
AT001 LIMITED

NOISE IMPACT ASSESSMENT REPORT

12 BOLTON STREET, BURY BL9 0LQ

Client: At001 Limited

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REPORT VERSION CONTROL:

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1 INTRODUCTION

1.1 Overview

1.1.1 By instruction from At001 Limited ('the client'), NoiseAir was commissioned to conduct a noise impact assessment (NIA) in relation to a planning application for the conversion of 12 Bolton Street, Bury to a bar on the ground floor and office use to the first floor.

1.1.2 This report is issued for planning purposes only and does not constitute detailed design covering the implementation of all recommendations made within this report.

1.1.3 It is understood that a pre-application document has been issued to the Local Planning Authority (LPA) and a response from the LPA is as follows:

'Noise from or associated with the proposed activity/development hereby permitted shall not increase the prevailing ambient noise levels as measured at the boundary of the site. The ambient noise levels shall be determined by survey, by the applicant, to the satisfaction of the Local Planning Authority (LPA) and a copy of the survey report shall be provided to the LPA before any development takes place.'

'No development shall take place unless and until a scheme to soundproof the bar and restaurant on ground floor between the offices on first floor has been submitted to and approved by the Local Planning Authority. The levels of acoustic insulation to be provided shall be, as a minimum, those deemed to be acceptable and specified as standards of construction in current Building Regulations. Such works that form the approved scheme shall be completed before the development is brought into use. This is because the offices are open from 8am until 8pm and the bar is 8am until 3am.'

1.1.4 General limitations with respect to this NIA are outlined in **Appendix A**.

1.2 Site Description

1.2.1 The proposed development site is located at Bolton Street, Bury. The site location and context are shown in **Figure 1**.



Figure 1: Site Location and Context

- 1.2.2 The site is primarily surrounded by commercial businesses. Most notably, a live music bar called Blind Tiger is located at 16-18 Bolton Street Bury, next door the proposed development.

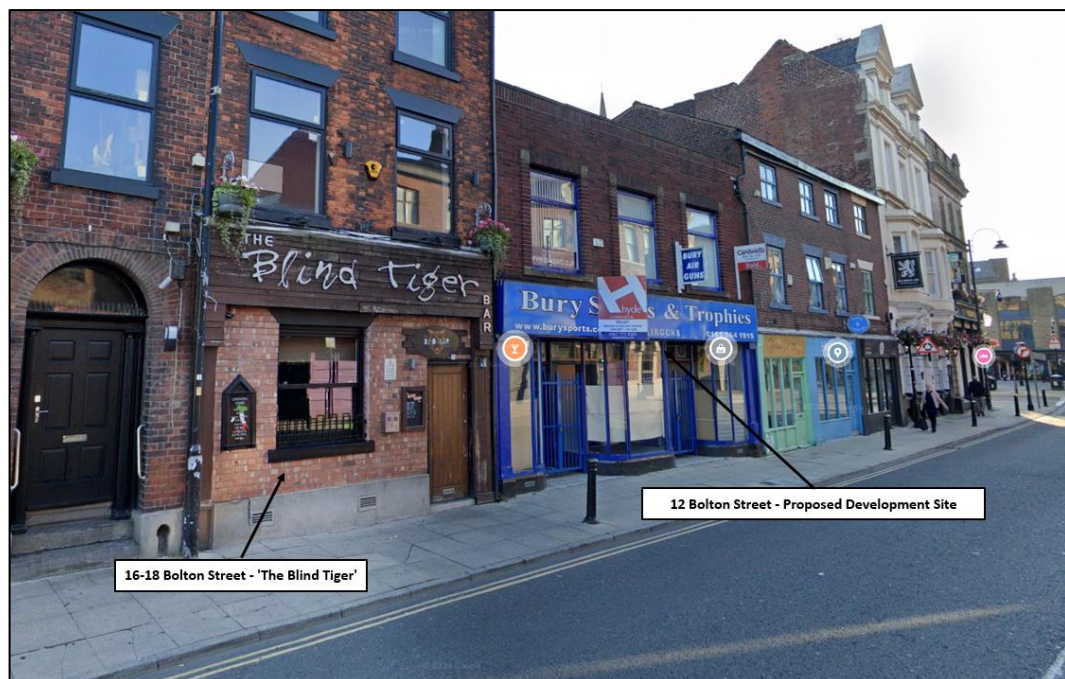


Figure 2: Street View Bolton Street

1.3 Development Proposals and General Information

- 1.3.1 The proposal is to operate a bar with amplified music to the ground floor and convert the first floor to offices.

1.3.2 The proposed operating hours for the bar are as follows:

- Monday to Thursday 08:00 – 03:00
- Friday and Saturday 08:00 – 04:30
- Sunday 08:00 – 03:00

1.3.3 It is understood that given the prevailing ambient noise is dominated by entertainment noise from the adjacent 'Blind Tiger' venue, the proposal is to operate with amplified music as a nightclub style venue between the hours of 21:00 until closing time on a Friday and Saturday.

1.3.4 At all other times during Friday and Saturday and for the rest of the days during the week, it is understood that the proposals are to operate on the basis of a wine bar without the amplified music.

