REPORT REFERENCE:

SA – 4204/PCD 2 4

Planning Condition Discharge Report

Approved Document E +5 dB (Condition 3)

CLIENT:

IDM Land Ltd

SITE:

1a Highgate Road, London, NW5 1JY

Report Presented By

Mr. B. J. Scrivener MIOA.

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1 INTRODUCTION

Sound Advice Acoustics Ltd have been instructed by IDM Land Ltd to undertake a review of the proposed design in order to satisfy planning conditions 3 of approval notice 2016/2279/P which states:-

Prior to commencement of the development, details of sound insulation shall be submitted to and approved by the Council. Such details shall show an enhanced sound insulation value DnT,w and L'nT,w of at least 5dB above the Building Regulations value for the floor/ceiling/wall structures separating different types of rooms/ uses in adjoining dwellings. Approved details shall be implemented prior to occupation of the development and thereafter be permanently retained.

This assessment has therefore been based on the requirements of the current Building Regulations 2010 Approved Document E 2003 Edition incorporating 2004 amendments and the +5 dB enhanced performance criteria.

Construction consists of a ground floor and first floor existing areas that are to be regenerated into new residential dwellings.

The following report assesses selected room separating walls and floors for the airborne and impact sound insulation properties in accordance with Building Regulations 2010 Approved Document E 2003 Edition incorporating 2004 amendments. Prediction calculations have been carried out using the Bastian© prediction software system and has been based on the proposed construction materials and design.

2 CRITERIA

The Building Regulation Part E of schedule 1 states that:

"E1. Dwelling-houses, flats and rooms for residential purposes shall be designed and constructed in such a way that they provide reasonable resistance to sound from other parts of the same building and from other parts of the same building and from adjoining buildings.
This does not apply to:

For purpose built dwellings and dwellings formed by material change of use the Building Regulations Approved Document E2 2003 'Resistance to the Passage of Sound' requires separating structures to adhere to the following requirements as detailed in table 0.1a of the above document.

Dwellings houses and flats – performance standards for separating walls, separating floors and stairs that have a separating function.

Table 1a:	**Dwelling-houses and flats – performance standards for separating walls, 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 and flats		
Walls	45	-
Floors and Stairs	45	62
Purpose built dwelling-houses and flats + 5 dB		
Walls	50	-
Floors and Stairs	50	57

3 PROCEEDURE

Calculation of the airborne and impact predicted sound transmission between rooms in buildings was carried out.

The calculations were carried out at selected areas between units. All standard separation constructions were deemed to have been constructed to the requirements of the Building Regulations 2010.

