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Isaac Maynard-Smith
Smith & Sons Construction Services
Gidea Park
Romford

24th May 2024

Re: 94 Montague Street, Worthing

Dear Isaac

This technical note gives acoustic design advice to ensure the development at 94 Montague Street Worthing meets the relevant parts of Building Regulations Approved Document E (ADE).

Building Regulations Approved Document E 2010 (ADE)

The acoustic performance of the flat needs to meet the acoustic performance criteria stated in Table 0.1 and Table 0.2 (marked in red). To prove compliance with the values in Table 0.1 the flats will be subject to pre-completion sound insulation testing. References to ADE have been throughout with a relevant page number of the document.

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 0.2 **Laboratory values for new internal walls and floors within dwelling-houses, flats and rooms for residential purposes, whether purpose built or formed by material change of use**

	Airborne sound insulation R_w dB (Minimum values)
Walls	40
Floors	40

Table 1: ADE Acoustic Criteria

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Proposed Development

The proposed development is the conversion of 94 Montague Street, Worthing a former commercial premises into a commercial space on the ground floor with a self-contained residential dwelling on the first and second floor. See Fig. 1 and Fig. 2 below.

The residential dwelling at 94 Montague Street is adjacent to commercial development at 96 Montague Street and residential (HMO) at 92 Montague Street.



Fig. 1: Existing Plans excerpt from 23-092 Drawing no. 300 Rev 00

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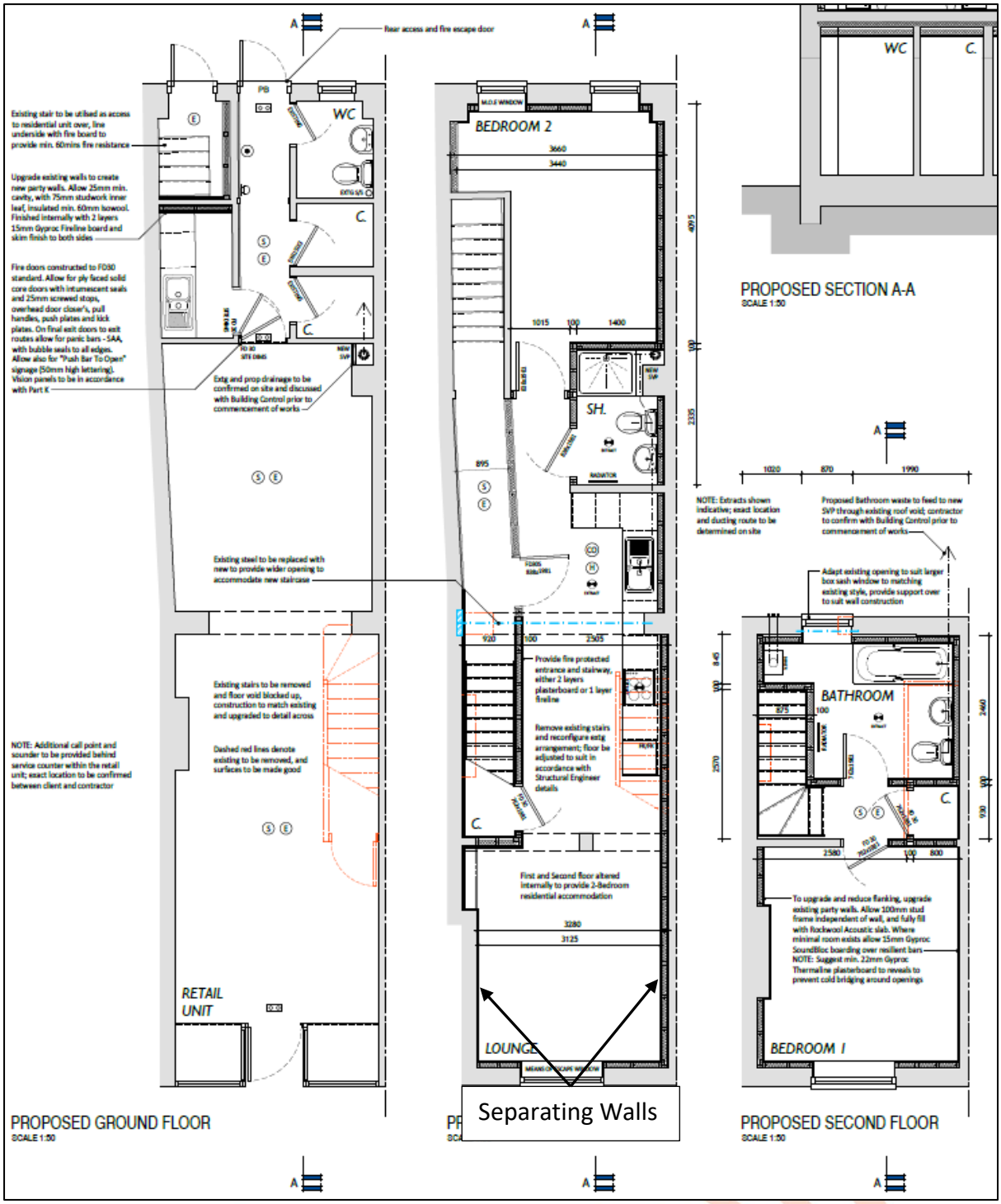