1.3.5 The proposed development plans are presented in **Figure 3**.

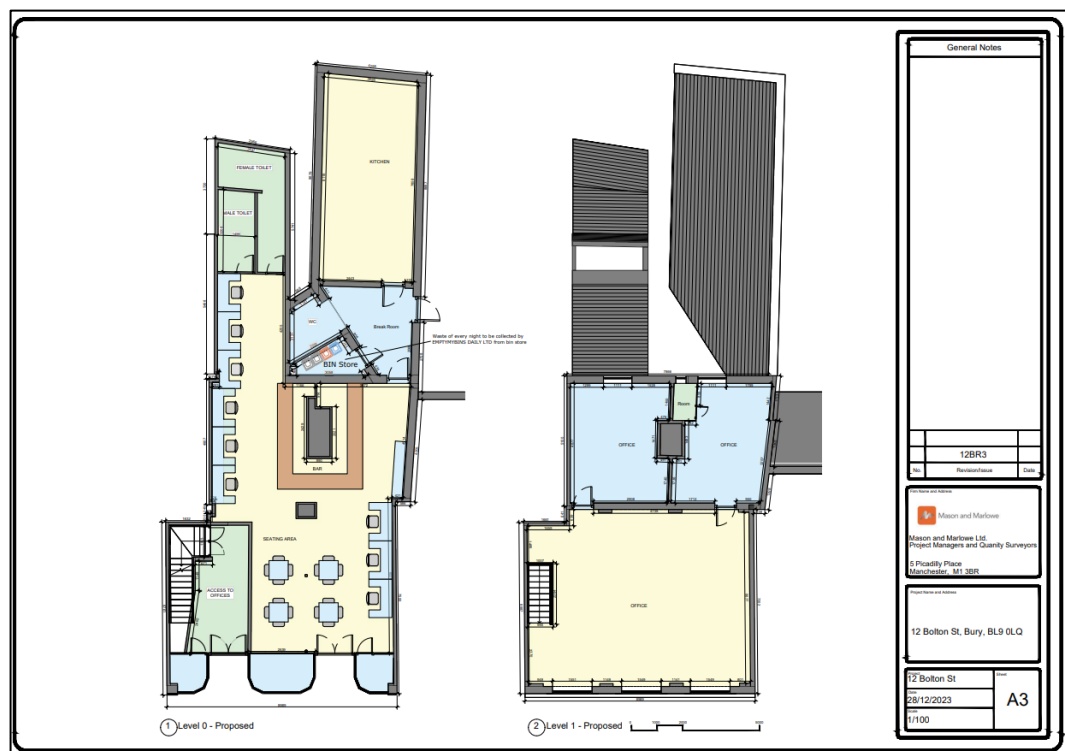


Figure 3: Street View Bolton Street

2 ASSESSMENT METHODOLOGY AND SCOPE OF WORKS

National Planning Policy Framework [NPPF 2023]

- 2.1.1 The NPPF is a document that sets out the government's planning policies for England and how they are expected to be applied. It aims to achieve sustainable development.
- 2.1.2 The NPPF states that planning policies and decisions should prevent unacceptable levels of noise pollution from new and existing development.
- 2.1.3 The NPPF affirms that National Policy Statements form part of the national planning policy framework and should be considered in planning decisions. The Noise Policy Statement for England (NPSE) is one of them.
- 2.1.4 The NPSE sets out the government's overall policy on noise within the context of sustainable development. It introduces three concepts for noise management: avoid significant adverse effects; mitigate and minimise adverse effects; and where possible, contribute to improvements in health and quality of life.
- 2.1.5 It also establishes a hierarchy of noise management actions: avoid; reduce; remedy; mitigate; compensate.

Noise Policy Statement for England (NPSE)

- 2.1.6 The Noise Policy Statement for England (NPSE), published in March 2010, states the long-term vision of Government noise policy is to "promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development".
- 2.1.7 The NPSE also introduces the below categories with respect to 'adverse impacts'.

'NOEL – No Observed Effect Level'

- This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

LOAEL – Lowest Observed Adverse Effect Level

- This is the level above which adverse effects on health and quality of life can be detected.

SOAEL – Significant Observed Adverse Effect Level

- This is the level above which significant adverse effects on health and quality of life occur’.

2.1.8 The NPSE states that significant adverse effects on health and quality of life should be avoided. Where the impact lies somewhere between LOAEL and SOAEL, it requires that all reasonable steps are taken to mitigate and minimise the adverse effects of noise. In this regard, a certain degree of impact between LOAEL and SOAEL would be acceptable in terms of planning policy, provided that the impact has been mitigated and minimised by design.

Planning Practice Guidance - Noise [PPG 2019]

2.1.9 PPG 2019 provides guidance on how noise should be considered in planning decisions. It was published in 2014 and updated in 2019. The document advises on how to avoid, mitigate or minimise adverse effects of noise through good acoustic design and appropriate conditions or obligations.

2.1.10 **Table 1** summarises the noise exposure hierarchy outlined within the PPG.

Table 1: National Planning Practice Guidance noise exposure hierarchy		
Perception	Increasing Effect Level	Action
Not noticeable	No Observed Effect	No specific measures required
Noticeable and not intrusive	No Observed Adverse Effect	No specific measures required
Lowest Observed Effect Level		
Noticeable and intrusive	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Effect Level		
Noticeable and disruptive	Significant Observed Adverse Effect	Avoid
Noticeable and very disruptive	Unacceptable Adverse Effect	Prevent

2.2 Scope of Works

- 2.2.1 This report presents and utilises the results of a noise survey at the proposed development site.
- 2.2.2 Given the LPA have requested that the proposals do not increase the prevailing ambient noise levels as measured at the boundary of the site, the assessment looks to determine the noise limit within the bar such that the LPA request is achieved.

3 ACOUSTIC SURVEY

3.1 Unattended Noise Monitoring

3.1.1 External unattended noise monitoring was conducted at the proposed development site.

3.1.2 Unattended noise monitoring was conducted out of the first floor window to the front of the property as indicated in **Figure 4**.

3.1.3 The monitoring equipment consisted of one NOR140 Class 1 sound level meter (SLM) with enhanced windshields and calibrated to traceable standards.

3.1.4 Details of the SLM and associated field calibration is presented in **Table 2**:

Table 2: Summary of SLM used for survey and associated field calibration						
SLM (Serial Number)	Preamp (Serial Number)	Microphone (Serial Number)	Calibrator (Serial Number)	Start Calibr ation	End Calibr ation	Drift
NOR140 (1402867)	NOR1209 (12113)	G.R.A.S. 40AF (102533)	SVAN SV30A (10818)	-26.1	-26.3	0.2

3.1.5 The monitoring periods covered a weekend when the Blind Tiger venue operated at typical weekend capacity.



Figure 4: Noise Monitoring Locations

3.1.6 The broadband noise monitoring results are presented in **Table 3** and shown graphically in **Figure 5**.

Table 3: Summary of Noise Monitoring Results at ML1		
Time Period Monitored		Measured Noise Level
Start	End	$L_{Aeq,T}$ (dB)
Fri 27/10/2023 18:30	Fri 27/10/2023 21:00	70.4
Fri 27/10/2023 21:00	Fri 27/10/2023 23:00	71.1
Fri 27/10/2023 23:00	Sat 28/10/2023 04:30	74.1
Sat 28/10/2023 08:00	Sat 28/10/2023 21:00	69.9
Sat 28/10/2023 21:00	Sat 28/10/2023 23:00	70.1
Sat 28/10/2023 23:00	Sun 29/10/2023 04:30	78.7
Sun 29/10/2023 08:00	Sun 29/10/2023 21:00	71.1

