Chartered Building Consultancy

Acoustic South East

Sound Insulation and Music Break-through Assessment

The Grizzly Bear, 33 South Street, Worthing, BN14 7LT

Report by: Simon Barrett BSc(Hons) MSc MIOA MInstSCVE

Date: 09/11/2026

Project: J4308

Issue: 1

Site: **The Grizzly Bear, Worthing, BN14 7LT**

Client: **The Grizzly Bear**

Constructionline Part of Capita plc

CQMS Safety Scheme

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Issue 1	09/11/2026	Original Issue

1 Introduction and Executive Summary

Acoustic South East have been appointed to undertake an acoustic assessment to assist in the modification of an existing premises license, to allow the playing of background music within The Grizzly Bear, Worthing, BN14 7LT. Planning Application AWDM/1779/19 refers.

A Sound Insulation Test (airborne) and an audibility test were both carried out between the ground floor commercial bar space and the residential dwelling directly above.

The result of the sound insulation test found that the result was Dw + Ctr = 53dB. Please see section 3 for further information on the sound insulation test.

The result of the audibility test showed that with music at 70dBA within the commercial space was inaudible within the 1st floor of the residential dwelling directly above. This is a higher SPL than would realistically be used as it would be too high for background music in the space and so provides a degree of headroom. Please see section 4 of this report for further details.

Based on the findings of this report, it is recommended that the planning condition relating to no background music is altered to allow it, on the basis of music SPL not exceeding 70dBA within the space (which relates to volume level “66” on the iPad).

2 Context, Noise Criteria & Noise Assessment Methodology

2.1 Context

The Grizzly Bear is a micropub, established for nearly a decade along with its outdoor seating and has up to now operated under planning consent with the following condition:

> *Condition 8: No amplified and/or live music shall be played at any time within or outside of the premises.*

An application is now live with the request to alter this condition to specify that "performed music is disallowed, but ambient music is permitted to a reasonable level".

It is understood that this is to be inside background music only, with the speaker being a small Sonos speaker fed by Bluetooth from an iPad.

2.2 Consultee Comments

Relevant Consultee Comments (Reference AWDM/0538/26) made by Mr Nadeem Shad against the application on 18th August 2026 on behalf of Environmental Protection, Environmental Health & Licensing are as follows:

> *Amplified music is generally always louder than acoustic music. The applicant requests the term "no amplified music" be removed as it is confused with ambient music played through speakers. By definition speakers should not be being used and in doing so they are in breach of the current planning permission. I see no confusion, it is either amplified or it isn't.*
>
> *The application provides no acoustic information confirming the suitability of the structure to accommodate amplified music. Neither does it identify any suitable noise levels within the premises which would allow for the provision of amplified music at a volume which is both viable for the operator whilst also not causing a loss of amenity to adjacent and nearby residents. The premises are likely to require significant acoustic improvement before amplified music can be permitted.*
>
> *So a significant level of detail is required before we can be satisfied that the removal of "no amplified music" in condition 8 will not result in a loss of residential amenity. In my view this can only be achieved by an acoustic impact assessment, carried out by a suitably qualified acoustician who can look at the premises and determine its suitability and robustness to contain music, recommend appropriate mitigation, set suitable internal levels, how to control these levels, etc. 'Suitably qualified" means someone who has met the qualification criteria to be a member of the Institute of Acoustics or the Association of Noise Consultants. This should be provided before any permission is granted.*

2.3 Relevant Criteria

2.3.1 Approved Document E 2003 (amended 2015)

Airborne Sound Insulation of the separating floor/ceiling will need to be measured and assessed against the requirements of Approved Document E 2003 (as amended 2015) of the Building Regulations 2010, hereafter referred to as ADE. ADE sets out performance requirements for walls and floors that separate residential dwellings from each other and also from other parts of the same building. The basic requirements for dwelling to dwelling are set out in the table below:

Partition Type	Airborne Sound Insulation (DnT,w + Ctr) dB
Floor	≥ 43

However, it is likely that the criterion for airborne sound insulation will require an enhancement given that the separation is between commercial and residential and it is typical that Adur & Worthing District Council would require the airborne sound insulation to satisfy a performance of $D_{nT,w}$ + C_{tr} = 50dB or higher.

