REPORT REFERENCE:

SA - 6138

INTERNAL NOISE ASSESSMENT

CLIENT:

Sada Architecture

SITE:

1 Hampshire Street London NW5 2TE

Report Presented By Mr. B. J. Scrivener _{MIOA}.



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1 INTRODUCTION

Sound Advice Acoustics Ltd. has been instructed by Sada Architecture, to assess the internal construction of the proposed new development at 1 Hampshire Street, London, NW5 2TE.

This assessment has been based on the requirements of the current Building Regulations 2010 Approved Document E 2003 Edition incorporating 2004, 2010, 2013 AND 2015 amendments.

Construction consists of a new property, with a ground floor commercial area and a further three floors above.

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, 2010, 2013 and 2015 amendments. Prediction calculations have been carried out using the Bastian[©] prediction software system and has been based on the proposed construction materials and design.

Planning permission has been granted under application number 2017/2883/P with planning condition 8 requesting a minimum +5 dB increase over and above Building Regulations for the residential element of this build and planning condition 9 requesting +10 above Building Regulations for the commercial element of this build. Therefore all calculations and assessment have been made to ensure the design is suitable to ensure compliance with the aforementioned requirements.

| Fior to commencement of the development, details shall be submitted to and approved writing by the Council, of an enhanced sound imulation value DnT, w and LYNT, w of at ast 5d8 above the Building Regulations value, for the Roor/ceiling/wall structures sparating different types of room/ uses in adjoining dwelling, namely [eg. Iving room id kitchen above bedroom of separate dwelling]. Approved details shall be implemented for to occupation of the development and thereafter be permanently retained. Insom: To safeguard the amenities of the adjoining premises in accordance with the sparsements of polisies G1, CC1, D1, A3, and A4 of the London Borough of Camden Local an 2017. | Prior to commencement | Acoustic Consultant | Acoustic Consultant to prepare information for sufmusion to planners by Sadla Arch |
|--|-----------------------|---------------------------|---|
| rior to commencement of the development, details shall be submitted to and approved writing by the Council, of the sound insulation of the floor/ ceiling/ walls separating the immencial part(s) of the premises from noise sensitive premises. Details shall monstrate that the sound insulation value DrT, w and L'nT, w is enhanced by at least XB above the Building Regulations value and, where necessary, additional mitigation easures are implemented to contain commercial noise within the noise sensitive premises. oproved details shall be implemented prior to occupation of the development and ensufts to be permanently instained. Parather be permanently instained. Passon: To safeguard the amenities of the adjoining premises in accordance with the equirements of policies G1, CC1, D1, A1, and A8 of the London Borough of Camden Local an 2017. | Prior to commencement | Acoustie Consultant | Acoustic Consultant to prepare information for submission to planners by Sada Arch |
| quitements of policies GL CC1 an 2017. | PLANNING CONDITIO | PLANNING CONDITIONS 8 & 9 | PLANNING CONDITIONS 8 & 9 |



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.

| | Dwelling-houses and flats – performance standards for separating walls, separating floors, and | | | | |
|---|--|---------------------------|-------------------------|--|--|
| | stairs that have a separating function | | | | |
| | | Airborne Sound Insulation | Impact Sound Insulation | | |
| | | $D_{nT'w} + C_{tr} dB$ | L' _{nT'w} dB | | |
| | | (Minimum values) | (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 | | |
| | | | | | |

Section 0.8 of Approved Document E 2003 edition states;

The performance standards set out in Tables 1a and 1b are appropriate for walls, floors and stairs that separate spaces used for normal domestic purposes. A higher standard of sound insulation may be required between spaces used for normal domestic purposes and communal or non-domestic purposes. In these situations the appropriate level of sound insulation will depend on the noise generated in the communal or non-domestic space. Specialist advice may be needed to establish if a higher standard of sound insulation is required and, if so, to determine the appropriate level.



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 Approved Document E 2003 Edition incorporating 2004, 2010, 2013 and 2015 amendments.