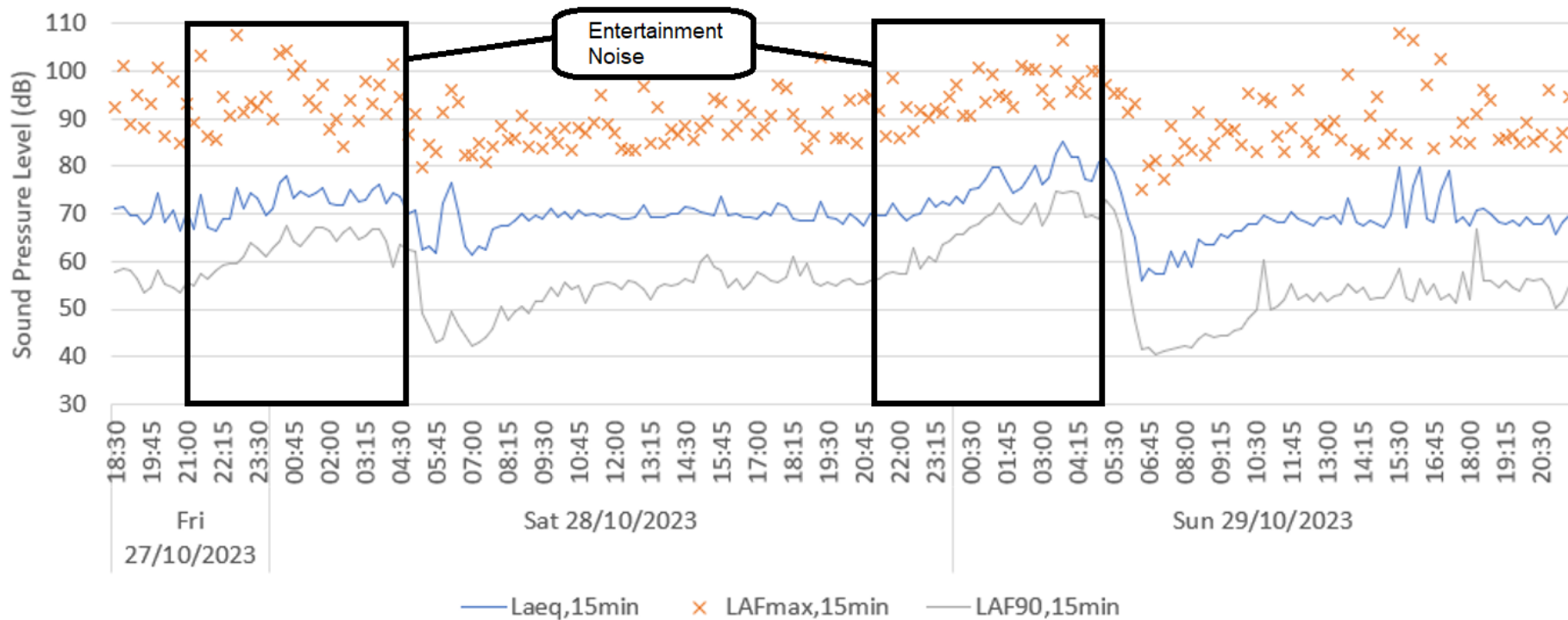


Figure 5: Noise Monitoring Results – ML1

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- 3.1.7 During the installation of all monitoring positions the Blind Tiger venue was in operation. Amplified music noise was clearly audible on Bolton Street, such that lyrics could clearly be discerned, and songs identified.
- 3.1.8 The entrance door to the Blind Tiger venue was open, and inside the entrance door was a large speaker system, pointing out into the street. This was the dominant noise source both internally and externally at the proposed development site during installation of all monitoring equipment.
- 3.1.9 Given the location of ML1 and its proximity to the façade, a façade correction of -3 dB is applied to the data and therefore the forthcoming assessment is based on the corrected dataset.

4 NOISE IMPACT ASSESSMENT

4.1 Entertainment Noise from Proposed Bar

- 4.1.1 Given the measured $L_{Aeq,T}$ noise levels presented in **Table 3**, and the request from the LTP that the prevailing ambient noise level is not exceeded, typical octave spectrums are adopted from the measured data and 10 dB subtracted from each frequency to provide a limit noise level at the façade of the development.
- 4.1.2 Providing a limit $L_{Aeq,T}$ originating from the proposed façade of 10 dB less than the prevailing $L_{Aeq,T}$ is calculated to not exceed the prevailing $L_{Aeq,T}$.
- 4.1.3 The aforementioned spectrums and limit noise levels are presented in **Table 4**. The limit spectrum at the external façade for the proposed operating hours is shown in red text.

Table 4: Typical Prevailing Ambient Noise Level and Limit Noise Level at the Proposed Site Facade								
Ref. Period	Octave L_{eq} Sound Pressure Level in centre frequency (dB)							L_{Aeq} Sound Pressure Level
	63	125	250	500	1000	2000	4000	
08:00 - 21:00	73	66	61	59	64	61	49	67
	63	56	51	49	54	51	39	57
21:00 – 23:00	74	69	68	65	63	56	49	67
	64	59	58	55	53	46	39	57
23:00 – 04:30	67	64	64	69	69	57	48	71
	57	54	54	59	59	47	38	61

- 4.1.4 Given the limit levels presented in **Table 4** it is considered necessary to assess the sound reduction at the façade of the proposed site such that a limit noise level can be set internally.
- 4.1.5 Documentation provided at the time of writing does not detail the build-up of the proposed façade, however following the site visit, **Figure 4** indicates the likely façade construction which will be adopted for calculating the composite façade reduction.

