Chartered Building Consultancy

Acoustic South East

Sound Insulation Pre-Test and Advice

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Date: 22/08/2025

Project: J4075

Issue 1

Site: **332 Goring Road, Goring**

Client: **Bon Vivant**

Constructionline Part of Capita plc

CQMS Safety Scheme

ANC THE ASSOCIATION OF NOISE CONSULTANTS

ATTMA

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1 Document Control

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2 Introduction and Executive Summary

Acoustic South East have been appointed to provide recommendations for the acoustic separation between ground floor and first floor at 332 Goring Road, Goring

The advice here-in is part for the general Approved Document E compliance

If the construction methods within this report are adopted, it is considered that the sound insulation will achieve results that satisfy the requirements of Approved Document E and exceed them sufficiently such that the live music occurring within the ground floor will not cause undue disturbance to the 1st floor occupants as well as meeting the expected requirements of the Local Authority.

3 Caveat

Whilst we are a chartered building consultancy, fire separation and structural stability are outside of our specialist scope and it is strongly advised that the client take advice from suitably qualified practitioners when reviewing our advice (which relates to acoustics only)

4 Sound Insulation and Internal Ambient Noise Level Criteria

4.1 Building Regulations Approved Document E

Approved Document E (ADE) 2003, as amended 2015, of the Building Regulations 2010 sets out the following requirements for sound insulation of floors and walls in houses and flats formed by a material change of use (dwelling to dwelling):

Partition Type	Airborne Sound Insulation $D_{nT,w} + C_{tr}$ (dB)
Floor	≥ 43

Table 1: Airborne Sound Insulation Criterion of Converted Floor

N.B. With airborne sound insulation, it is the level difference between the two rooms which is being measured and thus the higher the value the better the sound insulation.

Approved Document E states that where commercial units adjoin residential units, an enhanced airborne sound insulation criterion may be required.

It is typical to require an uplift of performance in such a cases of 5 – 7dB for conversion situations (I.E. $D_{nT,w} + C_{tr}$ = 48 – 50dB to be achieved).

Additionally, comment from the Local Authority is as follows:

> *An Acoustic report is required which will need to include consideration of live music.*
>
> *There are no EH objections in principle … and we will need to ensure that the sound insulation between the new business and the first floor flat is sufficient to prevent a nuisance. We normally recommend airborne sound insulation between commercial and residential of DnT,w + Ctr = 50dB, to control customer noise and to allow for low level recorded background music. However, because of the proposed live music this will need to be assessed and I would request an acoustic report is provided.*

5 Pre-liminary Testing

An airborne sound insulation test in accordance with BS EN ISO 140-4 was initially planned to be carried out between the ground floor commercial unit and the 1st floor flat, however there was a last-minute change with the flat becoming unavailable for testing due to the occupant's work commitments.

A noise break-out test was, however, carried out between the ground floor commercial space and the flat roof directly outside the first floor flat along with some investigatory work to understand what the existing separating construction appeared to be.

The result of the noise break-out test was found to be a Dw of 44dB with a Ctr of -4, thus making a final result of Dw + Ctr of 40dB.

This performance was mainly due to there being a weak element in the existing construction where an unused extraction fan was installed and left in place, with a canopy covering it, allowing the sound to flank through this route. It is therefore likely that the performance of the floor would otherwise be higher if tested into the flat itself.

The graph for the sound insulation test can be found in the appendices of this report, which indicates the lack of mass due to the aforementioned extractor unit.

6 Existing Construction

The existing separating construction has been inspected from below and appears to be of beam & block concrete. The thickness, however, is not known.

Below this beam & block floor is a lay-in-grid ceiling tile system with a large void above varying between 600mm & 1200mm.

Existing perimeter walls appear to be brickwork.

7 Upgrade Recommendations

Due to the proposed use of the ground floor an upgraded acoustic ceiling system is required with additional work to the weakness in the concrete floor where the extractor exists.

Firstly, remove the extraction unit from the floor as it is understood to be un-used and has no power to it. Where this unit existed, the hole in the concrete will need to be made good with new concrete poured into place (and supported appropriately) to the same depth as the original concrete.

Secondly, the lay-in-grid ceiling tile system should be removed from the ground floor unit along with any dis-used services.

Additionally, any gaps between masonry blocks etc or blocks/bricks that are not tightly butted together should be filled with mortar/grout.