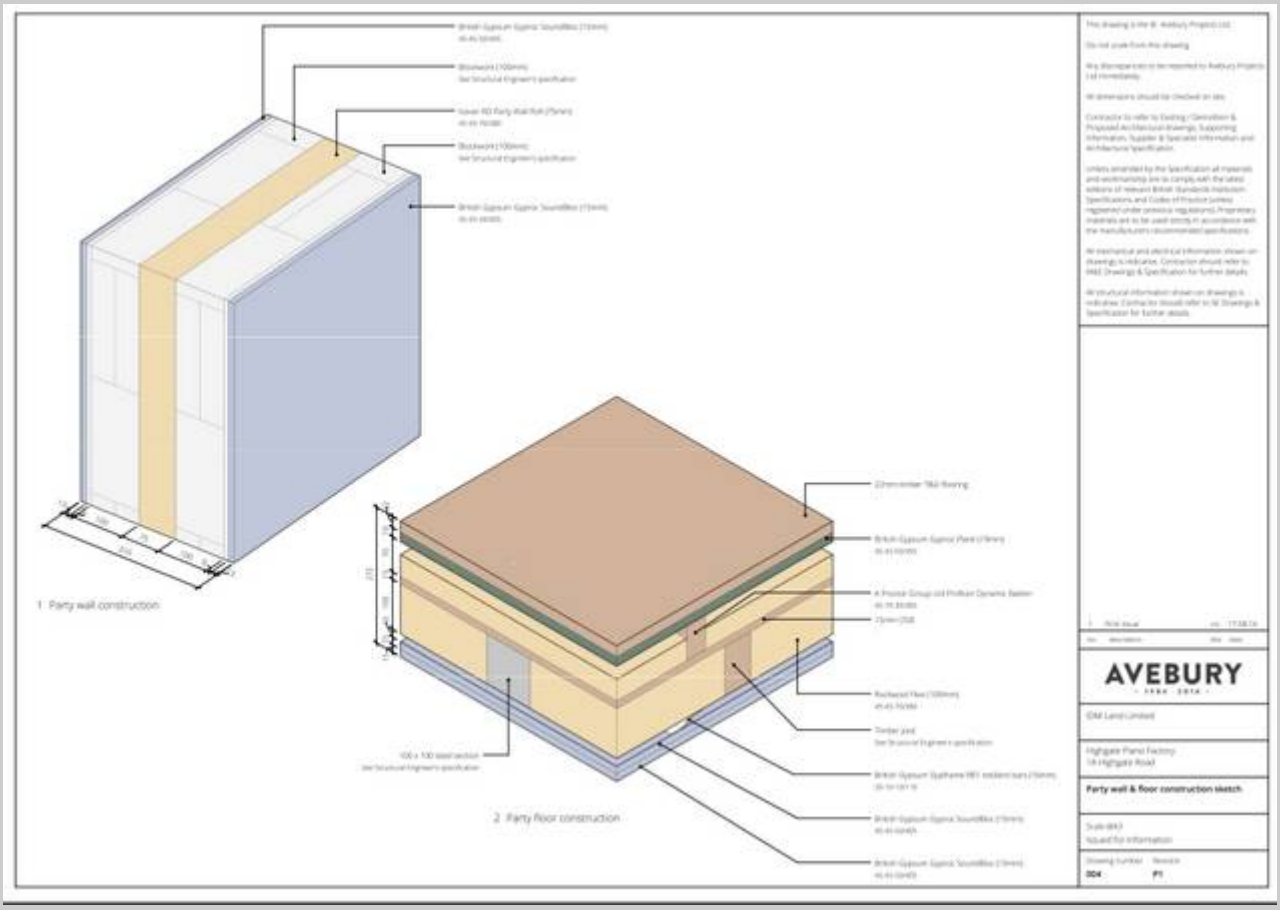
The following areas have been selected and calculations carried out accordingly.

Predicted internal levels		Figure
Unit 10 – Lounge	Unit 9 – Lounge	1
Unit 4 – Lounge	Unit 5 – Lounge	2
Unit 5 – Lounge	Unit 6 – Lounge	3
Unit 11 – Bedroom	Ground Floor Corridor	4
Unit 6 – Bathroom	Ground Floor Corridor	5

4 PROPOSED CONSTRUCTION

The following proposed construction have been used as the basis for these calculations and the following values calculated

4.1 Proposed Wall & Floor



TEST SURFACE	OCTAVE BAND CENTRE FREQUENCY (Hz)							Rw dB
	63	125	250	500	1.0K	2.0K	4.0K	
FLOOR	25	42	55	61	64	63	68	62
WALL	50	50	46	49	58	68	75	56

5 CALCULATION SUMMARY

5.1 Building Regulations Requirements Airborne Test - Walls & Floors

FIGURE NO.	FROM	TO	REQUIRED MIN $D_{nT,w} + C_{tr}$ dB	ACHIEVED $D_{nT,w} + C_{tr}$ dB	RESULT
1	Unit 10 – Lounge	Unit 9 – Lounge	45	57.7	PASS
2	Unit 4 – Lounge	Unit 5 – Lounge	45	60.4	PASS
3	Unit 5 – Lounge	Unit 6 – Lounge	45	57.4	PASS
4	Unit 11 – Bedroom	Ground Floor Corridor	45	56.3	PASS
5	Unit 6 – Bathroom	Ground Floor Corridor	45	58.1	PASS