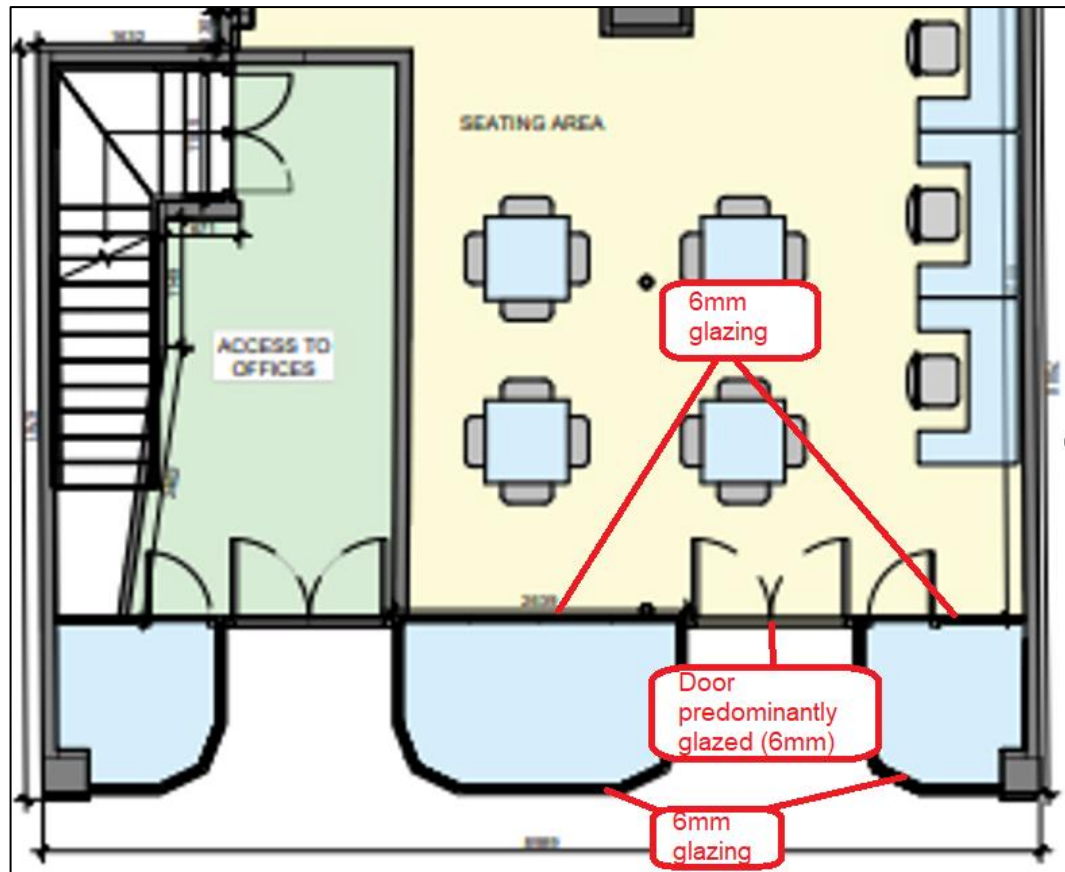


Figure 6: Façade Detail Adopted for the Assessment

- 4.1.6 Given the façade construction, Insul 10.0.3 has been adopted to model the façade and calculate a composite façade sound reduction.
- 4.1.7 **Figure 7** and **Figure 8** present the modelled glazing and door, respectively and indicates the likely sound reduction.
- 4.1.8 Insul 10.0.3 limits the void between each glazed pane at 500 mm, the void between the panes taken from the drawings is 1500 mm and therefore the modelled prediction is considered a conservative estimate of sound reduction.