Thirdly, a new suspended plasterboard ceiling system using independent ceiling joists should be installed. The top side of the ceiling joists must not touch the existing floor or be braced to them in any way and should be mounted on their own joist hangers. An appropriate size of joist should be used so that they can be fully independent and also support the weight of 2 layers of 15mm Soundbloc plasterboard and 150mm of dense mineral fibre.

The ceiling void created by the new independent ceiling joists should be as deep as possible, but it is understood that the ceiling height will be reduced to under-sail any existing beams.

Between the new ceiling joists, install 150 – 200mm thickness of mineral fibre (e.g. Rockwool / Earthwool / Isover) and ensure that the density of the mineral fibre is between 15 – 48 kg/m^3.

Affix at least 2 layers of 15mm Soundbloc to the underside of the new ceiling joists (joints should be staggered, taped and each layer sealed at the edges with a non-hardening / acoustic mastic. 3 layers of plasterboard would be preferrable if space and loading allows.

There should be no recessed lighting or ventilation items placed in the ceiling, as these would significantly reduce the airborne sound insulation performance.

There is a large jump in performance when using independent ceiling joists in comparison to a suspended metal furring grid ceiling, simply by the fact that the structural connection is fully broken (whereas with the metal ceiling systems, there are still many connections, even though they use rubber isolation grommets / acoustic hangers).

The predicted performance of the above recommended ceiling is Rw + Ctr = 77dB. This is a laboratory-derived value and when in-situ, this is likely to be reduced by approximately 7dB, to create a DnTw + Ctr performance of 70dB. This is predicted only, but allows a degree of performance headroom. It is important, however, to state that in reality the performance is likely to be much lower than 70dB also. This is due to buildability and potential issues which could arise on site along with existing construction unknowns. However, it is still likely to achieve a performance above DnT,w + Ctr 50dB, hence why this option was chosen.

A visual description of the above recommended ceiling can be shown on the following page, for further clarity.

