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NOISE IMPACT ASSESSMENT REPORT

GARAGE CONVERSION & SOUND INSULATION ANALYSIS
BLENCATHRA BISTED ROAD, BUCKS HORN OAK, FARNHAM, GU10 4LL

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1. INTRODUCTION

Planning approval is being sought for an existing double garage (hereafter referred to as 'the site') conversion into office and gym space at Blencathra Binsted Road, Bucks Horn Oak, Farnham, Hampshire, GU10 4LL. The noise from this proposed development could have the potential to affect existing noise sensitive properties nearby.

The purposes of this report are:

- To determine and assess prevailing ambient and maximum noise levels affecting surrounding properties due to nearby noise sources (e.g. road traffic, aircraft etc);
- Based on the above, to present the internal noise levels to be achieved within the residential premises in accordance with relevant planning conditions,
- To identify and recommend appropriate sound insulation requirements for the purposes of mitigating noise caused by prevailing noise sources such that internal noise levels are achieved, and
- To demonstrate that internal noise levels, with mitigation measures, comply with the planning conditions.

2. SITE DESCRIPTION

Blencathra is an existing residential dwelling with four bedroom dethatched house with, a storage outbuilding, two double car detached from the house. The site is roughly rectangular in shape with the largest side of the site being along Binsted Road.

The site is situated on the corner of Binsted Road and the A325. Bucks Horn Oak is a small village in the East Hampshire district of Hampshire, and is the main community within Alice Holt Forest, a jurisdiction of the South Downs National Park Authority. A small eastern part consists of buildings facing its main road and of the main management and tourist sites of the surrounding public forest, postally part of the place. It is a well clustered community mostly of low-rise, detached houses immediately west of the north-south A325 road, which is the link between Bordon and the southern A3 (such as Petersfield and Portsmouth) to Farnham.

If the noise impact assessment details that there is an indication of the specific sound source having a low impact at these premises, then it can be safely assumed it will be met at other properties of equal distance and/or those further away. Figure 2.1 shows the site highlighted in **blue** with the nearest noise sensitive premises highlighted in **red**. Note that the main premises at Blencathra was included as a sensitive receptor, as any potential noise will affect the occupants.

Figure 2.1: Site Location and Surrounding Land Use Source: Google Maps

3. STANDARD GUIDANCE

The noise assessment has been undertaken in accordance with the most up-to-date planning Guidance and . These have been outlined below:

3.1 The National Planning Policy Framework (NPPF), 2019

Section 15, paragraph 180 of The National Planning Policy Framework states that:

"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development."

In doing so they should:

a) Mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;

b) Identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and

c) Limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.

The NPPF indicates that the Noise Policy Statement for England (NPSE) should be used to define "significant adverse impacts". A summary of the NPSE is provided below, and it is understood that the UK government is currently undertaking research to quantify the significant observed adverse effect levels for noise.

3.2 Noise Policy Statement for England (NPSE)

The document seeks to clarify the underlying principles and aims in existing policy documents, legislation and guidance that relate to noise. It also sets out the long term vision of Government noise policy:

“Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development”.

The NPSE clarifies that noise should not be considered in isolation of the wider benefits of a scheme or development, and that the intention is to minimize noise and noise effects as far as is reasonably practicable having regard to the underlying principles of sustainable development. The explanatory note of NPSE defines the terms used in the NPPF:

“There are two established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organisation. They are:

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. Extending these concepts for the purpose of this NPSE leads to the concept of a significant observed adverse effect level.

SOAEL – Significant Observed Adverse Effect Level: This is the level above which significant adverse effects on health and quality of life occur.”

The NPSE does not provide a numerical value for the SOAEL. BS8233:2014, however, is the most appropriate guidance document in relation to identifying target noise level criteria.

3.3 British Standard BS8233:2014

This guide helps determine how much soundproofing different types of buildings need to block outside noise. It also suggests suitable indoor noise levels for various situations, including residential dwellings.

BS8233 defines the highest allowed noise levels inside buildings when no one is there. Its goal is to ensure comfortable sound levels in commercial spaces and create suitable conditions for rest and sleep in homes. The table below shows the suggested noise limits for residential properties in BS8233:2014:

Activity	**Location**	**07:00 – 23:00**	**23:00 – 7:00**
Resting	Living rooms	35 $L_{Aeq,\ 16hour}$	-
Dining	Dining room	40 $L_{Aeq,\ 16hour}$	-
Sleeping	Bedroom	35 $L_{Aeq,\ 16hour}$	30 $L_{Aeq,\ 16hour}$

Table 3.1 - BS8233:2014 recommended internal noise levels LAeq,T dB

The internal noise levels mentioned earlier are based on yearly averages and don't always have to be met. The rule says that if development is necessary or preferred, the internal target levels can be relaxed by up to 5 dB, while still maintaining reasonable conditions.

For outdoor areas like gardens and patios, the standard suggests that the noise level should not exceed 50 dB LAeq,T with an upper guideline value of 55 dB LAeq,T which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable.

3.4 ProPG: Gym Acoustics Guidance (GAG)

The ProPG Acoustic Guidance is designed to help those involved in building gyms, such as practitioners, developers, operators, and Local Authorities. It aims to reduce disruptive noise from gym equipment to prevent complaints from nearby residents or workers. Gyms in dual-use buildings or near homes need to consider strategies early on to minimize noise, as gym equipment often produces vibration and sound. The guidance is especially important in areas where people have lower tolerance for noise.