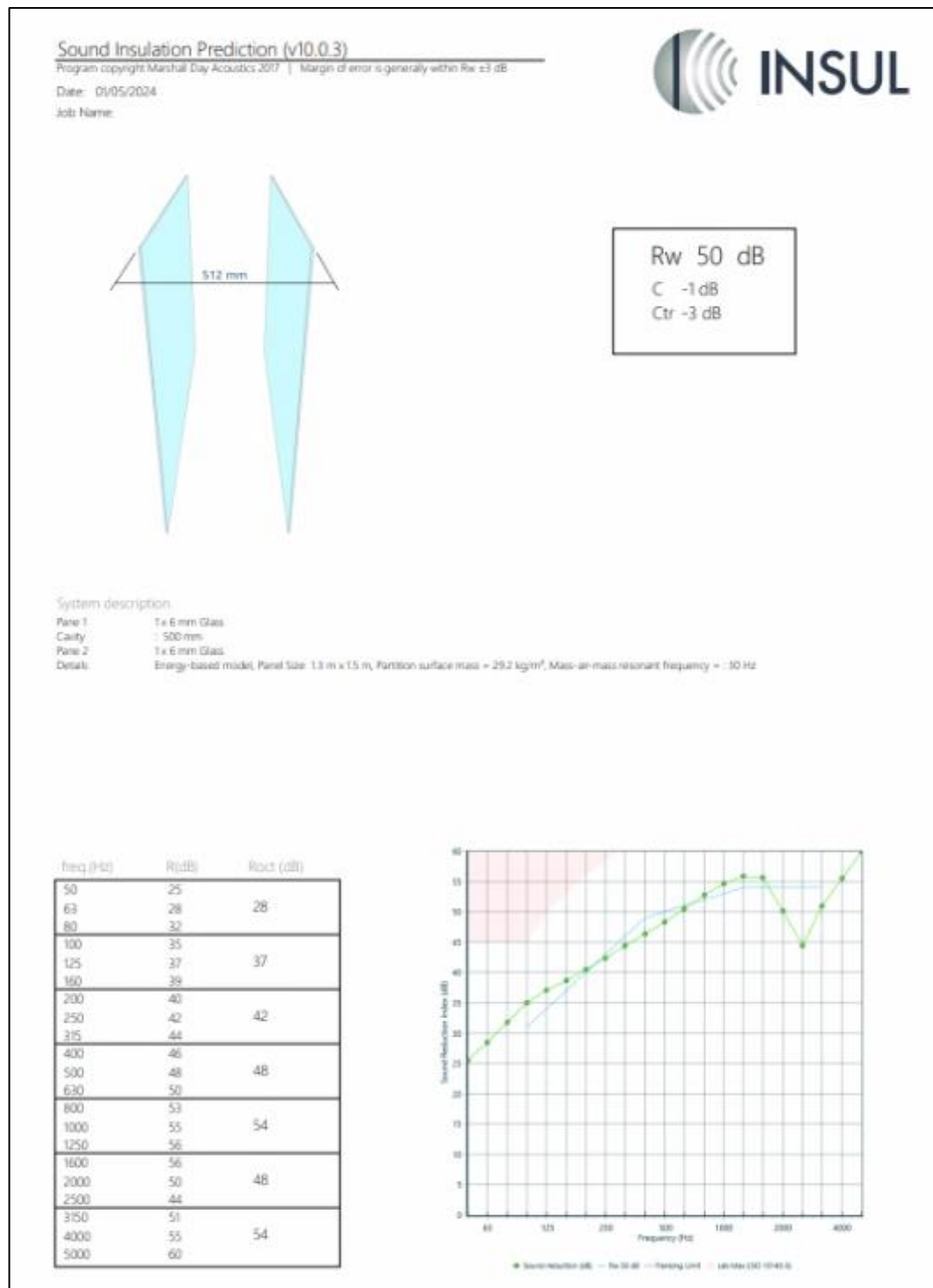


Figure 7: Modelled Glazing

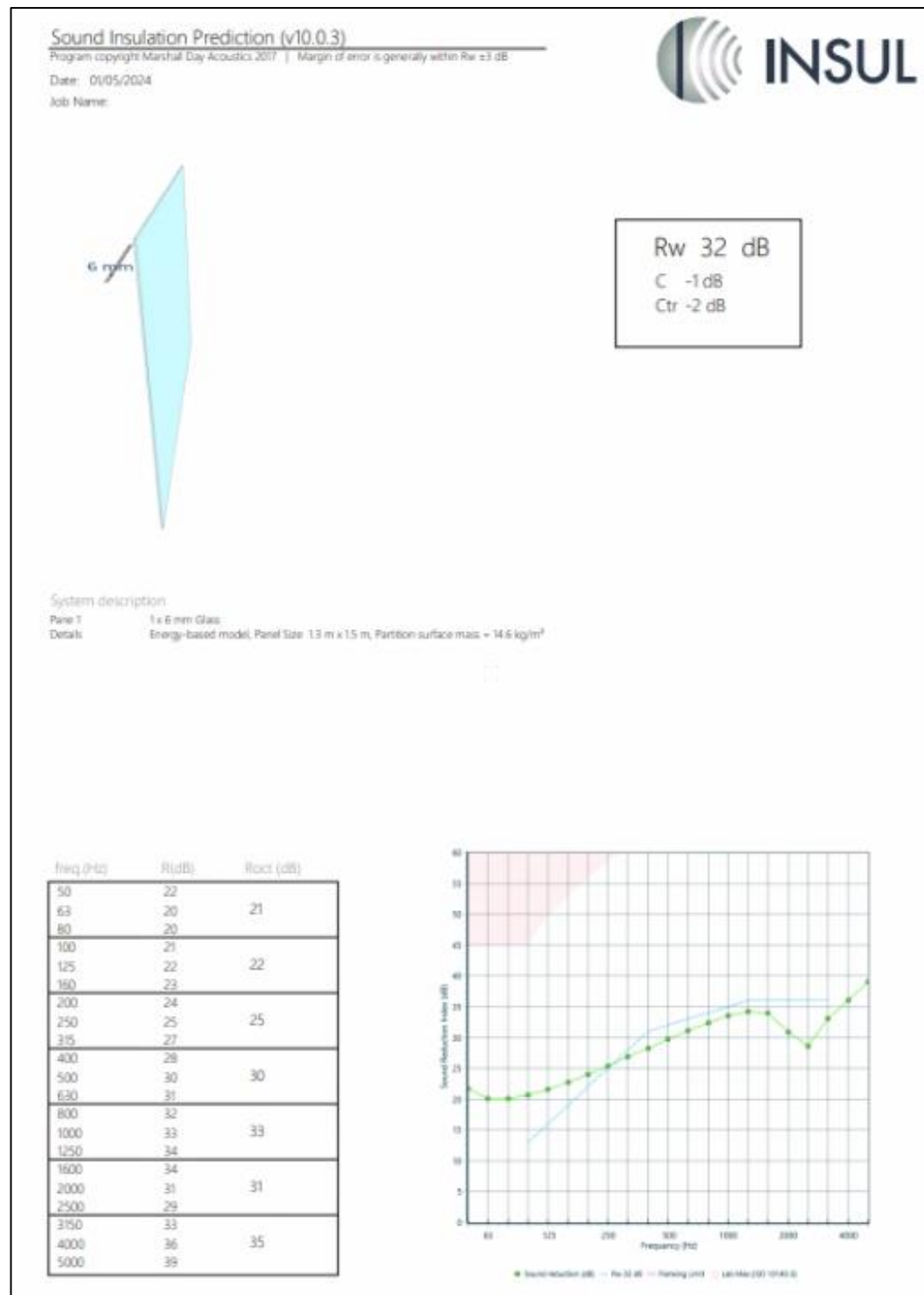


Figure 8: Modelled Door

- 4.1.9 **Table 5** presents composite sound reduction calculated in Insul 10.0.3 and subsequently the internal noise level limit such that the external prevailing $L_{Aeq,T}$ does not increase. It should be noted that given the façade is existing and that a detailed inspection of the façade is beyond the scope of the report, a correction of -5 dB has been applied to each octave frequency reduction to account for flanking transmission.

- 4.1.10 It should also be noted that the modelling software has a margin of error for these particular models of +/- 3 dB. Therefore, a correction of -8 dB is applied to the composite sound reduction.

Table 5: Façade Composite Sound Reduction and calculated Internal Noise Limit per Reference Period									
Ref. Period	Single Octave Centre frequency (dB)								L_{Aeq} Sound Pressure Level
	Parameter	63	125	250	500	1000	2000	4000	
08:00 - 21:00	External $L_{Aeq,T}$ Limit	63	56	51	49	54	51	39	57
	Composite Sound Reduction (R_w)	17	20	23	29	32	29	34	31
	Internal $L_{Aeq,T}$ Limit	80	76	74	78	86	80	73	88
21:00 - 23:00	External $L_{Aeq,T}$ Limit	64	59	58	55	53	46	39	57
	Composite Sound Reduction (R_w)	17	20	23	29	32	29	34	31
	Internal $L_{Aeq,T}$ Limit	81	79	81	84	85	75	73	87
23:00 - 04:30	External $L_{Aeq,T}$ Limit	57	54	54	59	59	47	38	61
	Composite Sound Reduction (R_w)	17	20	23	29	32	29	34	31
	Internal $L_{Aeq,T}$ Limit	74	74	77	88	91	76	72	92

- 4.1.11 The table indicates that during the hours 08:00 to 23:00 the external $L_{Aeq,T}$ noise limit with respect to noise from the proposed façade is 57 dB, however the $L_{eq,T}$ at the low to mid frequencies are slightly elevated during the hours 21:00 to 23:00.
- 4.1.12 During the hours 23:00 to 04:30 the external $L_{Aeq,T}$ is 61 dB and the $L_{eq,T}$ is elevated significantly across all octave frequencies.
- 4.1.13 The assessment indicates that should internal noise exceed 87 dB $L_{Aeq,T}$ for the hours 08:00 to 23:00, this is likely to result in an increase in the prevailing ambient noise externally during these hours.

