to supporting the planning applications for the refurbishment and fit-out of the existing ground and lower ground floor retail space at 113-115 Portland Street in Manchester.
- 7.2 The proposals comprise refurbishment and fit-out of the existing ground and lower ground floor retail space to form new dedicated office/studio space and a single Class E(a, d) (retail, indoor sport, recreation and fitness) unit within the lower ground floor.
- 7.3 Noise and vibration transfer limits within the proposed office spaces adjacent to the proposed commercial unit have been established based on the guidance present within the ProPG GAG which is considered to be suitable given the proposed Use Class E(a, d).
- 7.4 These limits can be secured with a suitably worded pre-occupation condition of planning requiring specific details of mitigation as part of the incoming tenant fit-out and in-site validation testing (in line with ProPG GAG for gym/indoor sport usage) to be submitted to Manchester City Council for discharge.
- 7.5 The limits have been reviewed in tandem with consideration of the existing timber flooring (proposed to be left exposed at this stage) to calculate approximate limiting internal operational noise limits within the proposed commercial unit. These operational limiting noise levels are quite onerous and it is considered likely that most incoming tenants will be required to install a mass barrier ceiling to prevent airborne operational noise transfer exceeding the limits set out in Table 1 within the ground floor office spaces above the unit.
- 7.6 At this stage it is anticipated that with an appropriately specified mass barrier ceiling configuration the unit could support a wide range of commercial tenants without compromising the acoustic conditions in the ground floor office spaces above. Specification of such a system will be the responsibility of the incoming tenant.
- 7.7 Installation of any mass barrier ceiling (if such a need arises) will be subject to separate discussion with Manchester City Council and separate Listed Building Consent(s) if needed.
- 7.8 If used for gym or indoor sport activities the final specification of the flooring would be subject to design by the incoming tenant and would require validation through in-situ sample testing in line with the ProPG GAG test methodologies; at this stage a preliminary allowance for a zone of up to 200mm for specialist rubber mattings has been advised and would be expected to control impact excitation from a wide range of gym or indoor sport activities in line with the proposed transfer limits in the adjacent office spaces.
- 7.9 Additionally, appropriate M&E plant daytime and night time environmental noise limits have been set herein, all as based on the measured, pre-existing environmental noise levels at surrounding noise sensitive receptors.

APPENDIX A

Glossary of Acoustic Terms

Term	Abbreviation	Description
Decibel	dB	A scale for comparing the ratios of two quantities, including sound pressure and sound power.
A-weighting	dB(A)	The unit of sound level, weighted according to the A-scale, which takes into account the change in sensitivity of the human ear at varying frequencies.
Sound Pressure Level	L_{pA}	A measure of the sound pressure at a particular location. Typically expressed in dB(A) referenced to 2×10^{-5} Pascals.
Equivalent Continuous Sound Level	$L_{Aeq,T}$	The steady level of sound over a prescribed period of time which would contain the same total sound energy as the actual fluctuating noise under consideration in the same period of time.
Statistical Sound Levels	L_{A10} and L_{A90}	The level of noise exceeded for a percentage of the time period being sampled, namely 10% or 90% respectively.
Background Sound Level	$L_{A90,T}$	The A-weighted sound pressure level of the residual noise at the assessment position that is exceeded for 90% of the time period being sampled.
Maximum Sound Level	L_{Amax}	The maximum sound or noise level determined with instrumentation set to either a fast time weighting, L_{AFmax} or a slow time weighting, L_{ASmax} as occurring during the time period being sampled.
Sound Power Level	L_{WA}	A measure of the total sound energy radiated from a source. Like sound pressure levels, this is also expressed in dB(A) terms, but it is referenced to 1×10^{-12} W.
Broadband		Sound sampled over a wide range of frequencies.
Narrow band		Sound sampled over a specific, restricted frequency range. Used to ascertain the amplitude and significant of individual, audible tones, and to assist in identifying particular sources of noise within a complex, multi-source soundscape environment.
Ambient Sound	$L_{eq,T}$	Totally encompassing sound in a given situation at a given time, usually composed of sound from many sources, both near and far.
Specific Sound Level	$L_{eq,T}$	The Equivalent Continuous A-Weighted Sound Level at an assessment position produced by a specific sound over a given reference time interval, T_r
Rating Level	L_{Ar,T_r}	The Specific Sound Level plus any adjustment for the acoustic characteristic features of the noise (e.g. intermittency, tones etc.).
Residual Noise	$L_{Aeq,T}$	The ambient sound remaining at given position in a given situation, when the specific sound source is suppressed to such an extent that it no longer contributes to the ambient sound.
Sound Reduction Index	SRI	The reduction in sound energy when transmitted through a panel or similar planar element, typically used in relation to single octave or one-third octave frequency band values.
Weighted Sound Reduction Index	R_w	The Sound Reduction Index expressed as a single figure, as expressed against a reference curve.
Dynamic Insertion Loss	DIL	Reduction in acoustic energy resulting from the insertion of a noise control element (e.g. an attenuator, acoustic enclosure etc.).
Free Field		Noise measuring location that is free from the presence of sound reflecting objects (except the ground), usually taken to mean being at least 3.5 metres distance from reflective surface(s) or greater.

