

SANDY BROWN

Consultants in Acoustics, Noise & Vibration

20270-R05-B

24 June 2024

58-66 King Street, Manchester

Sound insulation test report A
ANC task reference: 141/118343

London, Manchester, Edinburgh, Birmingham, Belfast, Leeds, Bristol

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SANDY BROWN

Consultants in Acoustics, Noise & Vibration

Version	Date	Comments	Author	Reviewer
A	13 Jun 24		Jack Parrott	Matthew Robinson
B	24 Jun 24	Additional tests undertaken from commercial unit to Apartment 3	Jack Parrott	Matthew Robinson



Jack Parrott
Engineer, AMIOA



Matthew Robinson
Associate Director, MIOA

ANC Task reference : 141 / 118343

Disclaimer

This report has been prepared for the sole benefit and use of our client based on their instructions and requirements. Sandy Brown Ltd extends no liability in respect of the information contained in the report to any third party.

Summary

Pre-completion sound insulation testing has been carried out at 58-66 King Street, Manchester to demonstrate compliance with the requirements of Approved Document E (2003 Edition including all amendments up to 2015) to the Building Regulations 2010.

Sandy Brown Ltd (Sandy Brown) is registered to carry out such tests under the Association of Noise Consultants' scheme (company registration number 141), and the tests have been carried out by an accredited testers, Jose Maria Gonzalez Dias, and Kane Mitchell assisted by Jack Parrott.

The site consists of 24 apartments over 4 floors formed by material change of use, with commercial properties on the ground floor.

In line with Approved Document E (2003 Edition including all amendments up to 2015) to the Building Regulations 2010 a minimum of 10% of dwellings formed by a material change of use are to be tested.

All tests complied with the requirements of Approved Document E.

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1 Introduction

Sandy Brown has been commissioned by Recom Solutions Limited, Unit 31, Salford, M5 3EZ to carry out sound insulation tests at 58 – 66 King Street, Manchester.

Sandy Brown is registered with the Association of Noise Consultants (ANC) Scheme for pre-completion testing. Sandy Brown's registration number is 141. This report is an ANC registered report, with the unique reference number 141/118343.

The test results were uploaded to the ANC ADvANCE website on 24 June 2024 and details of how to access the certification of the test results are included in Appendix A.

2 Performance standards

The minimum performance standards for airborne and impact sound insulation that must be achieved to demonstrate compliance with Approved Document E (2003 Edition incorporating 2004, 2010 and 2015 amendments) to the Building Regulations 2010 are given in Table 1.

Table 1 Dwelling-houses and flats – performance standards for elements 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)
Dwelling-houses and flats formed by material change of use:		
Walls	43	-
Floors and Stairs	43	64

3 Test details

3.1 Test dates and personnel

The tests were conducted by Jose M. Gonzalez, a registered tester under the ANC scheme with assistance from Jack Parrott on 5 June 2024, additional testing was undertaken on 17 June 2024 by Kane Mitchell, a registered tester under the ANC scheme.

3.2 Test methods and applicable standards

All tests have been conducted in full accordance with BS EN ISO 140-4:1998 (withdrawn) and BS EN ISO 140-7:1998 (withdrawn).

The additional guidance in Annex B of Approved Document E (2003 Edition incorporating 2004, 2010 and 2015 amendments) to the Building Regulations 2010 has also been complied with.

Values of $D_{nT,w}+C_{tr}$ and $L'_{nT,w}$ are determined in accordance with BS EN ISO 717-1:1997 (withdrawn) and BS EN ISO 717-2:1997 (withdrawn).

It should be noted that these withdrawn standards are used because these specific dated versions are referenced in ADE2003, and as such as required to be used as the basis for testing.

Further details of the measurement procedures, the method used for analysing the results, the terminology used and the equipment used for the tests are given in Appendix B.

3.3 Site details

The site comprises 24 apartments arranged over 4 floors with commercial units on the ground floor.

The site comprises of three historic buildings. One of the buildings, 62 King Street, also has a Grade II listed status .

The site is formed by a material change of use.

The layouts of the apartments tested are shown in Appendix C. Sources of background noise

The main sources of background noise during the tests were road traffic and passing trams. The tests were conducted such that the influence of background noise was minimised where possible. Some of the measurements were background limited due to the high levels of sound insulation achieved on site, resulting in a low noise level in the receiving rooms. It was determined on site that the influence of background noise was not significant enough to affect whether the sound insulation criteria were achieved.

3.5 Separating elements tested

Sound insulation tests were conducted in the rooms identified in Appendix C and D. The separating elements and types of rooms tested along with the corresponding test numbers are given in Table 2. Construction details for the separating elements are provided in Table 3.

Table 2 Details of tested separating elements

Test ref.	Separating element	Source room		Receiver room		Common area (m ²)
		Location	Volume (m ³)	Location	Volume (m ³)	
1	Wall	Apartment 7 (living)	124	Apartment 5 (living)	109	12
2	Wall	Apartment 5 (living)	109	Apartment 3 (bedroom)	27	10

Test ref.	Separating element	Source room		Receiver room		Common area (m ²)
		Location	Volume (m ³)	Location	Volume (m ³)	
3	Floor	Apartment 5 (living)	109	Apartment 12 (living)	93	31
4	Floor	Apartment 12 (bedroom)	43	Apartment 5 (bedroom)	37	11
5	Floor	Apartment 12 (living)	93	Apartment 5 (living)	109	31
6	Floor	Apartment 12 (bedroom)	43	Apartment 5 (bedroom)	37	11
7	Wall	Apartment 13 (living)	100	Apartment 11 (living)	94	11
8	Wall	Apartment 11 (living)	94	Apartment 8 (bedroom)	26	9
9	Wall	Apartment 11 (living)	94	Apartment 18 (living)	73	29
10	Wall	Apartment 11 (bedroom)	42	Apartment 18 (bedroom)	35	12
11	Floor	Apartment 18 (living)	73	Apartment 11 (living)	94	29
12	Floor	Apartment 18 (bedroom)	35	Apartment 11 (bedroom)	42	12
13	Wall	Apartment 21 (living)	112	Apartment 19 (living)	92	13
14	Wall	Apartment 21 (living)	112	Apartment 14 (living)	112	37
15	Wall	Apartment 19 (living)	92	Apartment 17 (bedroom)	26	8
16	Wall	Apartment 17 (living)	87	Apartment 16 (living)	74	11
17	Wall	Apartment 22 (living)	91	Apartment 17 (living)	87	29

Test ref.	Separating element	Source room		Receiver room		Common area (m ²)
		Location	Volume (m ³)	Location	Volume (m ³)	
18	Wall	Apartment 22 (living)	91	Apartment 17 (bedroom)	26	9
19	Floor	Apartment 22 (living)	91	Apartment 17 (living)	87	29
20	Floor	Apartment 22 (living)	91	Apartment 17 (bedroom)	26	9
21	Wall	Apartment 21 (bedroom)	43	Apartment 14 (bedroom)	43	13
22	Floor	Apartment 21 (bedroom)	43	Apartment 14 (living)	42	13
23	Floor	Apartment 21 (living)	112	Apartment 14 (living)	112	37
24	Floor	Ground floor Commercial Unit	378	Apartment 3 (living)	93	27
25	Floor	Ground floor Commercial Unit	378	Apartment 3 (bedroom)	27	8

Table 3 Construction details

Surface	Test ref.	Construction details
Separating wall	8, 9	Existing masonry walls, 12.5 mm GTEC dB Board nominal thickness 38 mm (25 mm cavity)
Separating wall	1	Independent twin-frame system, 50 mm GTEC C Studs CS50/Rx at 600 mm centres, 2x15 mm GTEC dB Board to both sides, cavity containing 50 mm glass mineral wool insulation ($\geq 16 \text{ kg/m}^3$)
Separating wall	2, 7, 13, 15	Acoustic enhancement to existing masonry walls, 2x12.5 mm GTEC Standard Boards to room side, cavity containing 50 mm glass mineral wool insulation ($\geq 16 \text{ kg/m}^3$)
Separating wall	16	Independent twin-frame system, 50 mm GTEC C Studs CS50/Rx at 600 mm centres, 2x15 mm GTEC dB Board to both sides, cavity containing 50 mm glass mineral wool ($\geq 16 \text{ kg/m}^3$) insulation, 80 mm between frames, openings to be infilled with 2x100 mm concrete blockwork, ($\geq 1880 \text{ kg/m}^3$), to match surrounding wall.
Separating floor	3, 4, 5, 6, 9, 10, 11, 12, 14, 17, 18, 19, 20, 21, 22, 23	InstaCoustic C40 floating floor system, existing floorboards, exiting joints (various depths), cavity containing 100 mm mineral fibre insulation ($\geq 30 \text{ kg/m}^3$), 2x12.5 mm standard plasterboard suspended on an MF grid supported by resilient isolation hangers, with 50 mm mineral fibre insulation within the cavity.
Separating floor	24,25	InstaCoustic C40 floating floor system, existing floorboards, exiting joints (various depths), cavity containing 100 mm mineral fibre insulation ($\geq 30 \text{ kg/m}^3$), existing ceiling below made good

For further construction details refer to the as-built drawings.

4 Results

The full set of test results is presented in Appendix D. The results are summarised in Table 4 and Table 5.

Table 4 Summary of measured airborne sound insulation results

Test ref.	Source Room		Receiver Room		Required $D_{nT,w} + C_{tr}$ (dB)	Measured $D_{nT,w} + C_{tr}$ (dB)	Pass/Fail
	Location	Vol (m ³)	Location	Vol (m ³)			
1	Apartment 7 (living)	124	Apartment 5 (living)	109	≥ 43	69	Pass
2	Apartment 5 (living)	109	Apartment 3 (bedroom)	27	≥ 43	68	Pass
3	Apartment 5 (living)	109	Apartment 12 (living)	93	≥ 43	62	Pass
4	Apartment 12 (bedroom)	43	Apartment 5 (bedroom)	37	≥ 43	60	Pass
7	Apartment 13 (living)	100	Apartment 11 (living)	94	≥ 43	66	Pass
8	Apartment 11 (living)	94	Apartment 8 (bedroom)	26	≥ 43	63	Pass
9	Apartment 11 (living)	94	Apartment 18 (living)	73	≥ 43	61	Pass
10	Apartment 11 (bedroom)	42	Apartment 18 (bedroom)	35	≥ 43	59	Pass
13	Apartment 21 (living)	112	Apartment 19 (living)	92	≥ 43	69	Pass
14	Apartment 21 (living)	112	Apartment 14 (living)	112	≥ 43	63	Pass
15	Apartment 19 (living)	92	Apartment 17 (bedroom)	26	≥ 43	63	Pass
16	Apartment 17 (living)	87	Apartment 16 (living)	74	≥ 43	49	Pass

Test ref.	Source Room		Receiver Room		Required $D_{nT,w} + C_{tr}$ (dB)	Measured $D_{nT,w} + C_{tr}$ (dB)	Pass/Fail
	Location	Vol (m ³)	Location	Vol (m ³)			
17	Apartment 22 (living)	91	Apartment 17 (living)	87	≥ 43	55	Pass
18	Apartment 22 (living)	91	Apartment 17 (bedroom)	26	≥ 43	60	Pass
21	Apartment 21 (bedroom)	43	Apartment 14 (bedroom)	43	≥ 43	50	Pass
24	Ground floor Commercial Unit	378	Apartment 3 (living)	93	≥ 43	56	Pass
25	Ground floor Commercial Unit	378	Apartment 3 (bedroom)	27	≥ 43	56	Pass

Table 5 Summary of measured impact sound insulation results

Test ref.	Source Room		Receiver Room		Required $L'_{nT,w}$ (dB)	Measured $L'_{nT,w}$ (dB)	Pass/Fail
	Location	Vol (m ³)	Location	Vol (m ³)			
5	Apartment 12 (living)	93	Apartment 5 (living)	109	≤ 64	36	Pass
6	Apartment 12 (bedroom)	43	Apartment 5 (bedroom)	37	≤ 64	42	Pass
11	Apartment 18 (living)	73	Apartment 11 (living)	94	≤ 64	42	Pass
12	Apartment 18 (bedroom)	35	Apartment 11 (bedroom)	42	≤ 64	44	Pass
19	Apartment 22 (living)	91	Apartment 17 (living)	87	≤ 64	47	Pass
20	Apartment 22 (living)	91	Apartment 17 (bedroom)	26	≤ 64	46	Pass

Test ref.	Source Room		Receiver Room		Required $L'_{nT,w}$ (dB)	Measured $L'_{nT,w}$ (dB)	Pass/ Fail
	Location	Vol (m ³)	Location	Vol (m ³)			
22	Apartment 21 (bedroom)	43	Apartment 14 (bedroom)	42	≤ 64	50	Pass
23	Apartment 21 (living)	112	Apartment 14 (living)	112	≤ 64	42	Pass

Appendix A

ANC ADvANCE website login details



Notice to Building Control Officer

Certification of Test Results

ANC operates an online, secure, paperless certification system for sound insulation tests.