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

| Predicted internal levels | | Figure |
|---------------------------|----------------------|--------|
| Ground Floor - Commercial | Flat 3 – Living Room | 1 |
| Flat 4 – Living Room | Flat 3 – Living Room | 2 |
| Flat 1 – Bedroom1 | Flat 2 – Bedroom 1 | 3 |
| Flat 2 – Bedroom 2 | Flat 1 – Living Room | 4 |
| Flat 9 – Living Room | Flat 3 – Living Room | 5 |
| Flat 8 – Bedroom 2 | Flat 2 – Bedroom 2 | 6 |
| Flat 13 – Living Room | Flat 7 – Living Room | 7 |

4 CALCULATION SUMMARY

4.1 Airborne Test - Wall & Floors

| FIGURE NO. | FROM | то | REQUIRED MIN $D_{nT,w} + C_{tr} dB$ | ACHIEVED $D_{nT,w} + C_{tr} dB$ | RESULT |
|---------------|---------------------------|----------------------|---|---|--------|
| 1 | Ground Floor - Commercial | Flat 3 – Living Room | 45 | 61.7 | PASS |
| 2 | Flat 4 – Living Room | Flat 3 – Living Room | 45 | 55.8 | PASS |
| 3 | Flat 1 – Bedroom1 | Flat 2 – Bedroom 1 | 45 | 52.8 | PASS |
| 4 | Flat 2 – Bedroom 2 | Flat 1 – Living Room | 45 | 58.5 | PASS |
| 5 | Flat 9 – Living Room | Flat 3 – Living Room | 45 | 57.3 | PASS |
| 6 | Flat 8 – Bedroom 2 | Flat 2 – Bedroom 2 | 45 | 56.4 | PASS |
| 7 | Flat 13 – Living Room | Flat 7 – Living Room | 45 | 56.7 | PASS |
| | | | | | |

4.2 Impact Test - Floors

| FIGURE NO. | FROM | то | REQUIRED MAX L _{n7,w} dB | ACHIEVED L _{n7,w} | RESULT |
|---------------|-----------------------|----------------------|--------------------------------------|-------------------------------|--------|
| 5 | Flat 9 – Living Room | Flat 3 – Living Room | 62 | 36.6 | PASS |
| 6 | Flat 8 – Bedroom 2 | Flat 2 – Bedroom 2 | 62 | 38.7 | PASS |
| 7 | Flat 13 – Living Room | Flat 7 – Living Room | 62 | 38.5 | PASS |
| | | | | | |

4.3 Airborne Test - Wall & Floors (Enhanced Performance Planning Conditions 8 & 9)

| FIGURE NO. | FROM | то | REQUIRED MIN $D_{nT,w} + C_{tr} dB$ | ACHIEVED $D_{nT,w} + C_{tr} dB$ | RESULT |
|---------------|---------------------------|----------------------|---|---|--------|
| 1 | Ground Floor - Commercial | Flat 3 – Living Room | 55 | 61.7 | PASS |
| 2 | Flat 4 – Living Room | Flat 3 – Living Room | 50 | 55.8 | PASS |
| 3 | Flat 1 – Bedroom1 | Flat 2 – Bedroom 1 | 50 | 52.8 | PASS |
| 4 | Flat 2 – Bedroom 2 | Flat 1 – Living Room | 50 | 58.5 | PASS |
| 5 | Flat 9 – Living Room | Flat 3 – Living Room | 50 | 57.3 | PASS |
| 6 | Flat 8 – Bedroom 2 | Flat 2 – Bedroom 2 | 50 | 56.4 | PASS |
| 7 | Flat 13 – Living Room | Flat 7 – Living Room | 50 | 56.7 | PASS |
| | | | | | |

4.4 Impact Test – Floors (Enhanced Performance Planning Conditions 8 & 9)

| FIGURE NO. | FROM | то | REQUIRED MAX L _{n7,w} dB | ACHIEVED L _{n<i>T</i>,w} | RESULT |
|---------------|-----------------------|----------------------|--------------------------------------|--------------------------------------|--------|
| 5 | Flat 9 – Living Room | Flat 3 – Living Room | 57 | 36.6 | PASS |
| 6 | Flat 8 – Bedroom 2 | Flat 2 – Bedroom 2 | 57 | 38.7 | PASS |
| 7 | Flat 13 – Living Room | Flat 7 – Living Room | 57 | 38.5 | PASS |
| | | | | | |

4.5 Planning Conditions 8 & 9

Based on the calculations and assessments made within this report, the proposed construction methods should ensure compliance with the above planning conditions.



5 BASTIAN

5.1 Ground Floor – Commercial to Flat 3 – Living Room





5.2 Flat 4 – Living Room to Flat 3 – Living Room





5.3 Flat 1 – Bedroom 1 to Flat 2 – Bedroom 1





5.4 Flat 2 – Bedroom 2 – Flat 1 – Living Room





5.5 Flat 9 – Living Room to Flat 3 – Living Room





5.6 Flat 8 – Bedroom 2 to Flat 2 – Bedroom 2





5.7 Flat 13 – Living Room to Flat 7 – Living Room



6 **RECOMMENDATIONS**

6.1 Separating Wall (dwelling dividing)

Calculations have been based on the following calculated attenuation figures for the proposed separating wall construction between residential apartments:

2 x 15mm Soundbloc Plasterboard 70mm metal stud 50mm cavity with 100mm 45kg/m3 mineral wool 70mm metal stud 2 x 15mm Soundbloc plasterboard



6.2 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.

