

Report VA6532.260910.GNR

16 Guilder Lane, Salisbury

Gym Noise Assessment

10 September 2026

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Report Version	Author	Approved	Changes	Date
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1. Introduction

An application is being made under Class MA of the General Permitted Development Order for the change of use of 16 Guilder Lane, Salisbury into new apartments.

The following comment has been made on the application by Wiltshire Public Protection:

I write regarding the application for Prior Approval under Part MA of the GPDO for change of use from commercial (Class E) to residential (Class C3) to 8no. flats. 3no. flats at ground floor level, 3no. flats at first floor level and 2no. flats at second floor level, providing a mix of 5no. one bedroom and 3no. two-bedroom units.

I have reviewed the information submitted and note that the proposed development adjoins a commercial unit at ground floor level. Whilst I understand that the previous occupier, a weightlifting gym, has now ceased trading, the lawful commercial use of the adjoining premises remains extant and the premises could therefore be reoccupied by a similar or alternative Class E use in the future. The potential impact of noise from the adjoining commercial premises on the future occupiers of the proposed residential units is a material consideration under the prior approval process.

In particular, a gym use has the potential to generate significant airborne and structure-borne noise and vibration associated with weight drops, fitness activities, amplified music, mechanical plant, and customer movements, including during early morning and evening periods. Given the close relationship between the proposed flats and the adjoining commercial premises, it is not considered appropriate to assume that there will be no adverse noise impact simply because the unit is currently vacant.

The applicant should therefore provide a suitably robust acoustic assessment which considers the potential impact of noise associated with the lawful use of the neighbouring commercial premises and demonstrates that acceptable internal living conditions can be achieved for future occupants.

The assessment should also consider the transmission of noise and vibration through any shared walls, floors or structural elements, together with details of any mitigation measures required to achieve acceptable residential amenity.

In addition, careful consideration should be given to the internal layout of the proposed units, particularly the location of bedrooms adjacent to the party wall with the commercial premises, in order to minimise the potential for future noise disturbance. At this stage, I do not consider that sufficient information has been submitted to fully assess the potential impact of noise from the adjoining commercial premises on the intended occupiers of the development. This department would therefore welcome the opportunity to review any additional acoustic information submitted by the applicant and will provide further comments at that time.

Venta Acoustics has been commissioned by Pelleas Homes to undertake an assessment of the potential noise impact of these proposals.

As part of the assessment, airborne sound insulation tests and weight drop investigations have been undertaken. The results are used to undertake an assessment of the likely impact and provide mitigation recommendations.

2. Site Description

16 Guilder Lane appears to be an old warehouse or commercial building over three floors, with the adjacent building at 18 Guilder Lane comprising a brick construction at ground floor level, with the first floor located in the roof space. There is a doorway through the party wall at first floor level between the two buildings, indicating a thick brick construction.

The former gym space at 18 Guilder Lane was located at first floor level, with the ground floor containing the former office spaces, changing facilities, toilets and storage rooms.

At first floor level, the gym space abuts to the staircase in 18, as well as a storage space, with lobby doors into the room from the staircase. The rear windows of the roof gym space overlook the rear flat roof area of the premises.

3. Design Considerations

There two elements of noise that have been considered when assessing the likely impact of gym area as follows:

1. Airborne sound transfer;
2. Impact sound transfer through the structure due to dropping of weights.

3.1 Gym Acoustic Guidance

The Association of Noise Consultant's *ProPG Gym Acoustics Guidance* (2023) document provides recommendations on noise limits for music transmitted into adjacencies, defined in terms of 'G' curves.

Table 2 of the document details the guidance internal sound target criteria for gym activity in adjoining areas as summarised in below:

Receptor Type	Guide Criteria (for third octave band values plotted against the stated G curve)	
	Airborne Sound (e.g., music) $L_{eq,T}$ (31.5Hz to 8kHz)	Heavy Impact Sound $L_{max,F}$ (31.5Hz to 8kHz)
Residential Areas	G15-G25 (day) G10-G20 (night)	G20-G25 (day) G15-G20 (night)

Table 3.1 – Gym Noise Criteria

When approximated into octave band values, the relevant G-Curves are defined in the ProPG Gym Acoustic Guidance and are based on NR curves extended to 1/3 octave bands.

	Limiting Level, dB, at Octave Band Centre-Frequency, Hz						
	63	125	250	500	1k	2k	4k
G15	40	28	20	14	10	7	5
G20	44	32	24	18	15	12	10
G25	47	37	29	23	20	17	15

Table 3.2 – G Curve limits – Provided as indicative 1/1 levels, 1/3 octave values used in assessments.

3.2 BS8233:2014

BS8233: 2014 *Guidance on sound Insulation and noise reduction for buildings* provides guidance of appropriate ambient noise levels within different uses. Although this is not applicable directly to noise from gyms, it provides a useful reference to the ambient noise levels expected in rooms.