APPENDIX B

Noise Survey Details and Summary Results

Location

113-115 Portland Street, Manchester

Dates & Times

12 January 2024 to 16 January 2024

23 April 2026 to 27 April 2026

Weather Conditions

Weather conditions were understood to be typically dry with light winds, dry ground surfaces and minor cloud cover.

Personnel

Chris Downing – Sol Acoustics Ltd

Joe Sinker – Sol Acoustics Ltd

Instrumentation

01dB Cube Sound Level Meter (serial no. 12070)

01dB Cube Sound Level Meter (serial no. 11348)

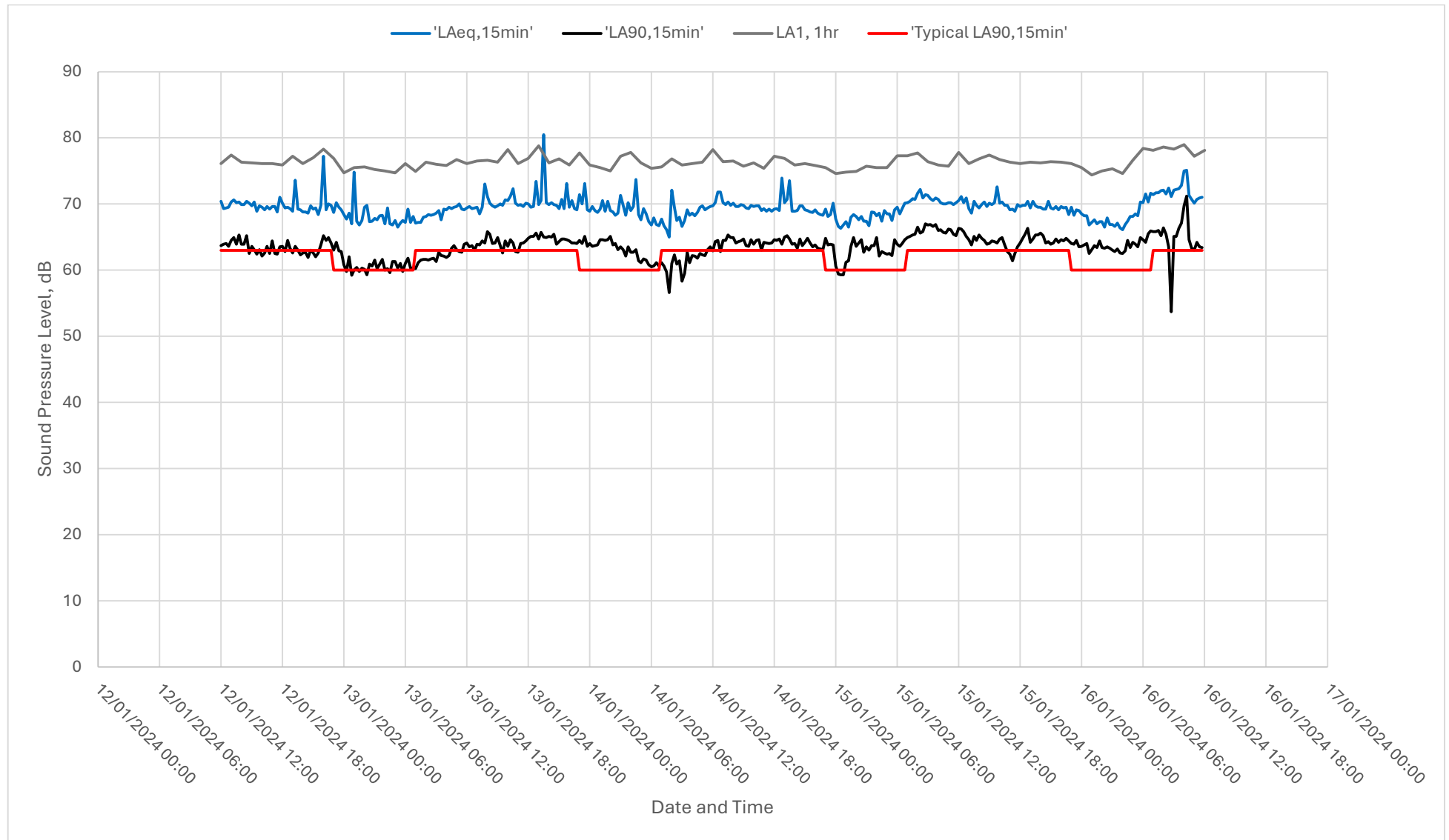
CAL21 Acoustic Calibrator (serial no. 34375244)

