
No.67 Broom Lane, Levenshulme Noise Validation Report



Project: No.67 Broom Lane, Levenshulme

Client: Jayne Grundy

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Document History

Version	Date	Comments	Initials
1	11 March 2025	Issue for planning	RS / LT

Authorised by	Ryan Swales, BSc, MIOA Director & Principal Consultant
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1. Introduction

- 1.1 RS Acoustic Engineering Ltd have been appointed by Jayne Grundy to undertake an internal noise survey and provide a validation report regarding a recently completed material change of use at No.67 Broom Lane, Levenshulme, Manchester, M19.
- 1.2 The ground floor of the end-terraced property has been converted back into a residential habitable room and was formerly a barber shop. The first floor of the property is an existing dwelling and both the ground and first floor form part of the same dwelling (i.e. not separate dwellings).
- 1.3 Manchester City Council granted prior approval on the 5th June 2024 (ref: 139654/P3MAP/2024).
- 1.4 The conditions attached to the prior approval state that a noise validation survey and report need to be submitted to the council prior to the ground floor of the dwelling being occupied.
- 1.5 Continuous sound level monitoring was conducted in March 2025 within the ground floor lounge. Although not required as part of the prior approval, sound level monitoring was also conducted within a first-floor bedroom. The dwelling was complete and furnished at the time of the survey.
- 1.6 The survey and assessment was conducted by Mr Ryan Swales (BSc(Hons), MIOA), Principal Acoustic Consultant and Member of the Institute of Acoustics.
- 1.7 The results of the noise survey have been presented, along with a discussion of the results with respect to the relevant condition and acoustic performance targets.

2. Assessment Guidance & Design Criteria

Manchester City Council Planning Conditions

2.1 With regard to noise, Manchester City Council have stipulated the following condition:

1. a) *Before the development commences a scheme for acoustically insulating the proposed residential accommodation against noise from Broom Lane shall be submitted to and approved in writing by the City Council as local planning authority. The approved noise insulation and ventilation scheme shall be completed before the dwelling unit is occupied.*

1. b) *Prior to first occupation of the residential unit, a verification report shall be required to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved acoustic consultant's report. The report shall also undertake post completion testing to confirm that the internal noise criteria have been met. Any instances of non-conformity with the recommendations in the report shall be detailed along with any measures required to ensure compliance with the internal noise criteria.*

Reason: To secure a reduction in noise from traffic or other sources in order to protect future residents from noise disturbance, pursuant to policies SP1 and DM1, of the Manchester Core Strategy and saved policy DC26 of the Unitary Development Plan for the City of Manchester.

British Standard 8233:2014: Guidance on sound insulation and noise reduction for buildings

2.2 BS 8233 provides guidance regarding acoustic criteria and noise levels appropriate for various types of space that have different functions.

2.3 With regard to dwellings, appropriate internal ambient sound levels are given in Table 2.1 for bedrooms, living rooms and dining rooms. The guidelines take into consideration the effect of internal noise on sleep and also the effect of noise on resting, listening and communicating.

Table 2.1 - Indoor ambient noise levels for dwellings

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 dB L _{Aeq,16hour}	---
Dining	Dining room/area	40 dB L _{Aeq,16hour}	---
Sleeping (daytime resting)	Bedroom	35 dB L _{Aeq,16hour}	30 dB L _{Aeq,8hour}

2.4 BS 8233 (Note 7) also suggests that in some circumstances, it is appropriate to relax the indoor ambient noise level targets by up to 5 dB:

Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved.

Professional Practice Guidance on Planning & Noise (2017)

2.5 Professional Practice Guidance on Planning and Noise (ProPG) has been produced in order to provide practitioners with guidance on a recommended approach to the management of noise within the planning system in England.

- 2.6 The NPPF encourages improved standards of design. This guidance document encourages better acoustic design for new residential development and aims to protect people from the harmful effects of noise.
- 2.7 The scope of ProPG is restricted to the consideration of new residential development that will be exposed predominantly to airborne noise from transportation sources.
- 2.8 The recommended ProPG internal noise level guidelines are presented in Table 2.2. The guidelines reflect and extend current practice contained within BS 8233:2014.