There are three common approaches for noise and vibration assessments:

a.) *Absolute Guideline Values - The effects can be determined by reference to guideline values, for example BS 8233:2014 Guidance on sound insulation and noise reduction for* *buildings or BS 6472: Part 1: 2008 Guide to evaluation of human exposure to vibration in buildings.*

b.) Change in Noise Level - The effects can be determined by considering the change in noise level that would result from the noise source. This approach is contained within the Institute of Environmental Management and Assessment (IEMA) Guidelines for Environmental Noise Impact Assessment November 2014.

c.) Relative Effect - The effects can be determined by comparing the resultant noise level after the noise source is placed into the local environment, against the background noise level (LA90, T) of the area. This is the method employed by BS4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound and is used to determine the significance of effect in a site specific way.

Creating good acoustic design involves following the approach outlined in ProPG: Planning & Noise, Section 2, and further explained in Supplementary Document 2. When applying this approach to Gyms, it's important to carefully consider the structure and context of the location to establish suitable criteria and practical goals. In cases where background noise levels are higher, more flexible criteria may be suitable.

To ensure adherence to regulations, one must validate compliance either through calculations or by demonstrating the absence of adverse effects. For instance, the selection and quantity of gym equipment can impact the noise and vibrations emitted within the premises. While effective acoustic design typically steers clear of siting a gym near delicate equipment such as high-resolution printers, computers, or areas dedicated to small component production, there may be instances where proximity occurs. In such scenarios, specialized isolation tables or mounts can be employed to install sensitive equipment. Manufacturers commonly provide specifications for the vibration environment suitable for installing sensitive equipment, and these specifications should form the basis of the assessment.

4. NOISE SURVEY RESULTS

Environmental noise survey was undertaken at the site. The measurements were taken over one minute period between 16:00 on 28th November 2023 and 23:55 on 2nd December 2023. Monitoring was conducted over five days to determine prevailing ambient and maximum noise levels affecting the development. The measurement position was approximately 1.5m above ground level and under free-field conditions.

The monitoring locations are indicatively highlighted in **blue** in Figure 2.2. These measurement locations were chosen to be reasonably representative of noise levels at the site and outside the nearest noise sensitive premises. The survey represents typical day, evening and night-time periods at the site.

Measurements were taken over 15 minute period on Tuesday 28th November 2023. The microphone was mounted on a tripod approximately 1.5m above the ground level and under free-field conditions. Ambient, background and maximum sound pressure levels (LAeq, LA90 and LAmax, f respectively) throughout the measurement period.

Figure 4.1: Acoustic Measurement positions Source: Google Maps

The noise survey and measurements were conducted in accordance with BS 7445-1:2003 *'Description and measurement of environmental noise. Guide to quantities and procedures'*.

Weather conditions throughout the entire noise survey period were noted to be between approximately 1 and 5° Celsius, cloudy skies (30-90% cloud cover approximately) with average wind speed 8mph in the general direction NNW. These weather conditions were checked against and confirmed by the use of the Met Office mobile application available on smart phone technology. These conditions were maintained throughout the majority of the survey period and are considered reasonable for undertaking environmental noise measurements.

The lowest background noise level at the measurement position during the most sensitive time period of the survey, at the time in which the proposed home gym could be in use, is 34dB LA90,15min. This representative noise level is considered appropriate for the assessment.

A design criterion of achieving a minimum 5dB(A) below the background noise level has been adopted in line with a worst-case scenario. Taking the noise data in Section 4 and Local Authority requirements above, the following design target has been adopted for mechanical plant as provided in Table 4.1.

Date / Period (hours)	Lowest Background Sound Pressure Level, dB $L_{A90,15min}$	Rating noise level at 1m from residential facade, dB $L_{Aeq,T}$
27/11/2023– 28/11/2023 (09:00 to 23:00)	**34**	**29**

Table 4.1 Maximum noise emission design target at residential premises

5. SOUND INSULATION ANALYSIS

5.1 Testing Methodology

The methodology in figure 5.1 can be used for testing gyms during both initial and regular evaluations. The following sections will clarify different testing aspects, making it adaptable for different types of gym spaces, including home gyms.

Gym noise issues can be grouped into the below categories:

- **High Impact Response** (HIR) (e.g.: Impacts with hard/ soft masses)
- **Synchronized Repetitive Excitation** (SRE) (e.g.: Running on a treadmill)
- **Airborne Noise** (AN) (e.g.: Spinning Class Music)

Airborne noise assessments usually follow standard methods like BS EN ISO 16283-1:2014. However, for HIR and SRE analyses, specific methods are recommended for consistency. For HIR assessments, a strong noise like a weight drop is used. Ideally, we'd test gym equipment with trained users, but it's often not practical. So, baseline tests before installing the gym floor help. These results should be a factual part of the assessment, along with subjective factors like how noticeable the noise seems.

The goal of the testing method is to mimic the noise from the designated gym area(s) (HIR or SRE) and measure how loud it is at the nearby sensitive locations. The measured noise levels are then compared to set standards for evaluation.