The online verification (certification) system means that Building Control Bodies will need to follow the steps below to verify the results quoted in the relevant test report:

1. Go to the ANC secure server at www.theanc.co.uk
2. Navigate to the [ADvANCE](#) page which links to the ANC site available for use by BCOs.
3. Enter the following in the spaces provided:

Task Number: 118343 Task Password: 39RQ0B
4. Select role "Building Control Officer" and press "Login"
5. You will then see a summary list of results of all the Tests undertaken to date for this project (Task) as held on the secure primary server and you can print this table for your records.

Appendix B

Glossary of terms, measurement procedures, and equipment

Glossary of terms

D_{nT} Standardized Level difference

The difference in sound level between a pair of rooms in a stated frequency band corrected (standardized) to take account of the reverberation time in the receiving room. This allows the sound level difference between furnished and unfurnished rooms to be compared.

$D_{nT,w}$ Weighted Standardized Level difference

A single number quantity used to describe the airborne sound insulation between rooms. Using the weighted level difference simplifies the description of airborne sound insulation between rooms. The greater the value of $D_{nT,w}$, the greater the airborne sound insulation

$D_{nT,w} + C_{tr}$ Weighted Standardized Level difference with spectrum adaptation term

$D_{nT,w}$ that has been weighted with a spectrum adaptation term (C_{tr}). The C_{tr} spectrum adaptation term increases the significance airborne sound insulation at low frequencies. $D_{nT,w} + C_{tr}$ is used to describe airborne sound insulation in the Building Regulations of England and Wales.

L'_{nT} Standardized impact sound pressure level

The impact sound pressure level in a stated frequency band corrected (standardized) to take account of the reverberation time in the receiving room. This allows the impact sound pressure level in furnished and unfurnished rooms to be compared.

$L'_{nT,w}$ Weighted Standardized impact sound pressure level

The single number quantity used to describe impact sound insulation of floors in the Building Regulations of England and Wales. The lower the value of $L'_{nT,w}$, the greater the impact sound insulation of the floor tested.

Measurement procedure

In all cases, the guidance on the proximity of the microphone to surfaces in the rooms was followed. At no time was the microphone less than 1 m from the sound source or less than 0.5 m from any surface in the rooms.

Airborne sound insulation

Broadband continuous steady pink noise was generated in each chosen source room using a single loudspeaker in a fixed position and the sound pressure level measured in the source and receiving rooms. The loudspeaker was then moved to a second fixed position and the measurements repeated. It was ensured that sound from the loudspeaker was not directly incident on the separating partition being tested.

Sound pressure levels in the source and receiving rooms were measured using the moving microphone technique for each loudspeaker position. Representative background noise levels in the receiving rooms (without the loudspeaker operating) were also measured.

The measured noise levels were obtained in one-third octave bands from 100 Hz to 3150 Hz inclusively. Each measurement was time-averaged over a 30 s period.

In all cases where sound pressure levels in the receiving rooms, with the sound source operational, were less than 10 dB above the measured background noise levels (with the sound source off), the measured sound pressure level was corrected in accordance with Section 6.6 of BS EN ISO 140-4:1998 (withdrawn).

The level differences between source and receiving rooms were calculated and used in combination with the measured average reverberation times to determine the Standardised Level Differences (D_{nT}) in one-third octave bands from 100 Hz to 3150 Hz.

The Standardised Level Differences were then weighted in accordance with BS EN ISO 717-1: 1997 (withdrawn) to obtain the $D_{nT,w}$ and $D_{nT,w} + C_{tr}$ values for comparison with the requirements of the specification and with the requirements of Approved Document E (2003 Edition incorporating 2004, 2010 and 2015 amendments) to the Building Regulations 2010.

Impact sound insulation (floors)

A standard tapping machine conforming to the specification in Annex A of BS EN ISO 140-7:1998 (withdrawn) was used for the impact sound insulation measurements. Where carpets are listed in the test constructions they were removed from at least 50% of the floor area. The tapping machine was placed in four different positions across each floor (not on carpeted areas).

Sound pressure levels in the receiving rooms were measured using the moving microphone technique. Representative background noise levels in the receiving rooms (without the tapping machine operating) were also measured.

The measured noise levels were obtained in one-third octave bands from 100 Hz to 3150 Hz inclusive. Each measurement was time-averaged over a 30 s period.

In all cases where sound pressure levels in the receiving rooms, with the sound source operational, were less than 10 dB above the measured background noise levels (with the sound source off), the measured sound pressure level was corrected in accordance with Section 5.6 of BS EN ISO 140-7:1998 (withdrawn).

After correction for the influence of background noise, the measured average impact sound pressure levels were used together with the average reverberation times to determine the Standardised Impact Sound Pressure Levels (L'_{nT}) in one-third octave bands from 100 Hz to 3150 Hz.

The single figure rating for each floor, the 'weighted standardized impact sound pressure level', $L'_{nT,w}$ is calculated from all the L'_{nT} values at every one-third octave frequency band, in accordance with the weighting procedure in BS EN ISO 717-2:1997 (withdrawn).

Reverberation times

Reverberation times in the receiving rooms were measured in general accordance with BS EN ISO 3382-2:2008 using the interrupted sound method with a loudspeaker as the sound source.

At least six measurements were made in each receiving room using three microphone positions and one loudspeaker position. Two measurements were made at each microphone position.

Test Equipment

The equipment used to conduct the measurements is set out in Table B1.

Table B1 Equipment details and calibration information

Equipment description	Type/serial number	Manufacturer	Calibration expiry	Calibration certification number
Sound level meter	2250/3011964	Brüel & Kjær	11 Sep 25	UCRT23/2163 UCRT23/2167
Microphone	4189/3100176	Brüel & Kjær	11 Sep 25	UCRT23/2163 UCRT23/2167
Pre-amp	ZC0032/26376	Brüel & Kjær	11 Sep 25	UCRT23/2163 UCRT23/2167
Calibrator	4231/3019123	Brüel & Kjær	11 Sep 25	UCRT23/2162
Tapping machine	NOR277/2776 375	Norsonic	23 Oct 25	45696
Loudspeaker	CP8	QSC	N/A	N/A
Noise source	MR1	Neutrik	N/A	N/A

Equipment calibration

Calibration of the equipment used for the tests is traceable to UKAS accredited laboratories. In addition, the calibration of the sound level meter was checked prior to and after making the measurements. No significant drift in calibration was observed.

The hammer drop height on the tapping machine was confirmed to be 40 mm before and after the tests.

Appendix C

Sound insulation test locations

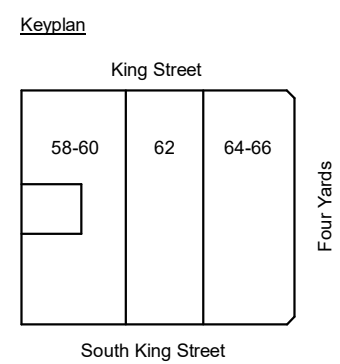


Title	ANC sound insulation test locations	OTES
Project	58 - 66 King Street	All dimensions and levels are to be checked on site.
Project no.	020270	Any discrepancies are to be reported to the architect before any work commences
Version	B	This drawing shall not be scaled to ascertain any dimensions. Work to figured dimensions only.
Marked-up by	Jack Parrott	This drawing shall not be reproduced without express written permission from AEW.
Reviewed by	Matthew Robinson	Title overlay drawings and ownership boundaries are produced using all reasonable endeavors. AEW cannot be responsible for the accuracy or scale discrepancy of base plans supplied to them.
Date	24 June 2024	All works are to be undertaken in accordance with Building Regulations and the latest British Standards.
Key:		All proprietary materials and products are to be used strictly in accordance with the manufacturers recommendations
	Airborne sound insulation measurement (wall)	This drawing contains the following model files: -
	Airborne sound insulation measurement to above	702-AEW-ZZ-XX-M3-A-0001
	Airborne sound insulation measurement to below	
	Impact insulation measurement	
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Client notified of duties: 04/11/2020
Principal Designer: AEW Architects

Unless noted below, all known hazards have been highlighted on the drawing.

Key	
	Existing structure
	New construction



Key	
	SVP locations - refer to drainage layouts (subject to review)
Note: RWP gulleys not shown. Refer to survey information.	