Table 2.2 - ProPG internal noise level guidelines

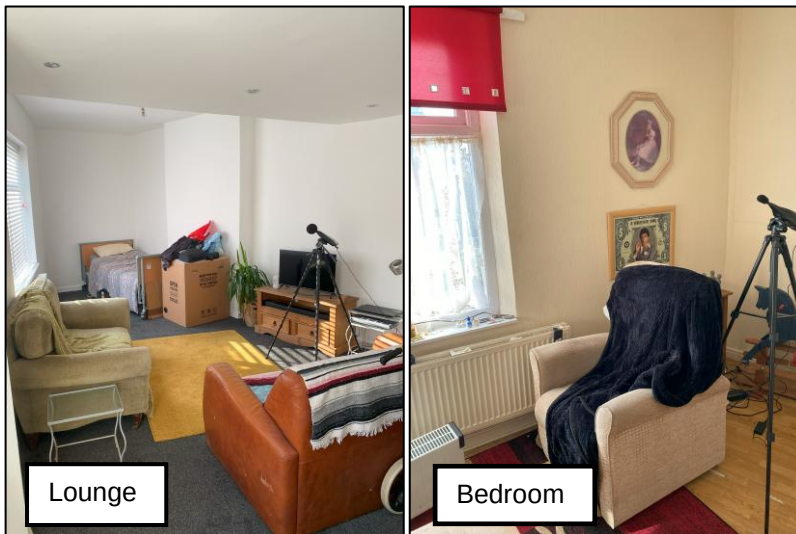
Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 dB $L_{Aeq,16hour}$	---
Dining	Dining room/area	40 dB $L_{Aeq,16hour}$	---
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hour}$	30 dB $L_{Aeq,8hour}$ 45 dB $L_{Amax,F}$

3. Internal Noise Survey

Survey methodology

- 3.1 Continuous sound level monitoring was conducted over a 22.5-hour period within the new ground floor lounge and also within an existing first floor bedroom.
- 3.2 Measurements were performed from 10:30 hours on Wednesday 5th through to 09:00 hours on Thursday 6th March 2025.
- 3.3 The measurement rooms and survey equipment are shown in the photographs below.

Figure 3.1 - Photographs showing survey measurement positions



- 3.4 The ground floor layout showing the new lounge and kitchen is presented in Figure 3.2 below and the first-floor layout showing the existing bedrooms is presented in Figure 3.3 overleaf.

Figure 3.2 - Ground floor layout showing new lounge and kitchen

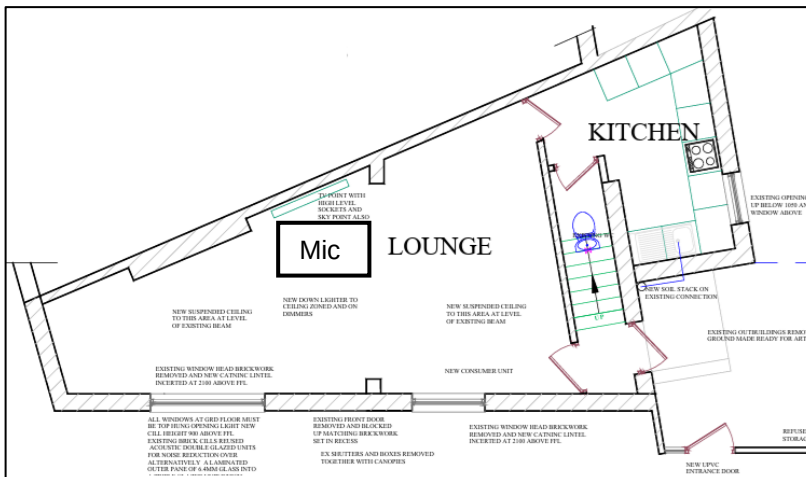
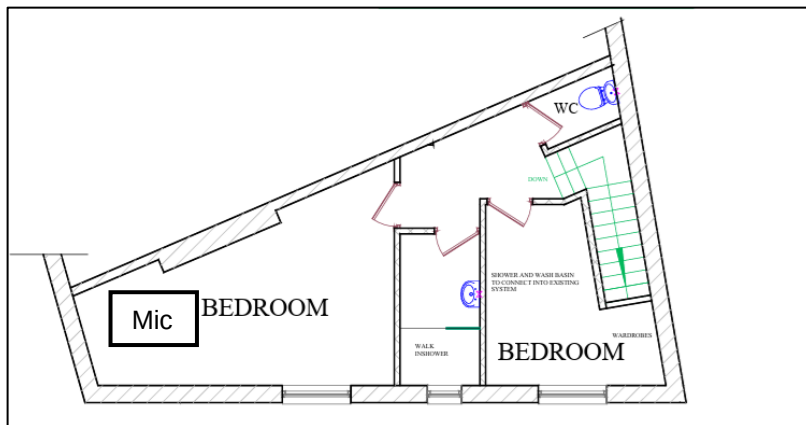