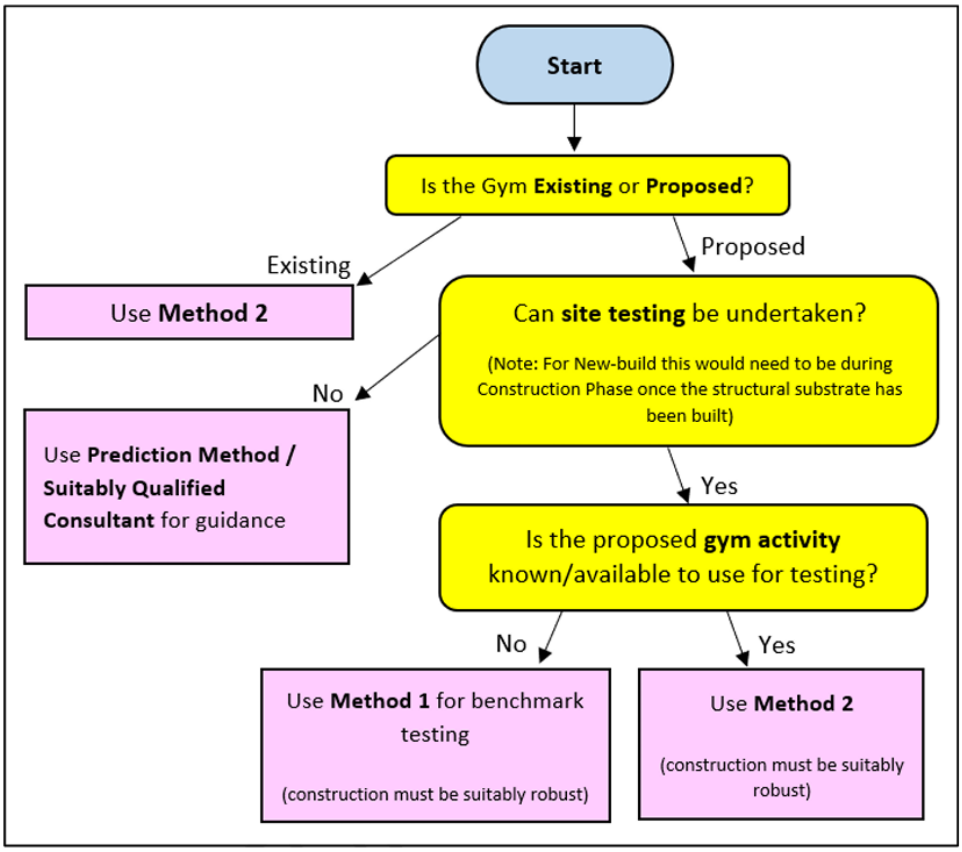


Figure 5.1: Flowchart to Determine Appropriate Gym Testing Methodology

5.2 Testing Equipment

5.2.1 Sound Level Meter

The Sound Level Meter (SLM) should comply with the requirements of accuracy class 1 defined in IEC 60651 and IEC 60804. The SLM should be calibrated before and after measurement using a calibrator compliant with accuracy class 1 defined in IEC 60942. Any Reverberation Time measuring equipment must comply with the requirements defined in ISO 354.

5.2.2 Weight

To create a starting force using weight drops, the weight source must:

For Method 1 Testing:

Select a weight between 20 to 35 kg to shake the structure effectively (or the heaviest weight under 35 kg if it's less). This ensures consistent comparisons between different projects. For lighter structures, it's better to use Method 2 due to increased uncertainty.

- Use a kettlebell with a rounded or partially rounded base to consistently hit the floor with an even surface. If that is not possible, drop more weights to measure the worst-case scenario.
- A rubberized finish must be used
- Method 1 excludes drops from 0.5m above 35 kg - Anything above this weight would be classed as Method 2 testing.

For Method 2 Testing:
Method 2 testing aims to measure the actual noise levels expected or already present in the space due to activities resembling those planned for the gym. Any gym equipment can be used, but it may involve dropping heavier weights or barbells from greater heights. Safety guidelines in Appendix F should be consulted. Efforts should be made to avoid damaging the building structure during testing, such as using protective flooring.

To account for the various ways energy is transferred during different activities, Method 2 testing should ideally assess one example of each proposed or expected gym activity, such as those listed below:

Slamball/Medicine ball/Weight bags

- Throw the heaviest suggested ball from a height of about 1.5 meters. If slamballs are proposed to be slammed on walls, this should be measured. Generally, the worst-case weight would be around 10 kg in that case.

Dumbbell

- Drops using the heaviest proposed unit*, in line with drop methodology given in Method 1. Generally, the worst-case weight would be around 35 kg.

Barbell

- Drops using the heaviest proposed unit*, in line with drop methodology given in Method 1. Typically, the worst-case weight would be around 150 kg.

Treadmill

- Running on the treadmill at a setting representative of a fast run at aprox 10 km/h (6.21mph) with shoes and with a flat-footed running style. This should ideally be measured continuously for a minimum of 30 seconds.

Fixed Pin Weight Machines

- If the machine has a fixed weight, it's advised to let the weight bars fall from a height of about 0.2m. The maximum weight could be 50 kg (varies by machine type). Depending on where the machines are located, you need to assess the worst-case scenario on-site. Consider the maximum weight of various machines and their proximity to noise-sensitive areas.

Other

- Evaluate important custom activities like using battle ropes, weight bags, etc

5.3 Sound Insulation Requirements

Local governments require commercial and residential spaces to have better sound insulation than the noise level stated in the Building Regulations (ADE) by at least 10 decibels:

Building Regulations (2010) Approved Document 'E', 'Resistance to the Passage of Sound', provides performance standards for residential dwellings only and 'the normal way of satisfying Requirement (ADE) E1 will be to be build separation walls, separating floors, and stairs that have a separating function together with the associated flanking construction, in such a way that they achieve the sound insulation values of for dwellings-houses and flats set out in in Table 1a, and the values for rooms for residential purposes set out in Table 1b'.

Table 1a and Table 1b from ADE are reproduced in Table 9.1 below. The SI criteria to be achieved in this circumstance is 10dB above the airborne values highlighted in red.

