

Acoustic Consultancy Report

34393/3/1/3

Acoustic Testing Report

Report Prepared For

Mhy Capital Ltd
14 Wokingham Road
03 July 2025

Issued By

A handwritten signature in black ink, appearing to read 'M Balsom'.

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i) Executive Summary

Sound insulation testing has been performed at 14 Wokingham Road, Reading.

LCP have been commissioned by MHY Capital Ltd to carry out sound insulation testing of the floor separating the commercial premises from the proposed residential premises above.

The results shown in section 4 of this report detail the testing that was carried out on 2nd July 2025.

ii) Document History

Issue	Date	Issue Details	Issued By
1	3 rd July 2025	Initial Issue	MB

1. Introduction

Sound insulation testing is required when a new separating structure is created, either by a new building development, or from a material change of use (as defined within the Building Regulations).

A set of tests was undertaken to measure the airborne sound insulation performance of the separating structure, to establish whether they provide sufficient resistance to sound transmission to comply with the requirements of Approved Document E and Local Authority requirements.

LCP have been commissioned to carry out sound insulation testing of the floor separating the commercial premises from the proposed residential premises above.

This report details all measurement results and data obtained during the testing period and sets out all findings following comparison of the obtained data with the project design criteria.

2. Testing Programme

2.1. Address of Building

14 Wokingham Road, Reading

2.2. Types of Property

Tests were carried out in flats formed by material change of use.

2.3. Dates of Testing

The testing was carried out on 2nd July 2025 from 16:00 to 17:00.

2.4. Test Organisation

Tests were carried out by LCP, Riverside House, 3 Winnersh Fields, Gazelle Close, Winnersh, Wokingham, RG41 5QS.

Acoustic testing was carried out by suitably qualified acoustician Mark Balsom MSc MIOA (D) (E).

Tests were carried out for MHY Capital Ltd.

2.5. Calibration

The measurement equipment (as detailed in section 6) was calibrated prior to and after obtaining measurements. As required, the equipment was also calibrated under the circumstances outlined in section 3 of ANC guidelines: 'Measurement of sound levels in buildings' version 1 2020 (if they arose during the testing period).

The recorded calibration gain adjustment levels were as follows:

Table 1: Calibration gain adjustment levels (94 dB at 1 kHz), dB re 2×10^{-5} Pa

Sound level meter	Calibration level at 1kHz	Before	After
Svantek SV 971A SN: 151484	94dB	-0.03	+0.00

3. Criteria

3.1. Approved Document E

The criteria given in Tables 1a and 1b of Approved Document E: 2003 are shown in the following table.

Table 2: Approved Document E Criteria

	Minimum Airborne Sound Insulation Values $D_{nT,w} + C_{tr}$	Maximum Impact Sound Insulation Values $L_{nT,w}$
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
Purpose built rooms for residential purpose		
Walls	43	-
Floors and stairs	45	62
Rooms for residential purpose formed by material change of use		
Walls	43	-
Floors and stairs	43	64

3.2. Local Authority Requirements

Reading Borough Council provided the following advice in respect of the proposals:

*...the scheme itself shall be designed, specified and constructed so that the sound insulation performance of the separating floor/ceiling between the uses achieves a minimum airborne sound insulation performance of greater than or equal to **55 dB ($D_{ntw} + C_{tr}$)**...*

3.3. Criteria

The criteria shall therefore be:

Table 3: Criteria, dB

Sound Insulation	Criteria
Airborne	$\geq 55 D_{nT,w} + C_{tr}$

4. Summary of Results

4.1. Airborne Tests

Elements should have a minimum $D_{nT,w}+C_{tr}$ of 55dB for floors as specified by the Local Authority. Source and receiver room positions are shown in Appendix A.

Table 4: Airborne sound insulation test results

Partition	Element	Source Room	Receiving Room	$D_{nT,w}+C_{tr}$ (dB)	Result
Task 1	Floor	S1	R1	55	Pass
Task 2	Floor	S2	R2	54	Fail*

*The result for Task 2 shows a 1dB failure, this is discussed in the comments section.