Figure 3.3 - First floor layout showing existing bedrooms



Survey equipment

- 3.5 The survey was conducted using the following Class-1 specification equipment:
- Brüel & Kjaer 2250 sound level meter, microphone type 4189, preamplifier type ZC0032.
 - Brüel & Kjaer 2260 sound level meter, microphone type 4189, preamplifier type ZC0032.
 - CEL-120/1 Acoustic calibrator.
- 3.6 Calibration of the sound level meter and microphone used for the measurements are traceable to UKAS accredited laboratories (calibration certificates are provided within Appendix A).
- 3.7 The calibration of both sound level meter and microphone was checked using a 1 kHz tone at 94 dB prior to and following the measurements performed. Calibration drift was less than 0.1 dB.

Measured indices

- 3.8 Although a wide range of statistical sound level data was recorded during the survey, the L_{Aeq} and L_{AFmax} indices are of most interest in this instance:
- $L_{Aeq,T}$ - The A-weighted equivalent continuous sound pressure level over a period of time, T. Representative of the 'average' sound pressure level over a given period and commonly used to describe the 'ambient' sound level.
 - $L_{AFmax,T}$ - The A-weighted 'maximum' sound pressure level that occurred during a given period, T. Commonly used for the assessment of occasional or intermittent loud noises.
- 3.9 Sound pressure level measurements are taken with an A-weighting (denoted by a subscript 'A', e.g. L_{Aeq}) to approximate the frequency response of the human ear.

Results summary

- 3.10 Table 3.1 presents the survey results for the new ground floor lounge. Measured values have been rounded to the nearest whole number.

Table 3.1 - Summary of measured ambient sound pressure levels, ground floor lounge

Date	Period	Duration, T (hours)	$L_{Aeq,T}$ dB	10 th highest $L_{AFmax,T}$ dB
Wednesday 05/03/2025 to Thursday 06/03/2025	Daytime (07:00-23:00)	14.5	33	---
	Night-time (23:00-07:00)	8	27	45

- 3.11 The daytime ambient sound pressure level was 33 dB $L_{Aeq,14.5hour}$ and the night-time sound pressure level was 27 dB $L_{Aeq,8hour}$.

- 3.12 Table 3.2 presents the survey results for the existing first floor bedroom. Measured values have been rounded to the nearest whole number.

Table 3.2 - Summary of measured ambient sound pressure levels, first floor bedroom

Date	Period	Duration, T (hours)	$L_{Aeq,T}$ dB	10 th highest $L_{AFmax,T}$ dB
Wednesday 05/03/2025 to Thursday 06/03/2025	Daytime (07:00-23:00)	14.5	35	---
	Night-time (23:00-07:00)	8	30	45

- 3.13 The daytime ambient sound pressure level was 35 dB $L_{Aeq,14.5hour}$ and the night-time sound pressure level was 30 dB $L_{Aeq,8hour}$.

- 3.14 The measured ambient sound pressure levels are presented graphically in the figures below.

Figure 3.4 - Graph showing measured ambient sound pressure levels, ground floor lounge