5.2 Building Regulations Requirements Impact Test – Floors

FIGURE NO.	FROM	TO	REQUIRED MAX $L_{nT,w}$ dB	ACHIEVED $L_{nT,w}$	RESULT
4	Unit 11 – Bedroom	Ground Floor Corridor	62	51.1	PASS
5	Unit 6 – Bathroom	Ground Floor Corridor	62	51.8	PASS

5.3 Enhanced +5 dB Requirement Airborne Test - Walls & Floors

FIGURE NO.	FROM	TO	REQUIRED MIN $D_{nT,w} + C_{tr}$ dB	ACHIEVED $D_{nT,w} + C_{tr}$ dB	RESULT
1	Unit 10 – Lounge	Unit 9 – Lounge	50	57.7	PASS
2	Unit 4 – Lounge	Unit 5 – Lounge	50	60.4	PASS
3	Unit 5 – Lounge	Unit 6 – Lounge	50	57.4	PASS
4	Unit 11 – Bedroom	Ground Floor Corridor	50	56.3	PASS
5	Unit 6 – Bathroom	Ground Floor Corridor	50	58.1	PASS

5.4 Enhanced +5 dB Requirement Impact Test – Floors

FIGURE NO.	FROM	TO	REQUIRED MAX $L_{nT,w}$ dB	ACHIEVED $L_{nT,w}$	RESULT
4	Unit 11 – Bedroom	Ground Floor Corridor	57	51.1	PASS
5	Unit 6 – Bathroom	Ground Floor Corridor	57	51.8	PASS

6 RECOMMENDATIONS

6.1 Separating Wall (non-load bearing internal dwelling)

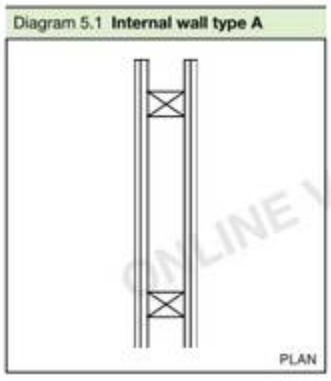
Calculations have been based on the following calculated attenuation figures for the proposed separating wall within residential apartments. The construction can be either 12.5mm wallboard / 70mm metal stud including 50mm mineral wool / 12.5mm wallboard or equivalent (Rw 40dB minimum), or 2 x 12.5mm plasterboard / 70mm metal stud with no insulation / 2 x 12.5mm wallboard or equivalent (Rw 40dB minimum).

The following extract from Building Regulations Approved Document E 'Resistance to the Passage of Sound' should be followed.

The following construction details are suggested:
Rw 40 dB minimum. Building Regulations Part E suggest that any one of the three following wall details are acceptable to achieve this criteria. One of these three must be selected.

6.1.1 Internal Wall Type A:

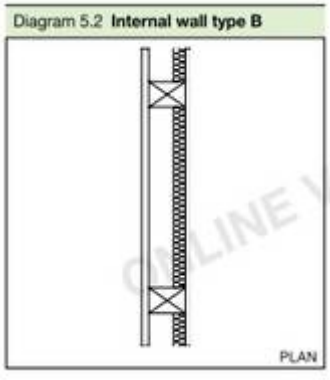
- ✓ Timber or metal frames with plasterboard lining on each side of frame.
- ✓ Each lining to be two or more layers of plasterboard, each sheet of a minimum mass per unit of 10kg/m2.
- ✓ Lining Fixed to timber frame with a minimum distance between linings of 75mm, or metal frame with a minimum distance of 45mm.
- ✓ All joints well sealed.



6.1.2 Internal Wall Type B

Timber or metal frames with plasterboard lining each side of the frame and absorbent material.

