

# **Acoustic South East**



## Sound Insulation Design Review

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Date: 01/09/2026

Project: J4253

Issue 1

Site: **21 Rowlands Road, Worthing, BN11 3JJ**

Client: **Brian Elstone**

## Contents

|          |                                                                             |               |
|----------|-----------------------------------------------------------------------------|---------------|
| <b>1</b> | <b>Document Control</b>                                                     | <b>- 2 -</b>  |
| <b>2</b> | <b>Introduction and Executive Summary</b>                                   | <b>- 3 -</b>  |
| <b>3</b> | <b>Caveat</b>                                                               | <b>- 3 -</b>  |
| <b>4</b> | <b>Sound Insulation and Internal Ambient Noise Level Criteria</b>           | <b>- 4 -</b>  |
| 4.1      | <i>Building Regulations Approved Document E.....</i>                        | <i>- 4 -</i>  |
| 4.2      | <i>Proposed Planning Condition.....</i>                                     | <i>- 4 -</i>  |
| <b>5</b> | <b>Existing Situation</b>                                                   | <b>- 5 -</b>  |
| <b>6</b> | <b>Separating Floors – Commercial to Residential</b>                        | <b>- 6 -</b>  |
| 6.1      | <i>Main Front Space.....</i>                                                | <i>- 6 -</i>  |
| 6.2      | <i>Bar Area with Lower Ceiling .....</i>                                    | <i>- 9 -</i>  |
| <b>7</b> | <b>Separating Walls</b>                                                     | <b>- 10 -</b> |
| 7.1      | <i>Front Space to Stairwell Wall .....</i>                                  | <i>- 10 -</i> |
| 7.2      | <i>Middle-Room Bar Space to Stairwell Wall .....</i>                        | <i>- 10 -</i> |
| 7.3      | <i>Infill for separating Front Commercial Space Wall and Entrance .....</i> | <i>- 10 -</i> |
| 7.4      | <i>Infill for wall separating Middle-Room to Entrance.....</i>              | <i>- 11 -</i> |
| <b>8</b> | <b>General Workmanship</b>                                                  | <b>- 14 -</b> |
| <b>9</b> | <b>Conclusion</b>                                                           | <b>- 15 -</b> |

## Tables

|                                                    |       |
|----------------------------------------------------|-------|
| Table 1: Basic ADE Sound Insulation Criteria ..... | - 4 - |
|----------------------------------------------------|-------|

## Figures

|                                                                           |        |
|---------------------------------------------------------------------------|--------|
| Figure 1: Recommended Separating Floor/Ceiling Upgrades                   | - 7 -  |
| Figure 2: Pelmet detail for independent joist ceiling meeting window head | - 8 -  |
| Figure 3: Double Timber Stud Infill wall.                                 | - 11 - |
| Figure 4: Resilient Bar Wall Detail                                       | - 12 - |
| Figure 5: Acoustic Stud                                                   | - 13 - |

## 1 Document Control

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|---------|------------|----------------|
| Issue 1 | 01/09/2026 | Original Issue |
|---------|------------|----------------|

## 2 Introduction and Executive Summary

Acoustic South East have been appointed to provide recommendations for the acoustic separating floor between ground and first levels at 21 Rowlands Road, Worthing. It is proposed to separate a previous pub managers accommodation from the commercial demise below. It is noted specifically that the ground floor premises will not continue to remain as a public house/licenced venue but revert to a class E commercial venue.

The advice here-in is for the enhanced Approved Document E (ADE) compliance within the registered planning application AWDM/0362/26: As requested in the pre-app advice from Adur & Worthing DC's Environmental Protection department, the airborne sound insulation between ground and first floor levels is to achieve  $D_{nT,w} + C_{tr} = 50\text{dB}$  or higher (i.e. 7dB better than basic ADE requirements).