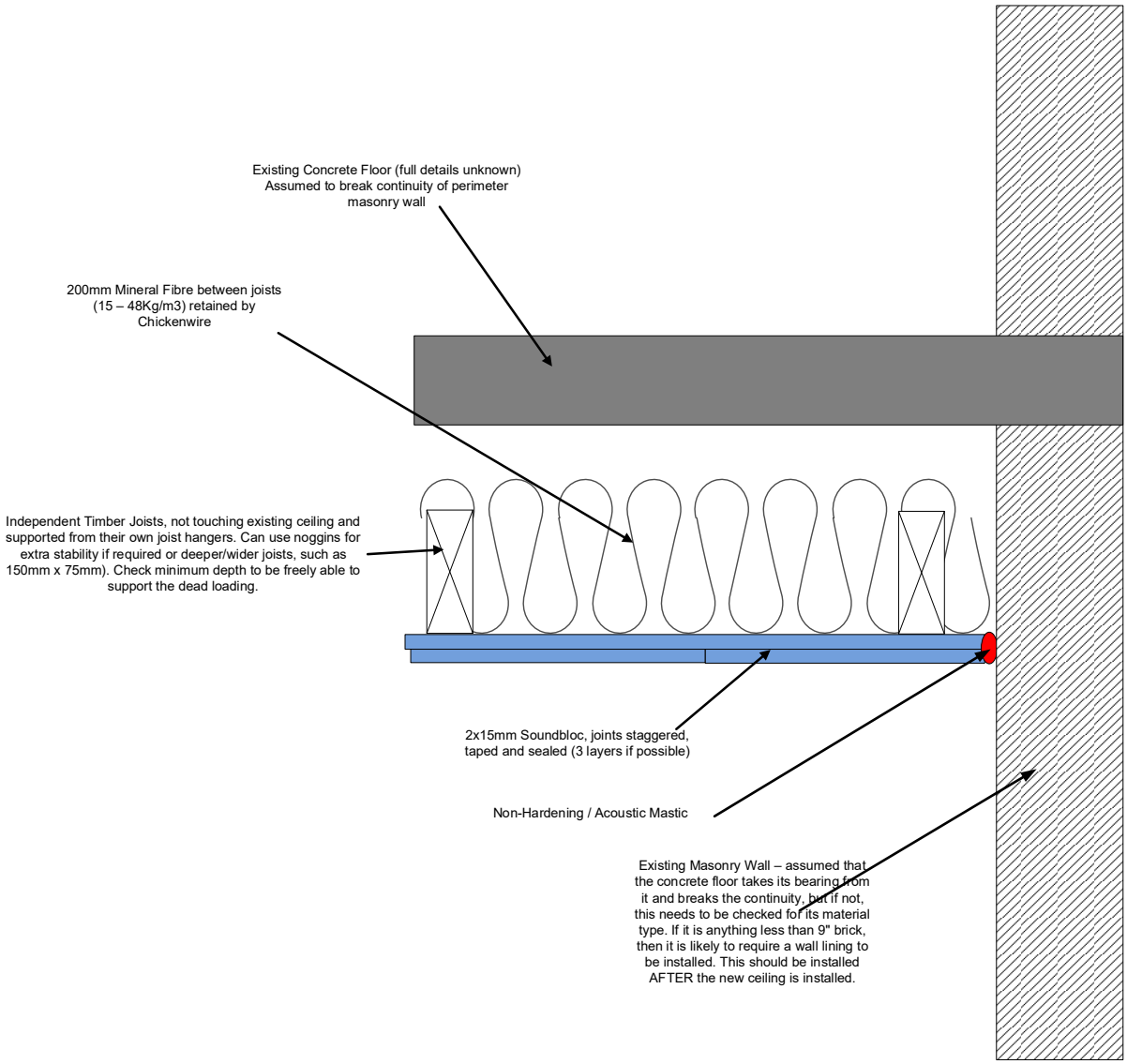


Figure 1: Recommended Separating Floor/Ceiling Upgrades

8 Wall Linings related to separating floors

Approved Document E states that where a continuous flank wall exists between floors, it is necessary to check if they have a density of at least 375 kg/m2. This typically equates to 9” (215mm) brickwork

It is assumed that the existing concrete floors take their bearing from the existing masonry walls and thus break their continuity.

However, if this is not the case and continuous flank walls do exist, they should be checked for their type and thickness.

If the material is other than 9” brick and they are continuous past the floor then, they should be lined with a Gyproc Gyplyner Single system (or another manufacturer’s equivalent).

The Gyplyner frame should create a void of at least 30mm and incorporate 25mm mineral fibre within. It should be finished with (at least) 1 layer of 12.5mm Soundbloc.

It is recommended that sockets and switches are not recessed into these wall linings if at all practicably possible. Surface mounted electrics would be more suitable here.

These wall linings must not be installed until the new independently joisted ceiling has been installed.

9 General Workmanship

The following applies to any services that pass from one floor to another or that pass through a separating wall.

- Pipes and ducts that penetrate a floor separating habitable rooms in different flats should be enclosed for their full height in each flat. The enclosure should be constructed of two layers of board material having a combined mass per unit area of at least 16kg/m^2. (2x12.5mm plasterboard)
- Either line the enclosure, or wrap the duct or pipe within the enclosure, with 25 mm unfaced mineral wool.
- Soil pipes should be fixed to the masonry wall with a resilient material between the pipe and collar support bracket
- Penetrations through a separating floor by ducts and pipes should have fire protection to satisfy Building Regulation Part B - Fire safety. Fire stopping should be flexible and also prevent rigid contact between the pipe and floor. Note: There are requirements for ventilation of ducts at each floor where they contain gas pipes. Gas pipes may be contained in a separate ventilated duct or they can remain unducted. Where a gas service is installed, it shall comply with relevant codes and standards to ensure safe and satisfactory operation.
- Do seal the joint between casings and ceiling with tape & sealant.
- Do leave a nominal gap (approx. 5 mm) between the casing and any floating layer and fill with sealant.

As previously stated, workmanship must be of a high standard and includes the following points:

- Where Soundbloc is laid, the sheets must be staggered to avoid common joints. The seals must be taped at the joins and perimeter edges.
- The Soundbloc layers must continue to all walls and be taped and treated at the wall junctions to avoid weaker areas where sound energy will penetrate.
- Dense mineral wool fibre must be laid evenly with no gaps.
- The mineral wool must not *fully* fill the void to avoid creating a bridging of sound energy through the partition.

10 Conclusion

A preliminary sound break-out test has been carried out from the ground floor to above the flat roof (in place of being able to perform a sound insulation test into the flat above).

The existing construction is not measured to be sufficient to satisfy Approved Document E although there was an unforeseen weakness due to an un-used ventilation unit and the existing performance into the 1st floor flat is likely to be slightly higher than measured to the flat roof.

Despite this, recommendations relating to upgrades to the separating floor/ceiling have been provided within this report and they are to install a fully independent ceiling joist system with at least 2 layers of 15mm Soundbloc.