2.3.2 CIBSE Guide A – 11/01/2016

When considering music noise levels, it can be useful to consider NR Curves as they consider the full frequency profile. Table 1.5 of CIBSE Guide A is shown below stating NR25 or lower for bedrooms:

Table 1.5 Recommended comfort criteria for specific applications

Building/room type	Customary winter operative temperatures for stated activity and clothing levels*			Customary summer operative temperatures (air conditioned buildings†) for stated activity and clothing levels*			Suggested air supply rate / ($L \cdot s^{-1}$ per person unless stated otherwise)	Filtration grade‡	Maintained illuminance¶ / lux	Noise criterion§		
	Temp. / °C	Activity / met	Clothing / clo	Temp. / °C	Activity / met	Clothing / clo				NR	dBA§	dBC§
Airport terminals:												
— baggage reclaim	12–19[1]	1.8	1.2	21–25	1.3	0.6	10[2]	F6–F7	200	45	50	75
— check-in areas[3]	18–20	1.4	1.2	21–25	1.3	0.6	10[2]	F6–F7	500[4]	45	50	75
— concourse (no seats)	19–24[1]	1.8	1.2	21–25	1.3	0.6	10[2]	F6–F7	200	45	50	75
— customs area	18–20	1.4	1.2	21–25	1.3	0.6	10[2]	F6–F7	500	45	50	75
— departure lounge	19–21	1.3	1.2	22–25	1.2	0.6	10[2]	F6–F7	200	40	45	70
Art galleries — see Museums and art galleries												
Banks, building societies, post offices:												
— counters	19–21	1.4	1.0	21–25	1.3	0.6	10[2]	F6–F7	500	35–40	40–45	65–70
— public areas	19–21	1.4	1.0	21–25	1.3	0.6	10[2]	F5–F7	300	35–45	40–45	65–70
Bars/lounges	20–22	1.3	1.0	22–25	1.3	0.6	10[2]	F5–F7	100–200[5]	30–40	35–45	60–70
Bus/coach stations — see Railway/coach stations												
Churches	19–21	1.3	1.2	22–25	1.3	0.6	10[2]	G4–F6	100–200	25–30[6]	30–35	55–60
Computer rooms[7]	19–21	1.4	1.0	21–25	1.3	0.6	10[2]	F7–F9	300	35–45	40–50	65–75
Conference/board rooms	22–23	1.1	1.0	23–25	1.1	0.6	10[2]	F6–F7	300/500[8]	25–30	30–35	55–60
Drawing offices	19–21	1.4	1.0	21–25	1.3	0.6	10[2]	F7	750	35–45	40–50	65–75
Dwellings:												
— bathrooms	20–22	—	—	23–25	—	—	15 $L \cdot s^{-1}$	G2–G4 (extract)[9]	150[4]	—	—	—
— bedrooms	17–19	0.9	2.5	23–25	0.9	1.2	0.4–1 ACH to control moisture[9]	G2–G4	100[4]	25	30	55
— hall/stairs/landings	19–24[1]	—	—	21–25[1]	—	—	—	—	100	—	—	—
— kitchen	17–19	1.6	1.0	21–25	1.5	0.5	60 $L \cdot s^{-1}$	G2–G4 (extract)[9]	150–300	40–45	45–50	70–75
— living rooms	22–23	1.1	1.0	23–25	1.1	0.6	0.4–1 ACH to control moisture[9]	G2–G4	50–300	30	35	60
— toilets	19–21	—	—	21–25	—	—	>5 ACH	G2–G4	100[4]	—	—	—

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Figure 1: CIBSE Guide A - NR Curve Criteria

3 Sound Insulation Test

3.1 General

A site visit was carried out on Thursday 5th November 2026 to conduct a sound insulation test between the ground floor micropub space and the first-floor hallway area directly above the micropub which serves the flats (access was not possible into the bedroom above but the hallway was common with the micropub). Testing was carried out in accordance with the methods in BS EN ISO 140-4:1997 with the method as per the description below:

3.2 Method: Resistance to Airborne Sound

Two loudspeakers were placed facing into the corners, separated from each other, at different heights in the source room and angled across the room to create a diffuse sound field, ensuring they were also at least 0.7m away from the room surfaces. An amplifier was used to broadcast pink noise through the loudspeakers using two individual noise generators. The spectrum shape of the reverberant noise was checked to ensure that each 1/3 octave band was within 6 dB of its neighbouring bands. The spectrum shape was adjusted, if necessary, to comply with this criterion (Firstly loudspeaker position/s are adjusted until the criterion is achieved. If this fails the spectrum shape is adjusted using equalisation).