## 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) and new-build (dwelling to dwelling):

| Partition Type                             | Airborne Sound Insulation<br>DnT,w + Ctr (dB) | Impact Sound Insulation<br>L'nT,w (dB) |
|--------------------------------------------|-----------------------------------------------|----------------------------------------|
| Dwellings formed by Material Change of Use |                                               |                                        |
| Floor                                      | ≥ 43                                          | ≤ 64                                   |
| Wall                                       | ≥ 43                                          | -                                      |

**Table 1: Basic ADE Sound Insulation Criteria**

*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. With impact sound insulation, however, it is the absolute value in the receiving room which is being measured and thus the lower the value the better the sound insulation.*

\*It is however noted that within section 0.8 of Approved Document E, where there is a mixed demise involving commercial and residential premises, there may be a requirement to uplift the sound insulation performance. See 4.2 below which is a result of the Environmental Health Officer's review of the proposals.

### 4.2 Proposed Planning Condition

The EPO's Proposed Planning Condition for the registered planning application AWDM/0362/26 states the following:

*The use hereby permitted shall include the sound insulation scheme for protecting the upper floor residential unit from noise. The scheme shall achieve a minimum airborne sound insulation value of 50dB (DnTw + Ctr dB). Following implementation of the insulation scheme, a test shall be undertaken to demonstrate that the attenuation measures carried out has achieved the minimum airborne sound insulation criteria. The use of the development shall not commence until test results, demonstrating the minimum sound insulation criteria has been achieved, has been submitted to and approved by the local planning authority*

The requirements set out in this proposed planning condition will trump any criteria set out within ADE.

## 5 Existing Situation

During an initial site visit, the airborne sound insulation was measured of the existing separating floor between the ground-floor front commercial space and the first-floor lounge area.

The result achieved a sound insulation of  $D_{nT,w} + C_{tr} = 33\text{dB}$  showing that a significant improvement in sound insulation is required.

Further investigation found that the existing construction is simply:

- Butt Jointed Floorboards
- 9" x 2" Joists (empty void)
- 1 layer of standard plasterboard

This construction explains the low sound insulation result.

The following pages provide details based upon experience as to how to achieve the enhanced requirements of  $D_{nT,w} + C_{tr} = 50\text{dB}$  (or higher) required by the Local Planning Authority.

## 6 Separating Floors – Commercial to Residential

### 6.1 Main Front Space

The requirements of the planning condition are very strong and will require a very enhanced level of sound insulation. It is hard to achieve this and so attention to detail, along with the correct method is important.

Different methods have been considered due to a lot of the building having already been constructed, such as suspended metal furring grid ceilings, Genie Clip systems as well as the option most likely to be needed (independently joisted ceiling).

When modelling these systems in sound insulation prediction software, suspicions were confirmed that a suspended MF Grid or Genie Clip system would not provide performance with a sufficient confidence level to satisfy the Local Authority's planning condition.

It is, therefore, recommended to install independent ceiling joists (either in line with the direction of the floor joists or in a counter direction). The top side of the ceiling joists must not touch the floor joists or be braced to them in any way and it is recommended a gap of 25mm is left between the underside of the existing ceiling and the top of the new ceiling joists. At least 2 layers of 15mm Soundbloc plasterboard should be fixed 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 preferable if space allows.

Ceiling joists should be supported from their own joist hangers only and thus be a suitable dimension to satisfy the structural engineer's requirements to not bow under the static load caused by the weight it supports.

Between the *ceiling* joists, install 100mm mineral fibre (e.g. Rockwool / Earthwool / Isover APR 1200) and ensure that the density of the mineral fibre is between 15 – 48 kg/m<sup>3</sup>. No gaps should exist between rolls, but be tightly abutted where joins exist.