4.1.14 The assessment also indicates that should internal noise exceed 92 dB $L_{Aeq,T}$ for the hours 23:00 to 04:30, this is likely to result in an increase in the prevailing ambient noise externally during these hours.

5 RECOMMENDATIONS

5.1 External Façade

- 5.1.1 The model has assumed the door to the bar to be closed and therefore it is recommended that the door remains closed with the exception of patrons entering and leaving throughout operations.
- 5.1.2 The documentation indicates a door that leads to the glazing void, the model has assumed this to be closed and should therefore remain closed throughout operations.
- 5.1.3 The façade should be maintained such to prevent acoustic weaknesses (holes or gaps under doors etc.) It is therefore recommended that any glazing that is damaged is replaced to achieve the sound reduction indicated in **Figure 7** and **Figure 8** and that the entrance door is equipped with acoustic seals to the perimeter to maintain the façade sound reduction performance.

5.2 Internal Noise Levels

- 5.2.1 It is recommended that the internal noise levels do not exceed the levels indicated in **Table 6**.

Table 6: Recommended Internal Broadband Noise Level Limits		
Ref. Period	Day	$L_{Aeq,T}$ Noise Limit dB
08:00 - 21:00	Saturday and Sunday	87
21:00 – 23:00	Friday and Saturday	
23:00 – 04:30	Friday through to Saturday and Saturday through to Sunday	92

- 5.2.2 It is also recommended that the L_{eq} noise levels at each frequency indicated in **Table 5** should not be exceeded.
- 5.2.3 Further to **Table 6**, at all other times during operations it is recommended that the amplified music ceases.
- 5.2.4 It is recommended that a volume limiter is adopted for use on the amplifier and set to levels such that the octave frequency levels in **Table 5** are not exceeded.

6 GF-1F SEPARATING FLOOR SOUND INSULATION

6.1 Recommendations

- 6.1.1 The local authority comments stated that “the levels of acoustic insulation to be provided shall be, as a minimum, those deemed to be acceptable and specified as standards of construction in current Building Regulations”.
- 6.1.2 The comment refers to Approved Document E, which deals with sound insulation between adjacent residential dwellings, and makes comments about sound insulation between residential uses and other uses.
- 6.1.3 In this scenario where there are two commercial adjacencies, Approved Document E sets no criteria and issues no advice. This is not to say that it would not be appropriate to incorporate sound insulation measures, but simply to clarify that the ‘specified standards’ referred to in the local authority comments are not clear.
- 6.1.4 We assume that the comments intend to refer to the minimum airborne sound insulation criteria between adjacent residential dwellings ($43 \text{ dB } D_{nT,w} + C_{tr}$), in which case we recommend that the applicant incorporates Approved Document E Section 4 Floor Treatment 1 (see **Figure 9**).