Fig. 2: Proposed Plans

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ADE Section 4: Separating Walls

The existing separating walls are assumed to be 225mm (9') solid masonry.

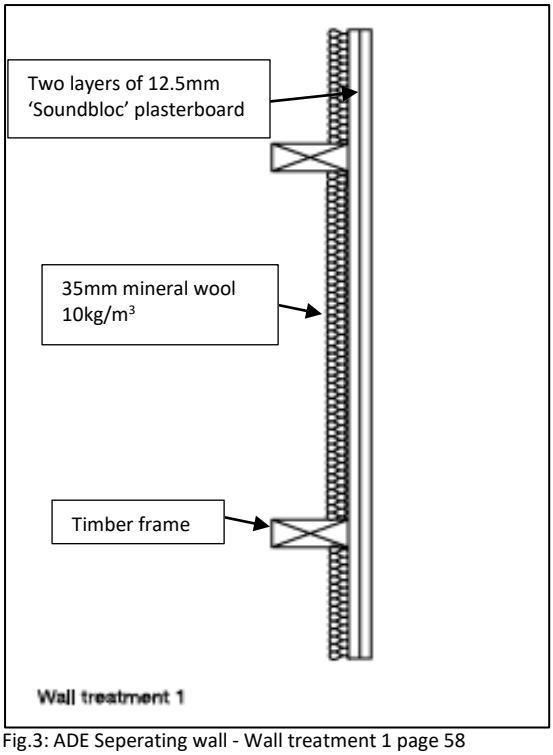

Fig.3: ADE Seperating wall - Wall treatment 1 page 58



Photo 1: Upgrade to Separating Wall

Acoustic Design Advice – 1st Floor & 2nd Floor

The separating wall requires upgrading using Wall treatment 1. The upgrade has started on site, see Photo 1 above. The new independent panel will have a 100mm timber frame the timber frame should be lined with a minimum of 35mm mineral wool insulation with two layers of 12.5mm 'Soundbloc' plasterboard or equivalent with staggered joints. There shall be 10mm between the frame and the existing wall.

Do not overfill the cavity there must be a gap between mineral wool and board lining on one side.

The new panel upgrade to the separating wall meets ADE requirements.

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In the construction notes it is stated '*Where minimal room exists allow 15mm Gyproc Soundbloc over resilient bars*'