5. Comments

During the testing it was noticeable that the dominant path for the noise was the flanking path through the single glazed windows on the outer façade.

Pre-works testing of the floor has previously been carried out by another consultancy and a $D_{nT,w}+C_{tr}$ of 41dB was originally measured.

Improvement works have been carried out and a significant improvement in sound insulation has been achieved. There are still further works to be carried out, including replacing the single glazed windows with double glazed units and installing a new entrance door to the proposed flat. Once these final works have been carried out, I believe a $D_{nT,w}+C_{tr}$ of 55dB will be achieved throughout the proposed flat.

6. Equipment

The following instrumentation and equipment were used during the testing:

Svantek SV 971A Sound Analyser, S/N 151484 (next cal due 09/12/26), compliant with the Type 1 specification of BS EN 61672-1:2003 and BS EN 61672-1:2003

Svantek SV 18A microphone, S/N 7152: 92246

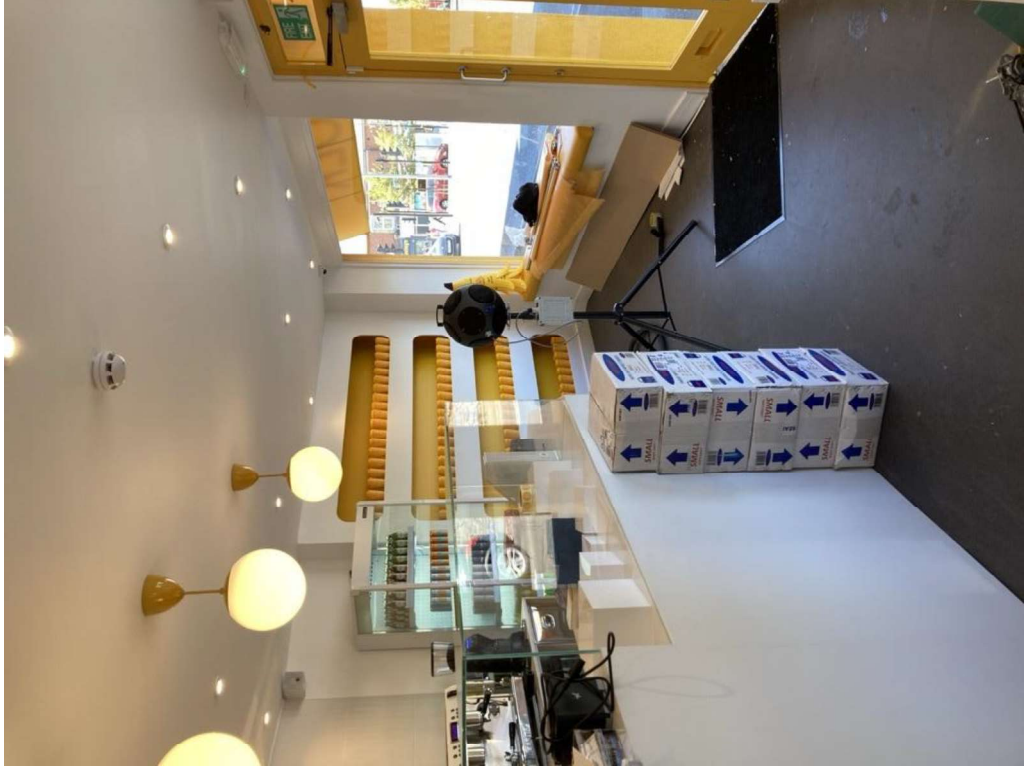
Brüel & Kjær 4231 calibrator, S/N: 219291 (next cal due 04/02/26) complying with Class 1 specification of BS EN 60942:2003

Speaker with built in amplifier Look Line DI 303, S/N: F2885

All instrumentation carries current certificates of calibration, copies of which are available upon request.

Calibration checks were made prior to and after completion of measurements using a calibrator complying with Class 1 of IEC 942 (1988), calibration level 94.0 dB, ± 0.3 dB, @ 1.0 kHz.