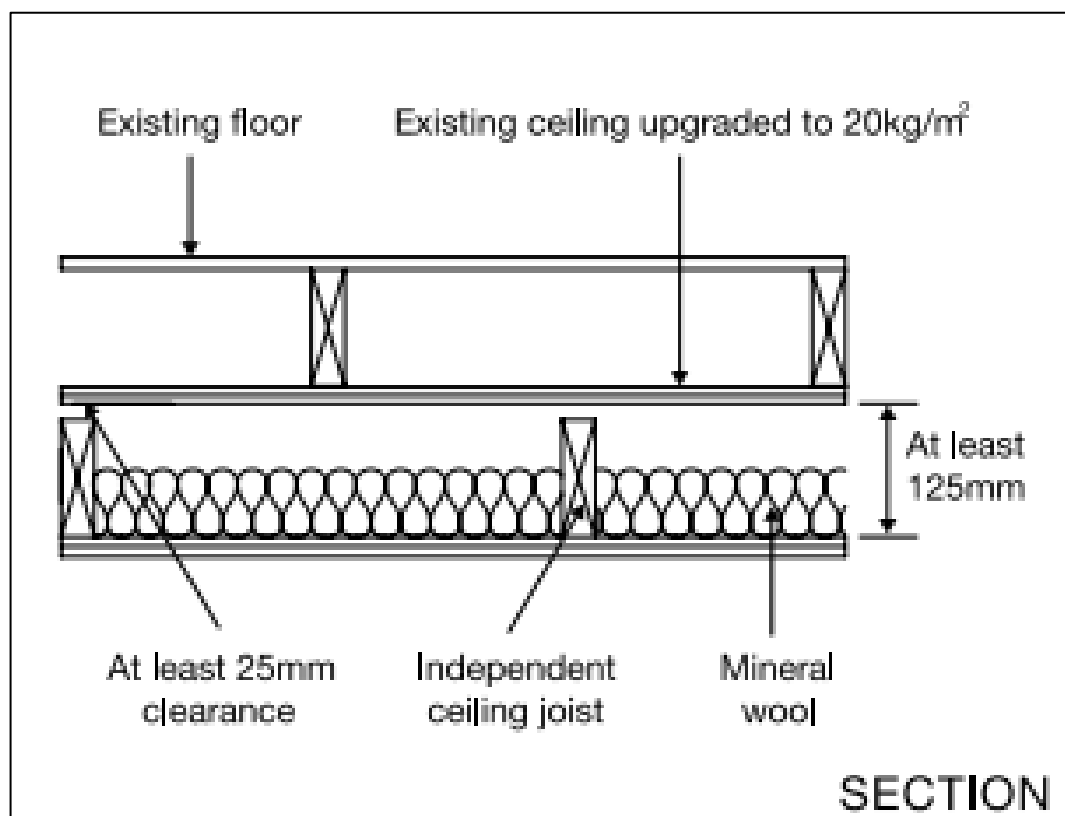


Figure 9: Approved Document E Floor Treatment 1

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- 6.1.5 This is based on observations by NoiseAir Ltd during a visit to the site to examine the existing separating floor and determine a suitable detail to implement on-site.
- 6.1.6 The existing floor currently consists of timber joists with floorboards and ply above with plasterboard below fixed to the bottom of the joists. Below that is currently a suspended MF grid ceiling with drop in tiles, which we understand would be removed under the proposals.
- 6.1.7 The detail would involve upgrading the mass per unit area of the ceiling fixed to the underside of the joists to 20 kg/m² (e.g., with 2 no. layers of high mass plasterboard such as Fireline, Soundbloc, etc. or equivalent), then the installation of an independent ceiling below, also with a mass per unit area of 20 kg/m² minimum with mineral wool in the void.
- 6.1.8 The constructions within Approved Document E are designed with a reasonable margin of safety such that the criteria can be achieved provided that major errors are not made on-site. If constructed correctly, the airborne sound insulation would actually exceed 43 dB $D_{nT,w}+C_{tr}$. NoiseAir Ltd are registered sound insulation testers for building regulations purposes and have measured results up to 50 dB $D_{nT,w}+C_{tr}$ where this detail has been implemented with high standards of workmanship.
- 6.1.9 The detail outlined is therefore suitable. Separate to this document, NoiseAir Ltd are providing more detailed advice to the applicant to be forwarded to any contractors appointed, including advice on best practices, common mistakes to avoid, advice on junctions with columns and beams, etc.
- 6.1.10 The letter contained within this deliverable, however, is sufficient for the purposes of demonstrating a design as requested.

7 CONCLUSIONS

- 7.1.1 By instruction from At001 Limited (the client'), NoiseAir was commissioned to conduct a noise impact assessment for the proposed conversion of 12 Bolton Street, Bury to a bar on the ground floor and office space to the first floor.
- 7.1.2 The development is directly adjacent and structurally connected to a live music venue, 'The Blind Tiger'.
- 7.1.3 A noise survey was undertaken at one monitoring location overlooking Bolton Street to measure the prevailing ambient noise level.
- 7.1.4 Limits for the internal noise levels during the operation of amplified music are provided such that with the predicted attenuation of the façade the prevailing external ambient noise level is unlikely to be exceeded.
- 7.1.5 Recommendations with respect to maintaining the façade acoustic performance and limiting the internal noise has also been provided.
- 7.1.6 Advice with respect to upgraded sound insulation between the GF and 1F as requested by the local authority has been provided
- 7.1.7 It is reasoned that by limiting the noise levels to that recommended in this report, the prevailing ambient noise levels as measured at the façade are unlikely to be exceeded.

APPENDIX A - REPORT LIMITATIONS

This Report is presented to At001 Limited and may not be used or relied on by any other person or by the client in relation to any other matters not covered specifically by the scope of this report.

Notwithstanding anything to the contrary contained in the report, NoiseAir Limited is obliged to exercise reasonable skill, care and diligence in the performance of the services required by At001 Limited and NoiseAir shall not be liable except to the extent that it has failed to exercise reasonable skill, care and diligence, and this report shall be read and construed accordingly.

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The conclusions and recommendations contained in this report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from who it has been requested and that such information is accurate. Information obtained by NoiseAir Limited has not been independently verified by NoiseAir Limited unless otherwise stated in the report and should be treated accordingly.

Where assessments of works or costs identified in this report are made, such assessments are based upon the information available at the time and where appropriate are subject to further investigations or information which may become available.

Where / if estimates and projects are made within this report, are made based on reasonable assumptions as of the date of this report, such statements however by their very nature involve risks and uncertainties that could cause actual results to differ materially from the results predicted. NoiseAir Limited specifically does not guarantee or warrant any estimates or projects contained in this report.

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APPENDIX B - GLOSSARY

A-weighted sound pressure, p_A	Value of overall sound pressure, measured in pascals (Pa), after the electrical signal derived from a microphone has been passed through an A-weighting network. <i>NOTE: The A-weighting network modifies the electrical response of a sound level meter with frequency in approximately the same way as the sensitivity of the human hearing system.</i>
A-weighted sound pressure level, L_{pA}	Quantity of A-weighted sound pressure in decibels (dBA).
Acoustic environment	Sound from all sound sources as modified by the environment [BS ISO 12913-1:2013].
Ambient sound	Totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far. <i>NOTE: The ambient sound comprises the residual sound and the specific sound when present.</i>
Ambient sound level, $L_a = L_{Aeq,T}$ (BS 4142:2014)	Equivalent continuous A-weighted sound pressure level of the totally encompassing sound in a given situation at a given time, usually from many sources near and far, at the assessment location over a given time interval, T <i>NOTE: The ambient sound level is a measure of the residual sound and the specific sound when present.</i>
Background sound	Underlying level of sound over a period, T, which might in part be an indication of relative quietness at a given location.
Background sound level, $L_{A90,T}$ (BS 4142:2014)	A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using time weighting F and quoted to the nearest whole number of decibels.
Break-in	Noise transmission into a structure from outside.
Break-out	Noise transmission from inside a structure to the outside.
Cross-talk	Noise transmission between one room and another room or space via a duct or other path.
C_{tr}	Correction term applied against the sound insulation single-number values (R_w , D_{w1} and $D_{nT,w}$) to provide a weighting against low frequency performance. <i>NOTE: The reference values used within the C_{tr} calculation are based on urban traffic noise.</i>
Equivalent continuous A-weighted sound pressure level, $L_{Aeq,T}$	Value of the A-weighted sound pressure level in decibels (dB) of a continuous, steady sound that, within a specified time interval, T, has the same mean-squared sound pressure as the sound under consideration that varies with time.
Equivalent continuous A-weighted sound pressure level, $L_{Aeq,T}$ (BS 4142:2014)	Value of the A-weighted sound pressure level in decibels of continuous steady sound that, within a specified time interval, $T = t_2 - t_1$, has the same mean-squared sound pressure as a sound that varies with time.
Equivalent sound absorption area of a room, A	Hypothetical area of a totally absorbing surface without diffraction effects, expressed in square metres (m ²), which, if it were the only absorbing element in the room, would give the same reverberation time as the room under consideration
Facade level	Sound pressure level 1 m in front of the façade. <i>NOTE: Facade level measurements of L_{pA} are typically 1 dB to 2 dB higher than corresponding free-field measurements because of the reflection from the facade.</i>
Free-field level	Sound pressure level away from reflecting surfaces. <i>NOTE: Measurements made 1.2 m to 1.5 m above the ground and at least 3.5 m away from other reflecting surfaces are usually regarded as free-field. To minimize the effect of reflections the measuring position has to be at least 3.5 m to the side of the reflecting surface (i.e. not 3.5 m from the reflecting surface in the direction of the source). Estimates of noise from aircraft overhead usually include a correction of 2 dB to allow for reflections from the ground.</i>