The following ambient noise level design criteria are extracted from the Standard:

Location	Design Range
Within bedrooms	of L_{Aeq} 30dB
Within retail environments	L_{Aeq} 50-55
Within private offices	L_{Aeq} 35-40dB

Table 3.3 – Excerpt from BS8233:2014 – Ambient Noise Criteria in Different Uses

4. Sound Insulation Investigations

Investigative tests were undertaken during a site visit on Friday 4th September 2026.

4.1 Equipment

The following equipment was used in the course of the investigations.

Manufacturer	Model Type	Serial No	Calibration	
			Certificate No.	Date
NTi Class 1 Integrating SLM	XL2	A2A-11461-E0	1518310-4	9/7/26
NTi Class 1 Integrating SLM	XL2	A2A-11586-E0	1518310-3	9/7/26
Larson Davis calibrator	CAL200	22561	1516263-1	6/2/26
Electro Voice	ZLX-12P-EX	095208361761760076	-	-
Electro Voice	ZLX-12P-EX	095208361761760087	-	-
NTi Audio Signal Generator	Minirator MR2	G2L-RACYB-G1	-	-
NTi Audio Signal Generator	Minirator MR2	G2L-RACZE-G1	-	-

Table 4.1 – Equipment used for the tests

4.2 Airborne Sound Insulation

Airborne sound insulation testing was undertaken between the two buildings at both ground and first floor level.

Tests were undertaken in general accordance with the procedures defined in BS EN ISO 16283-1:2014 *Acoustics – Field measurement of sound insulation in buildings and of building elements – Part 1: Airborne sound insulation* using a pair of uncorrelated pink noise sources.

High volume 'pink' noise was generated from a loudspeaker in the source room, positioned so as to obtain a diffuse sound field within the spaces. A spatial average of the resulting one-third octave band noise levels was obtained within both the source and the receive rooms.

Background noise levels were measured in the receive rooms in order to correct the received noise measurements for the influence of the prevailing noise climate as in accordance with BS EN 140 part 4.

4.3 Noise from Weights

Tests of noise from a weight dropped within the gym area were undertaken with the resultant noise levels being measured in 16 Guilder Lane.

Tests involved the dropping of a 24kg kettle bell onto the floor, with the corresponding maximum noise level measured in the adjacent space. The dumbbell was released from waist height (approximately 800mm) for all tests. This is considered a 'reasonable' weight drop for the purposed of this report.

Testing commenced with a measurement of the ambient noise in the space followed by the weight being dropped on the existing floor at various locations to determine variation across the unit.

5. Results

5.1 Airborne Sound Insulation

The tests results are shown in Table 5.1 and are weighted as per the methodology described in BS EN ISO 717-1: 2013 *Acoustics – Rating of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation*.

Source	Receive	Sound Insulation, D_w
16 – Ground	16 – Ground	56 dB*
16 – First	18 – First	62 dB

Table 5.1 – Airborne sound insulation test result

*The sound insulation test at ground floor level was compromised by noise flanking through the front door of both buildings. Observations of the sound elsewhere in the space away from the doors would suggest a similar high level of airborne sound insulation performance, as measured at first floor level.

At first floor level, there was also flanking noted through the existing doorway between the two buildings, and also externally through the roof window of 18 Guilder Lane, which are in a poor state of repair.

With the doorways closed up between the buildings, as per the proposals, and the fitting out of 16 as a residential building meeting the current building regulations, the airborne sound between the buildings is expected to improve significantly.

5.2 Transmitted Noise and Vibration (Weights)

Weight drops were undertaken in the first floor gym space in 18, and measured in the adjacent area in 16. During drops, there was no perceptible tactile vibration present in 16 Guiler Lane. However, airborne noise flanking through the doorways between the areas (many of the doors were missing or could not be closed fully) from the weight drops resulted in the recorded maximum noise levels being higher than would actually be experienced by future residents once the opening are closed up and the building is fitted out.

Subjectively, the noise from weight drops was faintly audible in 16, although not dominant above the ambient noise level in the space between weight drops.

Figure 5.1 shows the maximum level measured from weight drops in the receiver location.



Figure 5.1 – Weight drop level in 16 Guilder Lane

6. Discussion

The airborne sound insulation tests show a relatively high level of airborne sound insulation between the two buildings, albeit with limitations due to the openings in the structure.

The weight-drop tests show a low level of vibration transference, but airborne noise transmission again is compromised by the existing openings, which has influenced weight drop measurements.

Inspection of the building suggests that the buildings are separate structures, and the low level of vibration transmission would support this observation, with the floor joists likely hung on separate wall constructions.

As this is the case, vibration transmission between the two demises is not considered to be a high risk to disturbing future residents of 16 Guilder Lane.

As previously discussed, noise from weight drops was audible, but it is considered that this is due to the openings in the existing structure at first floor level, and poorly sealed doors and windows.

The opening at first floor level between the two buildings should be closed up using a dense cavity blockwork construction tied into the existing structure. This is expected to significantly reduce this airborne sound transmission path.

Elsewhere, the fitting of doors and windows that would achieve the thermal requirements of the Building Regulations would be expected to significantly reduce the other airborne transmission paths between the buildings.