P04	13/08/21	Proposed SVP locations (from drainage layout) indicated.	OSI	BL
P03	21/07/21	Main entrance lobby and stairs amended, bin store access lobby amended, stairs to retail unit mezzanine floor amended to suit fire strategy.	MH	BL
P02	21/05/21	GA Layouts updated	MH	BL
P01	23/04/21	Initial issue	MH	BL
Rev	Date	Description	Drawn by	Checked By

Status Purpose of Issue
S2 For Information

drawing stage **Stage 4**

client

Glasgow City Council as Trustees of Strathclyde Pension Fund

project

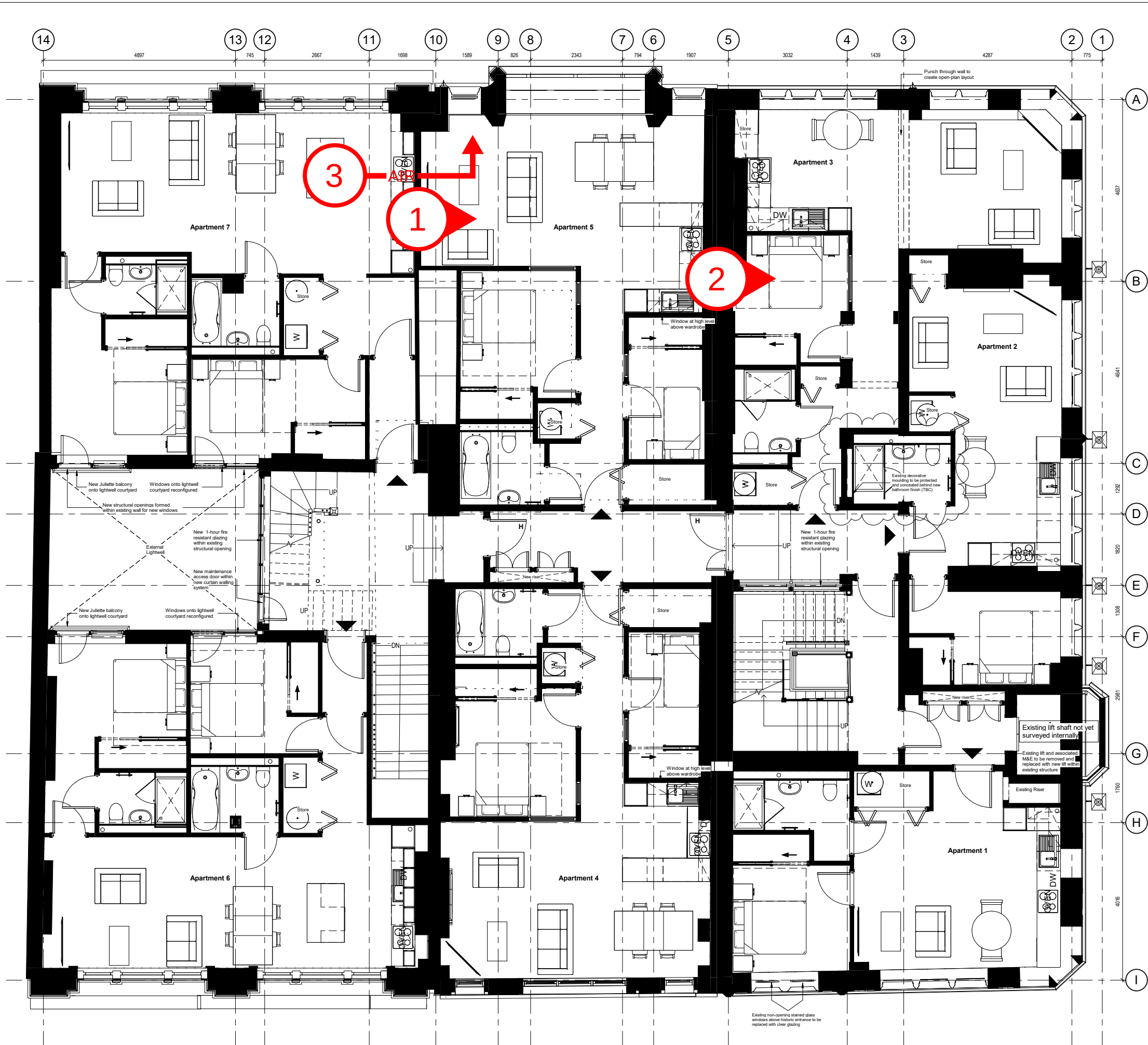
Manchester, King Street

drawing title

Proposed GA Ground Floor Plan

date 23/04/2021 drawn MH
scale @ A1 1 : 50 checked BL

00 - Proposed Ground Floor Plan
Scale @ 1 : 50



01 - Proposed First Floor Plan
Scale @ 1 : 50

Title	ANC sound insulation test locations
Project	58 - 66 King Street
Project no.	020270
Version	B
Marked-up by	Jack Parrott
Reviewed by	Matthew Robinson
Date	24 June 2024
Key:	
	Airborne sound insulation measurement (wall)
	Airborne sound insulation measurement to above
	Airborne sound insulation measurement to below
	Impact insulation measurement
SANDY BROWN Consultants in Acoustics, Noise & Vibration	

H	New door with electronic hold-open device linked to fire alarm system
W	Washing machine
•	Hot water cylinder
○	SVP locations - refer to drainage layouts (subject to review)

P04	13/08/21	Kitchen layouts revised, proposed SVP locations (from drainage layout) indicated, apartment 3 shower room layout revised. Minor amendments to furniture layout.	OSI	BL
-----	----------	---	-----	----

P03	21/07/21	Kitchen layouts amended, apartment store arrangements amended, small store added to apartment 3, bathroom doors to apartments 4 & 5 amended, minor amendments to Juliette Balcony door to apartment 6, well and understore store to no. 58-60 omitted to suit fire strategy.	MH	BL
-----	----------	--	----	----

P02	21/05/21	GA Layouts updated	MH	BL
P01	23/04/21	Initial Issue	MH	BL
Rev	Date	Description	Drawn by	Checked By

Status	Purpose of Issue
S2	For Information

drawing stage **Stage 4**

client

Glasgow City Council as Trustees of Strathclyde Pension Fund

project

Manchester, King Street

drawing title

Proposed GA First Floor Plan

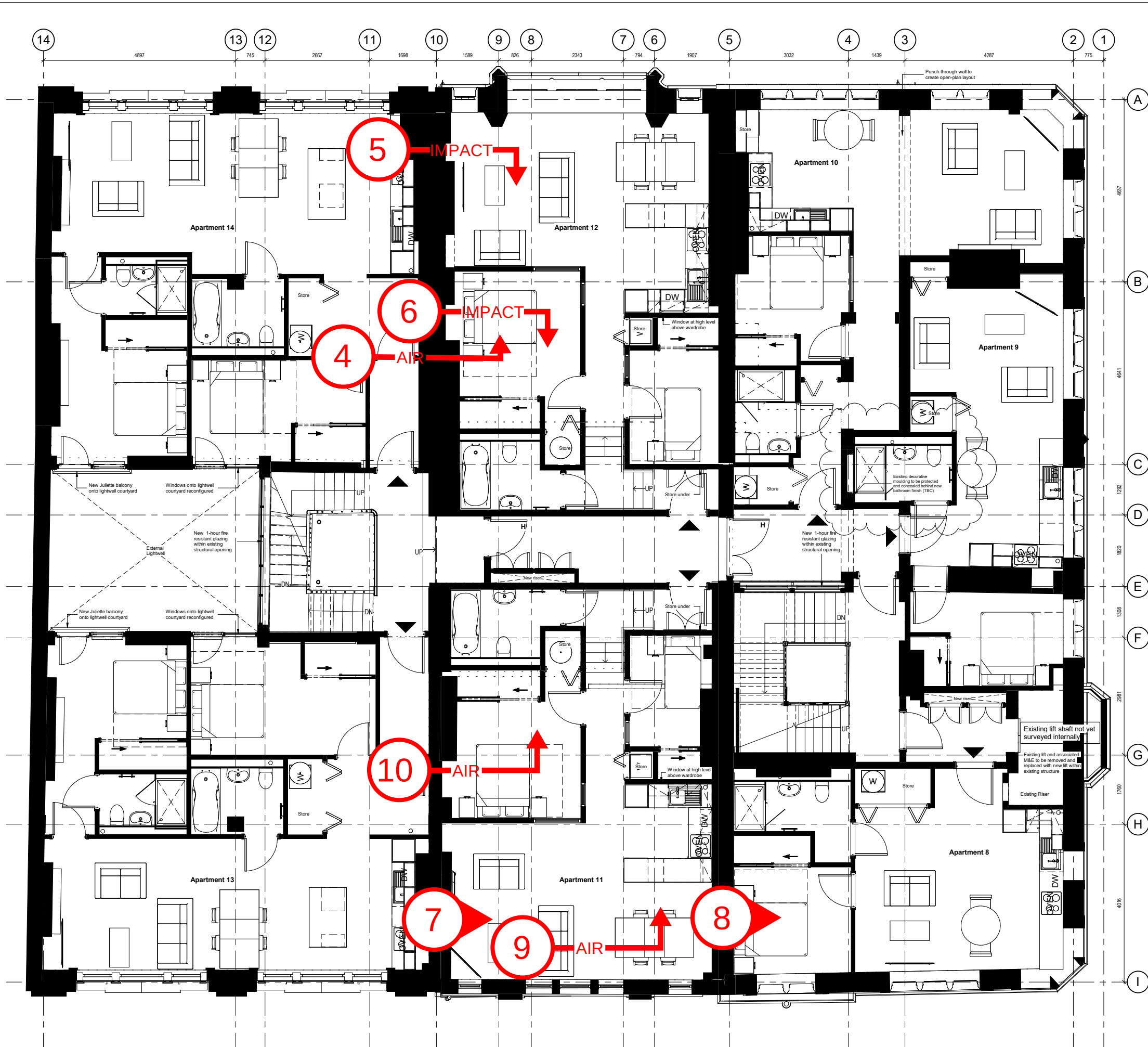
date 23/04/2021 drawn MH

scale @ A1 1 : 50 checked BL

Rev P04

11702-AEW-XX-01-DR-A-2001

aew architects
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www.aewarchitects.com



Title	ANC sound insulation test locations
Project	58 - 66 King Street
Project no.	020270
Version	B
Marked-up by	Jack Parrott
Reviewed by	Matthew Robinson
Date	24 June 2024

- Key:
- XX → Airborne sound insulation measurement (wall)
 - XX → AIR → Airborne sound insulation measurement to above
 - XX → AIR → Airborne sound insulation measurement to below
 - XX → IMPACT → Impact insulation measurement

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- H New door with electronic hold-open device linked to fire alarm system
- W Washing machine
- Hot water cylinder
- SVP locations - refer to drainage layouts (subject to review)

P04	13/09/21	Kitchen layouts revised, proposed SVP locations (from drainage layout) indicated, apartment 10 shower room layout revised. Minor amendments to furniture layout.	OSI	BL
P03	21/07/21	Apartment kitchen layouts and store arrangements amended, bathroom door positions to apartments 11 & 12 amended, Juliette balcony door to apartment 13 amended, apartment 10 kitchen store omitted, small store added.	MH	BL
P02	21/05/21	GA Layouts updated	MH	BL
P01	23/04/21	Initial Issue	MH	BL