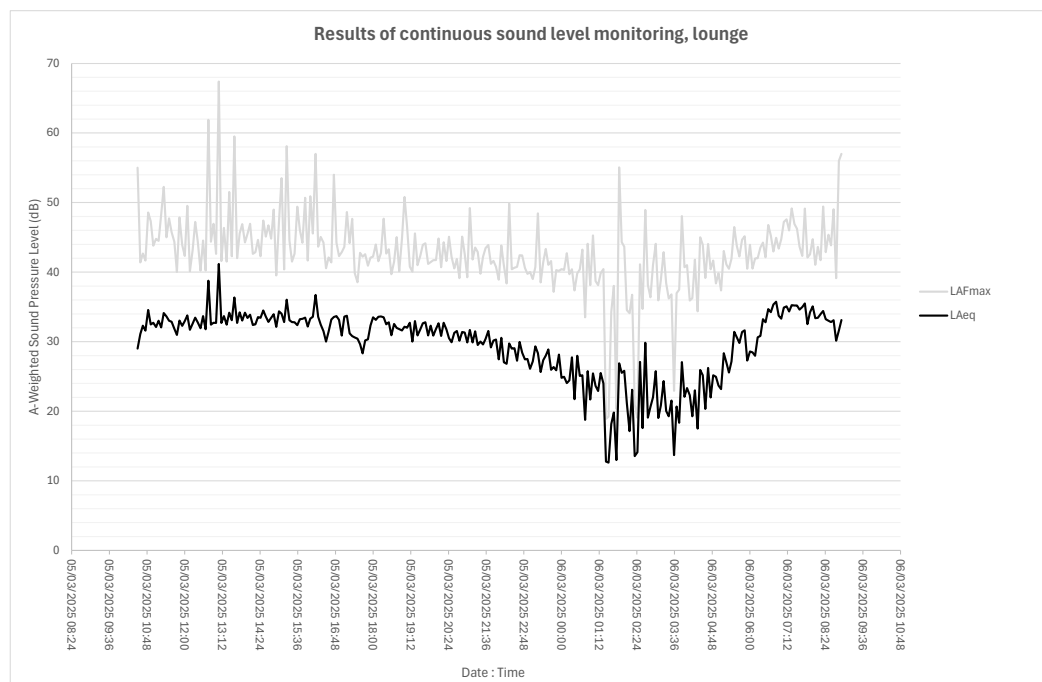
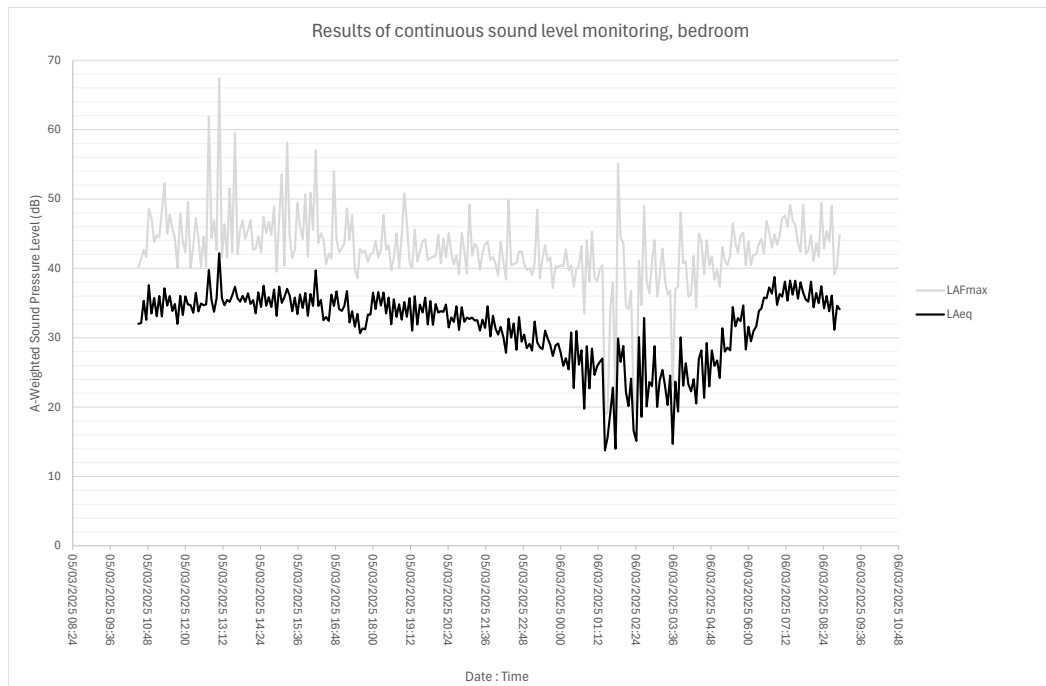