Table 0.1a Dwelling-houses and flats – performance standards for separating walls, separating floors, and stairs that have a separating function

	Airborne sound insulation sound insulation $D_{nT,w} + C_{tr}$ dB (Minimum values)	Impact sound insulation $L'_{nT,w}$ dB (Maximum values)
Purpose built dwelling-houses and flats		
Walls	45	-
Floors and stairs	45	62
Dwelling-houses and flats formed by material change of use		
Walls	43	-
Floors and stairs	43	64

Table 0.1b Rooms for residential purposes – performance standards for separating walls, separating floors, and stairs that have a separating function

	Airborne sound insulation sound insulation $D_{nT,w} + C_{tr}$ dB (Minimum values)	Impact sound insulation $L'_{nT,w}$ dB (Maximum values)
Purpose built rooms for residential purposes		
Walls	43	-
Floors and stairs	45	62
Rooms for residential purposes formed by material change of use		
Walls	43	-
Floors and stairs	43	64

Figure 5.2 ADE Sound Insulation Requirements

The design goal based on the standard requirements outlined in Table 5.1 provided by the Local Authority.

oved Document E required floor performance dB $D_{nT,w} + C_{tr}$	nded SI Design Target dB $D_{nT,w} + C_{tr}$
43	53

Table 5.1 Party Ceiling/Floor SRI design target

In line with Local Authority requirements, it is suggested that all dividing ceiling/floors meet a minimum performance standard of 53dB DnT,w + Ctr.

5.3.1 Predicted Sound Insulation Performance

The client has advised that the existing construction of the party ceiling/floor is as follows:

Timber joist with 9.5mm plasterboard below and timber boarding above. Joist size are; 172mm x

50mm @ approx. 450 c/c

A prediction of the existing ceiling/floor sound insulation, based on all information provided by the client, has been carried out. The predicted performance can be found in table 9.2.1 below (full predicted results can be found in Appendix D).

Source Room	Receiver Room	Predicted Sound Reduction Performance, dB $D_{nT,w}$ + C_{tr}	Design Target dB $D_{nT,w}$ + C_{tr}	Minimum Additional Sound Reduction Performance Requirement, dB $D_{nT,w}$ + C_{tr}
Ground Floor	First Floor	17	53	36

Table 9.2.1 Predicted Sound Insulation Performance

In order to meet the design target additional sound insulation will be required.

5.3.2 Example Mitigation

Ceilings/floors may not perform as well in real-world conditions as the examples in this report suggest, even if they are built correctly. This is because factors like flanking transmissions (through junctions, doors, etc.) can affect performance. While efforts have been made to predict the Sound Insulation (SI) of the proposed constructions, it's important to recognize that the actual performance depends on the construction quality, workmanship, and build.
An example sound insulation specification is shown below, however any specification which meets the minimum performance and Building Regulations will be suitable. The following example party ceiling/floor would meet the required design target:

- 1 x 20 mm Flooring Particle Board
- Solid Joist with rubber isolation clip
- 100mm Fibreglass (22kg/m3)
- 2 x 15mm Gyproc SoundBloc
- AMC Akustik+Sylomer 1 hangers
- 60mm Fibreglass (10kg/m3)
- 2 x 12.5mm Gyproc SoundBloc

The predicted performance of the party ceiling/floors is 62dB R_w + Ctr. (Full calculations can be found in Appendix D).

5. CONCLUSION

P.U.L Services Limited has determined the prevailing background noise levels that are representative of the nearest noise sensitive properties. The operation of the office and gym space, in accordance with BS 8233: 2014 guidance, indicates to creating a low impact.

All worst-case scenarios have been applied to the assessment. The predicted operating noise levels of the office and gym equipment is demonstrated to comply with the South Downs National Park Authority's policy. An environmental noise survey was carried out to establish the existing noise levels from road traffic, pedestrians and other significant noise sources in the area.

Consideration has been highlighted to ensure the selection and quantity of gym equipment as well as the acoustic design takes into account the presence of delicate office equipment to be set up in the dedicated office space. Equipment such as computer monitor mounts are recommended to ensure that specifications for the vibration environment suitable for installing sensitive equipment form the basis of the assessment. The following guidance on what might considered in a noise impact assessment for a home gym development:

Environmental Noise Regulations (England) 2006

The Environmental Noise (England) Regulations 2006 set out the framework for assessing and managing environmental noise. It incorporates the European Environmental Noise Directive (END) into UK law. You may refer to these regulations for guidelines on acceptable noise levels in different environments, including residential areas.

BS 4142:2014 Methods for Rating and Assessing Industrial and Commercial Sound

This British Standard provides methods for assessing industrial and commercial sound in terms of its likely impact on nearby residential areas. While it may not be directly applicable to a home gym, it can offer guidance on how to assess the impact of noise on residential premises.

World Health Organization (WHO) Guidelines

The WHO provides guidelines on community noise and its effects on health. While not legally binding, these guidelines can be referred to as a reference for assessing the potential health impact of noise emissions.

Building Regulations

Although primarily concerned with the construction of buildings, certain aspects of building design may influence noise transmission. Check Building Regulations for any relevant requirements related to sound insulation.