Rev	Date	Description	Drawn by	Checked By
S2		For information		

drawing stage **Stage 4**

client **Glasgow City Council as Trustees of Strathclyde Pension Fund**

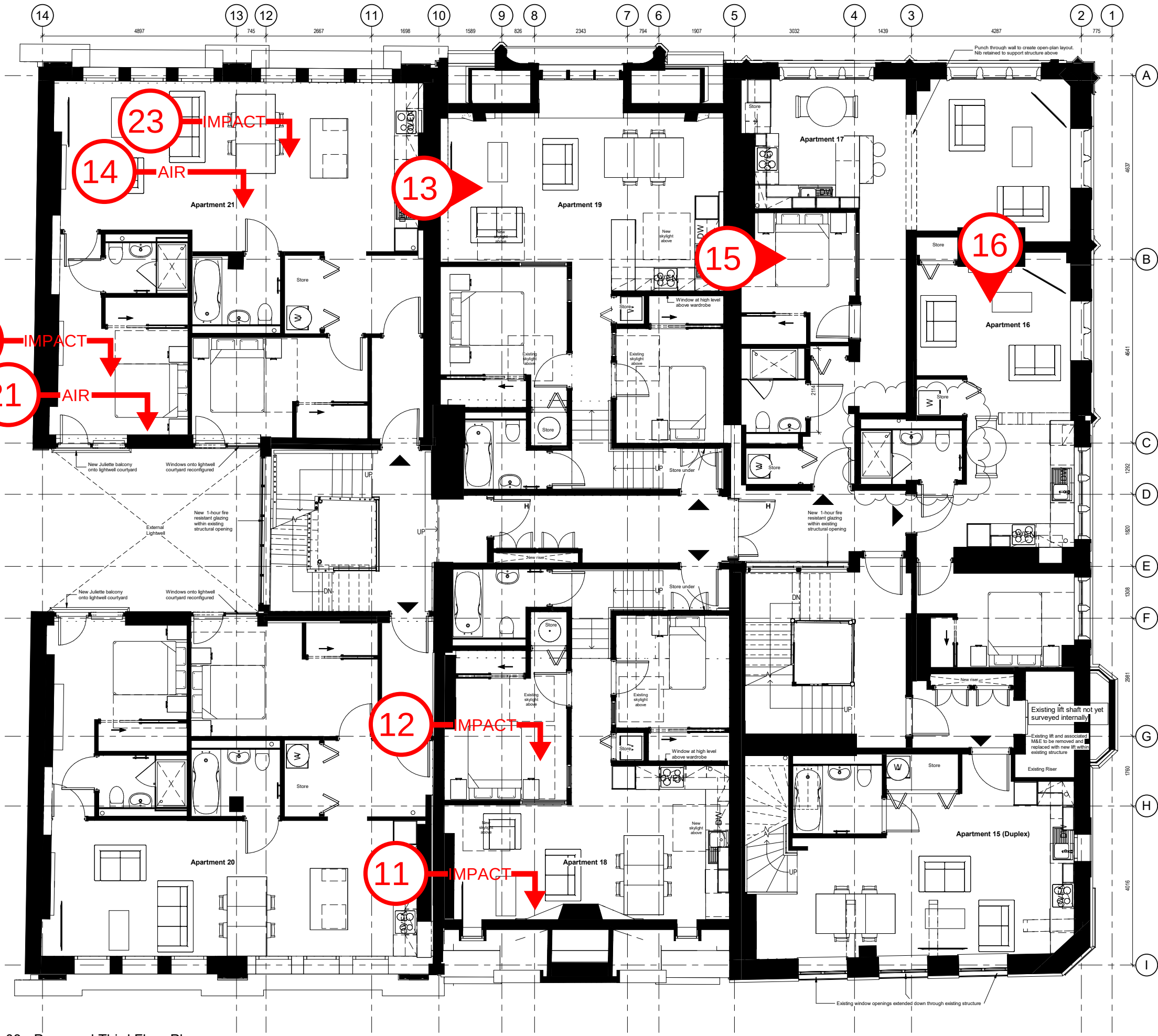
project **Manchester, King Street**

drawing title **Proposed GA Second Floor Plan**

date 23/04/2021 drawn MH

scale @ A1 1 : 50 checked BL

02 - Proposed Second Floor Plan
Scale @ 1 : 50



Proposed acoustic testing locations	
Title	ANC sound insulation test locations
Project	58 - 66 King Street
Project no.	020270
Version	B
Marked-up by	Jack Parrott
Reviewed by	Matthew Robinson
Date	24 June 2024
Key:	
XX Airborne sound insulation measurement (wall)	
XX AIR	
XX AIR	
XX IMPACT	

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- H New door with electronic hold-open device linked to fire alarm system
- W Washing machine
- Hot water cylinder
- SVP locations - refer to drainage layouts (subject to review)

P04	13/08/21	Kitchen layouts revised, proposed SVP locations (from drainage layout) indicated, apartment 17 shower room layout revised. Minor amendments to furniture layout.	OSI	BL
P03	21/07/21	Apartment kitchen layouts and store arrangements amended, bathroom door positions to apartment 18 and 19 amended, Juliette balcony door to apartment 20 amended, small store added to apartment 17.	MH	BL
P02	21/05/21	GA Layouts updated	MH	BL
P01	23/04/21	Initial Issue	MH	BL
Rev	Date	Description	Drawn by	Checked By

Status S2 Purpose of Issue For information
drawing stage Stage 4

client Glasgow City Council as Trustees of Strathclyde Pension Fund

project Manchester, King Street

drawing title Proposed GA Third Floor Plan

date 23/04/2021 drawn MH
scale @ A1 1 : 50 checked BL

03 - Proposed Third Floor Plan
Scale @ 1 : 50

Appendix D

Sound insulation test results and graphs

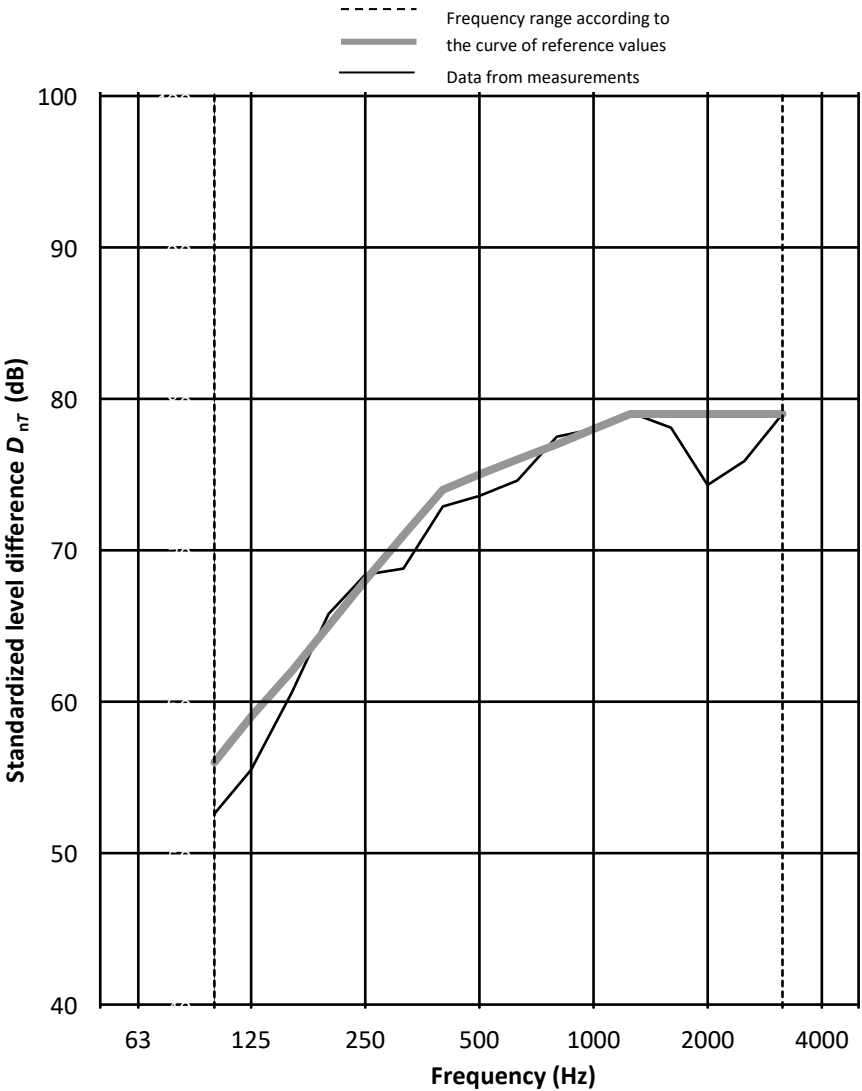
Standardized level difference according to ISO 140-4

Field measurement of airborne sound insulation between rooms

Client name and address	Recom, Unit 31, Salford, M5 3EZ	File ref	20270/DM
		ANC test ref	141/118343
Job name and address	58-66 King Street, Manchester, M2 4LY	Test ref	1
		Test date	5 Jun 24
Test rooms and direction	Apartment 7 (living) to Apartment 5 (living)		
Construction details	Independent twin-frame system, 50 mm GTEC C Studs CS50/Rx at 600 mm centres, 2x15 mm GTEC dB Board to both sides, cavity containing 50 mm glass mineral wool insulation (≥ 16 kg/m ³)		

Area of separating element	11.9	m ²
Source room volume	124	m ³
Receiving room volume	109	m ³

Frequency (Hz)	D_{nT} (1/3 octave, dB)	
50		
63		
80		
100	$\geq$	52.6
125		55.5
160		60.6
200		65.8
250		68.4
315		68.8
400	$\geq$	72.9
500	$\geq$	73.6
630	$\geq$	74.6
800	$\geq$	77.5
1000	$\geq$	78.0
1250	$\geq$	79.1
1600	$\geq$	78.1
2000	$\geq$	74.3
2500	$\geq$	75.9
3150	$\geq$	79.0
4000		
5000		



'B' indicates where receiving room sound pressure levels in that frequency band were within 6-10 dB of the background noise levels and have been corrected

' $\geq$ ' indicates where receiving room sound pressure levels in that frequency band were within 6 dB of the background noise levels and are the limit of measurement and have been corrected

Evaluation based on field measurement results obtained by an engineering method

Rating according to ISO 717-1

$D_{nT,w}$ (C;C_{tr}) = 75 (-2;-6) dB

Reference reverberation time T_0 = 0.5 seconds

Test personnel Jose M. Gonzalez

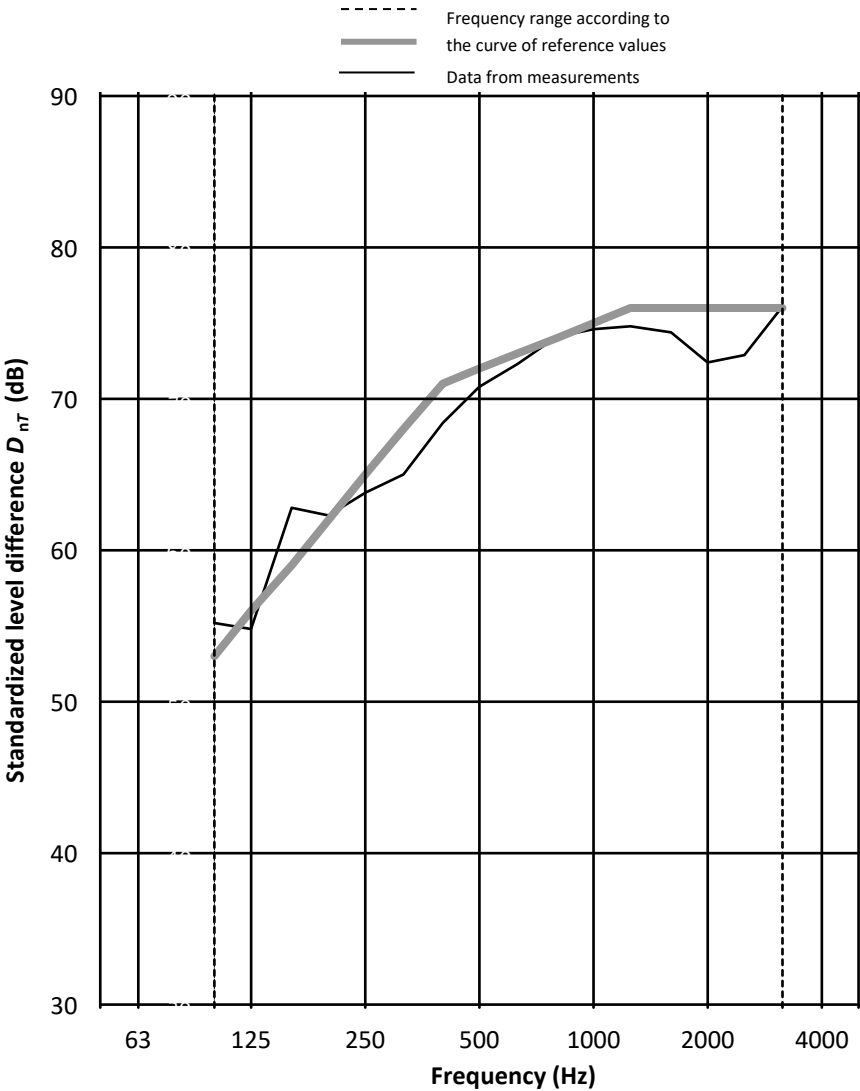
Standardized level difference according to ISO 140-4