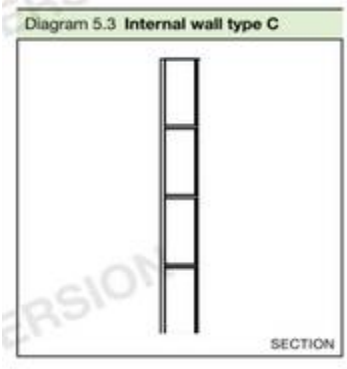
- ✓ Single layer of plasterboard of minimum mass per unit area 10kg/m2. Linings fixed to timber frame with a minimum distance between linings of 75mm, or metal frame with a minimum distance between linings of 45mm.
- ✓ An absorbent layer of un-faced mineral wool batts or quilt (minimum thickness 25mm, minimum density 10kg/m3) which may be wire reinforced, suspended in the cavity.



6.1.3 Internal Wall Type C

Concrete Block Wall, Plaster or plasterboard finish on both sides.

- ✓ Minimum mass per unit area, excluding finish, 120 kg/m^2.
- ✓ All Joints well sealed.
- ✓ Plaster or Plasterboard finish on both sides.

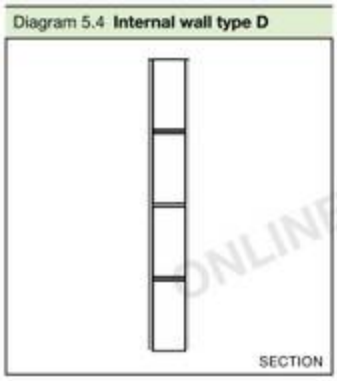


6.1.4 Internal Wall Type D

Aircrete Block Wall, Plaster or plasterboard finish on both sides.

- ✓ For plaster finish, minimum mass per unit area, including finish, 90 kg/m^2
- ✓ For plasterboard finish, minimum mass per unit area, including finish, 75 kg/m^2
- ✓ All Joints well sealed.
- ✓ Internal Wall Type D should only be used with the separating walls described in the Approved Document where there is no minimum mass requirement on the internal masonry walls. See guidance in section 2 of Approved Document E.
- ✓ Internal Wall Type D should not be used as a load bearing wall connected to a separating floor, or be rigidly connected to the separating floors described in the Approved Document. See guidance in section 3 of Approved Document E.

Diagram 5.4 **Internal wall type D**



6.2 Wall Lining System

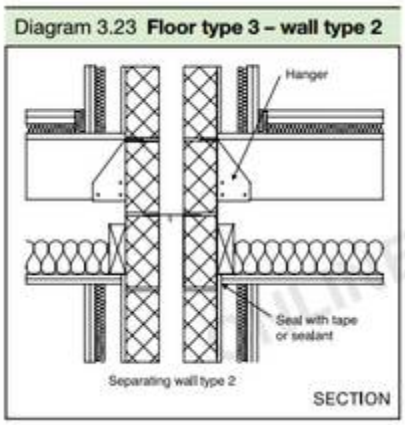
As shown in section 3 Diagram 3.23 Floor type 3 of Approved Document E Resistance to the Passage of Sound it will be necessary to install a wall lining system on the external walls, this should be as a minimum 10mm void, 70mm metal stud with APR 1200 insulation and 2 x 15mm soundbloc. This is to alleviate any flanking transmission issues that may occur, as is typical in this kind of construction.

The following extract from Building Regulations Approved Document E 'Resistance to the Passage of Sound' should be followed.

6.3 Detail showing a wall lining system

The following diagram illustrates the typical design that should be adopted for wall lining systems where timber floors are installed with concrete supporting walls.

Diagram 3.23 **Floor type 3 – wall type 2**



6.4 Flooring

Calculations have been based on the following calculated attenuation figures for the proposed separating floor, detailed within this report, between units and the corridors below.