APPENDIX A: Acoustic Terminology

Parameter	Description
Acoustic environment	Sound from all sound sources as modified by the environment
Ambient sound	Totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far
Ambient sound level, La = LAeq,T	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
Background sound level, LA90,T	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
Decibel (dB)	A logarithmic scale representing the sound pressure or power level relative to the threshold of hearing ($20x10^{-6}$ Pascals).
Equivalent continuous A- weighted sound pressure level, LAeq,T	Value of the A-weighted sound pressure level in decibels of continuous steady sound that, within a specified time interval, T = t2 – t1, has the same mean-squared sound pressure as a sound that varies with time
Measurement time interval, Tm	Total time over which measurements are taken
Rating level, LAr,Tr	Specific sound level plus any adjustment for the characteristic features of the sound
Reference time interval, Tr	Specified interval over which the specific sound level is determined
Residual sound	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, Lr = LAeq,T	Equivalent continuous A-weighted sound pressure level of the residual sound at the assessment location over a given time interval, T
Specific sound level, Ls = LAeq,Tr	Equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, Tr
Specific sound source	Sound source being assessed

APPENDIX B: Acoustic Test Meter Data Sheet

T.I.S.

TIS 770 Digital Sound
Level Meter

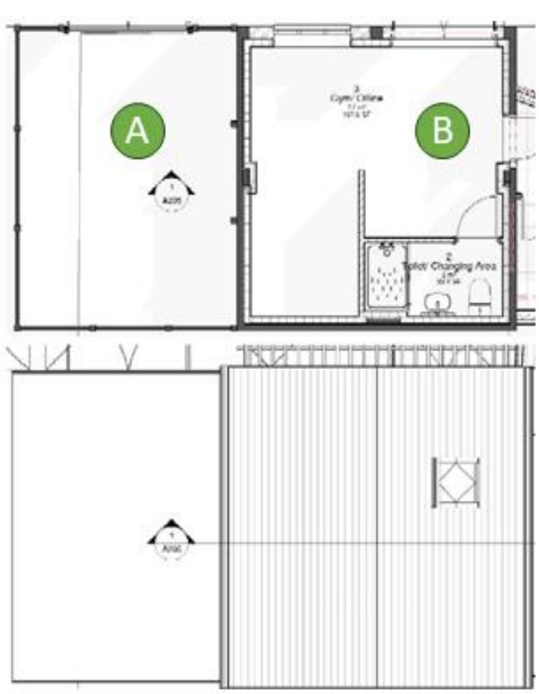
The TIS 770 is a digital sound level meter capable measuring between 30dB and 130dB. It operates between 30Hz and 8KHz and features Slow and Fast Response, Max Hold and Auto Range.

Specification	**TECHNICAL** Sound Pressure Accuracy:± 1.5dB (sound pressure standard, 94 dB @ 1KHz) Sound Pressure Accuracy:±5 dB (sound pressure standard, 94dB @ 8KHz) Sound Pressure frequency response: 30Hz to 8kHz Dynamic Range:50dB (for each measurement of gear level) Sound Pressure Frequency weighting characteristics: A and C Dynamic characteristics: FAST 125ms, SLOW 1sec Microphone: Polarised Capacitive Microphone Digital Display: 4 digit, 0.1dB 2 times / sec Measurement Gear Level:30-80dB, 40-90dB, 50-100dB, 60-110dB, 70-120dB, 80-130dB Auto Shifting Gear Level Below or above limit prompt: "UNDER" or "OVER" display
Special Functions	Range: 30dB to 130dB Frequency: 30Hz - 8KHz A and C weighting Slow and Fast Response Max Hold Data Hold Auto Range Auto Power Off Back Light Display Meets Current Fire Alarm Regulations Low Battery Warning Digital and Bar Graph Display
General Characteristics	Size: 193mm x 60mm x 29mm Weight: Approx. 222g (Including Batteries)