Field measurement of airborne sound insulation between rooms

Client name and address	Recom, Unit 31, Salford, M5 3EZ	File ref	20270/DM
		ANC test ref	141/118343
Job name and address	58-66 King Street, Manchester, M2 4LY	Test ref	2
		Test date	5 Jun 24
Test rooms and direction	Apartment 5 (living) to Apartment 3 (bedroom)		
Construction details	Acoustic enhancement to existing masonry walls, 2x12.5 mm GTEC Standard Boards to room side, cavity containing 50 mm glass mineral wool insulation (≥ 16 kg/m ³)		

Area of separating element	9.695	m ²
Source room volume	109	m ³
Receiving room volume	27	m ³

Frequency (Hz)	D_{nT} (1/3 octave, dB)	
50		
63		
80		
100	55.2	
125	54.8	
160	62.8	
200	62.3	
250	63.8	
315	65.0	
400	68.4	
500	70.8	B
630	≥ 72.3	
800	≥ 74.1	
1000	≥ 74.6	
1250	≥ 74.8	
1600	≥ 74.4	
2000	≥ 72.4	
2500	≥ 72.9	
3150	≥ 76.1	
4000		
5000		



'B' indicates where receiving room sound pressure levels in that frequency band were within 6-10 dB of the background noise levels and have been corrected

' $\geq$ ' indicates where receiving room sound pressure levels in that frequency band were within 6 dB of the background noise levels and are the limit of measurement and have been corrected

Evaluation based on field measurement results obtained by an engineering method

Rating according to ISO 717-1

$D_{nT,w}$ (C;C_{tr}) = 72 (-1;-4) dB

Reference reverberation time T_0 = 0.5 seconds

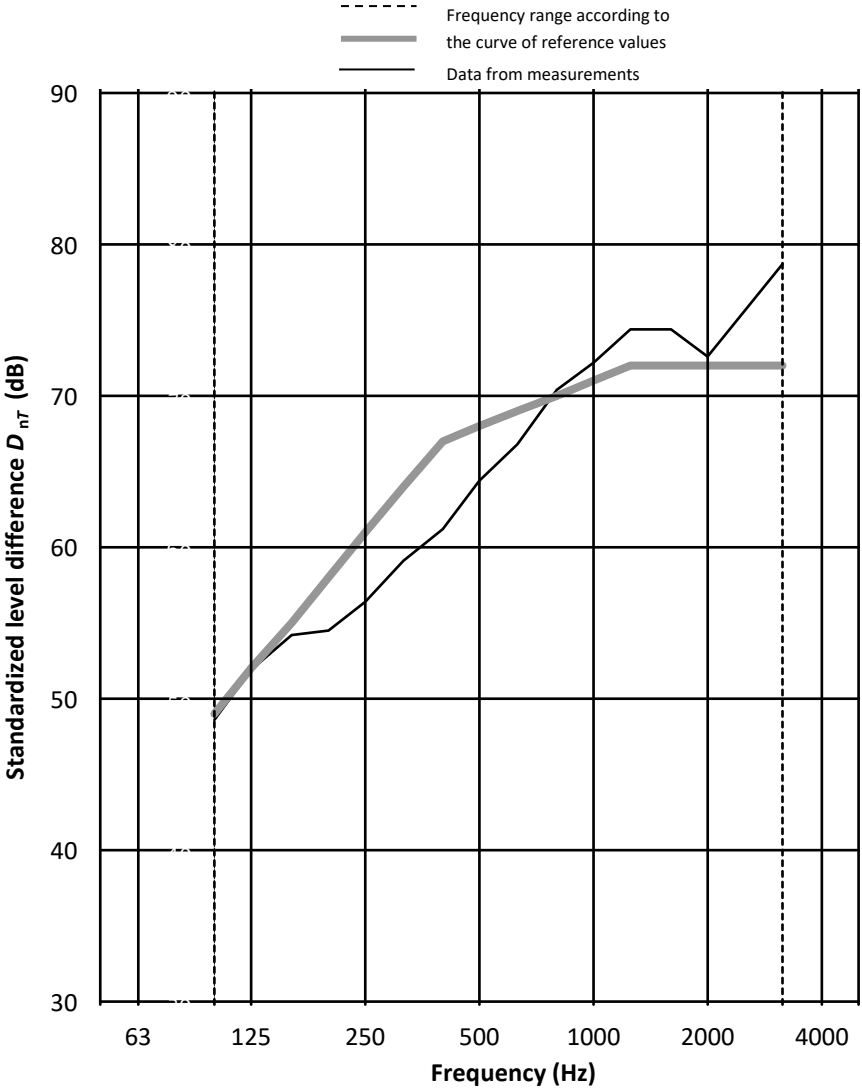
Test personnel Jose M. Gonzalez

Standardized level difference according to ISO 140-4

Field measurement of airborne sound insulation between rooms

Client name and address	Recom, Unit 31, Salford, M5 3EZ	File ref	20270/DM
		ANC test ref	141/118343
Job name and address	58-66 King Street, Manchester, M2 4LY	Test ref	3
		Test date	5 Jun 24
Test rooms and direction	Apartment 5 (living) to Apartment 12 (living)		
Construction details	InstaCoustic C40 floating floor system, existing floorboards, exiting joints (various depths), cavity containing 100 mm mineral fibre insulation (≥ 30 kg/m ³), 2x12.5 mm standard plasterboard suspended on an MF grid supported by resilient isolation hangers, with 50 mm mineral fibre insulation within the cavity		
Area of separating element	31	m ²	
Source room volume	109	m ³	
Receiving room volume	93	m ³	

Frequency (Hz)	D_{nT} (1/3 octave, dB)
50	
63	
80	
100	48.6
125	51.9
160	54.2
200	54.5
250	56.4
315	59.1
400	61.2
500	64.4
630	66.8
800	≥ 70.4
1000	≥ 72.2
1250	≥ 74.4
1600	≥ 74.4
2000	≥ 72.6
2500	≥ 75.6
3150	≥ 78.7
4000	
5000	



'B' indicates where receiving room sound pressure levels in that frequency band were within 6-10 dB of the background noise levels and have been corrected

' $\geq$ ' indicates where receiving room sound pressure levels in that frequency band were within 6 dB of the background noise levels and are the limit of measurement and have been corrected

Evaluation based on field measurement results obtained by an engineering method

Rating according to ISO 717-1

$D_{nT,w}$ (C;C_{tr}) = 68 (-2;-6) dB

Reference reverberation time T_0 = 0.5 seconds

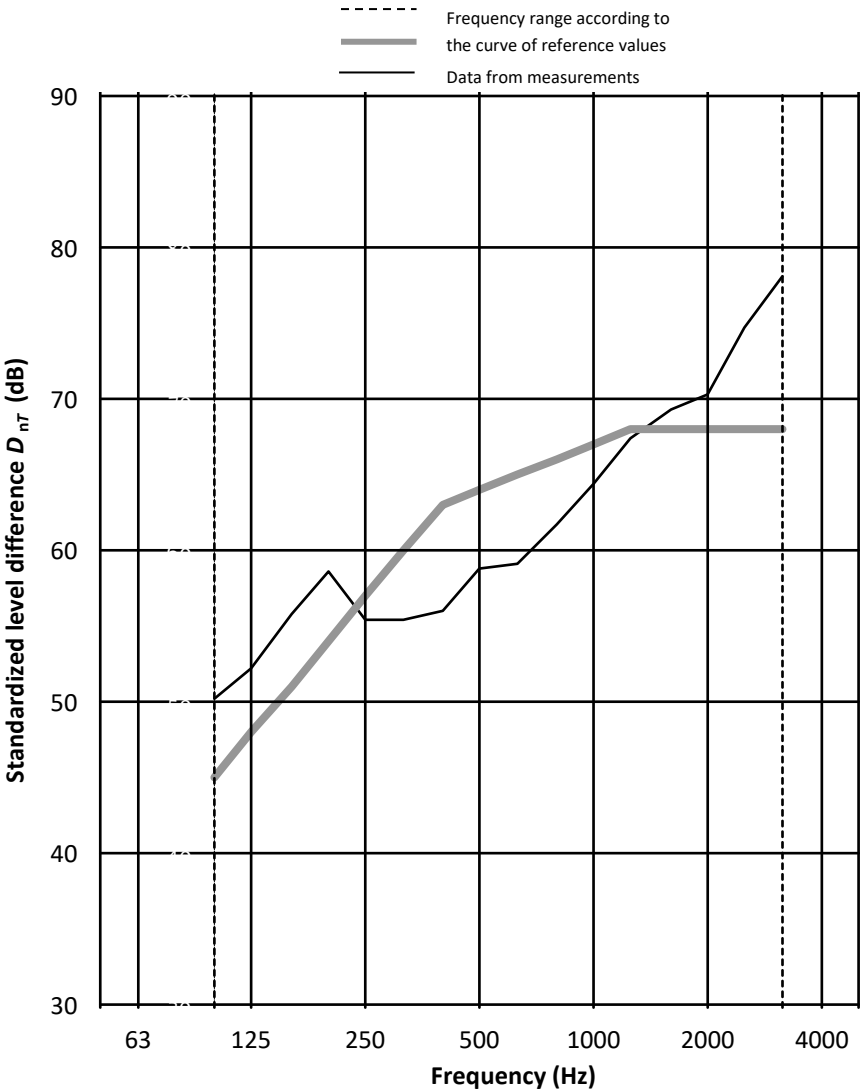
Test personnel Jose M. Gonzalez

Standardized level difference according to ISO 140-4
Field measurement of airborne sound insulation between rooms

Client name and address	Recom, Unit 31, Salford, M5 3EZ	File ref	20270/DM
		ANC test ref	141/118343
Job name and address	58-66 King Street, Manchester, M2 4LY	Test ref	4
		Test date	5 Jun 24
Test rooms and direction	Apartment 12 (bedroom) to Apartment 5 (bedroom)		
Construction details	InstaCoustic C40 floating floor system, existing floorboards, exiting joints (various depths), cavity containing 100 mm mineral fibre insulation (≥ 30 kg/m ³), 2x12.5 mm standard plasterboard suspended on an MF grid supported by resilient isolation hangers, with 50 mm mineral fibre insulation within the cavity		

Area of separating element	11	m ²
Source room volume	43	m ³
Receiving room volume	37	m ³

Frequency (Hz)	D_{nT} (1/3 octave, dB)
50	
63	
80	
100	50.2
125	52.2
160	55.8
200	58.6
250	55.4
315	55.4
400	56.0
500	58.8
630	59.1
800	61.7
1000	64.4 B
1250	67.4 B
1600	$\geq$ 69.3
2000	$\geq$ 70.3
2500	$\geq$ 74.7
3150	$\geq$ 78.1
4000	
5000	



'B' indicates where receiving room sound pressure levels in that frequency band were within 6-10 dB of the background noise levels and have been corrected

' $\geq$ ' indicates where receiving room sound pressure levels in that frequency band were within 6 dB of the background noise levels and are the limit of measurement and have been corrected