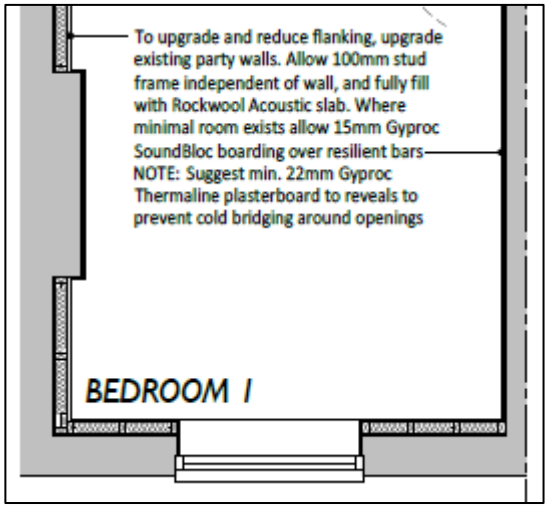

Fig. 4: Construction Notes

Acoustic Design Advice – 1st Floor & 2nd Floor – Minimal Room Areas

A 16mm resilient bar does provide an independent panel but ADE does state that 35mm deep mineral wool should be placed in the cavity.

This upgrade does not meet ADE.

Although not recommended in ADE this independent panel may be acceptable to Building Control.

The wall must be finished with 2 layers of 12.5mm 'Soundbloc' plasterboard or equivalent.

Alternatively if the simple 16mm resilient bar system needs to be changed.

Option 1:
Install a 38mm x 38mm timber frame, 10mm from the existing wall and finished with 2 layers of 12.5mm 'Soundbloc' plasterboard or equivalent. Place 35mm mineral wool insulation n the cavity. The new wall must be structurally secure and the frame capable of holding up the plasterboard layers.

Option 2:
Directly fix the 38mm x 38mm timber frame to the wall, place 35mm mineral wool insulation between the frame, install a 16mm resilient bar on the frame and finish the wall with 2 layers of 12.5mm 'Soundbloc' plasterboard or equivalent. The new wall must be structurally secure and the frame capable of holding up the plasterboard layers.

The separating wall between the residential part of the development and adjacent properties may be subject to pre-completion sound insulation testing.

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ADE Section 4: Separating Floor

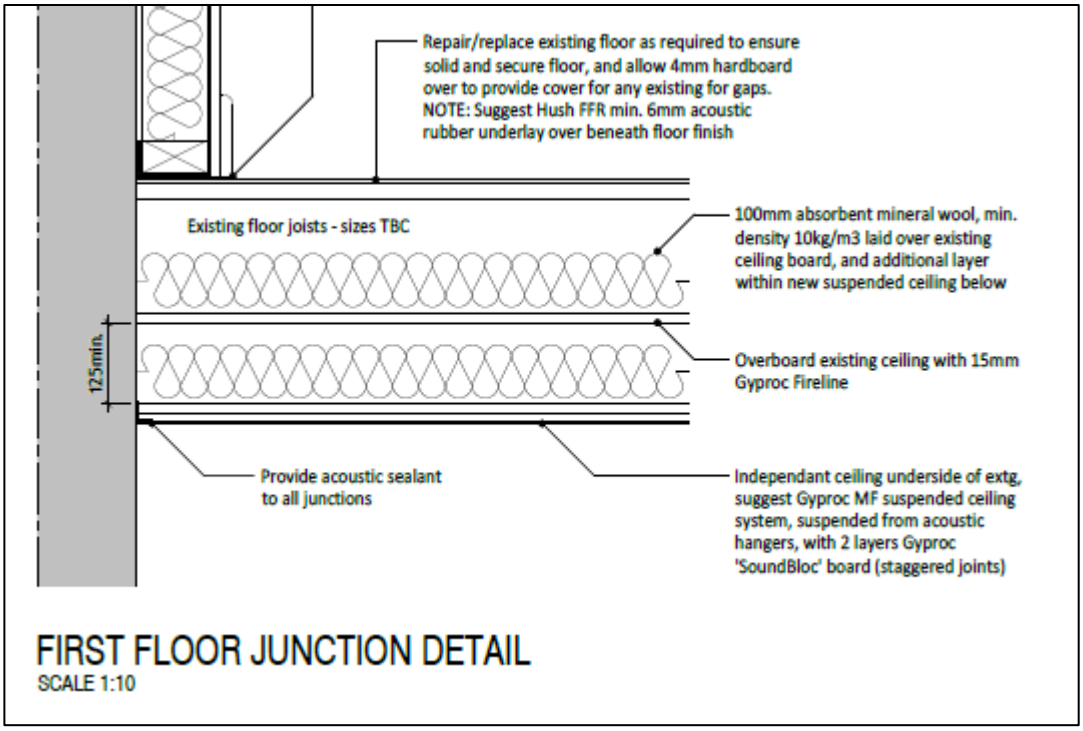

Fig. 5: Proposed Separating Floor

Planning application number NOTICE/0024/23 Condition 3 states:

'The Proposed Layout Plans and Constructions Notes does not confirm that the scheme shall achieve a minimum airborne sound insulation value of 50dB (DnTw + Ctr dB) for all floors. I cannot comment on the Condition until a test has been undertaken and submitted demonstrating compliance'. (Worthing Borough Council)

This is 7dB in excess of the 43dB $D_{nTw} + C_{tr}$ stated in Ade for a dwelling formed by a material change of use (conversion).

The separating floor detail will not meet 50dB $D_{nTw} + C_{tr}$ and will need to be upgraded from the original specification.

To upgrade the floor detail the mass on one side and the isolation of floor needs to be changed. The upgrades have been shown below.

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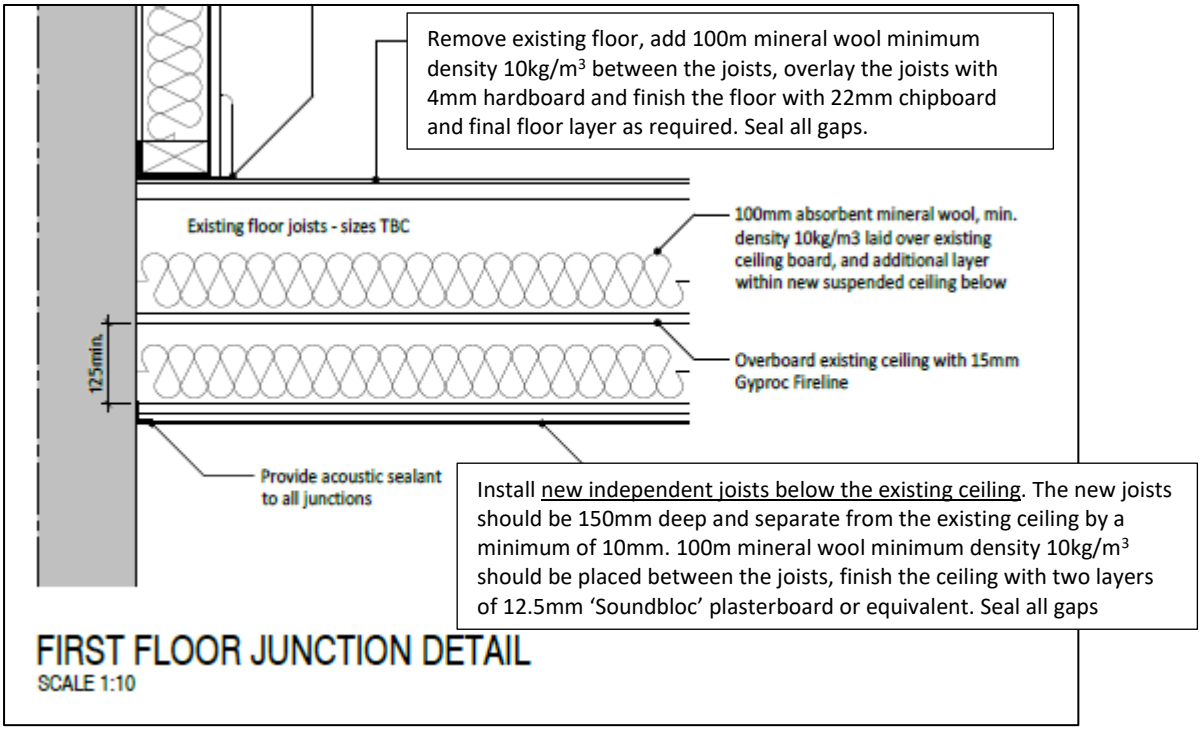

Fig. 6: Proposed Separating Floor with upgrades to mass layers and isolation.