Figure 3.5 - Graph showing measured ambient sound pressure levels, first floor bedroom



4. Assessment & Discussion

Building envelope construction

- 4.1 The external walls are of a traditional double-leaf brickwork construction and the roof and ceiling construction consists of a pitched tiled roof, mineral wool insulation and plasterboard ceiling.
- 4.2 The new windows to the ground floor lounge are standard thermal double-glazed units fixed within uPVC frames. The construction appears to be 4 mm glass/18 mm cavity/4 mm glass.
- 4.3 The existing windows to the first-floor bedrooms are again standard thermal double-glazed units fixed within uPVC frames. The construction appears to be 4 mm glass/18 mm cavity/4 mm glass.
- 4.4 Figure 4.1 shows the former elevation and the current elevation following the refurbishment works.
- 4.5 The former main entrance door has been removed and the aperture sealed with brickwork. The entrance door is now to the side of the property orientated away from the road.

Figure 4.1 - Photographs showing former and current front elevation



- 4.6 It was noted during the survey that there are no frame-mounted trickle vents installed within the new windows to the ground floor lounge. It is therefore recommended that an appropriate ventilator unit be installed within the external wall of the lounge, so that an alternative method of ventilation is available to the occupants (i.e. in addition to opening windows).

Internal noise level with windows closed

- 4.7 Within the ground floor lounge the daytime sound pressure level was 33 dB $L_{Aeq,14.5hour}$ and the night-time sound pressure level was 27 dB $L_{Aeq,8hour}$.
- 4.8 The daytime sound level target of 35 dB L_{Aeq} is therefore being achieved with the windows closed.
- 4.9 The night-time sound level target of 30 dB L_{Aeq} applies to bedrooms and does not apply to lounges/living rooms. However, it is worth noting that the night-time sound level target for bedrooms is also being achieved within the lounge (i.e. should the lounge be used as a bedroom).
- 4.10 Within the first-floor bedroom the daytime sound pressure level was 35 dB $L_{Aeq,14.5hour}$ and the night-time sound pressure level was 30 dB $L_{Aeq,8hour}$.
- 4.11 The daytime sound level target of 35 dB L_{Aeq} and the night-time target of 30 dB L_{Aeq} is therefore being achieved with the windows closed.
- 4.12 For the majority of the night-time period the recommended maximum sound level target of 45 dB $L_{AFmax,T}$ for bedrooms is also being achieved.

Ventilation and noise mitigation

4.13 British Standard (BS) 8233:2014 states where occupants rely on closed windows to meet the internal noise limits, there needs to be appropriate *alternative ventilation* that does not compromise the facade sound insulation or resulting internal sound level.

4.14 BS 8233 also provides the following comment with regard to ventilation:

The Building Regulations' supporting documents on ventilation recommend that habitable rooms in dwellings have background ventilation. Where openable windows cannot be relied upon for this ventilation, trickle ventilators can be used and sound attenuating types are available. However, windows may remain openable for rapid or purge ventilation, or at the occupant's choice.

Acoustically rated ventilator units

4.15 Manually controlled trickle ventilators are the most common type of background ventilator and can be located over the window frames, in the frames or just above the glass.

4.16 Installing a background ventilator directly through a wall that provides the equivalent areas described in Approved Document F can also be an acceptable route to compliance (as opposed to installing the ventilator unit within the window frame).

4.17 The minimum 'equivalent area' of background ventilators for natural ventilation should follow the guidance in Table 1.7 of Approved Document F for each room type.

4.18 Sound attenuating (acoustically rated) ventilator units can be installed to habitable rooms to allow background ventilation whilst maintaining a high acoustic performance from the facade.