Evaluation based on field measurement results obtained by an engineering method

Rating according to ISO 717-1

$D_{nT,w}$ (C;C_{tr}) = 64 (-1;-4) dB

Reference reverberation time T_0 = 0.5 seconds

Test personnel Jose M. Gonzalez

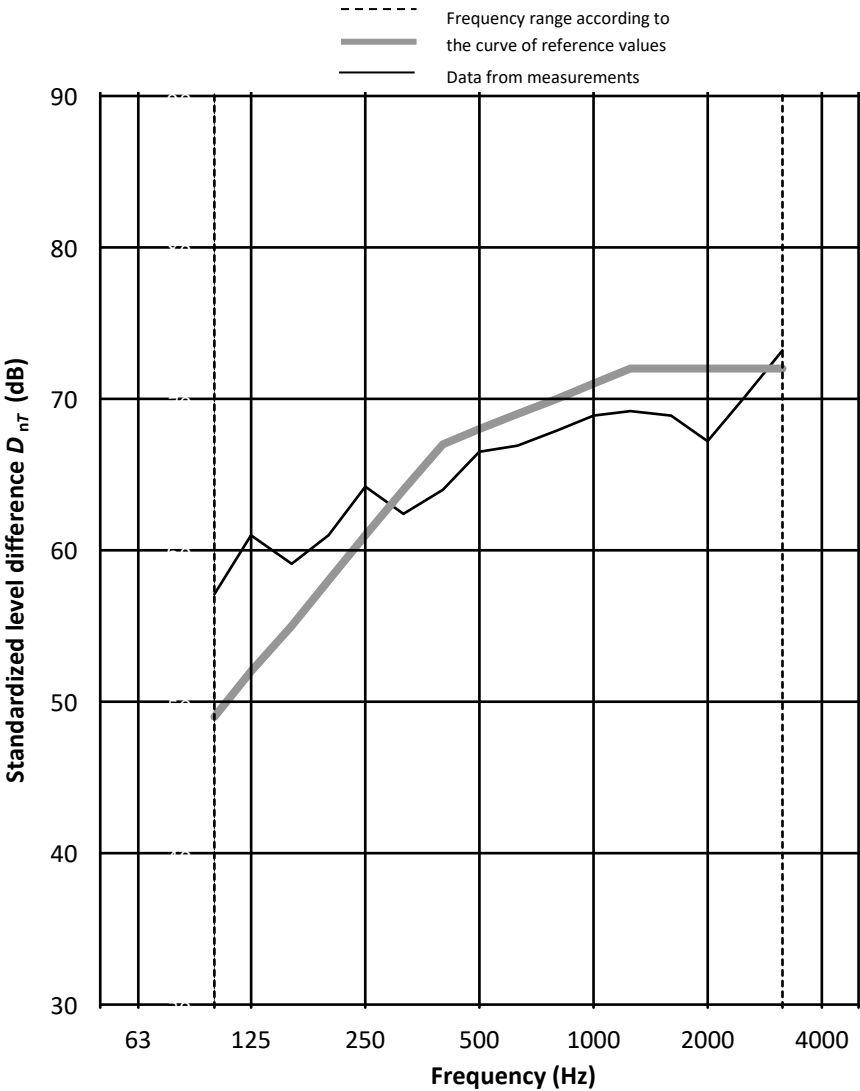
Standardized level difference according to ISO 140-4

Field measurement of airborne sound insulation between rooms

Client name and address	Recom, Unit 31, Salford, M5 3EZ	File ref	20270/DM
		ANC test ref	141/118343
Job name and address	58-66 King Street, Manchester, M2 4LY	Test ref	7
		Test date	5 Jun 24
Test rooms and direction	Apartment 13 (living) to Apartment 11 (living)		
Construction details	Acoustic enhancement to existing masonry walls, 2x12.5 mm GTEC Standard Boards to room side, cavity containing 50 mm glass mineral wool insulation (≥ 16 kg/m ³)		

Area of separating element	8	m ²
Source room volume	100	m ³
Receiving room volume	94	m ³

Frequency (Hz)	D_{nT} (1/3 octave, dB)
50	
63	
80	
100	$\geq$ 57.1
125	61.0
160	59.1
200	61.0
250	64.2
315	62.4
400	64.0
500	66.5
630	66.9
800	67.9
1000	68.9
1250	69.2
1600	68.9
2000	67.2
2500	70.1
3150	73.2
4000	
5000	



'B' indicates where receiving room sound pressure levels in that frequency band were within 6-10 dB of the background noise levels and have been corrected

' $\geq$ ' indicates where receiving room sound pressure levels in that frequency band were within 6 dB of the background noise levels and are the limit of measurement and have been corrected

Evaluation based on field measurement results obtained by an engineering method

Rating according to ISO 717-1

$D_{nT,w}$ (C;C_{tr}) = 68 (0;-2) dB

Reference reverberation time T_0 = 0.5 seconds

Test personnel Jose M. Gonzalez

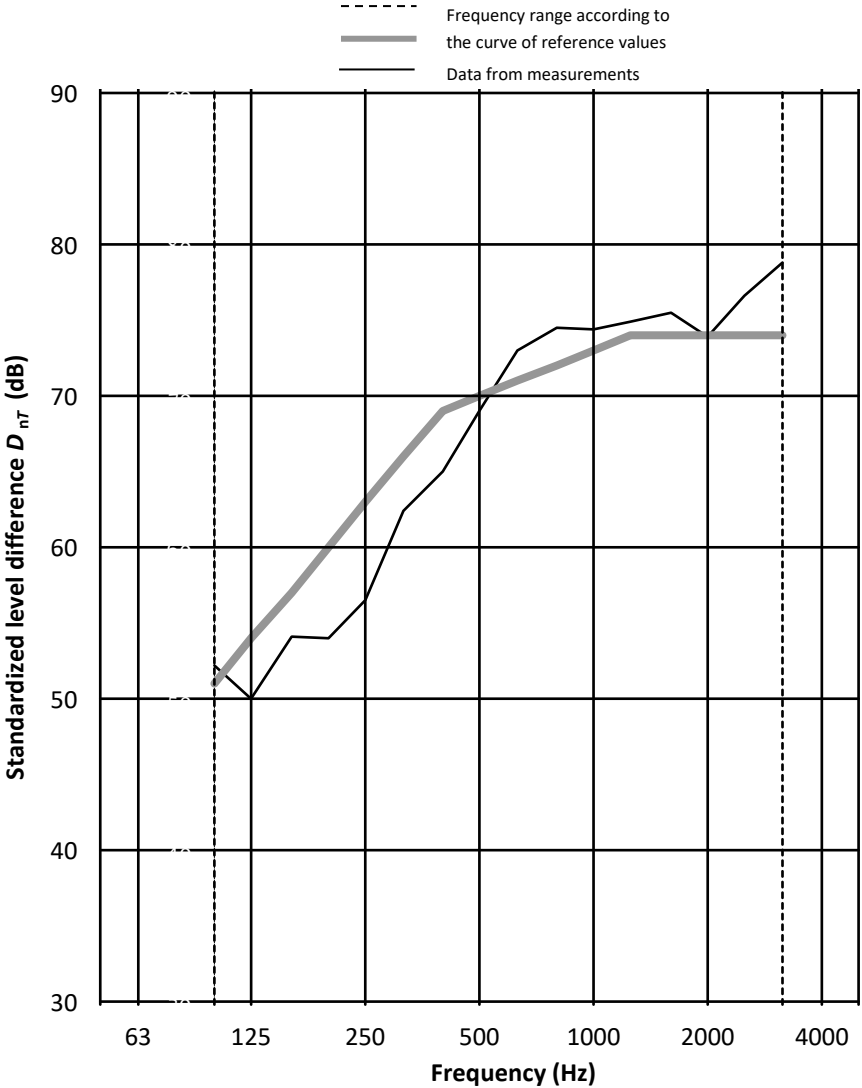
Standardized level difference according to ISO 140-4

Field measurement of airborne sound insulation between rooms

Client name and address	Recom, Unit 31, Salford, M5 3EZ	File ref	20270/DM
		ANC test ref	141/118343
Job name and address	58-66 King Street, Manchester, M2 4LY	Test ref	8
		Test date	5 Jun 24
Test rooms and direction	Apartment 11 (living) to Apartment 8 (bedroom)		
Construction details	Existing masonry walls, 12.5 mm GTEC dB Board nominal thickness 38 mm (25 mm cavity)		

Area of separating element	9.248	m ²
Source room volume	94	m ³
Receiving room volume	26	m ³

Frequency (Hz)	D_{nT} (1/3 octave, dB)
50	
63	
80	
100	52.2
125	50.0
160	54.1
200	54.0
250	56.5
315	62.4
400	65.0
500	69.0
630	73.0
800	74.5
1000	≥ 74.4
1250	≥ 74.9
1600	≥ 75.5
2000	≥ 73.9
2500	≥ 76.6
3150	≥ 78.8
4000	
5000	



'B' indicates where receiving room sound pressure levels in that frequency band were within 6-10 dB of the background noise levels and have been corrected

'≥' indicates where receiving room sound pressure levels in that frequency band were within 6 dB of the background noise levels and are the limit of measurement and have been corrected

Evaluation based on field measurement results obtained by an engineering method

Rating according to ISO 717-1

$D_{nT,w}$ (C; C_{tr}) = 70 (-2; -7) dB

Reference reverberation time T_0 = 0.5 seconds

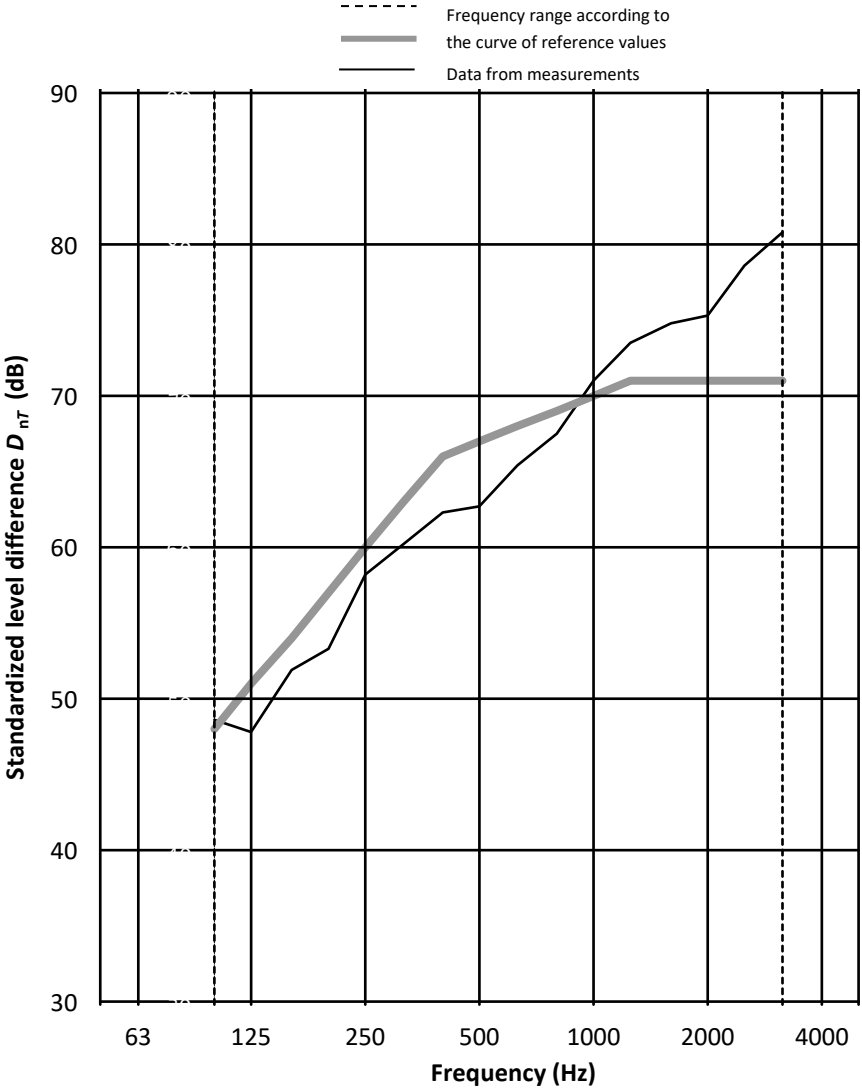
Test personnel Jose M. Gonzalez

Standardized level difference according to ISO 140-4

Field measurement of airborne sound insulation between rooms

Client name and address	Recom, Unit 31, Salford, M5 3EZ	File ref	20270/DM
		ANC test ref	141/118343
Job name and address	58-66 King Street, Manchester, M2 4LY	Test ref	9
		Test date	5 Jun 24
Test rooms and direction	Apartment 11 (living) to Apartment 18 (living)		
Construction details	InstaCoustic C40 floating floor system, existing floorboards, exiting joints (various depths), cavity containing 100 mm mineral fibre insulation (≥ 30 kg/m ³), 2x12.5 mm standard plasterboard suspended on an MF grid supported by resilient isolation hangers, with 50 mm mineral fibre insulation within the cavity		
Area of separating element	29	m ²	
Source room volume	94	m ³	
Receiving room volume	73	m ³	