Using INSUL Sound Insulation Prediction Software this separating floor has a value of 58dB $D_{nTw} + C_{tr}$ which gives an 8dB tolerance for onsite construction practices.

The separating floor meets ADE and the Worthing Borough Council criteria.
The floor will be subject to a pre-completion sound insulation test at the end of the build.

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ADE Section 5: Internal Walls

PARTITIONS
100x50 softwood studwork, with matching sole and head plates, studs at max. 600mm centres. (Alternative to be 70mm Gyproc metal stud system). Allow min. 50mm ISOWOOL acoustic insulation within partitions, 12.5mm Gyproc 'SoundBloc' board and skim coat to both sides, all installed in accordance with manufacturer's instructions. Provide horizontal noggins at max. 1.2m centres.
NOTE: Where secure fixings are required within room contractor to allow for min. 12mm WPB plywood layer behind plasterboard to assist.

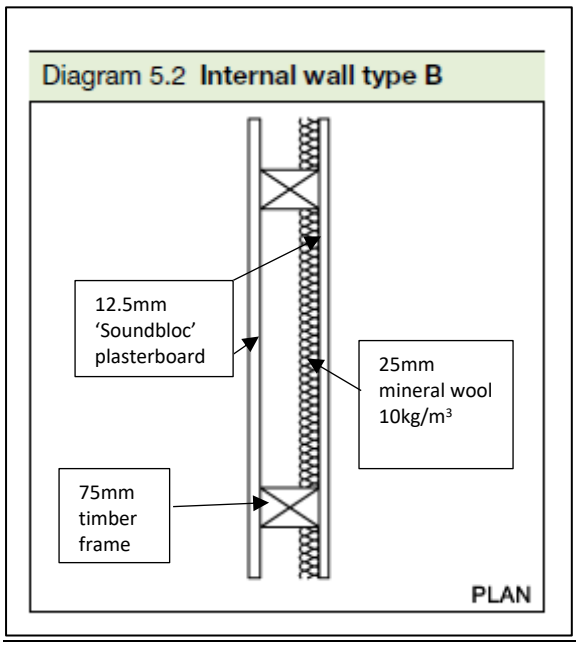

Fig. 7: ADE Section 5 Internal wall type B page 65

The internal partition specification meets the requirements of ADE.

Note the stud depth can be reduced to 75mm.

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ADE Section 5: Internal Floor

UPGRADE EXISTING SECOND FLOOR
Carefully remove existing floor boards and provide, if not already present, min. 100mm insulation between existing joist. Replace existing boards or provide new 22mm T&G moisture resistant chipboard floor boards.