6.5 Ceiling

2 x 15mm soundbloc suspended from resilient bards. A typical void above the ceiling is understood to be 100mm.

6.6 Flanking Noise

Flanking strips should be used on all floors and wrapped up the walls and folded over in order that the skirting boards do not touch the floor. Any deviations from this specification should be checked with ourselves prior to alteration for further calculation and analysis.

6.7 RSJ's & SVP's

Where there are any metal RSJ's or soil pipes (SVP's) these should be wrapped in 45kg/m3 insulation and double boarded with 2 layers of 15mm soundbloc.

6.8 Spot Lights

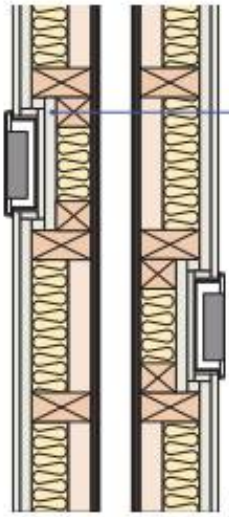
It is highly recommended that any spot lights installed within separating floors between dwellings be fitted with suitable acoustic hoods with the number of spot lights per room limited to 6 for rooms of areas less than 20m2.

6.9 Sockets within Separating Walls

Back to back sockets should be avoided within the separating party walls of the apartments as this will reduce the overall wall sound insulation. If sockets are installed within these walls they must be fitted with suitable British Gypsum Acoustic Boxes, or equivalent, in order to maintain the acoustic integrity of the wall itself.

Care should be taken when installing the electrical cables and a minimal diameter hole drilled for the cables to be fed through. Once the cable is installed the hole should be sealed completely around the cable using non setting acoustic mastic in order to maintain the acoustic integrity of the wall.

The following excerpt from the robust detail book gives guidance for services and sockets in the separating wall:

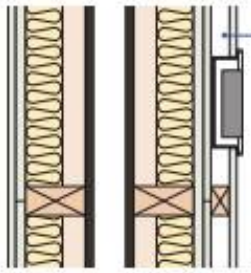


Plan

10.1 – electrical sockets, switches, etc.

Provide two or more layers of gypsum-based board (total nominal mass per unit area 22 kg/m²) to enclose electrical boxes

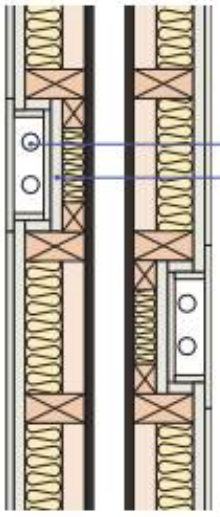
Stagger sockets, switches, etc. on each side of the wall such that they are not positioned in opposite bays



Plan

Alternatively provide a service void on surface of separating wall. This is the preferred method where more than one socket, switch, etc. are close together, e.g. in a kitchen.

Studs or battens used to create the service zone should be securely fixed back to the separating wall structure



Plan

10.2 – piped services

Service duct within separating wall

Provide two or more layers of gypsum-based board (total nominal mass per unit area 22 kg/m²) to enclose pipes

Stagger services on each side of wall such that they are not positioned in opposite bays

Note: this detail is not applicable for SVPs or gas pipes.

7 CONCLUSION

Sound Advice Acoustics Ltd have been instructed by IDM Land Ltd to undertake a review of the proposed design in order to satisfy planning conditions 3 of approval notice 2016/2279/P.

This assessment has been based on the requirements of the current Building Regulations 2010 Approved Document E 2003 Edition incorporating 2004 amendments and the +5 dB enhanced performance detailed within the above planning condition. The selected rooms within the development have indicated compliance with both these elements therefore confirming the proposed design details.

Based on the calculations and assessments made within this report it is the professional opinion of Sound Advice Acoustics Ltd that the aforementioned planning condition 3 can be discharged with the design proposed detailed within this report implemented accordingly.