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

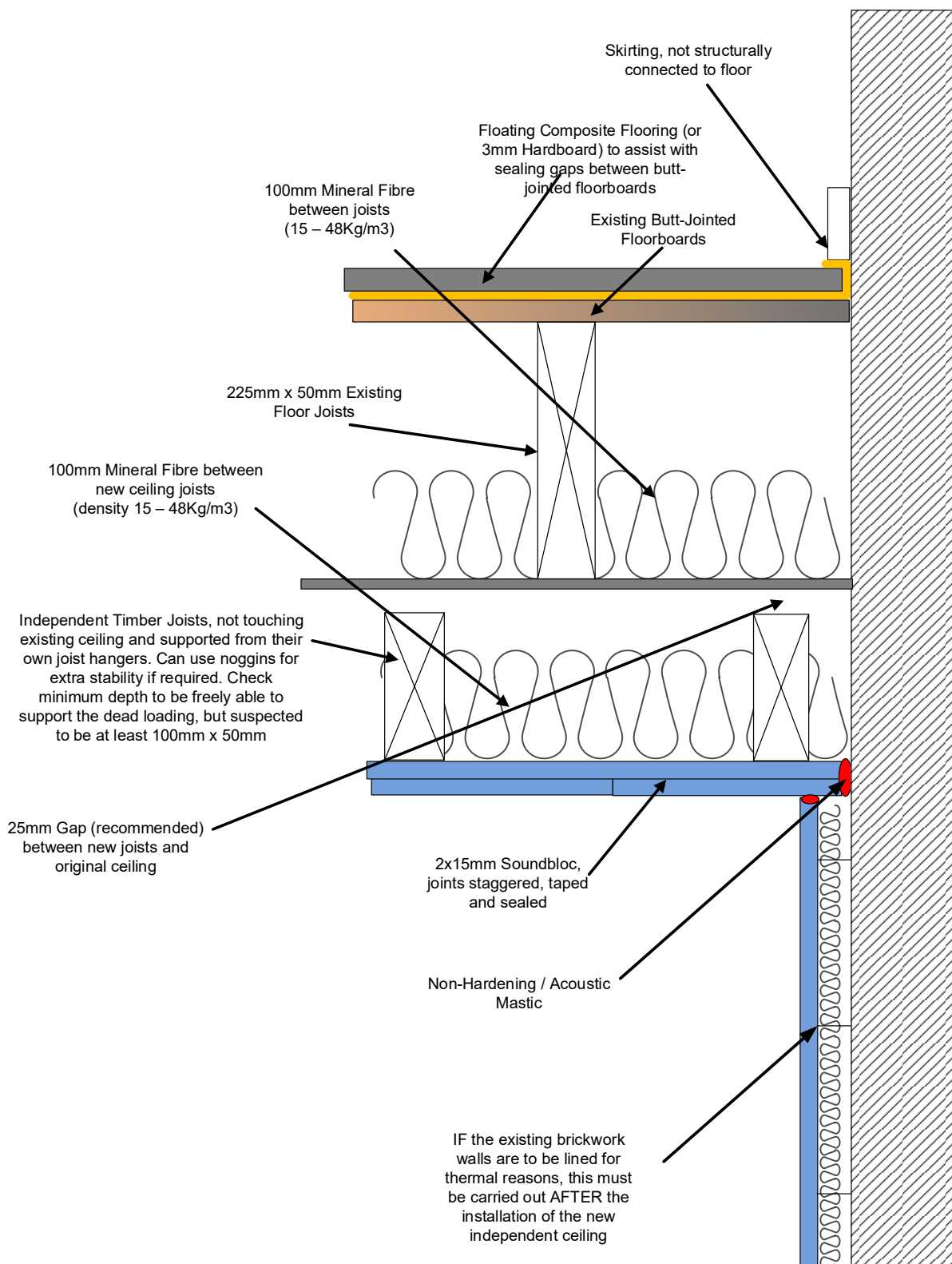
Between the *floor* joists, also install 100mm mineral fibre (e.g. Rockwool / Earthwool / Isover) and ensure that the density of the mineral fibre is between 15 – 48 kg/m<sup>3</sup>.