Frequency	D_{nT}	
(Hz)	(1/3 octave, dB)	
50		
63		
80		
100	48.6	
125	47.8	
160	51.9	
200	53.3	
250	58.2	
315	60.2	
400	62.3	
500	62.7	B
630	65.4	B
800	67.5	B
1000	≥ 71.0	
1250	≥ 73.5	
1600	≥ 74.8	
2000	≥ 75.3	
2500	≥ 78.6	
3150	≥ 80.8	
4000		
5000		



'B' indicates where receiving room sound pressure levels in that frequency band were within 6-10 dB of the background noise levels and have been corrected

' $\geq$ ' indicates where receiving room sound pressure levels in that frequency band were within 6 dB of the background noise levels and are the limit of measurement and have been corrected

Evaluation based on field measurement results obtained by an engineering method

Rating according to ISO 717-1

$D_{nT,w}$ (C;C_{tr}) = 67 (-1;-6) dB

Reference reverberation time T_0 = 0.5 seconds

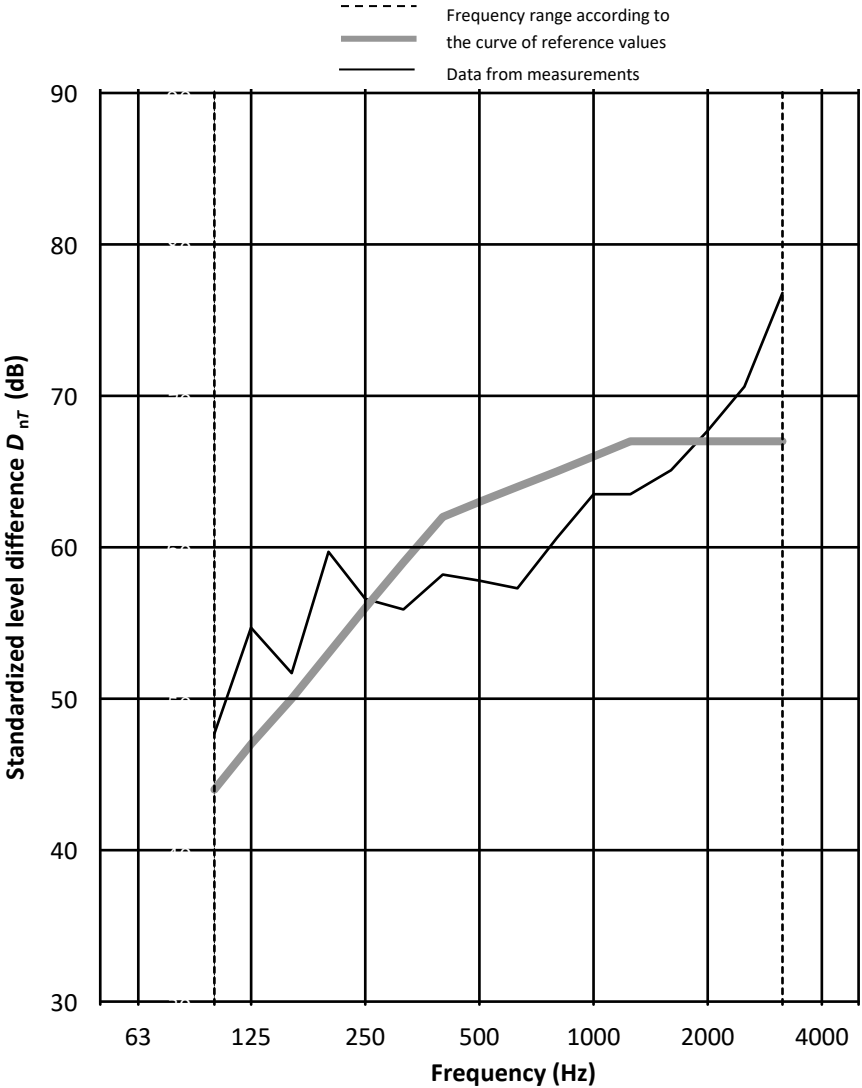
Test personnel Jose M. Gonzalez

Standardized level difference according to ISO 140-4

Field measurement of airborne sound insulation between rooms

Client name and address	Recom, Unit 31, Salford, M5 3EZ	File ref	20270/DM
		ANC test ref	141/118343
Job name and address	58-66 King Street, Manchester, M2 4LY	Test ref	10
		Test date	5 Jun 24
Test rooms and direction	Apartment 11 (bedroom) to Apartment 18 (bedroom)		
Construction details	InstaCoustic C40 floating floor system, existing floorboards, exiting joints (various depths), cavity containing 100 mm mineral fibre insulation (≥ 30 kg/m ³), 2x12.5 mm standard plasterboard suspended on an MF grid supported by resilient isolation hangers, with 50 mm mineral fibre insulation within the cavity		
Area of separating element	12	m ²	
Source room volume	42	m ³	
Receiving room volume	35	m ³	

Frequency (Hz)	D_{nT} (1/3 octave, dB)
50	
63	
80	
100	47.7
125	54.7
160	51.7
200	59.7
250	56.6
315	55.9
400	58.2
500	57.8
630	57.3
800	60.6
1000	63.5
1250	63.5
1600	65.1
2000	67.7
2500	70.6
3150	76.8
4000	
5000	



'B' indicates where receiving room sound pressure levels in that frequency band were within 6-10 dB of the background noise levels and have been corrected

Evaluation based on field measurement results obtained by an engineering method

Rating according to ISO 717-1

$D_{nT,w}$ (C;C_{tr}) = 63 (-1;-4) dB

Reference reverberation time T_0 = 0.5 seconds

Test personnel Jose M. Gonzalez

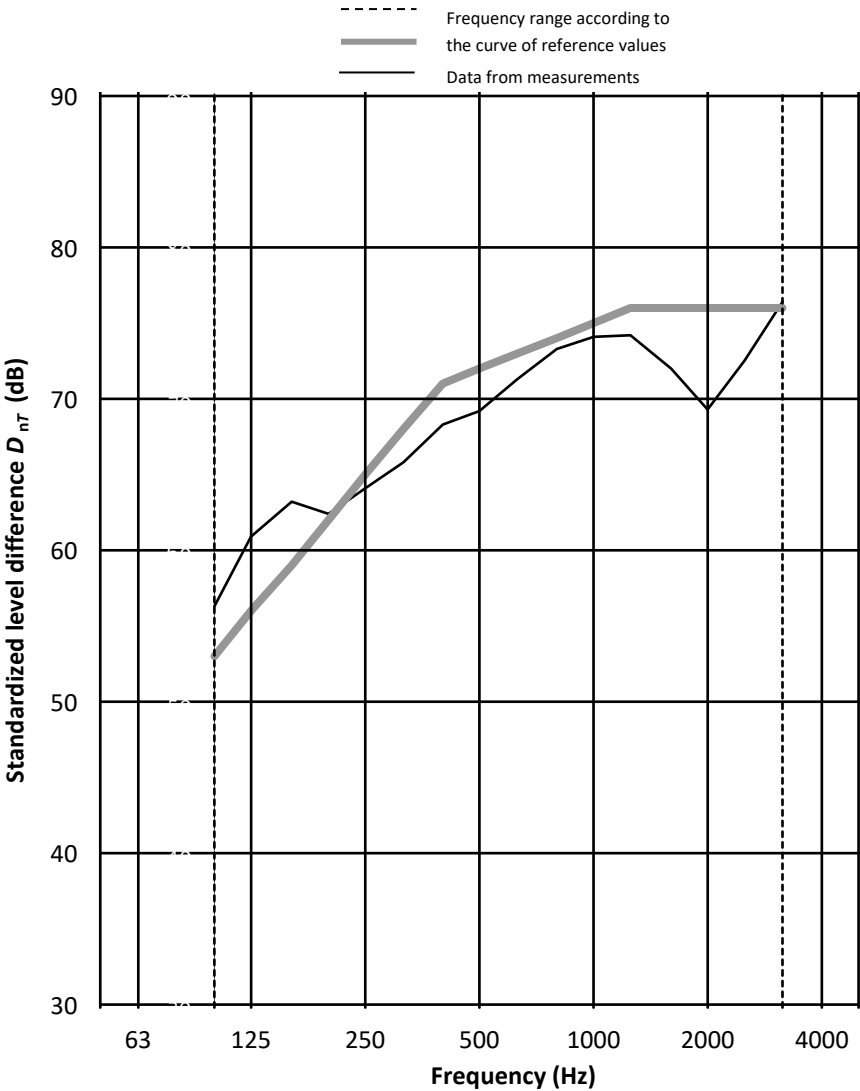
Standardized level difference according to ISO 140-4

Field measurement of airborne sound insulation between rooms

Client name and address	Recom, Unit 31, Salford, M5 3EZ	File ref	20270/DM
		ANC test ref	141/118343
Job name and address	58-66 King Street, Manchester, M2 4LY	Test ref	13
		Test date	5 Jun 24
Test rooms and direction	Apartment 21 (living) to Apartment 19 (living)		
Construction details	Acoustic enhancement to existing masonry walls, 2x12.5 mm GTEC Standard Boards to room side, cavity containing 50 mm glass mineral wool insulation (≥ 16 kg/m ³)		

Area of separating element	12.69	m ²
Source room volume	112	m ³
Receiving room volume	92	m ³

Frequency (Hz)	D_{nT} (1/3 octave, dB)	
50		
63		
80		
100	$\geq$	56.3
125	$\geq$	60.9
160		63.2
		B
200		62.4
		B
250		64.1
315		65.8
		B
400	$\geq$	68.3
500	$\geq$	69.2
630	$\geq$	71.3
800	$\geq$	73.3
1000	$\geq$	74.1
1250	$\geq$	74.2
1600	$\geq$	72.0
2000	$\geq$	69.3
2500	$\geq$	72.5
3150	$\geq$	76.4
4000		
5000		