S1



R1



Appendix B: Results of Test

Standardized level difference measured in accordance with ISO 140-4

Field measurements of airborne sound insulation between rooms

Date of test: 2025-07-02

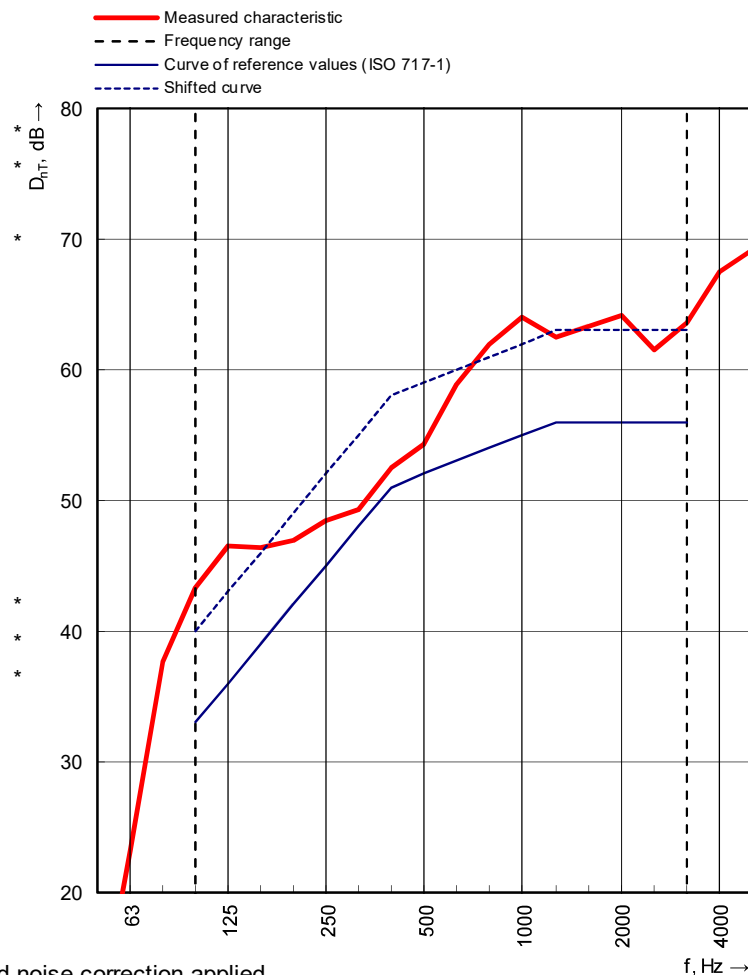
Task: Task 1 Object: Floor
Client: MHY Capital

Description:

Flooring, MF frame ceiling, acoustic hangers, 2x 15mm Soundbloc, 180mm Rockwool in void.

Area of common partition: 18.7 m² Note: Ground floor (S1) to First floor (R1)
Receiving room volume: 45.4 m³ Name: R1
Source room volume: 77.4 m³ Name: S1

Frequency <i>f</i> Hz	<i>D</i> _{nT} (1/3 octave) dB
50	9.6
63	23.2
80	37.6
100	43.3
125	46.5
160	46.4
200	46.9
250	48.4
315	49.3
400	52.5
500	54.3
630	58.9
800	61.9
1000	64.0
1250	62.5
1600	63.3
2000	64.2
2500	61.5
3150	63.6
4000	67.5
5000	69.1



Rating according to ISO 717-1

*D*_{nT,w}(C; C_{tr}) = **59** (**-1** ; **-4**) dB
*C*₅₀₋₃₁₅₀ = -10 dB *C*₅₀₋₅₀₀₀ = -9 dB *C*₁₀₀₋₅₀₀₀ = 0 dB
*C*_{tr,50-3150} = -25 dB *C*_{tr,50-5000} = -25 dB *C*_{tr,100-5000} = -4 dB

Evaluation based on field measurement results obtained by an engineering method

No. of test report:

Name of test institute: LCP

Date: 2025-07-02

Signature: 

