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Dear Megan

4-6 CLIFTON ROAD, PRESTWICH, MANCHESTER SEPARATING FLOOR ASSESSMENT

Further to our site visit on 8 February 2022 we are pleased to present the results of the airborne sound insulation tests as detailed below.

1.0 Introduction

It is understood that the former ground floor takeaway unit is proposed to be used as a bar/restaurant unit whilst the existing 1st floor residential flat is to be retained.

Lighthouse Acoustics has subsequently been appointed to undertake a preliminary airborne sound insulation test across the existing separating floor construction between the proposed bar/restaurant unit and existing residential flat above.

The measurement methodology, results and discussion are presented in this report.

2.0 Objectives

To undertake a preliminary airborne sound insulation test across the existing separating floor construction between the proposed bar/restaurant unit and existing residential flat above in order to establish the existing performance and highlight any flanking paths.

To comment on the measured results and the likelihood of achieving an appropriate level of sound insulation between the proposed bar/restaurant and existing residential flat above. To advise on additional treatment if required in order to maximise the airborne sound insulation performance between the proposed bar/restaurant unit and existing residential flat above.

3.0 Site Description

The existing building comprises a former takeaway unit at ground floor with an existing residential flat at 1st floor.

The existing separating floor to be retained between the proposed bar/restaurant unit and existing residential flat above is understood to be a timber construction.

4.0 Requirements

Building Regulations Approved Document E 2010, "Resistance to the passage of sound", provides performance standards for separating walls, separating floors and stairs that have a separating function. The table below presents the performance standards for flats formed by material change of use.

Flats formed by material change of use	Airborne sound insulation $D_{nT,w} + C_{tr}$ dB (Minimum values)	Impact sound insulation $L'_{nT,w}$ dB (Maximum values)
Walls	43	-
Floors and stairs	43	64

In addition, Building Regulations Approved Document E 2010 states the following with regard to communal or non-domestic spaces:

"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."

Since a bar/restaurant is proposed at ground floor level the performance standards for normal domestic purposes may need to be increased between this space and the existing residential flat above.

5.0 Preliminary Sound Insulation Testing

5.1 Equipment

The following equipment was used to undertake the sound insulation tests.

Equipment	Manufacturer	Model	Serial No.	Calibration Date
Class 1 Sound Level Meter	Bruel & Kjaer	2250	2626230	26/10/2020
Preamplifier	Bruel & Kjaer	ZC-0032	21309	26/10/2020
Microphone	Bruel & Kjaer	4189	2621208	26/10/2020
Class 1 Sound Calibrator	Casella	120/1	3864878	02/11/2021
10" Active Loudspeaker with Vented Cabinet	Yamaha	DBR10	-	-

Field calibration checks were performed on the sound level meter prior to and on completion of the tests and were found to be within acceptable tolerance limits.

5.2 Test Procedure

Lighthouse Acoustics visited site on 8 February 2022 to undertake a preliminary airborne sound insulation test across the existing separating floor construction between the proposed bar/restaurant unit and existing residential flat above.

The proposed bar/restaurant unit was fully stripped with piles of waste building material whilst the existing residential flat was fully furnished with exposed timber floor.

Preliminary airborne sound insulation tests were undertaken across separating floor constructions in accordance with BS EN ISO 140-4: 1998, "Acoustics. Measurement of sound insulation in buildings and of building elements. Field measurements of airborne sound insulation between rooms".

The one-third octave frequency band results are then rated in terms of the weighted standardised level difference, $D_{nT,w}$, and spectrum adaptation term, C_{tr} , in accordance with BS EN ISO 717-1: 1997, "Acoustics. Rating of sound insulation in buildings and of building elements. Airborne sound insulation".

5.3 Test Locations

Preliminary airborne sound insulation tests across the existing separating floor construction were undertaken between the following spaces.

Test Ref.	Source Room	Receive Room
A	Ground Floor Unit	First Floor Living Room
B	Ground Floor Unit	First Floor Bedroom

5.4 Test Results

The results of the preliminary airborne sound insulation tests are presented in the following table.

Test Ref.	Source Room	Receive Room	Measured Airborne sound insulation $D_{nT,w} + C_{tr}$ dB	Target Airborne sound insulation $D_{nT,w} + C_{tr}$ dB
A	Ground Floor Unit	First Floor Living Room	38	≥ 43
B	Ground Floor Unit	First Floor Bedroom	41	≥ 43

5.5 Discussion of Results

Test A fell short of achieving the minimum requirement of $D_{nT,w} + C_{tr}$ 43dB by 5dB. Flanking via the masonry walls was noted to be minimal and the separating floor construction itself was noted to be the main transmission path for this test.

Test B fell short of achieving the minimum requirement of $D_{nT,w} + C_{tr}$ 43dB by 2dB. Flanking via the masonry walls was noted to be minimal and the separating floor construction itself was noted to be the main transmission path for this test.

6.0 Separating Floor Construction

It is understood that the existing first floor construction comprises the following build-up:

- Exposed timber floor boards;
- Timber floor joists (unknown if any insulation present between joists);
- Lathe and plaster ceiling.

In order to maximise the level of airborne sound insulation between the proposed bar/restaurant unit and existing residential flat above the following treatment is proposed:

- Existing lathe and plaster ceiling made good with any holes sealed;
- 300mm ceiling void containing 150mm mineral wool (min. 16kg/m³);
- 2No. layers of plasterboard (each min. 10kg/m² e.g. 12.5mm SoundBloc) with staggered joints.

The ceiling shall extend up to all masonry external/internal walls and be sealed around the perimeter with a continuous bead of mastic. Penetrations of the ceiling shall be avoided where possible. Recessed lighting should be carefully considered since it can reduce the acoustic performance of the ceiling in which they are installed. Surface mounted lighting is preferable with any penetrations suitably sealed.

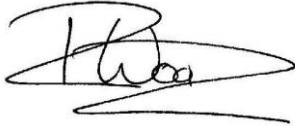
7.0 Conclusions

Preliminary airborne sound insulation tests across the existing separating floor construction between the proposed bar/restaurant unit and existing residential flat above have been undertaken in order to establish the existing performance and highlight any flanking paths.

Comments have been provided on the measured results and on the likelihood of achieving an appropriate level of sound insulation between the proposed bar/restaurant and existing residential flat above.

Advice has been provided on additional treatment where required in order to maximise the airborne sound insulation performance between the proposed bar/restaurant unit and existing residential flat above.

Yours sincerely
for LIGHTHOUSE ACOUSTICS

A handwritten signature in black ink, appearing to read 'Robin Wood', with a stylized, sweeping underline.

Robin Wood