Methodology

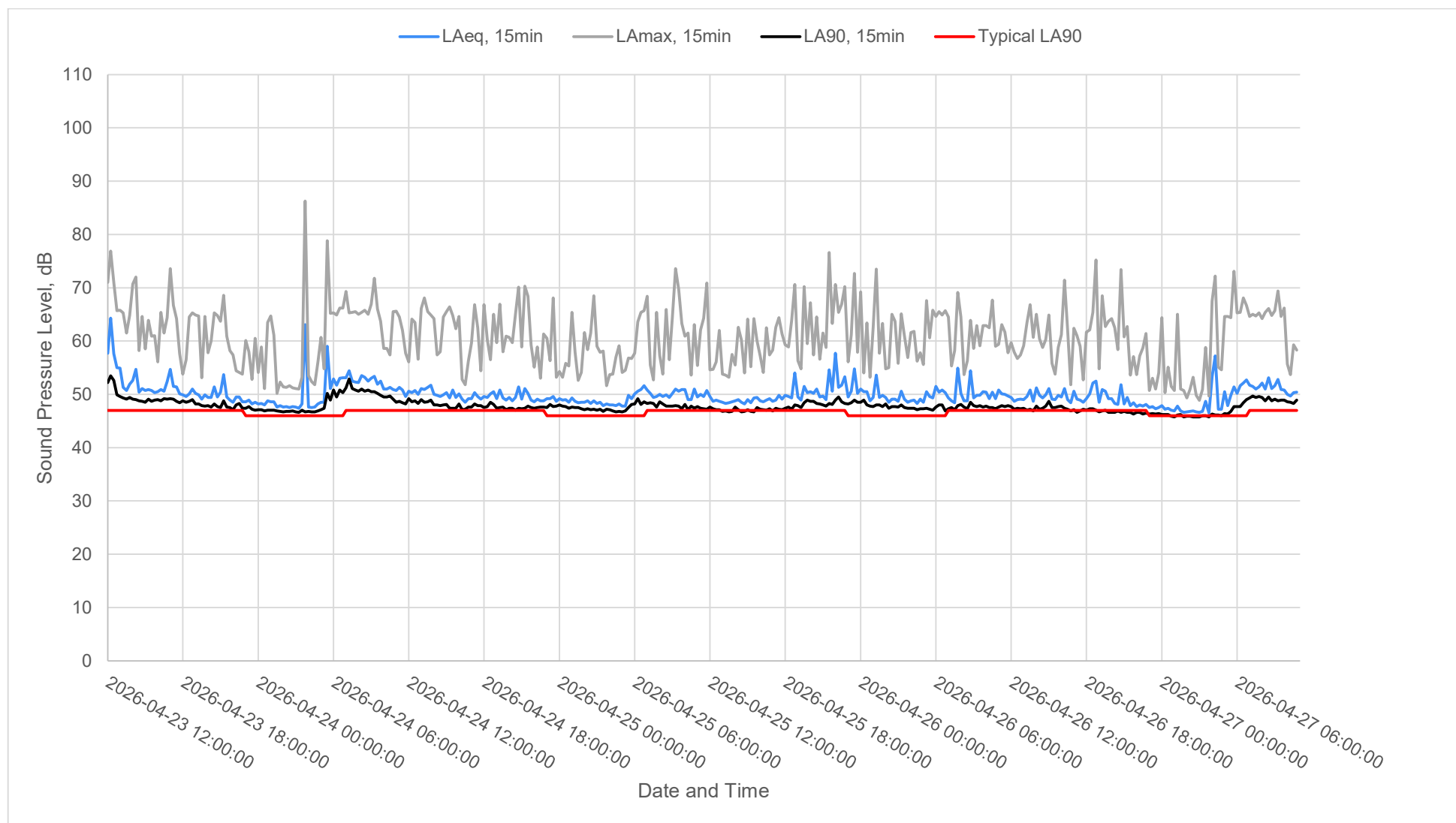
Before and after the measurements the sound level meters were checked and calibrated to an accuracy of ± 0.4 dB using the 01dB CAL 21 Calibrator. The calibrator produces a sound pressure level of 94 dB re 2×10^{-5} Pa @ 1 kHz.