Above the existing floor butt-jointed floorboards, install either a 3-4mm hardboard OR install a floating composite floorboard such as a Monar Floor Deck 18 or Reduc Micro 17.

There is a large jump in performance when using independent ceiling joists in comparison to a suspended metal 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).

This type of separating floor system has been tested many times and results have been confidently higher than the 50dB requirement set out by the Local Authority.

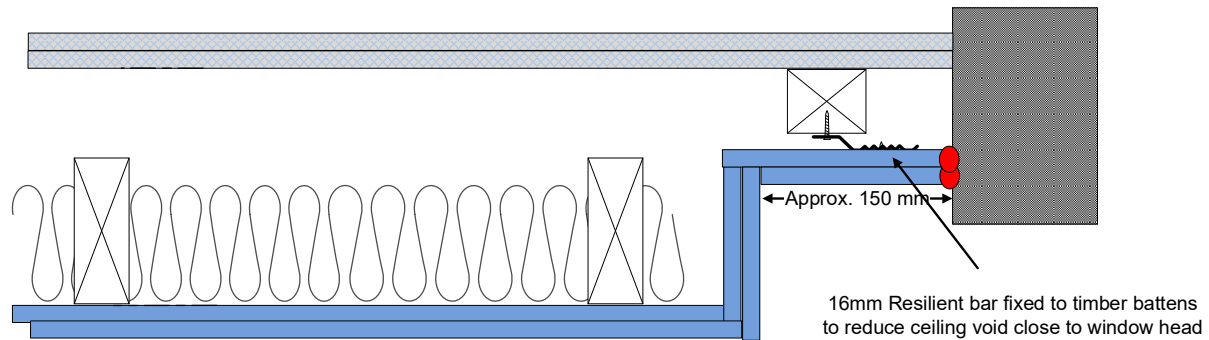
A visual description of the above recommended ceiling can be shown on the following page, for further clarity.



**Figure 1: Recommended Separating Floor/Ceiling Upgrades**

Where this ceiling meets the front of the commercial space, it is noted that the window head is at the full height of the space and so a “pelmet” needs to be created, so that the ceiling can continue all the way below the 1<sup>st</sup> floor balcony & bay-window spaces in order to prevent sound flanking via this route.

An example of the pelmet detail is shown below:



**Figure 2: Pelmet detail for independent joist ceiling meeting window head**

Additionally, it is noticed that there is currently the underside of the stairs protruding into the ceiling of the front area of the commercial ground floor. The new ceiling should be detailed around this such that the underside of the stairs is boxed-in, but using a fully independent frame, to mirror what is being carried out elsewhere on the ceiling.

## 6.2 Bar Area with Lower Ceiling

Through from the main space is a step-up into a middle-room area which is currently a bar and joins on to the rear area beyond the steel RSJ downstand that has a flat roof above. However, above the middle-room bar area itself is an “office” area and a “bathroom” area of the flat above.

### 6.2.1 Option 1

The ground floor area has a significantly lower ceiling than the front main space: 2.51m instead of 3.29m.

Regardless of this it is recommended that a similar suspended ceiling approach to the front space is carried out in this middle-room space, using independent ceiling joists. The 2.51m existing ceiling height gives sufficient room to lower the ceiling by 150mm. (Thus, making a new ceiling height of approx. 2.35m).

Given that the size of the space is narrower, it is likely that 100mm x 50mm ceiling joists on their own hangers can be used. It is still important to leave a 15-25mm gap below the existing ceiling and the top of the new joists to ensure structural independence. Place 80mm – 100mm mineral fibre between the ceiling joists (and 100mm between the floor joists) and then fix 2x 15mm Soundbloc to the underside of the new ceiling joists, ensuring that the joints are staggered, taped and sealed at the perimeter using acoustic mastic.

Prior to the new ceiling system being installed, it will be important to remove all lighting etc from the existing ceiling and make-good all the holes.