With the above measures in place, it is considered that the airborne sound insulation would be expected to improve by an order of 10-15dB, which would be expected to reduce the noise from weight drops to below the G25 curve.

Current noise levels from weight drops, even with the openings and leaks in the structure, were below the BS8233 internal daytime noise recommendations, and so would be significantly lower than these following the works.

Jamie Duncan MIOA

APPENDIX A

Acoustic Terminology & Human Response to Broadband Sound

1.1 Acoustic Terminology

The human impact of sounds is dependent upon many complex interrelated factors such as 'loudness', its frequency (or pitch) and variation in level. In order to have some objective measure of the annoyance, scales have been derived to allow for these subjective factors.

Sound	Vibrations propagating through a medium (air, water, etc.) that are detectable by the auditory system.
Noise	Sound that is unwanted by or disturbing to the perceiver.
Frequency	The rate per second of vibration constituting a wave, measured in Hertz (Hz), where 1Hz = 1 vibration cycle per second. The human hearing can generally detect sound having frequencies in the range 20Hz to 20kHz. Frequency corresponds to the perception of 'pitch', with low frequencies producing low 'notes' and higher frequencies producing high 'notes'.
dB(A):	Human hearing is more susceptible to mid-frequency sounds than those at high and low frequencies. To take account of this in measurements and predictions, the 'A' weighting scale is used so that the level of sound corresponds roughly to the level as it is typically discerned by humans. The measured or calculated 'A' weighted sound level is designated as dB(A) or L_A . A notional steady sound level which, over a stated period of time, would contain the same amount of acoustical energy as the actual, fluctuating sound measured over that period (e.g. 8 hour, 1 hour, etc).
L_{eq} :	The concept of L_{eq} (equivalent continuous sound level) has primarily been used in assessing noise from industry, although its use is becoming more widespread in defining many other types of sounds, such as from amplified music and environmental sources such as aircraft and construction. Because L_{eq} is effectively a summation of a number of events, it does not in itself limit the magnitude of any individual event, and this is frequently used in conjunction with an absolute sound limit.
L_{10} & L_{90} :	Statistical L_n indices are used to describe the level and the degree of fluctuation of non-steady sound. The term refers to the level exceeded for n% of the time. Hence, L_{10} is the level exceeded for 10% of the time and as such can be regarded as a typical maximum level. Similarly, L_{90} is the typical minimum level and is often used to describe background noise. It is common practice to use the L_{10} index to describe noise from traffic as, being a high average, it takes into account the increased annoyance that results from the non-steady nature of traffic flow.
L_{max} :	The maximum sound pressure level recorded over a given period. L_{max} is sometimes used in assessing environmental noise, where occasional loud events occur which might not be adequately represented by a time-averaged L_{eq} value.

1.2 Octave Band Frequencies

In order to determine the way in which the energy of sound is distributed across the frequency range, the International Standards Organisation has agreed on "preferred" bands of frequency for sound measurement and analysis. The widest and most commonly used band for frequency measurement and analysis is the Octave Band. In these bands, the upper frequency limit is twice the lower frequency limit, with the band being described by its "centre frequency" which is the average (geometric mean) of the upper and lower limits, e.g. 250 Hz octave band extends from 176 Hz to 353 Hz. The most commonly used octave bands are:

Octave Band Centre Frequency Hz	63	125	250	500	1000	2000	4000	8000
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1.3 Human Perception of Broadband Noise

APPENDIX A

Acoustic Terminology & Human Response to Broadband Sound

Because of the logarithmic nature of the decibel scale, it should be borne in mind that sound levels in dB(A) do not have a simple linear relationship. For example, 100dB(A) sound level is not twice as loud as 50dB(A). It has been found experimentally that changes in the average level of fluctuating sound, such as from traffic, need to be of the order of 3dB before becoming definitely perceptible to the human ear. Data from other experiments have indicated that a change in sound level of 10dB is perceived by the average listener as a doubling or halving of loudness. Using this information, a guide to the subjective interpretation of changes in environmental sound level can be given.

Change in Sound Level dB	Subjective Impression	Human Response
0 to 2	Imperceptible change in loudness	Marginal
3 to 5	Perceptible change in loudness	Noticeable
6 to 10	Up to a doubling or halving of loudness	Significant
11 to 15	More than a doubling or halving of loudness	Substantial
16 to 20	Up to a quadrupling or quartering of loudness	Substantial
21 or more	More than a quadrupling or quartering of loudness	Very Substantial

1.4 Earth Bunds and Barriers - Effective Screen Height

When considering the reduction in sound level of a source provided by a barrier, it is necessary to establish the "effective screen height". For example if a tall barrier exists between a sound source and a listener, with the barrier close to the listener, the listener will perceive the sound as being louder if he climbs up a ladder (and is closer to the top of the barrier) than if he were standing at ground level. Equally if he sat on the ground the sound would seem quieter than if he were standing. This is explained by the fact that the "effective screen height" is changing with the three cases above. In general, the greater the effective screen height, the greater the perceived reduction in sound level.

Similarly, the attenuation provided by a barrier will be greater where it is aligned close to either the source or the listener than where the barrier is midway between the two.