Measurement Results

Graph B1 and B2 summarise the results obtained from the noise survey at Measurement Position MP1 and MP2 respectively.



Graph B.1: Graph showing measured environmental noise levels as measured at Measurement Position MP1



Graph B.2: Graph showing measured environmental noise levels as measured at Measurement Position MP2

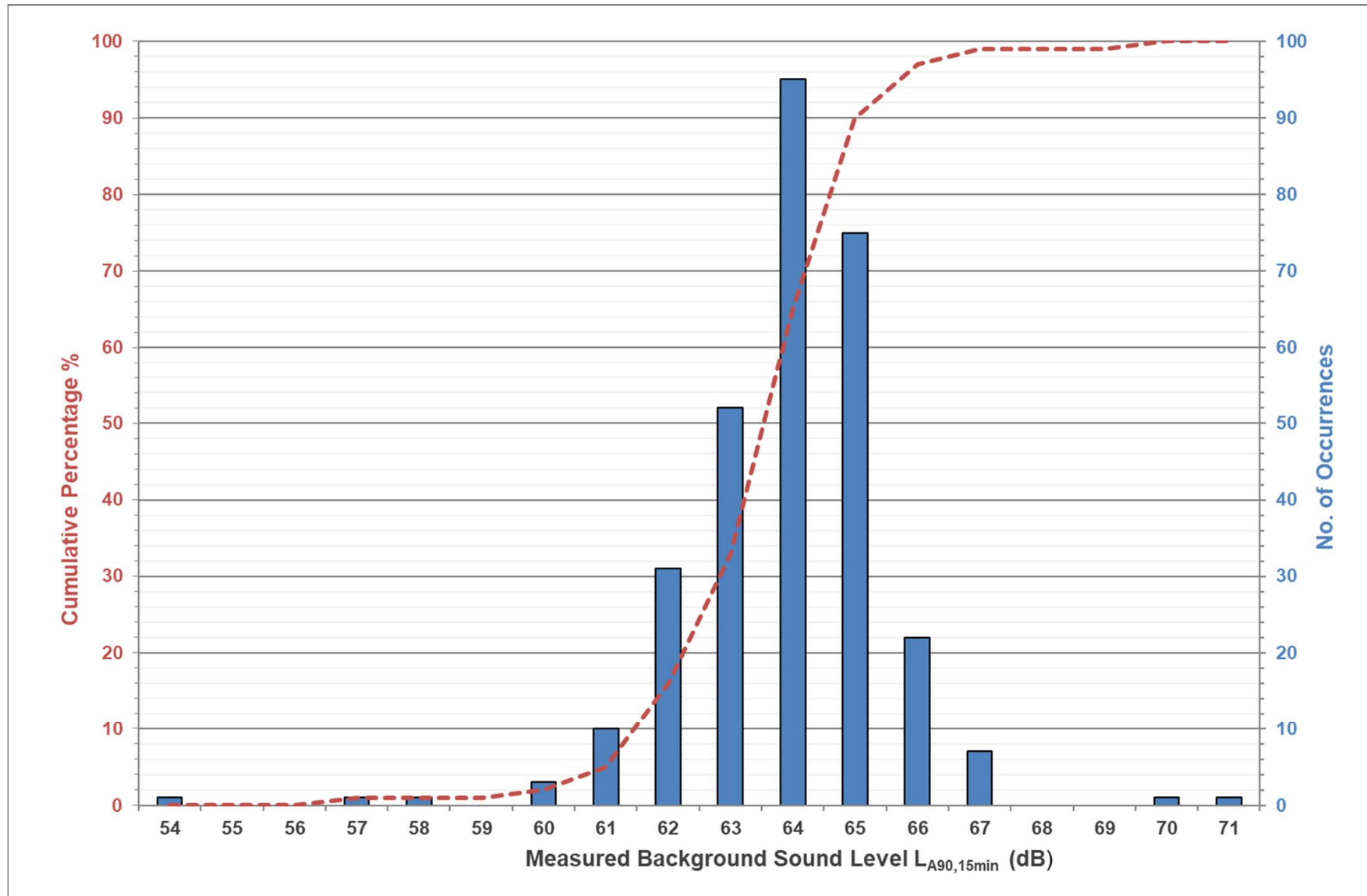


Figure B3: Histogram of measured background noise levels at MP1 (Daytime)

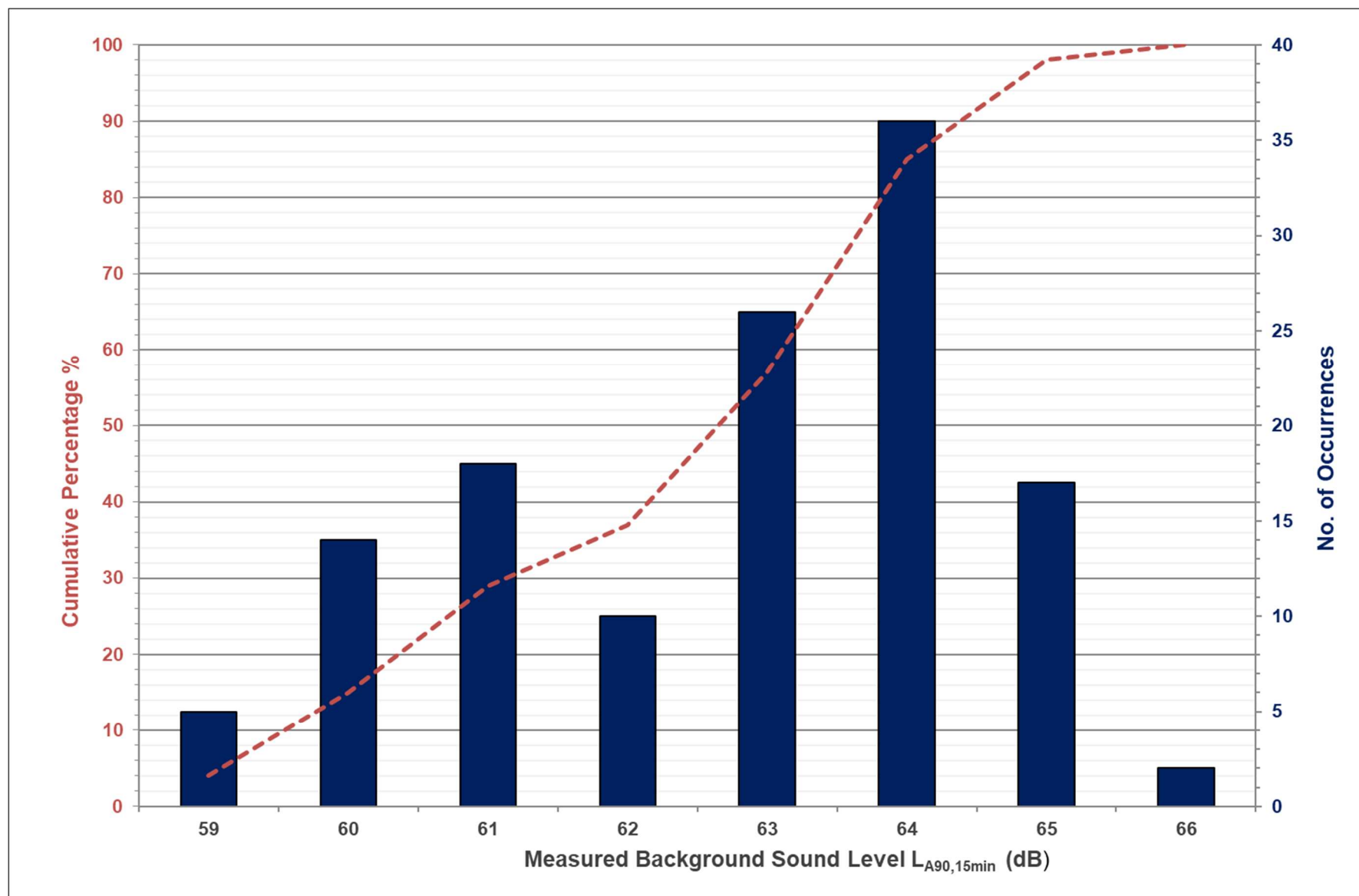


Figure B4: Histogram of measured background noise levels at MP1 (Night-time)