### 6.2.2 Option 2

If the independent ceiling joist approach is not practicably possible, then the next best approach is an acoustically isolated metal frame system, such as the Genie Clip system or the Oscar Acoustics Isomount 2 system.

A ceiling void of at least 100mm should still be created as a minimum, incorporating 80mm mineral fibre (density 15-40kg/m<sup>3</sup>) and be finished with 2x 15mm Soundbloc (joints staged, taped and sealed as per the advice in Option 1).

Manufacturer's installation instructions should always be followed, however, if in doubt, please feel free to seek our further advice.

## 7 Separating Walls

As part of the material change of use of this project, the stairwell to upstairs is being fully closed off and will now be fully private. Several of the existing walls need to be upgraded as a result (some of which have openings that will be in-filled).

### 7.1 Front Space to Stairwell Wall

The Front ground floor commercial space shares a wall with the existing staircase. This is understood to be 4" brick with plasterboard on dabs either side.

It is recommended that this wall has an independent stud installed on the side of the commercial space.

The stud should sit at least 15mm away from the existing wall and can be formed from either Timber CLS or metal studs and be at least 70mm deep (or however deep to be structurally stable). At least 50mm mineral fibre (density 15-40kg/m<sup>3</sup>) should be placed into the studs and be tightly abutted. The studs should be finished with 2 layers of Soundbloc or Fireline (joints staggered, taped and sealed).

This should be installed AFTER the suspended ceiling is installed and span the area between floor and [new] ceiling.

If it is found by the build-team that the brickwork is actually 9" brick, then an independent stud would not be needed here. HOWEVER, the new ceiling must cut into the dot & dab plasterboarding so that it removes any continuity between ground and first floor levels via this wall (which would otherwise have undermined the performance of the new ceiling).

### 7.2 Middle-Room Bar Space to Stairwell Wall

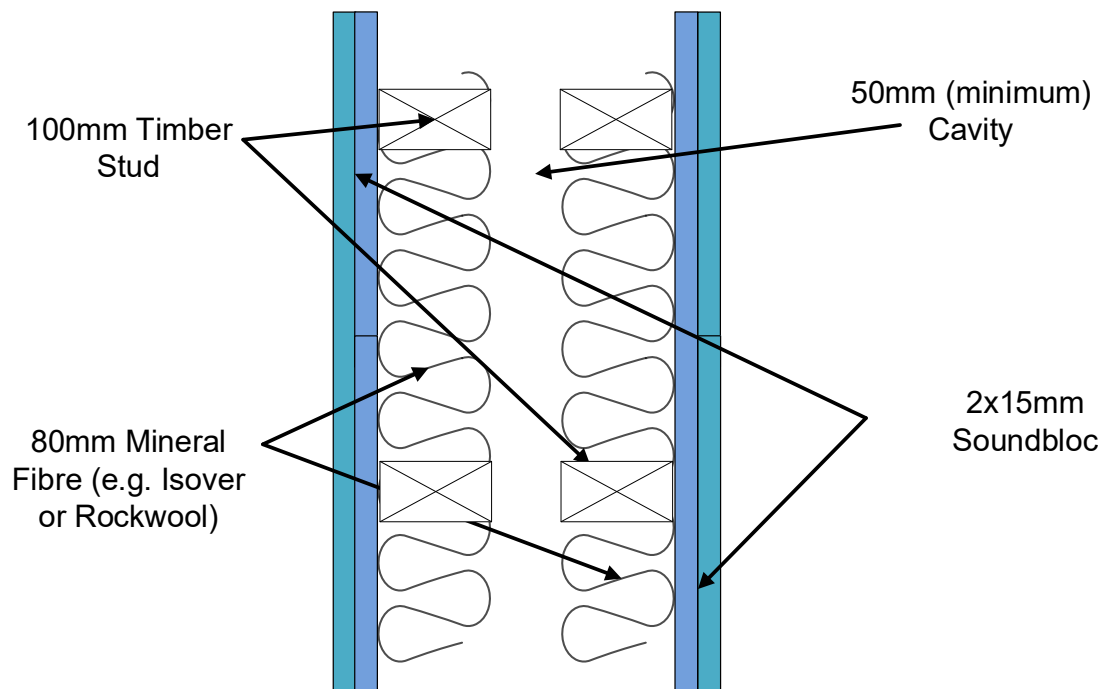
The preferred approach here would be to leave the existing stud wall in place and install a new independent stud set at least 15mm away from the existing wall to the room-side. In the same way as in section 6.1, above, the studs can be formed from either Timber CLS or metal studs and be at least 70mm deep (or however deep to be structurally stable). At least 50mm mineral fibre (density 15-40kg/m<sup>3</sup>) should be placed into the studs and be tightly abutted. The studs should be finished with 2 layers of Soundbloc or Fireline (joints staggered, taped and sealed).