6.2.1 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.





6.2.2 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.

6.2.3 Internal Wall Type C

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

- Minimum mass per unit area, excluding finish, 120 kg/m².
- All Joints well sealed.
- Plaster or Plasterboard finish on both sides.





6.2.4 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/m²
- For plasterboard finish, minimum mass per unit area, including finish, 75 kg/m²
- 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.



6.3 Flooring (Second & Third)

Calculations have been based on the following calculated attenuation figures for the proposed separating floor between units. The construction proposed is drawing number 715:

Floor finish

18mm T & G flooring board

75mm resilient cradle & batten system installed in accordance with manufacturers recommendations

225mm Insitu concrete slab

6.4 Flooring (First)

Calculations have been based on the following calculated attenuation figures for the proposed separating floor between units. The construction proposed is drawing number 715:

Floor finish

18mm T & G flooring board

75mm resilient cradle & batten system installed in accordance with manufacturers recommendations 400mm Insitu concrete slab

6.5 Ceiling (First & Second)

MF system 12.5mm plasterboard

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. Alternatively a preparatory Acoustic SVP could be considered if the downpipes do not run vertically through the entire building. The following company supplies suitable products, although others are available on the market.

Aliaxis – 01622 852796 Lenham, Maidstone, Kent, ME17 2DE Mr Adam Catrell.

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:





7 CONCLUSION

Sound Advice Acoustics Ltd. has been instructed by Sada Architecture, to assess the internal construction of the proposed new development at 1 Hampshire Street, London, NW5 2TE.

This assessment has been based on the requirements of the current Building Regulations 2010 Approved Document E 2003 Edition incorporating 2004, 2010, 2013 and 2015 amendments. The selected rooms within the development have indicated compliance with the current Building Regulations therefore confirming the proposed design details.

It is therefore recommended that the proposed construction methods are adopted for this development throughout. Any deviations from this specification should be checked with ourselves prior to alteration for further calculation and analysis.

Planning permission has been granted under application number 2017/2883/P with planning condition 8 requesting a minimum +5 dB increase over and above Building Regulations for the residential element of this build and planning condition 9 requesting +10 above Building Regulations for the commercial element of this build. Therefore all calculations and assessment have been made to ensure the design is suitable to ensure compliance with the aforementioned requirements.

| B Print | rior to commencement of the development, details shall be submitted to and approved writing by the Council, of an enhanced sound insulution value DnT,w and L'nT,w of at ast 5dB above the Building Regulations value, for the floor/ceiling/wall structures | Prior to commencement | Acoustic Consultant | Acoustic Consultant to prepare information for |
|---|--|-----------------------|------------------------|---|
| 22 2 2 2 2 | parating different types of rooms/ uses in adjoining dwellings, namely (eg. living room of Richen above bedroom of separate dwelling). Approved details shall be implemented for to occupation of the development and thereafter be permanently retained. racon: To safeguard the amenities of the adjoining premises in accordance with the guirements of polisies G1, CC3, D1, A3, and A4 of the London Borough of Camden Local an 2017. | | | submission to planners by Søda Arch |
| 9 Prince deb 10 ean Aptil Relefie Po | rior to commencement of the development, details shall be submitted to and approved writing by the Council, of the sound insulation of the floor/ ceiling/ walks separating the memorial part(s) of the premises from noise sensitive premises. Details shall enomstrate that the sound insulation value DnT, w and L'nT, w is enhanced by at least MB above the Building Regulations value and, where necessary, additional mitigation easures are implemented to contain commercial noise within the commercial premises of to achieve the 'Good' criteria of BSE233-2014 within the noise sensitive premises. sproved details shall be implemented prior to occupation of the development and emailter be permanently retained. Inscore: To safeguard the amenities of the adjoining premises in accordance with the quirements of policies G1, CC1, D1, A1, and A6 of the London Borough of Camden Local an 2017. | Prior to commencement | Acoustic Consultant | Acoustic Consultant to prepare information for submission to planners by Sada Arch |

Based on the calculations and assessments made within this report, the proposed construction methods should ensure compliance with the above planning conditions.



Acoustic Consultants and Engineers