APPENDIX C: Proposed Site Plan

Existing Ground Floor Plan

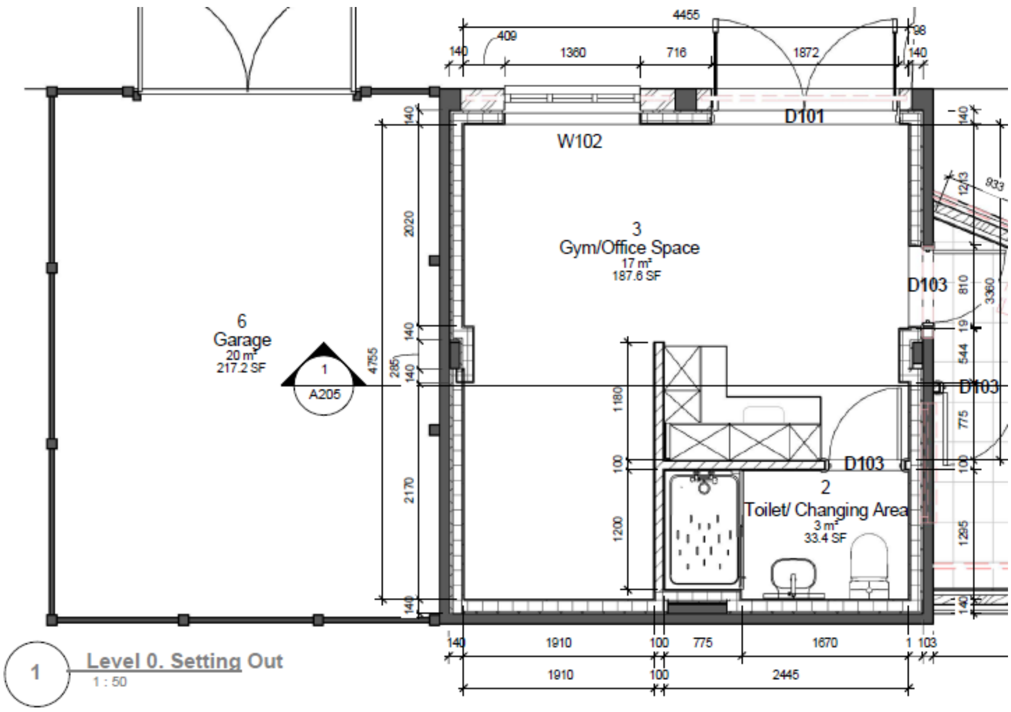
Proposed Ground Floor Plan



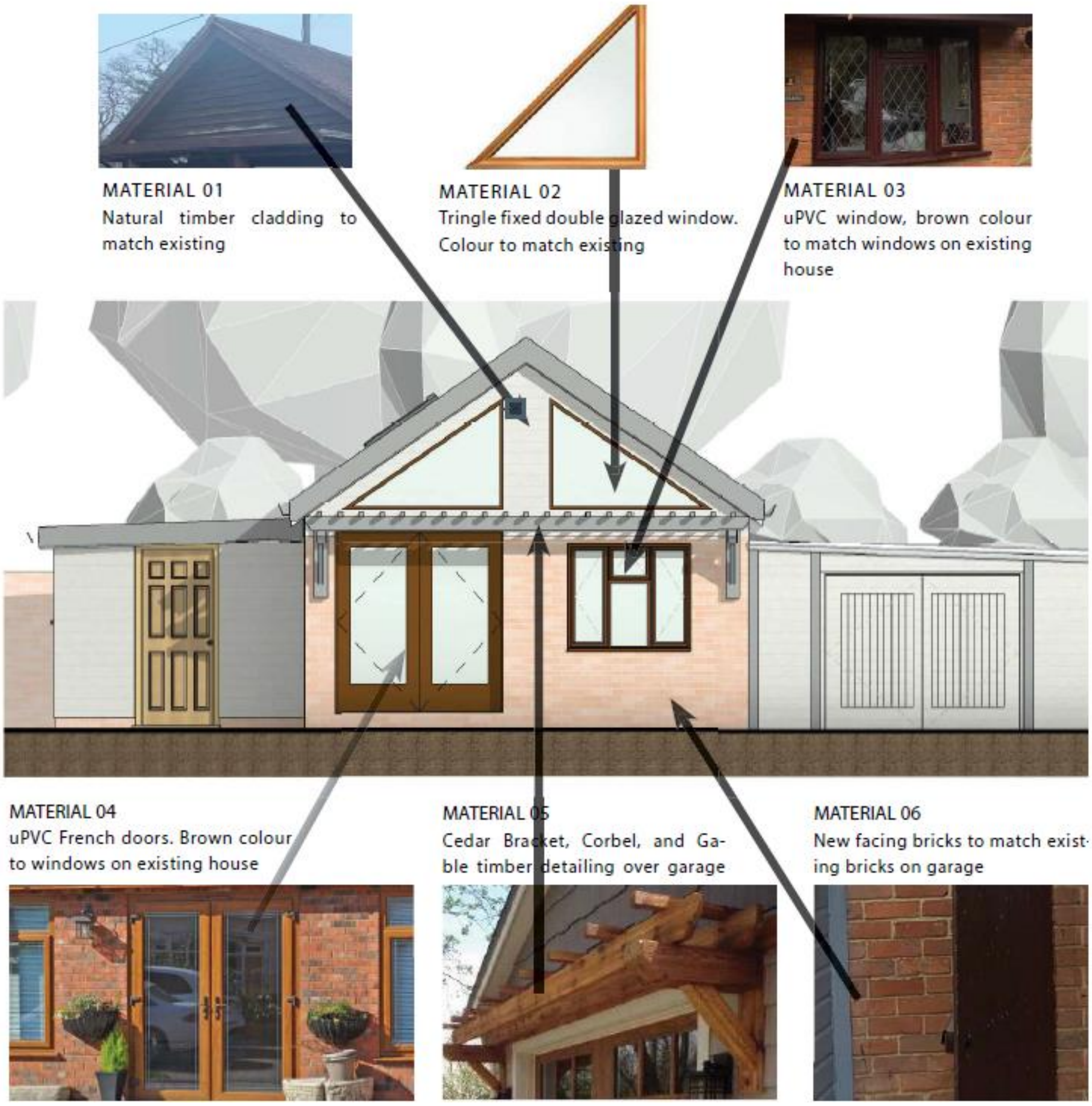
A Double car garage to remain as is

B Double car garage to be converted

Proposed Floor Plan



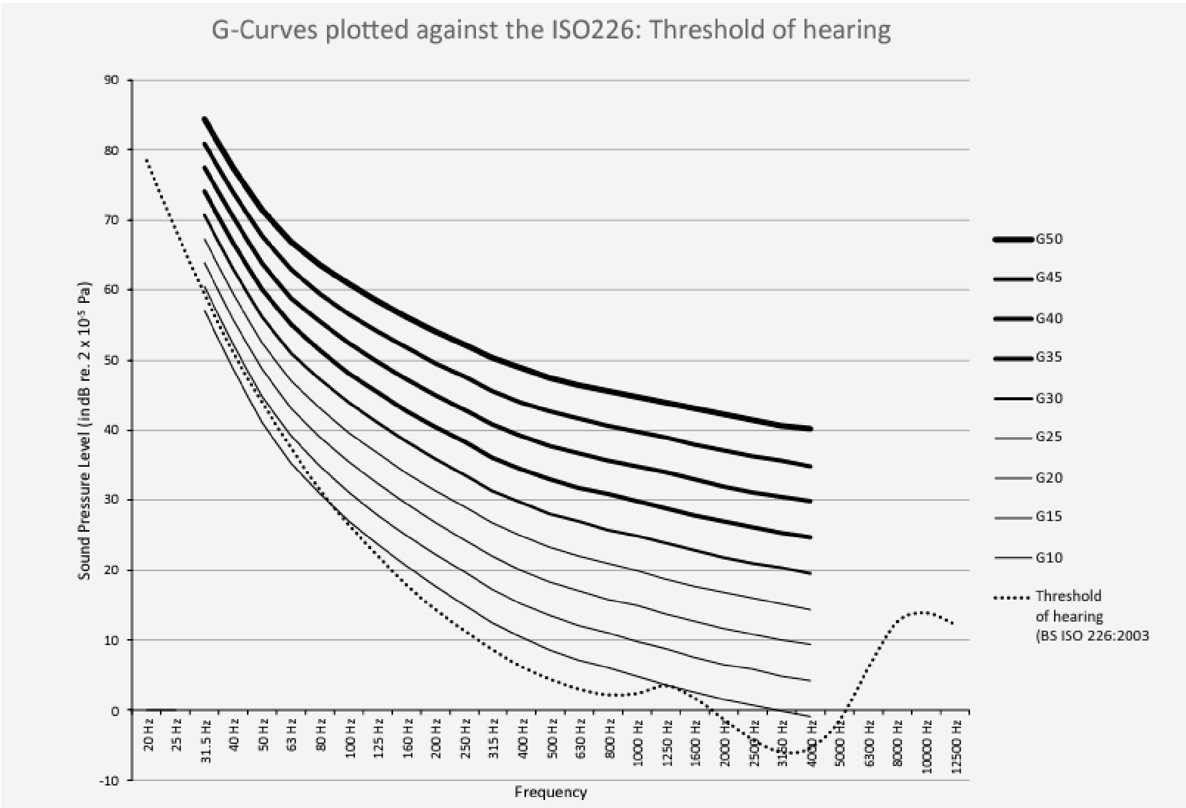
Proposed Materials



Appendix D: Guidance Internal Sound Target Criteria for Gym Activity

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 $L_{max,F}$ (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)

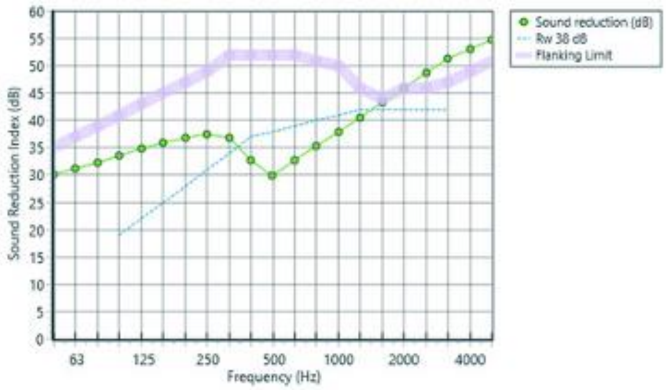


APPENDIX E: Sound Insulation Specifications

Example Wall Sound Insulation

Untreated Brick Wall 100mm single skin brick wall

Frequency Hz	DnT Value 1/3 Octave -dB Untreated Wall
50	30
63	31
80	32
100	33
125	34
160	36
200	37
250	38
315	37