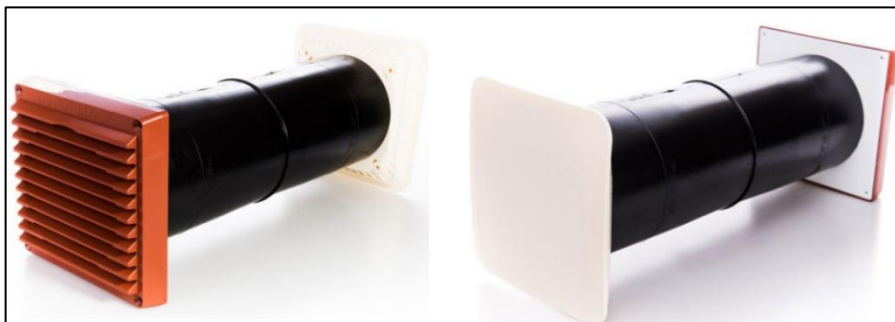
4.19 For guidance, suitable wall mounted ventilator units include the following:

- <https://rts.vents.co.uk/blog/product-details/aac125hp-rytons-super-acoustic-controllable-lookryt-aircore/>
- <https://www.greenwood.co.uk/acoustic-ventilation/awv39>
- <https://www.greenwood.co.uk/acoustic-ventilation/ma3051>
- <https://brookvent.co.uk/wall-vents/>

4.20 It is recommended that the new ventilator unit provides a sound insulation performance of at least 40 dB $D_{n,e,w}$ in the open position.

4.21 Figure 4.2 shows an example wall-mounted ventilator unit.

Figure 4.2 - Example wall mounted ventilator unit



5. Conclusion

- 5.1 Continuous sound level monitoring has been conducted within the new ground floor lounge and also within an existing first floor bedroom.
- 5.2 The daytime sound level target is being achieved within the lounge with the windows closed. The night-time sound level target for bedrooms is also being achieved within the lounge.
- 5.3 Although not strictly required under the prior approval, the daytime and night-time sound level targets is also being achieved within the bedrooms with the windows closed.
- 5.4 The building envelope construction and double-glazed units provide sufficient sound insulation from external noise (passing road traffic).
- 5.5 It is recommended that an appropriate ventilator unit is installed within the external wall of the lounge so that an alternative method of ventilation is available to the occupants.

Appendix A

Equipment calibration certificates

Certificate of Calibration Issued by University of Salford (Acoustics Calibration Laboratory) UKAS ACCREDITED CALIBRATION LABORATORY NO. 0801		 UKAS CALIBRATION 0801 University of Salford MANCHESTER	
Page 1 of 3			
APPROVED SIGNATORIES Claire Lomax [] Harry Bulger [x] Gary Phillips [] Daniel Wong-McSweeney [] 			
acoustic calibration laboratory The University of Salford, Salford, Greater Manchester, M5 4WT, UK http://www.acoustics.salford.ac.uk t 0161 295 3030/0161 295 3319 f 0161 295 4456 e c.lomax@salford.ac.uk			
Certificate Number: 08066/1 Date of Issue: 25 January 2025			
PERIODIC TEST OF A SOUND LEVEL METER to IEC 61672-3:2006			
FOR:	RS Acoustic Engineering Ltd 76 Marple Road Stockport Cheshire SK2 5QH		
FOR THE ATTENTION OF:	Ryan Swales		
DATE RECEIVED:	14 January 2025		
PERIODIC TEST DATE:	25 January 2025		
LOCATION OF CALIBRATION:	Acoustic Calibration Laboratory, Newton G31, University of Salford		
TEST PROCEDURE:	CTP12 (Laboratory Manual)		
Sound Level Meter Details-			
Manufacturer	B&K		
Model	2250L		
Serial number	2638934		
Class	1		
Hardware version: 2.0	Sound Level Meter Software: BZ7130 Version 3.1		
Associated Items:-			
Type	Manufacturer	Model	Serial Number
Microphone	B&K	4189	2643196
Preamplifier	B&K	ZC 0032	8938
Test Engineer (Initial):	GP	Name:	Gary Phillips
<i>Results in this certificate relate only to instruments tested.</i>			
This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to the units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full except with the prior written approval of the issuing laboratory.			