This should be installed AFTER the suspended ceiling is installed.

### 7.3 Infill for separating Front Commercial Space Wall and Entrance

Where the front ground floor commercial space's bar had an opening to the stairwell, this is now to be infilled.

The simplest acoustically effective way to create this infill is to form a double-stud partition using two independent 100mm studs (if timber) or 70mm C studs (if metal) separated by a 50mm cavity. The studs should incorporate 80mm mineral fibre (density 15-40kg/m<sup>3</sup>) and be finished to either side with 2x 15mm Soundbloc (joints staggered, taped and sealed).



**Figure 3: Double Timber Stud Infill wall.**

#### **7.4 Infill for wall separating Middle-Room to Entrance**

Where the front ground floor commercial space's bar had an opening to the stairwell, this is now to be infilled.

The simplest acoustically effective way to create this infill is to form a double-stud partition using two independent 100mm studs (if timber) or 70mm C studs (if metal) separated by a 50mm cavity. The studs should incorporate 80mm mineral fibre (density 15-40kg/m<sup>3</sup>) and be finished to either side with 2x 15mm Soundbloc or Fireline (joints staggered, taped and sealed).

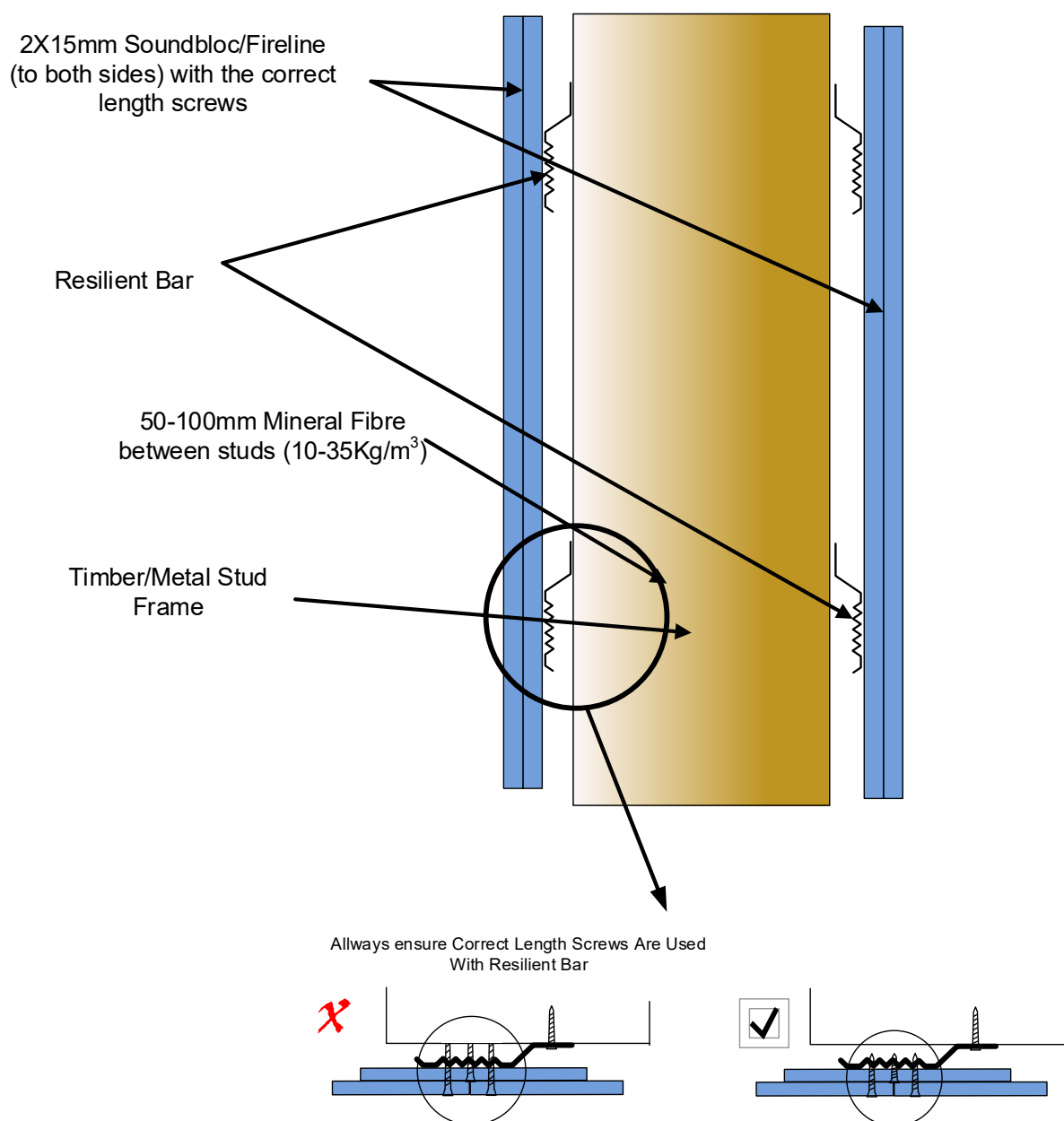
The drawing above shows this system in Figure 3.

If this is not practicable and a single-stud approach has to be used, then an alternative would be to install the (minimum) 100mm stud (timber CLS or Metal C or Metal I) and to either side, install Resilient Bars – we recommend where possible, to use the Collecta Resilient Bars, which are 30mm deep, rather than the Gyproc RB1, which is only 17mm deep.

80mm Mineral fibre should be placed between the studs and tightly butted together to ensure no gapping (density should be 15-40kg/m<sup>3</sup>).

To either side, 2 layers of 15mm Soundbloc or Fireline (or a mixture) should be installed and fixed on to the resilient bar, ensuring the correct screw lengths are used, in line with manufacturer's installation instructions.

The drawing below shows this system.

