Chartered Building Consultancy

Acoustic South East

Design Review

Client:	**Moretons Investments**
Site Address:	**22 Montague Street, Worthing**
Reported By:	**George Orton BEng(Hons) MIOA**
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Report by: George Orton BEng(Hons) MIOA

Issue 1	26/10/2023

1 Introduction

Acoustic Associates has been instructed to assess the acoustic design relating to the proposed development.

The acoustic design review will consider the following areas:

- Building Regulation and Planning Condition sound insulation levels
- Separating floors/walls within the proposed development

2 Building Regulations Criteria

Approved Document E of the Building Regulations (2003 Edition) specifies minimum performance values of Weighted Standardised Level Difference (DnT,w + Ctr) for airborne noise transmission through party floors and walls and Weighted Standardised Sound Pressure Level (L'nT,w) for impact sound transmission through a floor.

It should be noted that with airborne sound insulation it is the level difference that is being measured between rooms and the higher the result the better the insulation.

With impact sound insulation it is the actual sound pressure level in the receiving room that is measured, and therefore the lower results, the better the insulation.

There is also a planning condition for the development that relates to sound insulation between the commercial and residential parts of the development:

> 04. Construction work shall not commence until a scheme for protecting the proposed noise sensitive development from noise from the commercial unit below and adjacent has been submitted to and approved by the local planning authority. All works, which form part of the scheme, shall be completed before any part of the noise sensitive development is occupied. The scheme shall be designed to achieve a minimum airborne sound insulation value of 50dB (DnTw+Ctr dB) for floors/ceilings and 48dB (DnTw+Ctr dB) for walls. Following approval and completion of the scheme, a test shall be undertaken to demonstrate that the attenuation measures proposed in the scheme are effective and achieve the specified criteria.

The planning criteria are harder to achieve than the normal Building Regulations targets.

A summary of the acoustic requirements, for the conversion property, are as follows:

Requirements of:	Element	Airborne Sound Insulation (DnT,w + Ctr)	Impact Sound Insulation (LnT,w)
Planning Commercial/Dwelling	**Floor**	**≥50dB**	**N/A**
Planning Commercial/Dwelling	**Wall**	**≥48dB**	**N/A**
Bregs Dwelling/Dwelling	**Floor**	**≥43dB**	**≤64dB**
Bregs Dwelling/Dwelling	**Wall**	**≥43dB**	**N/A**

Table 1: Building Regulations Noise Criteria

It should be noted that the property is a listed building.

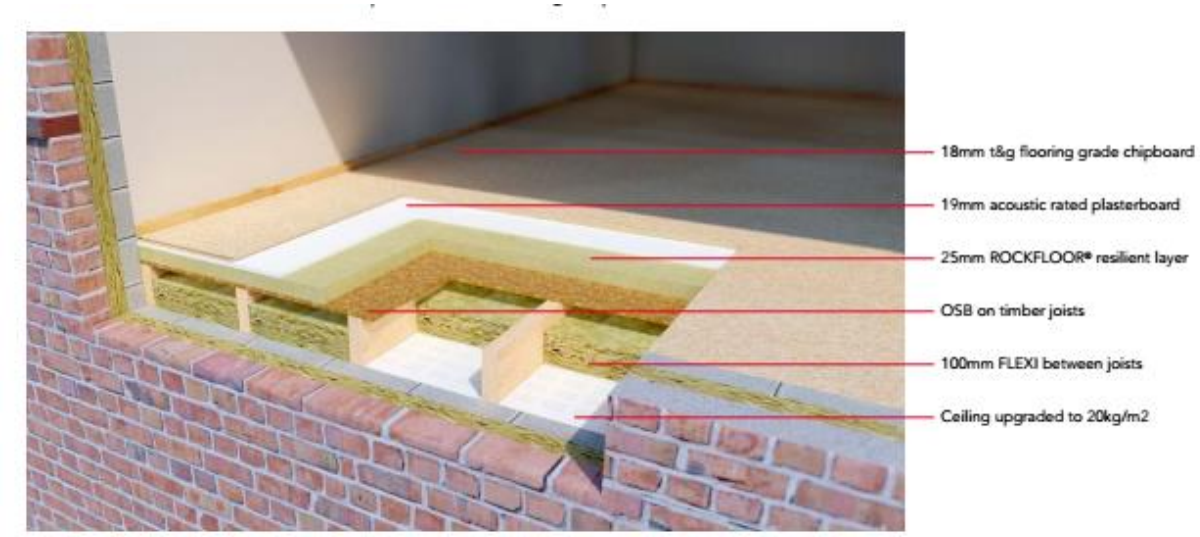
3 Party floors

Recommendations for the proposed party floor are detailed below:

3.1 Ground – 1st Floor

The sound insulation of the floor will be upgraded to achieve the planning condition criteria of DnT,w+Ctr ≥50dB.