400	33
500	30
630	33
800	35
1000	38
1250	41
1600	43
2000	46
2500	51

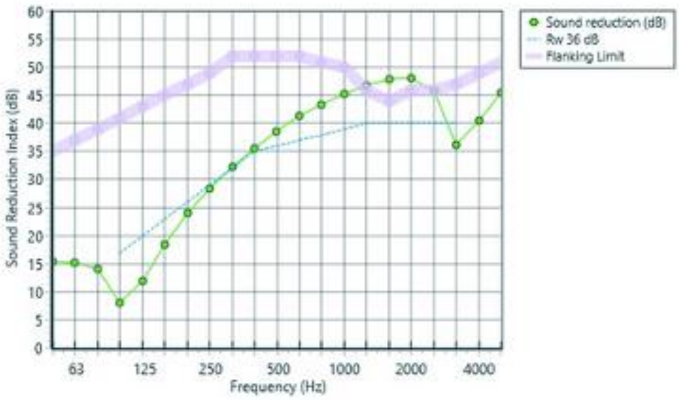


Untreated 100mm single skin brick wall	**DnT,w 38dB**

Rating in accordance to ISO 717-1

Untreated Stud Wall 100mm stud wall with 12.5mm plasterboard either side

Frequency Hz	DnT Value 1/3 Octave -dB Untreated Wall
50	15
63	15
80	14
100	8
125	12
160	19
200	24
250	29
315	32
400	36
500	39
630	41
800	43
1000	45
1250	47
1600	48
2000	48
2500	45

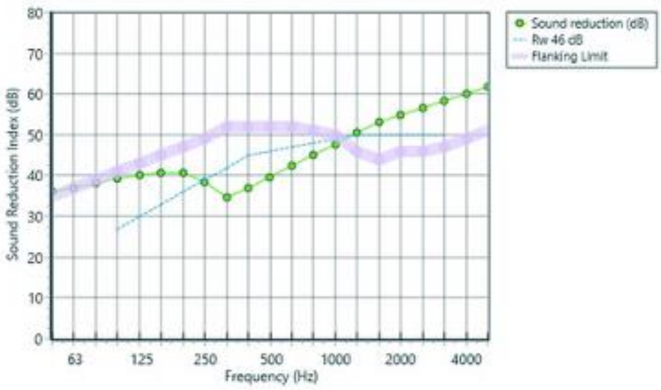


Untreated 100mm stud wall	**DnT,w 36dB**

Rating in accordance to ISO 717-1

Noisestop 2 Panel - 100mm single skin brick wall

Frequency Hz	DnT Value 1/3 Octave -dB Untreated Wall
50	36
63	37
80	38
100	39
125	40
160	41
200	41
250	38
315	35
400	37
500	40
630	42
800	45
1000	48
1250	50
1600	53
2000	55
2500	57