Certificate of Calibration Issued by University of Salford (Acoustic Calibration Laboratory) UKAS ACCREDITED CALIBRATION LABORATORY NO. 0801		 University of Salford MANCHESTER	
Page 1 of 2 APPROVED SIGNATORIES Claire Lomax [] Sean Furlong [] Harry Bulger [x] Daniel Wong-McSweeney []			
acoustic calibration laboratory The University of Salford, Salford, Greater Manchester, M5 4WT, UK http://www.acoustics.salford.ac.uk t 0161 295 3030/0161 295 3319 f 0161 295 4456 e c.lomax1@salford.ac.uk			
Certificate Number: 06357/2		Date of Issue: 30 August 2023	
VERIFICATION OF A TYPE 1 SOUND LEVEL METER to BS7580 Part 1			
FOR:	RS Acoustic Engineering Ltd 76 Marple Road Stockport Cheshire SK2 5QH		
FOR THE ATTENTION OF:	Ryan Swales		
DATE RECEIVED:	25 July 2023		
CALIBRATION DATE:	24 August 2023		
LOCATION OF CALIBRATION:	Acoustic Calibration Laboratory, Newton G31, University of Salford		
TEST PROCEDURE:	CTP08 (Laboratory Manual)		
Calibration item details:-			
Type	Manufacturer	Model	Serial Number
Sound Level Meter	B&K	2260	2114970
Microphone	B&K	4189	2643196
Preamplifier	B&K	ZC 0026	-
Calibrator	CEL	120/1	3321859
Test Engineer (initial):	GP	Name:	Gary Phillips
Results in this certificate relate only to instruments tested.			
This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to the units of measurement realized at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full except with the prior written approval of the issuing laboratory.			

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Page 1 of 2						
APPROVED SIGNATORIES Harry Bulger [x] Sean Furlong []  Gary Phillips [] Daniel Wong-McSweeney []						
acoustic calibration laboratory The University of Salford, Salford, Greater Manchester, M5 4WT, UK http://www.acoustics.salford.ac.uk t 0161 295 3030/0161 295 3319 f 0161 295 4456 e c.lomax@salford.ac.uk						
Certificate Number: 06357/1		Date of Issue: 8 August 2023				
CALIBRATION OF A SOUND CALIBRATOR						
FOR: RS Acoustic Engineering Ltd 76 Marple Road Stockport Cheshire SK2 5QH						
FOR THE ATTENTION OF: Ryan Swales						
DESCRIPTION: Sound calibrator with housing for half-inch microphones.						
MANUFACTURER: CEL						
TYPE: 120/1						
SERIAL NUMBER: 3321859						
DATE RECEIVED: 25 July 2023						
DATE OF CALIBRATION: 3 August 2023						
LOCATION OF CALIBRATION: Acoustic Calibration Laboratory, Newton G31, University of Salford.						
TEST PROCEDURE: CTP06 (Laboratory Manual)						
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; padding: 2px;">Test Engineer (initial):</td> <td style="width: 30%; padding: 2px;">CL</td> <td style="width: 20%; padding: 2px;">Name:</td> <td style="width: 20%; padding: 2px;">Claire Lomax</td> </tr> </table>			Test Engineer (initial):	CL	Name:	Claire Lomax
Test Engineer (initial):	CL	Name:	Claire Lomax			
<i>Results in this certificate relate only to instruments tested.</i>						
This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to the units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full except with the prior written approval of the issuing laboratory.						

Appendix B

Assessment terminology

Assessment terminology

Term	Description
dB (decibel)	The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure ($2 \times 10^{-5} \text{Pa}$).
dB(A)	The most widely used weighting mechanism that best corresponds to the response of the human ear is the 'A'-weighting scale. This is widely used for environmental noise measurement, and the levels are denoted as dB(A) or L_{Aeq} , L_{A90} etc, according to the parameter being measured.
Acoustic environment	Sound from all sources as modified by the environment.
Ambient sound level	The totally encompassing sound in a given situation at a given time; it is usually composed of sound from many sources, near and far.
Equivalent continuous sound level - $L_{Aeq,T}$	The A-weighted equivalent continuous sound pressure level over a period of time, T. Representative of the 'average' sound pressure level over a given period (commonly used to describe the 'ambient' sound level).
Maximum sound level - $L_{AFmax,T}$	The A-weighted 'maximum' sound pressure level that occurred during a given period, T (commonly used for the assessment of intermittent loud noises).
Background sound level - $L_{A90,T}$	The sound pressure level that is exceeded for 90% of the measurement time interval, T. $L_{A90,T}$ is often used to describe the 'background' sound level.
Habitable room	Any room used or intended to be used for sleeping, cooking, living or eating purposes (enclosed spaces such as bath or toilet facilities, service rooms, corridors, laundries, hallways, utility rooms or similar spaces are excluded from this definition).