Standardized level difference measured in accordance with ISO 140-4

Field measurements of airborne sound insulation between rooms

Date of test: 2025-07-03

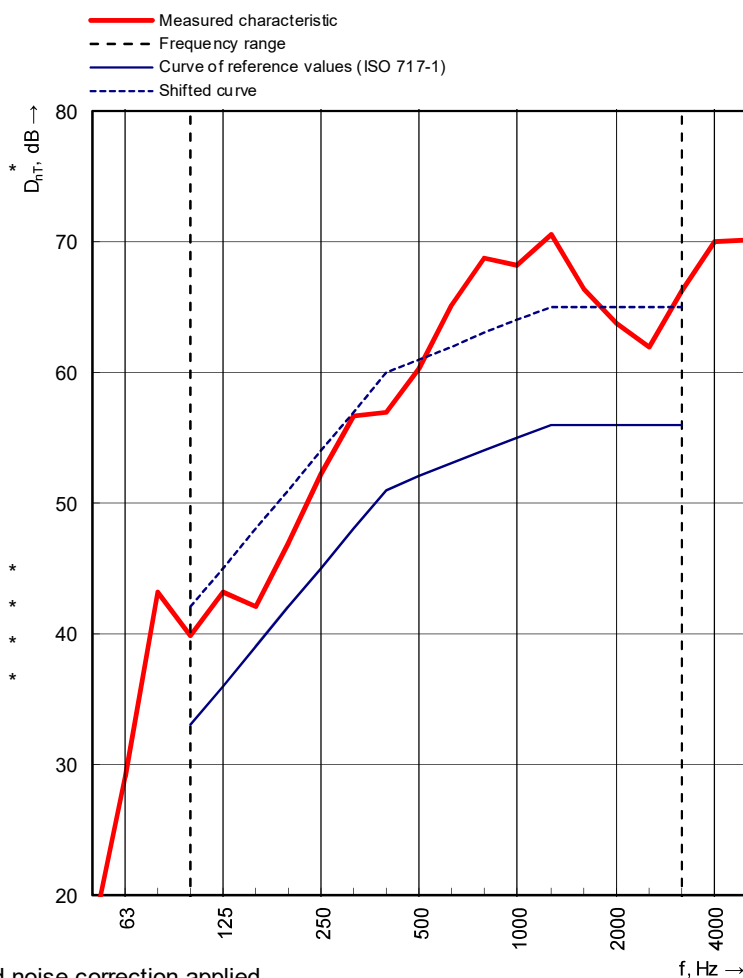
Task: Task 2 Object: Floor
Client: MHY Capital

Description:

Flooring, MF frame ceiling, acoustic hangers, 2x 15mm Soundbloc, 180mm Rockwool in void.

Area of common partition: 7.5 m² Note: Ground floor (S2) to First floor (R2)
Receiving room volume: 18.3 m³ Name: R2
Source room volume: 77.4 m³ Name: S2

Frequency <i>f</i> Hz	<i>D</i> _{nT} (1/3 octave) dB
50	16.9
63	29.0
80	43.1
100	39.9
125	43.1
160	42.1
200	46.9
250	52.2
315	56.7
400	57.0
500	60.2
630	65.1
800	68.7
1000	68.2
1250	70.6
1600	66.4
2000	63.7
2500	62.0
3150	66.2
4000	70.0
5000	70.1



* maximum background noise correction applied

Rating according to ISO 717-1

*D*_{nT,w}(C; C_{tr}) = **61** (-2 ; -7) dB *C*₅₀₋₃₁₅₀ = -7 dB *C*₅₀₋₅₀₀₀ = -6 dB *C*₁₀₀₋₅₀₀₀ = -1 dB
*C*_{tr,50-3150} = -20 dB *C*_{tr,50-5000} = -20 dB *C*_{tr,100-5000} = -7 dB

Evaluation based on field measurement results obtained by an engineering method

No. of test report:

Name of test institute: LCP

Date: 2025-07-03

Signature:



Appendix C: Glossary

The list below details the major acoustical terms and descriptors, with brief definitions:

'A' Weighting

Weighting applied to the level in each stated octave band by a specified amount, in order to better represent the response of the human ear. The letter 'A' will follow a descriptor, indicating the value has been 'A' weighted. An 'A' weighted noise level may also be written as dB(A).