It is important to note that in all cases, the advice provided in this report is solely in regard to acoustic performance. It remains the responsibility of the client to check that the structural engineer and fire officer approve of these details.

Where they exist, the installation instructions of the manufacturer should be followed, however if something is unclear, please do seek our advice.

If the construction methods within this report are adopted, it is considered that the sound insulation will achieve results that satisfy the requirements of Approved Document E and also exceed it sufficiently for achieving a result of at least DnTw + Ctr = 50dB.

Appendix A – Sound Insulation Test Graph

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

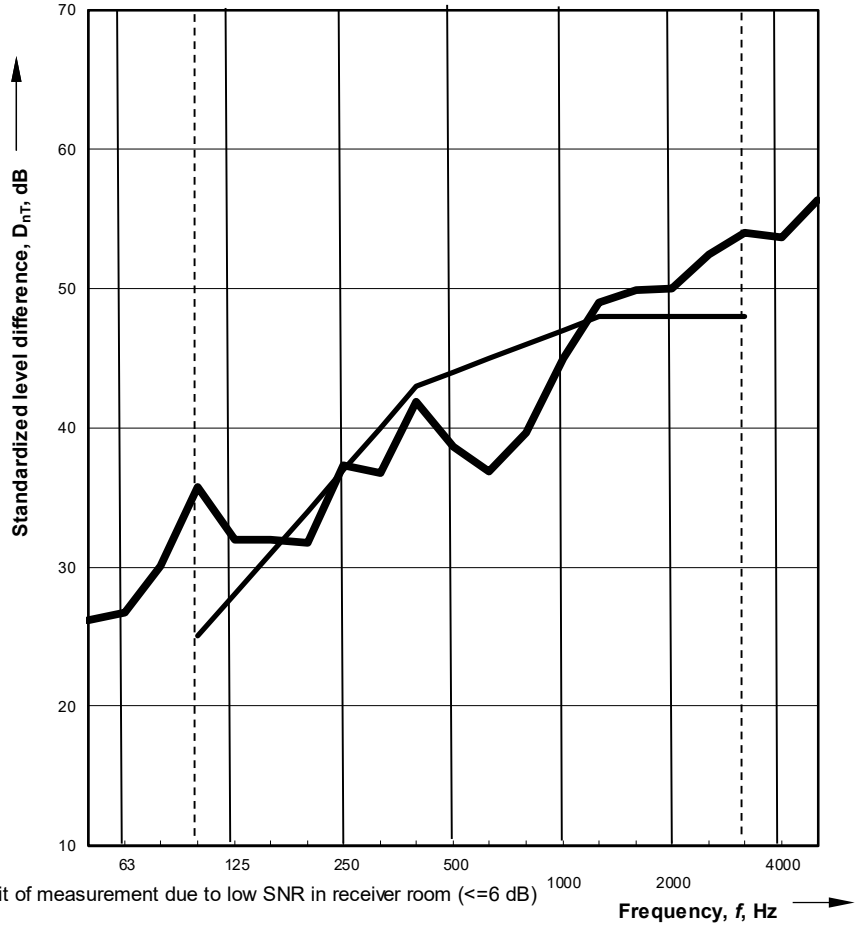
Client: Bonvivant Date of test: 15/08/2025

Description and identification of the building construction and test arrangement, direction of measurement:
332 Goring Road, Goring, Worthing, BN12
Ground Floor Rear Room - Upstairs Outdoor Area (Vertical)

Source room volume: 90 m³
Receiving room volume: N/A m³

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

Frequency *f* Hz	D_{nT} (one-third octave) dB
50	>= 26.2 *
63	26.7
80	30.1
100	35.7
125	31.9
160	31.9
200	31.7
250	37.3
315	36.7
400	41.9
500	38.6
630	36.9
800	39.6
1000	45.0
1250	>= 49.0 *
1600	>= 49.9 *
2000	>= 50.0 *
2500	>= 52.4 *
3150	>= 54.0 *
4000	53.7
5000	56.3



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

Rating according to ISO 717-1

$D_{nT,w}$ $(C;C_{tr})$ = 44 (; -4) dB; $D_{nT,w} + C_{tr}$ = 40 dB

Evaluation based on field measurement
results obtained by an engineering method

No. of test report: J4075/1 Name of test institute: Acoustic South East
Date: 22/08/2025 Signature: Simon Barrett