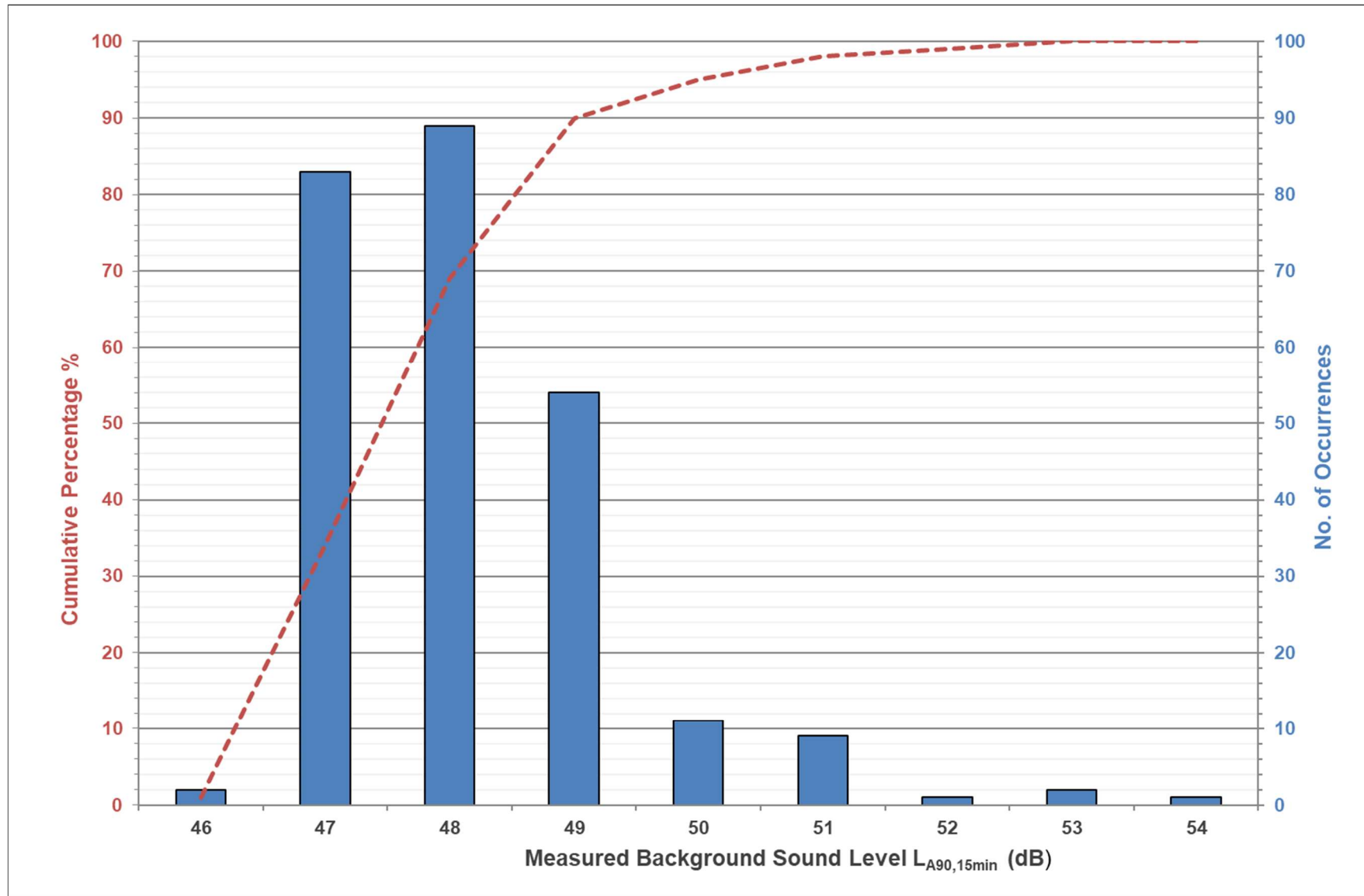


Figure B5: Histogram of measured background noise levels at MP2 (Daytime)