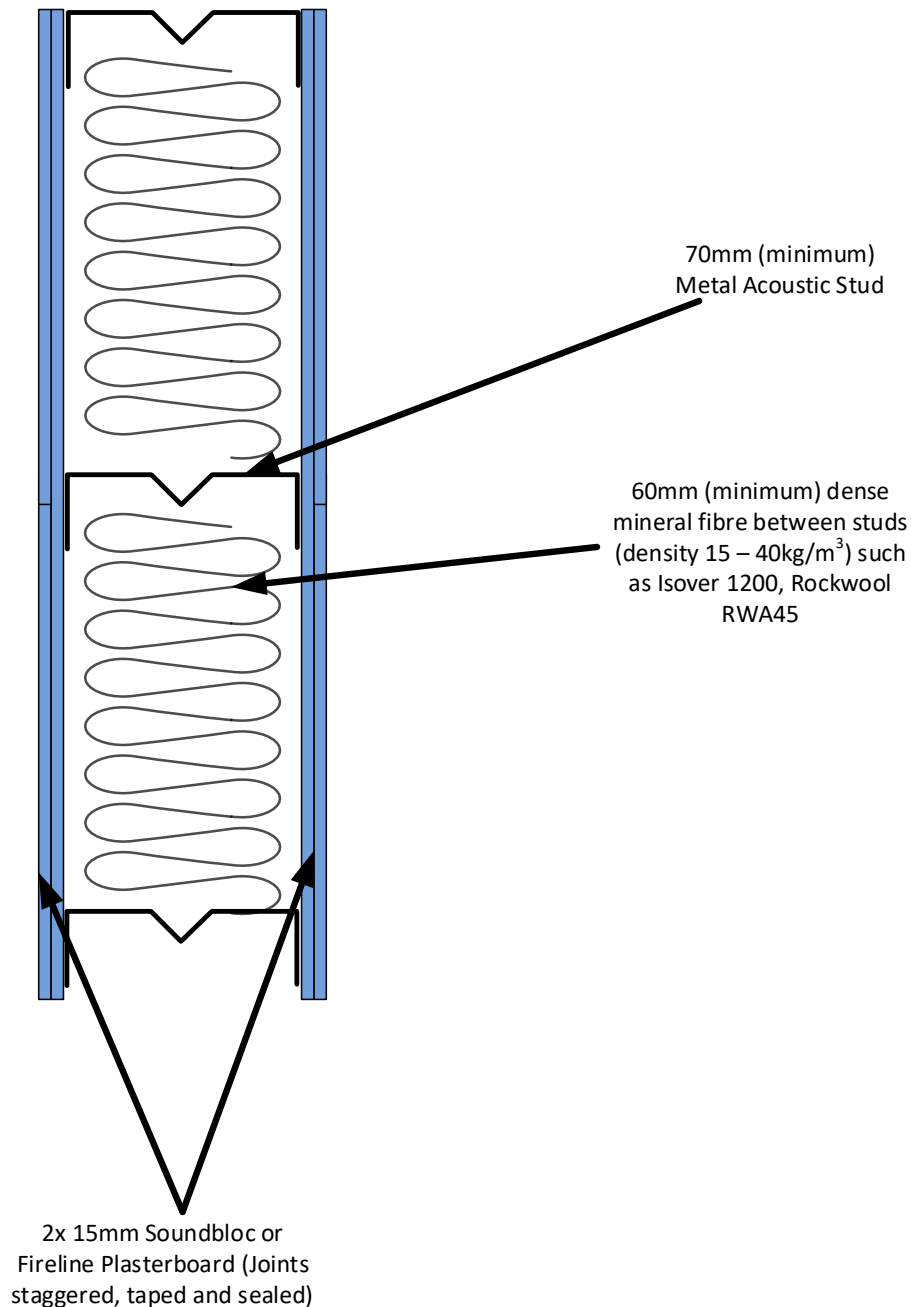


**Figure 4: Resilient Bar Wall Detail**

Alternatively still, in a way to avoid the pitfalls commonly associated with resilient bar installation (screw length etc) a further alternative would be to simply use Acoustic Studs, such as the Gyproc “AcouStud”. These are a metal stud with extra vibration isolation engineered into them.

80mm Mineral fibre should be placed between the studs and tightly butted together to ensure no gapping (density should be 15-40kg/m<sup>3</sup>).

To either side, 2 layers of 15mm Soundbloc or Fireline (or a mixture) should be installed and fixed on to the resilient bar, ensuring the correct screw lengths are used, in line with manufacturer’s installation instructions.



**Figure 5: Acoustic Stud**

## 8 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<sup>2</sup>. (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.

## 9 Conclusion

Recommendations relating to separating floors and separating walls have been provided within this report.

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, especially in the case of Section 5, it is considered that the sound insulation will achieve results that satisfy the requirements of Approved Document E. Additionally, where relevant, the enhanced requirements of the proposed Planning Condition will be part-way discharged with the understanding that full discharge of condition will only be possible following sound insulation testing at the “Pre-Completion” stage.