Impact sound pressure level, L_i	Average sound pressure level in a specific frequency band in a room below a floor when it is excited by a standard tapping machine or equivalent.
Indoor ambient noise	Noise in a given situation at a given time, usually composed of noise from many sources, inside and outside the building, but excluding noise from activities of the occupants. <i>NOTE: The location(s) within the room at which the ambient indoor noise is to be measured or calculated ought to be considered.</i>
Measurement time interval, T_m (BS 4142:2014)	Total time over which measurements are taken. <i>NOTE: This may consist of the sum of a number of non-contiguous, short-term measurement time intervals.</i>
Noise criteria	Numerical indices used to define design goals in a given space.
Noise rating, NR	Graphical method for rating a noise by comparing the noise spectrum with a family of noise rating curves.
Normalised impact sound pressure level, L_n	Impact sound pressure level normalized for a standard absorption area in the receiving room. <i>NOTE: Normalised impact sound pressure level is usually used to characterize the insulation of a floor in a laboratory against impact sound in a stated frequency band.</i>
Octave band	Band of frequencies in which the upper limit of the band is twice the frequency of the lower limit.
Percentile level, $L_{AN,T}$	A-weighted sound pressure level obtained using time-weighting "F", which is exceeded for $N\%$ of a specified time interval.
Reference time interval, T_r (BS 4142:2014)	Specified interval over which the specific sound level is determined. <i>NOTE: This is 1 h during the day from 07:00 h to 23:00 h and a shorter period of 15 min at night from 23:00 h to 07:00 h.</i>
Residual sound (BS 4142:2014)	Ambient sound remaining at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound.
Residual sound level, $L_r = L_{Aeq,T}$ (BS 4142:2014)	Equivalent continuous A-weighted sound pressure level of the residual sound at the assessment location over a given time interval, T .
Rating level, L_{Ar,T_r}	Equivalent continuous A-weighted sound pressure level of the noise, plus any adjustment for the characteristic features of the noise. <i>NOTE: This is used in BS 7445 and BS 4142 for rating industrial noise, where the noise is the specific noise from the source under investigation.</i>
Reverberation time, T	Time that would be required for the sound pressure level to decrease by 60 dB after the sound source has stopped.
Sound exposure level, L_{AE}	Level of a sound, of 1 s duration, that has the same sound energy as the actual noise event considered.
Sound level difference, D	Difference between the sound pressure level in the source room and the sound pressure level in the receiving room.
Sound pressure, p	Root-mean-square value of the variation in air pressure, measured in pascals (Pa) above and below atmospheric pressure, caused by the sound.
Sound pressure level, L_p	Quantity of sound pressure, in decibels (dB).
Sound reduction index, R	Laboratory measure of the sound insulating properties of a material or building element in a stated frequency band.

Specific sound level, $L_s = L_{Aeq,T_r}$ (BS 4142:2014)	Equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, T_r .
Specific sound source (BS 4142:2014)	Sound source being assessed.
Standardised impact sound pressure level, L'_{nT}	Impact sound pressure level normalized to a reverberation time in the receiving room of 0.5 s.
Standardised level difference, D_{nT}	Difference in sound level between a pair of rooms, in a stated frequency band, normalized to a reference reverberation time of 0.5 s for dwellings.
Groundborne noise	Audible noise caused by the vibration of elements of a structure, for which the vibration propagation path from the source is partially or wholly through the ground. <i>NOTE Common sources of ground-borne noise include railways and heavy construction work on adjacent construction sites.</i>
Structure-borne noise	Audible noise caused by the vibration of elements of a structure, the source of which is within a building or structure with common elements. <i>NOTE Common sources of structure-borne noise include building services plant, manufacturing machinery and construction or demolition of the structure.</i>
Third octave band	Band of frequencies in which the upper limit of the band is 2% times the frequency of the lower limit.
Weighted level difference, D_w	Single-number quantity that characterizes airborne sound insulation between rooms, but which is not adjusted to reference conditions. <i>NOTE Weighted level difference is used to characterize the insulation between rooms in a building as they are. Values cannot normally be compared with measurements made under other conditions (see BS EN ISO 717-1).</i>
Weighted normalised impact sound pressure level, $L'_{n,w}$	Single-number quantity used to characterize the impact sound insulation of floors over a range of frequencies.
Weighted sound reduction index, R_w	Single-number quantity which characterizes the airborne sound insulating properties of a material or
Weighted standardised impact sound pressure level $L'_{nT,w}$	Single-number quantity used to characterize the impact sound insulation of floors over a range of frequencies.
Weighted standardised level difference, $D_{nT,w}$	Single-number quantity that characterizes the airborne sound insulation between rooms.

Symbols

D_w	Weighted level difference (dB)
D_{nT}	Standardized level difference (dB)
$D_{nT,w}$	Weighted standardized level difference (dB)
L_{Amax}	Maximum noise level (dB)
$L_{Ar,Tr}$	Rating level (dB)
L_n	Normalised impact sound pressure level (dB)
L'_{nT}	Standardised impact sound pressure level (dB)
$L'_{nT,w}$	Weighted standardised impact sound pressure level (dB)
$L'_{n,w}$	Weighted normalised impact sound pressure level (dB)
L_p	Sound pressure level (dB)
L_{pA}	A-weighted sound pressure level (dB)
$L_{AN,T}$	Percentile level (dB)
L_{AE}	Sound exposure level (dB)
$L_{Aeq,T}$	Equivalent continuous A-weighted sound pressure level (dB)
p	Sound pressure (Pa)
p_A	A-weighted sound pressure (dB)
$p_{A(t)}$	Instantaneous A-weighted sound pressure (Pa)

R	Sound reduction index (dB)
R_w	Weighted sound reduction index (dB)
T	Time interval (also used for reverberation time) (s)
t_0	Reference time interval (s)

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