Untreated 100mm single skin brick wall	**DnT,w 38dB**
Noisestop 2 panel applied to 100mm brick wall	**DnT,w 46dB**
Improvement	**DnT,w 8dB**

Rating in accordance to ISO 717-1

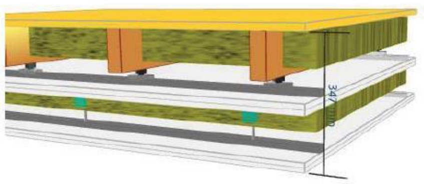
Example Floor Sound Insulation

Sound Insulation Prediction (v9.0.23)

Margin of error is generally within Rw ±3 dB
- Key No. 5559
Job Name: 19 Bridge Street MK18 1AF
Job No.: SLL - 0179 Initials:Spectre
Date:11/02/2021
File Name:

INSUL

Notes:



Rw 67 dB
C -2 dB
Ctr -5 dB

Mass-air-mass resonant frequency = =39 Hz , 62 Hz

Panel Size = 2.7 m x 4.0 m

Partition surface mass = 62.2 kg/m²

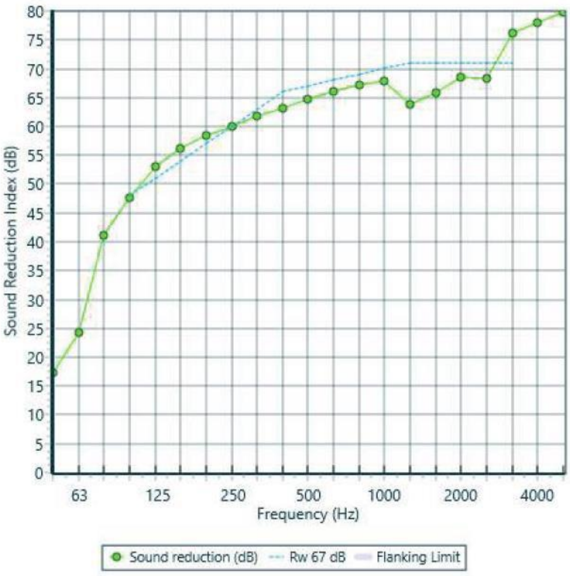
System description

Panel **1** : 1 x 20 mm Flooring Particle Board

Frame: Solid Joist with rubber isolation clip (1.3E2 mm x 45 mm), Stud spacing 450 mm ; Cavity Width 172 mm , 1 x Fibreglass (22kg/m3) Thickness 100 mm ...
Panel 2 : 2 x 15 mm Gyproc SoundBloc 15mm

Frame: AMC Akustik+Sylomer 1 hangers (-1E2 mm x 50 mm), Stud spacing 600 mm ; Cavity Width 100 mm , 1 x Fibreglass (10kg/m3) Thickness 60 mm ...
Panel 3 : 2 x 12.5 mm Gyproc SoundBloc 12.5mm

freq.(Hz)	R(dB)	R(dB)
50	17	
63	24	21
80	41	
100	48	
125	53	51
160	56	
200	58	
250	60	60
315	62	
400	63	
500	65	65
630	66	
800	67	
1000	68	66
1250	64	
1600	66	
2000	68	67
2500	68	
3150	76	
4000	78	78
5000	80	



Example Ceiling Sound Insulation

ACOUSTIC DATA

Building Regulations Part E - Resistance to the Passage of Sound

Dwelling-houses and flats - performance standards for separating floors, and stairs that have a separating function.		
	Airborne Sound Insulation $D_{nT,w} + C_{tr}$ dB (minimum values)	**Impact Sound Insulation** $L'_{nT,w}$ dB (maximum values)
Purpose built dwelling-houses or flats Floors + Stairs	45	62
Dwelling-houses or flats formed by material change of use Floors + Stairs	43	64

Rooms for residential purposes - performance standards for separating floors, and stairs that have a separating function.		
	Airborne Sound Insulation $D_{nT,w} + C_{tr}$ dB (minimum values)	**Impact Sound Insulation** $L'_{nT,w}$ dB (maximum values)
Purpose built rooms for residential purposes Floors + Stairs	45	62
Rooms for residential purposes formed by material change of use Floors + Stairs	43	64

ACOUSTIC PERFORMANCE

Maxi 60 Ceiling			
	Airborne $D_{nT,w}$ (dB)	$D_{nT,w} + C_{tr}$ (dB)	**Impact** $L'_{nT,w}$ (dB)
Maxi 60 only	53	48	57

Fire performance: achieves 1 hour fire resistance to BE EN 1365-2 floor/roof (WARRES 127725).

Maxi 30 Ceiling			
	Airborne $D_{nT,w}$ (dB)	$D_{nT,w} + C_{tr}$ (dB)	**Impact** $L'_{nT,w}$ (dB)
Maxi 30 only	50	43	61

Fire performance: achieves 1/2 hour fire resistance to BE EN 1365-2 floor/roof (WARRES 124986).

Acoustic tests on Maxi 30/60 ceilings carried out independently by Noise Control Services 16/05/03 in accordance with ISO 140 parts 4 and 7.

Rated to ISO 717 parts 1 and 2. Test reference numbers: 5031-5036 & 06031/1-4.