Due to height restrictions this will be completed by retaining the existing ceiling in the ground floor and completing all works in the upper floor (between joists and above the existing floor) as shown in this Rockfoor system example below:



If structurally acceptable the 1x19mm plasterboard could be replaced with 2x15mm Soundbloc. Without a suspended ceiling in the ground floor the planning criteria would be hard to achieve even with the overfloor detail above.

3.2 1st to 2nd Floor

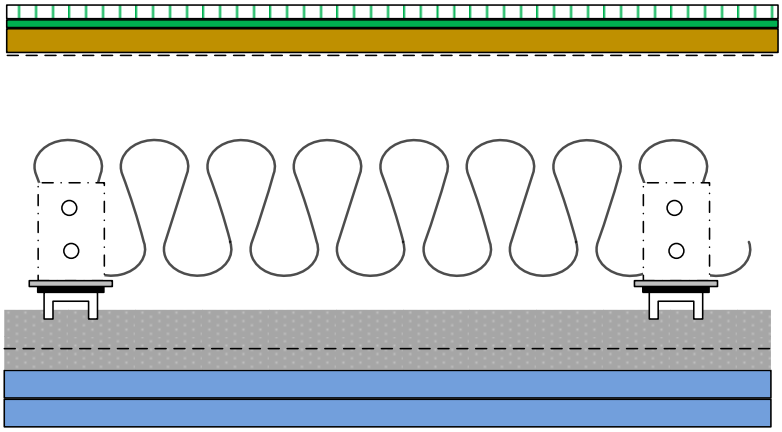
As there is plenty of ceiling height on the 1st floor a standard MF ceiling would be recommended:

- Thin acoustic floor (as detailed in notes below)
- Sub deck ply/osb or existing floorboards
- Existing timber joists
- 100mm acoustic mineral wool or Rockwool between the joists
- MF Ceiling on resilient hangers
- 2x15mm Soundbloc (assumes that the joists will not be over boarded)

3.3 2nd to 3rd Floor

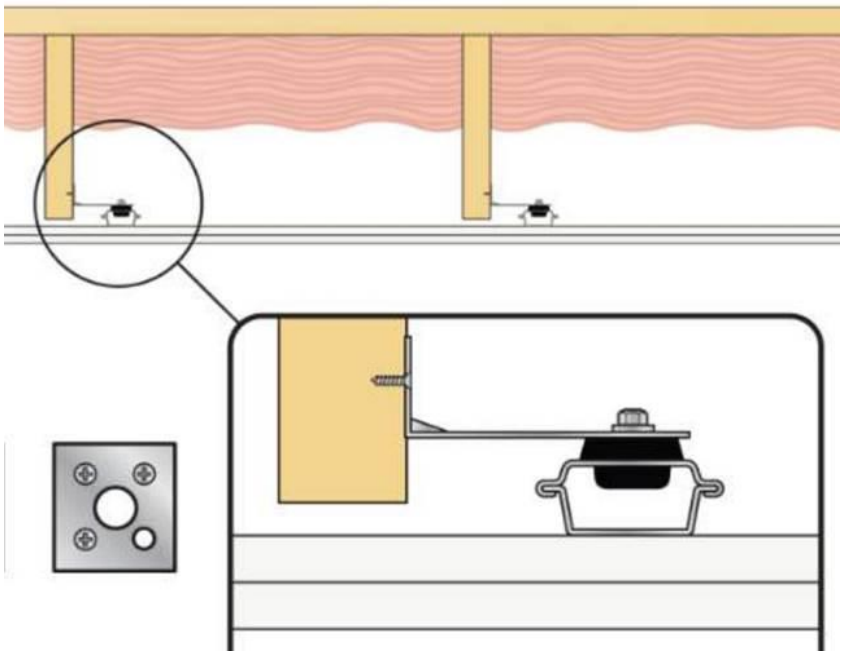
To maximise the floor/ceiling height in the 2nd floor a Genie Clip ceiling is recommended. The floor build up would be:

- Thin acoustic floor (as detailed in notes below)
- Sub deck ply/osb or existing floorboards
- Existing timber joists
- 100mm acoustic mineral wool or Rockwool between the joists.
- Genie Clip (fixed to side of joists) and furring channel
- 2x15mm Soundbloc



Further Genie clip details can be found below:

https://soundstop.co.uk/products/genieclip-lb3-solution



3.4 Acoustic Floor Examples

To reduce impact sound transmission it is recommended that an acoustic layer is fitted on the 2nd and 3rd floors. Three suitable examples would be:

- Monarfloor's "Deck 9"

  http://www.monarfloor.co.uk/products/traditonal-floating-floor-treatments/monarfloor-deck-9.aspx

- Cellecta's "Deckfon17T"

  http://www.cellecta.co.uk/cellecta-brands/acoustic-products/acoustic-floor-boards-deckfon-yelofon-fibrefon-screedboard/

- H&H Acoustic Technology's "Reduc Micro 17"

  https://www.acoustictechnologies.co.uk/product/reduc-micro-17/

4 Party Walls

4.1 Main Party Walls

It is understood that the main party walls would be made from twin independent timber/metal frames:

- 2x12.5mm Soundbloc or Fireline
- Timber/metal frame
- 10mm Min Void (no connection between frames
- Timber/metal frame
- 50mm Mineral fibre in frame Density approximately 20Kg/m^3
- 2x12.5mm Soundbloc or Fireline

As there are no ceilings directly below the joists the party walls will have to be built and lined up to the floor joists above (at least one layer could oversail the joists).

Where the gaps past party floors/walls are smaller 2 layers of fire stop ablative batt (2x50mm) could be used to block voids under/over party walls).

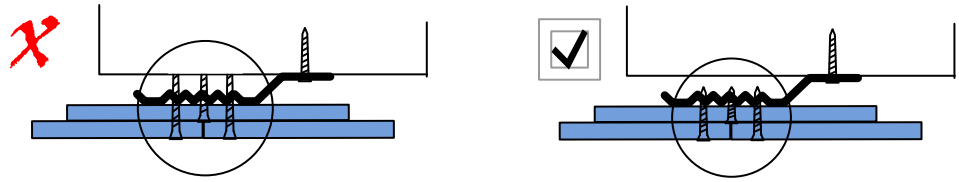
https://www.firestoppingshop.com/product/rockwool-50mm-ablative-coated-batt?gs=1&gclid=Cj0KCQjwpc-oBhCGARIsAH6ote8ToDRX5ipglZglo95DsUALl9O4bNr-JRJn37YdvtTYm2_kY71VZKAaAjmpEALw_wcB

4.2 Narrow Stair/Corridor Walls

The walls to the shared stair areas ideally would be as detailed above. If a narrow wall is required the following could be completed:

- 2x12.5mm Soundbloc plasterboard
- Timber Frame
- Rockwool slab insulation
- Resilient bar (usually on Flat side of wall so stairs and corridors are as wide as possible)
- 2x12.5mm Soundbloc plasterboard

Resilient bar (British Gypsum RB1 or similar) should be installed carefully and in accordance with the supplier's instructions. It is very important that the resilient bar isn't deformed and that no plasterboard screws fix all the way through to the frame (as shown below):



Allways ensure Correct Length Screws
Are Used With Resilient Bar

5 Services Generic Advice

In general it would be better to route soil pipes on the outside of the building. However it is understood that this may not be possible in this case. 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.
- Do seal the joint between casings and ceiling with tape & sealant.

6 Conclusion Notes

If recommendations in this report are followed to a good standard of workmanship the separating walls/floors should achieve the sound insulation criteria for conversion property.

It should be noted that if the products are not installed to the manufacturer's specification it can not be certain that the designs for the party floor/wall constructions will meet with the current building regulations regarding the passage of sound. The advice has been provided in good faith to help with the development's sound insulation but no responsibility can be taken for the structural integrity of the design or for any specific levels of sound insulation achieved.