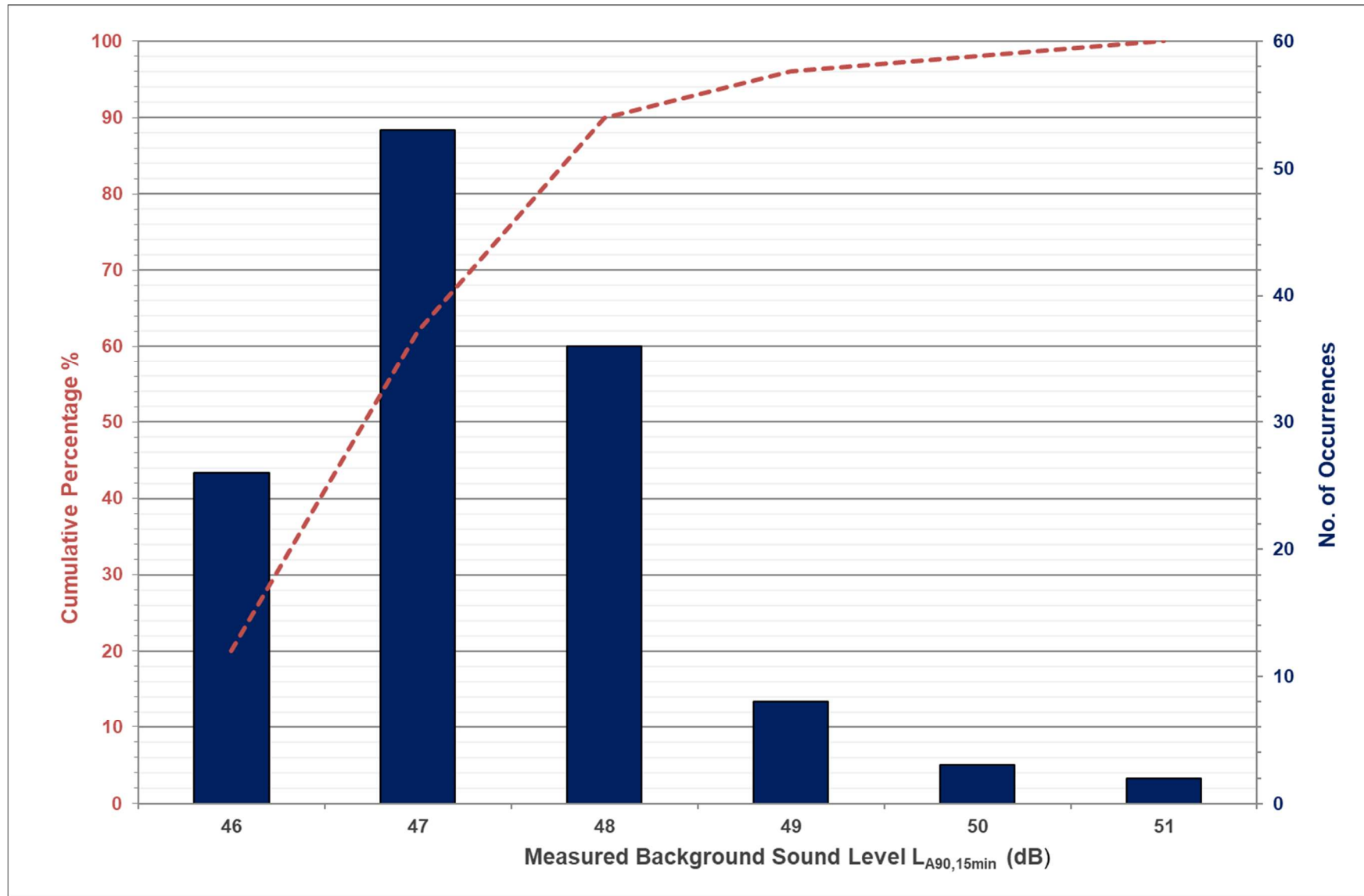


Figure B6: Histogram of measured background noise levels at MP2 (Night-time)