Airborne Noise

Noise transmitted through air.

dB or Decibel

Literally meaning 'a tenth of a bel', the bel being a unit devised by the Bell Laboratory and named after Alexander Graham Bell. A logarithmically based descriptor to compare a level to a reference level. Decibel arithmetic is not linear, due to the logarithmic base. For example:

30 dB + 30 dB $\neq$ 60 dB

30 dB + 30 dB = 33 dB

$D_{nTw} + C_{tr}$

The weighted, normalised difference in airborne noise levels measured in a source room (L1) and a receive room (L2) due to a separating partition.

D	Is simply $L1 - L2$.
D_{nT}	Is the normalisation of the measured level difference to the expected (in comparison to the measured) reverberation time in the receiving room.
D_{nTw}	Is the weighted and normalised level difference. This value is the result of applying a known octave band weighting curve to the measured result.
C_{tr}	Is a correction factor applied to the D_{nTw} to account for the known effects of particular types of noise, such as loud stereo music or traffic noise.

Frequency (Hz)

Measured in Hertz (after Heinrich Hertz), and represents the number of cycles per second of a sound or tone.

Impact Noise

Re-radiated noise as a result of impact(s) on a solid medium, such as footfalls on floors.

Insertion Loss, dB

The amount of sound reduction offered by an attenuator or louvre once placed in the path of a noise level.

$L_{A90, T}$

The 'A' weighted noise level exceeded for 90% of the time period T, described or measured. The '90' can be substituted for any value between 1 and 99 to indicate the noise level exceeded for the corresponding percentage of time described or measured.

$L_{Aeq, T}$

The 'A' weighted 'equivalent' noise level, or the average noise level over the time period T, described or measured.

L_{Amax}

The 'A' weighted maximum measured noise level. Can be measured with a 'slow' (1 sec) or 'fast' (0.125 sec) time weighting.

L_{Amin}

The 'A' weighted minimum measured noise level.

L'_{nTw}

The weighted, normalised impact sound pressure level measured in a receive room below a source room.

L

Is the spatially averaged impact sound pressure level measured in a receive room.

L'_{nT}

Is the normalisation of the measured impact sound pressure level to the expected (in comparison to the measured) reverberation time in the receiving room.

L'_{nTw}

Is the weighted and normalised impact sound pressure level. This value is the result of applying a known octave band weighting curve to the measured result.

NR

Noise Rating (NR) level. A frequency dependent system of noise level curves developed by the International Organisation for Standardisation (ISO). NR is used to categorise and determine the acceptable indoor environment in terms of hearing preservation, speech communication and annoyance in any given application as a single figure level. The US predominantly uses the Noise Criterion (NC) system.

Octave

The interval between a frequency in Hz (f) and either half or double that frequency (0.5f or 2f).

Pa

Pascals, the SI unit to describe pressure, after physicist Blaise Pascal.

Reverberation Time, T_{mf} , RT60, RT30 or RT20

The time taken in seconds for a sound to diminish within a room by 1,000 times its original level, corresponding to a drop in sound pressure of 60 dB. When taking field measurements and where background noise levels are high, the units RT20 or RT30 are used (measuring drops of 20 or 30 dB respectively). Sometimes given as a mid-frequency reverberation time, T_{mf} which is the average of reverberation time values at 500Hz, 1kHz and 2kHz.

R_w

The sound reduction value(s) of a constructional element such as a door, as measured in a laboratory, with a known octave band weighting curve applied to the result.

Sound Power Level

A noise level obtained by calculation from measurement data, given at the face of an item of plant or machinery. Referenced to 10^{-12} W or 1pW.

Sound Pressure Level

A noise level measured or given at a distance from a source or a number of sources. Referenced to 2×10^{-5} Pa.

W

Watts, the SI unit to describe power, after engineer James Watt.