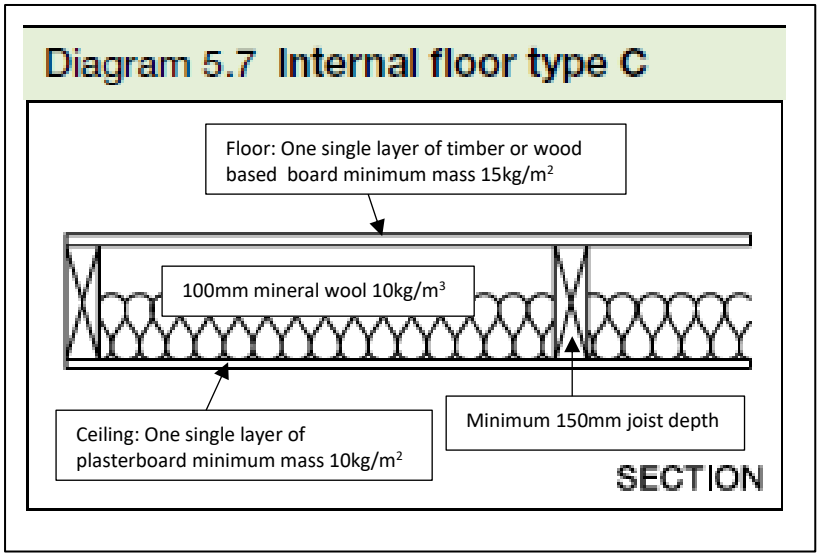

Fig. 8: ADE Internal Floor Type C

Acoustic Design Advice – Internal Floor

The existing floor joists are approximately 160mm.
The existing plasterboard ceiling can be retained, fill and seal all gaps and penetrations. The type of plasterboard on the ceiling is unknown so dBC would recommend adding a layer (direct fixed) of 10mm wall board to ensure the minimum mass of 10kg/m^2 is achieved.
Remove the existing floor boards and place 100mm mineral wool insulation minimum density 10kg/m^3 between the joists.
Replace the floorboards, fill and gaps. Seal in between all the boards across the floor. Finish the floor with a minimum depth of 4mm hardboard.

The internal partition specification meets the requirements of ADE.

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ADE Section 4: Stair Treatment

Stairs are subject to the same sound insulation requirements as floors where they perform a separating function.

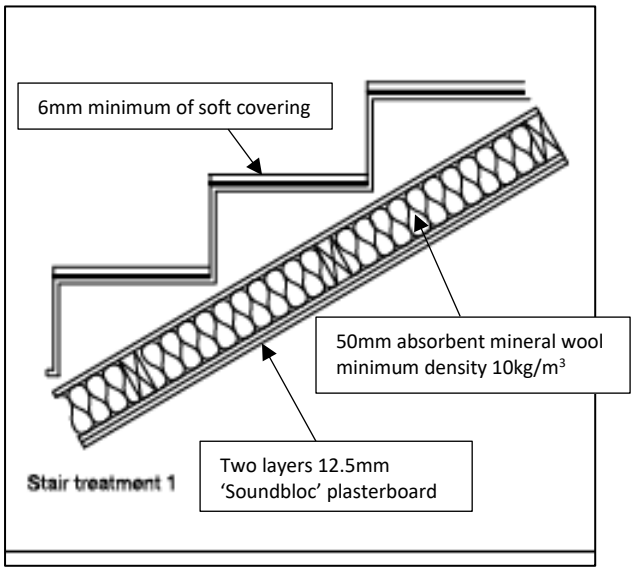

Fig. 9: ADE Stair treatment 1 page 58

The underside of the stairs should be lined with 50mm mineral wool insulation and two layers of 12.5mm 'Soundbloc' plasterboard with staggered joints.

Section 7: Reverberation in the common internal parts of building containing flats or rooms for residential purposes.

The access to the commercial and residential units is different so in terms of ADE there is no common area.

Revert to the the advice given in the ADE Section 4: Stair Treatment section above.

Pre-completion Sound Testing

The separating floor will be subject to a pre-completion sound test (airborne) to ensure compliance with the acoustic criteria in ADE.

Building Control could request a sound test between residential part of the development and the adjacent properties.

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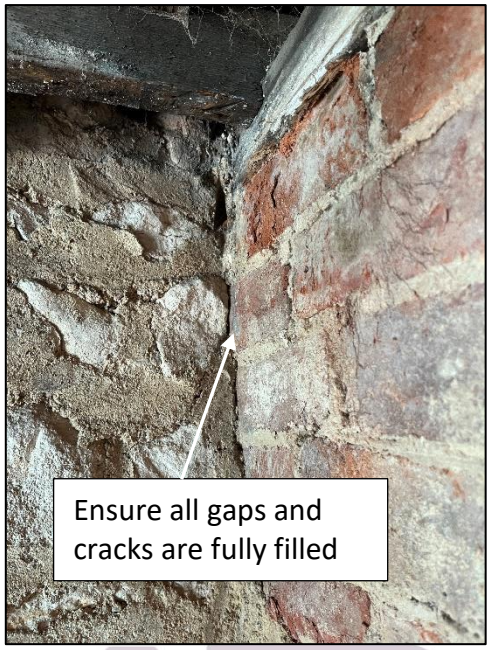
General Advice

Seal, fill and cover every gap and penetration in any of the separating and internal walls and floors. See photos 2 to 5 below as examples.







When dealing with acoustic issues such as this, the works should be completed with the highest levels of workmanship and attention to detail with adequate supervision at all times during the build.

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There is no further acoustic design advice.

Yours sincerely

[redacted]

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