Measurements were taken in the source room at each 1/3 octave band centre frequency between 100 Hz and 3.15 kHz using the “sweep” technique as described in ISO140 (30 secs.). Further measurements were then taken in the same way in the receiving room on the other side of the test element (in this case, the corridor directly outside the entrance to flats 2 and 3).

Ambient sound pressure levels (without the source operating) were also taken at each frequency in the receiving rooms using the “sweep” technique as described in ISO140 (30 secs) to check that ambient noise levels were at least 10 dB below the measured levels due to generated noise and thus did not contribute to the measured levels. These too were spatially-averaged. Type of noise radiated: Broadband pink noise. Dominant sources of background noise were as follows: None Significant

Reverberation times were not measured as the property on the first floor is already existing and will not change.

Equipment used:

Description	Type	Serial	Manufacturer	Calibration Expiry Date	Calibration Certificate No.
Type 1 SLM	NOR118(A)	31460	Norsonic	09/06/27	TCRT25/1449
Mic (118A)	1225	91973	Norsonic	09/06/27	TCRT25/1449
Pre-Amp (118A)	1206	30779	Norsonic	09/06/27	TCRT25/1449
SLM Calibrator	Type 1251 (Nor118A)	30974	Norsonic	05/06/27	TCAC25/1438
Sound Source	2 Speaker (RCF)	TCCI00033/ TCCI00031	ART SERIES 310-A MK4	-	-

N.B. Calibration certificates available upon request

3.3 Results and Discussion – Separating Floor

The standard single-figure results are shown in the table below.

This is typically known as a DnT,w + Ctr and is what is used in Approved Document E 2003 (As amended 2015) of the Building Regulations 2010. In this case, the DnTw would change to a Dw as the reverberation time was not measured.

This typical minimum pass criterion for airborne sound insulation between dwellings is normally 43dB. When commercial buildings are separated from dwellings, the minimum pass criterion is often increased to 50dB as discussed in Section 2.2 of this report, especially when music is involved and this is what has been used, but is for reference only.

Source Room	Vol (m^3) Approx.	Receiving Room	Vol (m^3) Approx.	D,w (dB)	D,w + Ctr (dB)	Typical Minimum Pass Criterion (dB)	Pass/Fail
Ground Floor Micropub	>60	1st Floor Hallway	10	59	53	50	PASS

Table 1: Sound Insulation Test Result – Grizzly Bear to 1st Floor Corridor

As can be seen from the table, the result is D,w + Ctr = 53dB. This comfortably achieves the higher criterion value typically required by the Local Authority.

The graphical representation of the result is shown in the appendix of this report.

4 Listening Test

Following the standard sound insulation test being carried out, a listening test was carried out using the exact music system which exists within The Grizzly Bear.

This consists of an iPad connected to a small individual Sonos speaker situated high up on the bookshelf above where all the board-games are stored.

Music tracks were played through the system at an initial SPL value which is higher than would realistically be played within the micropub. Listening was then undertaken in the same location as the sound insulation test as this was directly above the loudspeaker's location and thus considered representative of the sound pressure level experienced from the micropub's sound system within the first-floor front bedroom.

Music being played at 70dBA (Leq,3min) on the ground floor was found to be completely inaudible in the 1st floor of the dwelling directly above. At a SPL of 77dBA (Leq,3min), this was perceptible (although very quietly and concentration to hear it was required).

It is important to recognise that at 77dBA, conversation will not likely be possible and as a result this shows there is some headroom available. It is more plausible that conversation would only be possible when music is closer to 70dBA (or below) given that the sound pressure level of a male voice at normal speaking level is 60dBA and raised voice at 66dBA. (BSEN ISO9921:2003- *Ergonomics – Assessment of Speech Communication)*

The music track played was:

- Wasted Years – 2015 Remaster (Iron Maiden)

A measurement of the music profile was carried out of the audio tracks at 70dBA and this is shown in the figure below:

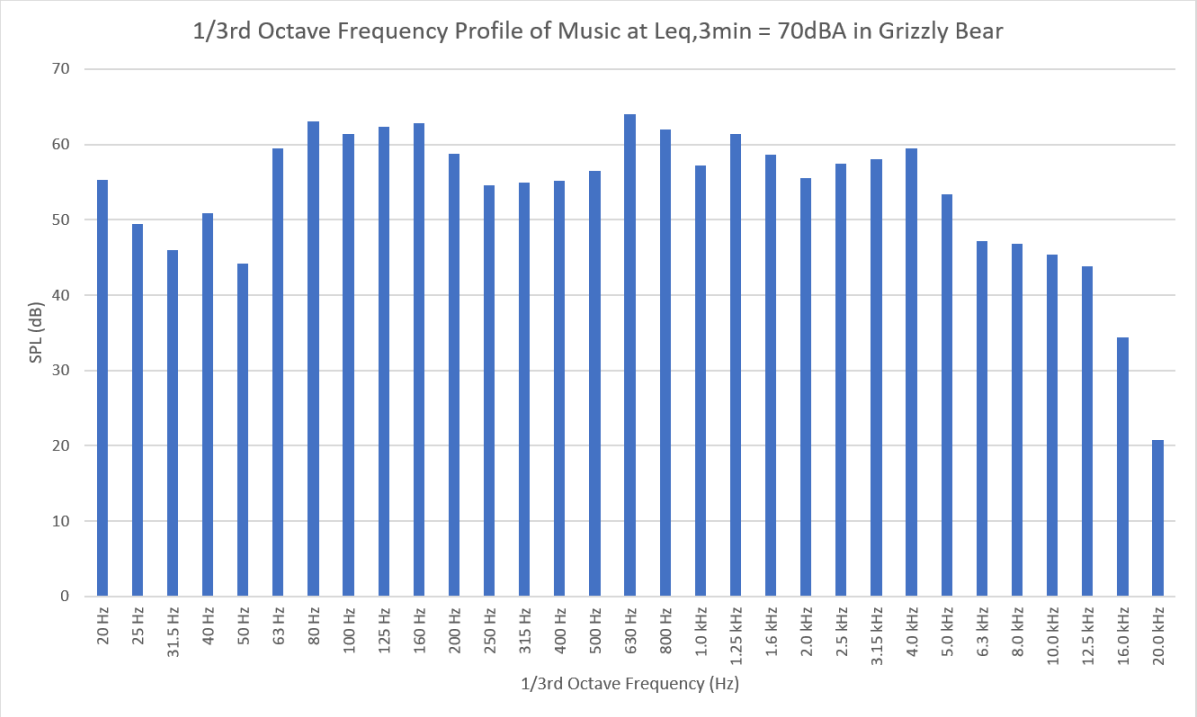


Figure 2: Music Profile at 70dBA in Source Room

For reference, the “Volume Level” on the iPad when the Music Noise Level is 70dB in the micropub is “66”. The “Volume Level” on the iPad when the Music Noise Level is 77dBA in the micropub is “75”.

The volume level on the Sonos speaker is never adjusted and has no indicator on it.

It is therefore necessary that the volume level on the iPad does not exceed 66.

4.1 NR Value

Using the Music Noise Level shown in Figure 2, along with the measured airborne sound insulation performance, detailed in Section 3 and the appendices, it is possible to see what the resultant frequency profile of the music is, as received directly above at first floor level. This can then be plotted against an NR Curve and compared with CIBSE Guide A (11/01/2016) for residential bedrooms. This states NR25 or lower.

The figure below shows the resultant NR curve plot and it is found that if the music noise level on the ground floor within The Grizzly Bear is Leq,3min = 70dBA, then it would be NR5 at first floor level.



Figure 3: NR Curve of "received" music noise at 1st floor level.

5 Conclusion

Measurements of Airborne Sound Insulation have been carried out between the Ground Floor “Grizzly Bear” micropub and the 1st floor residential dwelling directly above.

Audibility Listening Tests have also been carried out.

The airborne sound insulation test result shows a performance of Dw + Ctr = 53dB, which comfortably achieves the criterion typically required by Adur and Worthing DC when a commercial unit is below a residential dwelling.

Additionally, audibility tests have found that when the SPL of the music within the Grizzly Bear is Leq,3min = 70dBA, then it is completely inaudible at first floor level directly above the space.

Calculations have also shown that the resultant NR Curve from music played at 70dBA the Grizzly Bear would be NR5 at the first floor level directly above the space.

Based on the results, it is recommended that Planning Condition 8 is revised to allow playback of background music at levels no higher than 70dBA (volume level 66 on the iPad / Sonos speaker system).

Appendix A – Sound Insulation Test Graph

Standardized level difference according to ISO 140-4
Field measurements of airborne sound insulation between rooms

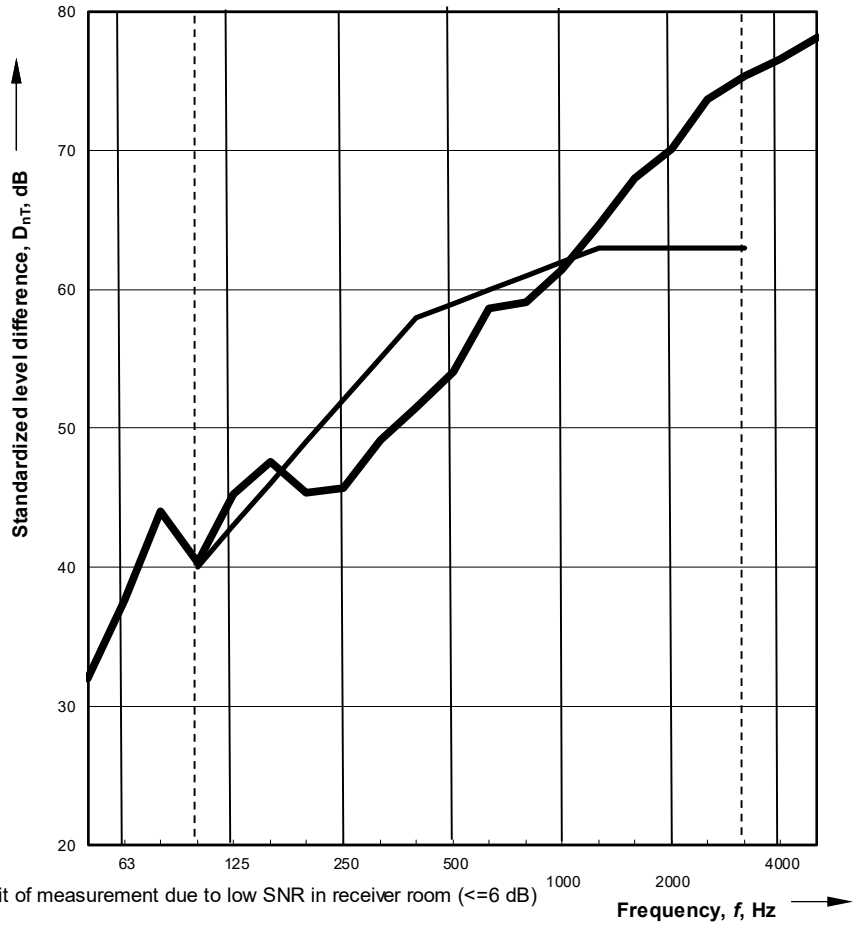
Client: The Grizzly Bear Date of test: 05/11/2026

Description and identification of the building construction and test arrangement, direction of measurement:
The Grizzly Bear, 32 South Street, Worthing
Ground Floor Bar - First Floor Flats Hallway (Vertical)

Source room volume: >60 m³
Receiving room volume: 10 m³

Frequency range according to the curve of reference values (ISO 717-1)

Frequency *f* Hz	D_{nT} (one-third octave) dB
50	32.0
63	37.7
80	44.0
100	40.3
125	45.2
160	47.6
200	45.3
250	45.7
315	49.1
400	51.5
500	54.0
630	58.6
800	59.1
1000	61.4
1250	64.6
1600	68.0
2000	70.1
2500	>= 73.7 *
3150	>= 75.4 *
4000	>= 76.6 *
5000	>= 78.1 *



* Result should be taken as limit of measurement due to low SNR in receiver room (<=6 dB)

Rating according to ISO 717-1

$D_{nT,w}$ (C;C_{tr}) = 59 (; -6) dB; $D_{nT,w} + C_{tr}$ = 53 dB

Evaluation based on field measurement
results obtained by an engineering method

No. of test report: J4308/1 Name of test institute: Acoustic South East
Date: 05/11/2026 Signature: Simon Barrett