'B' indicates where receiving room sound pressure levels in that frequency band were within 6-10 dB of the background noise levels and have been corrected

' $\geq$ ' indicates where receiving room sound pressure levels in that frequency band were within 6 dB of the background noise levels and are the limit of measurement and have been corrected

Evaluation based on field measurement results obtained by an engineering method

Rating according to ISO 717-1

$D_{nT,w}$ (C;C_{tr}) = 72 (-1;-3) dB

Reference reverberation time T_0 = 0.5 seconds

Test personnel Jose M. Gonzalez

Standardized level difference according to ISO 140-4

Field measurement of airborne sound insulation between rooms

Client name and address	Recom, Unit 31, Salford, M5 3EZ	File ref	20270/DM
		ANC test ref	141/118343
Job name and address	58-66 King Street, Manchester, M2 4LY	Test ref	14
		Test date	5 Jun 24
Test rooms and direction	Apartment 21 (living) to Apartment 14 (living)		
Construction details	InstaCoustic C40 floating floor system, existing floorboards, exiting joints (various depths), cavity containing 100 mm mineral fibre insulation (≥ 30 kg/m3), 2x12.5 mm standard plasterboard suspended on an MF grid supported by resilient isolation hangers, with 50 mm mineral fibre insulation within the cavity		
Area of separating element	37	m ²	
Source room volume	112	m ³	
Receiving room volume	112	m ³	

Frequency	D_{nT}
(Hz)	(1/3 octave, dB)
50	
63	
80	
100	45.9
125	54.7
160	58.5
200	60.2
250	64.1
315	68.9
400	71.5
500	≥ 73.1
630	≥ 74.6
800	77.1
1000	74.6
1250	76.6
1600	≥ 73.7
2000	≥ 74.0
2500	66.5
3150	53.4
4000	
5000	

----- Frequency range according to the curve of reference values

— Data from measurements

'B' indicates where receiving room sound pressure levels in that frequency band were within 6-10 dB of the background noise levels and have been corrected

'≥' indicates where receiving room sound pressure levels in that frequency band were within 6 dB of the background noise levels and are the limit of measurement and have been corrected

Evaluation based on field measurement results obtained by an engineering method

Rating according to ISO 717-1	
$D_{nT,w}$	$(C;C_{tr}) = 69 (-7;-6)$ dB

Reference reverberation time $T_0 = 0.5$ seconds

Test personnel

Jose M. Gonzalez

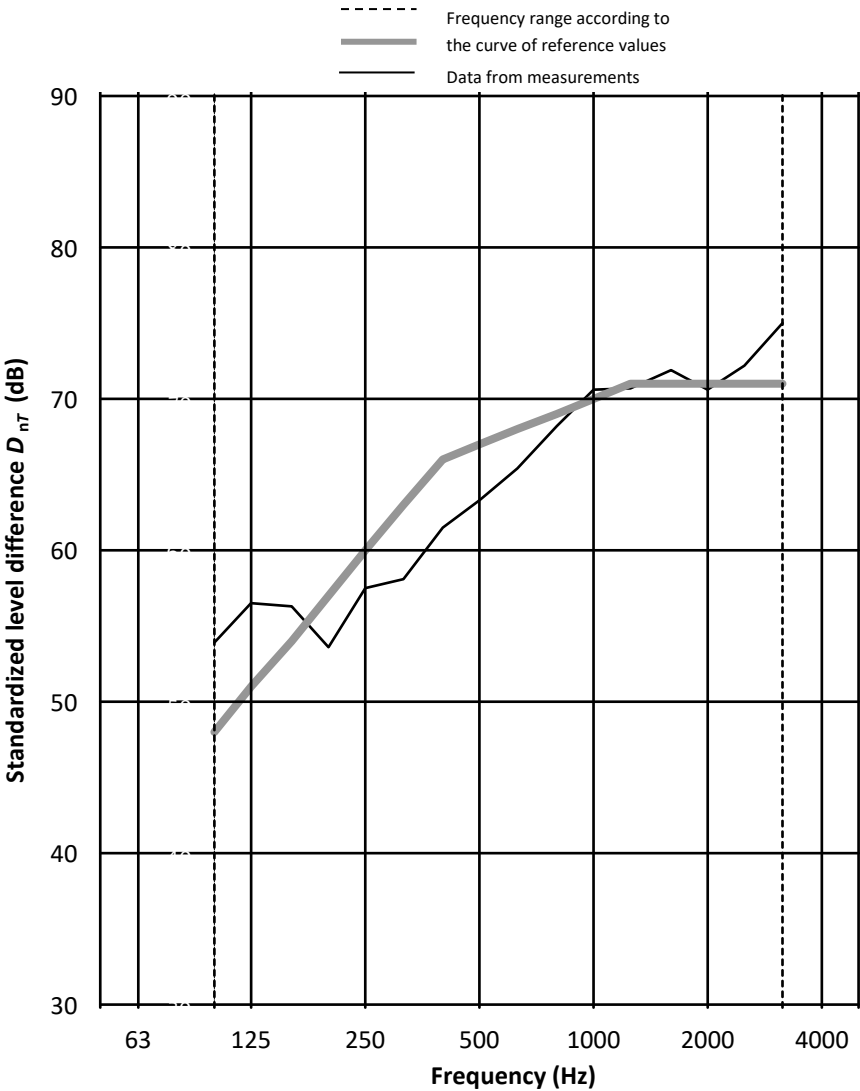
Standardized level difference according to ISO 140-4

Field measurement of airborne sound insulation between rooms

Client name and address	Recom, Unit 31, Salford, M5 3EZ	File ref	20270/DM
		ANC test ref	141/118343
Job name and address	58-66 King Street, Manchester, M2 4LY	Test ref	15
		Test date	5 Jun 24
Test rooms and direction	Apartment 19 (living) to Apartment 17 (bedroom)		
Construction details	Acoustic enhancement to existing masonry walls, 2x12.5 mm GTEC Standard Boards to room side, cavity containing 50 mm glass mineral wool insulation (≥ 16 kg/m ³)		

Area of separating element	7.53	m ²
Source room volume	92	m ³
Receiving room volume	26	m ³

Frequency (Hz)	D_{nT} (1/3 octave, dB)
50	
63	
80	
100	53.9 B
125	56.5
160	56.3
200	53.6
250	57.5
315	58.1
400	61.5
500	63.3
630	65.4
800	≥ 68.2
1000	≥ 70.6
1250	70.7 B
1600	≥ 71.9
2000	≥ 70.6
2500	≥ 72.2
3150	≥ 75.0
4000	
5000	



'B' indicates where receiving room sound pressure levels in that frequency band were within 6-10 dB of the background noise levels and have been corrected

' $\geq$ ' indicates where receiving room sound pressure levels in that frequency band were within 6 dB of the background noise levels and are the limit of measurement and have been corrected

Evaluation based on field measurement results obtained by an engineering method

Rating according to ISO 717-1

$D_{nT,w}$ (C;C_{tr}) = 67 (-1;-4) dB

Reference reverberation time T_0 = 0.5 seconds

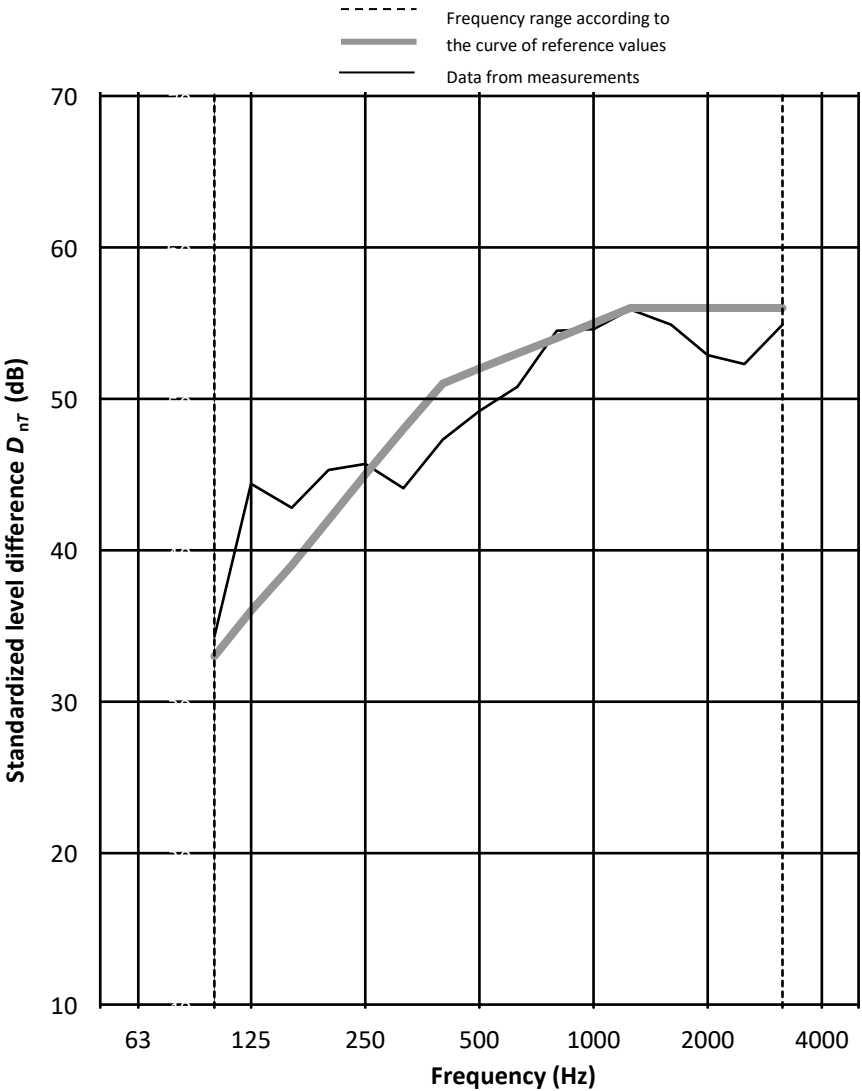
Test personnel Jose M. Gonzalez

Standardized level difference according to ISO 140-4

Field measurement of airborne sound insulation between rooms

Client name and address	Recom, Unit 31, Salford, M5 3EZ	File ref	20270/DM
		ANC test ref	141/118343
Job name and address	58-66 King Street, Manchester, M2 4LY	Test ref	16
		Test date	5 Jun 24
Test rooms and direction	Apartment 17 (living) to Apartment 16 (living)		
Construction details	Independent twin-frame system, 50 mm GTEC C Studs CS50/Rx at 600 mm centres, 2x15 mm GTEC dB Board to both sides, cavity containing 50 mm glass mineral wool (≥ 16 kg/m ³) insulation, 80 mm between frames, openings to be infilled with 2x100 mm concrete blockwork, (≥ 1880 kg/m ³), to match surrounding wall.		
Area of separating element	11.4	m ²	
Source room volume	87	m ³	
Receiving room volume	74	m ³	

Frequency (Hz)	D_{nT} (1/3 octave, dB)
50	
63	
80	
100	34.3
125	44.4
160	42.8
200	45.3
250	45.7
315	44.1
400	47.3
500	49.2
630	50.8
800	54.5
1000	54.6
1250	55.9
1600	54.9
2000	52.9
2500	52.3
3150	54.9
4000	
5000	



Evaluation based on field measurement results obtained by an engineering method

Rating according to ISO 717-1

$D_{nT,w}$ (C;C_{tr}) = 52 (0;-3) dB

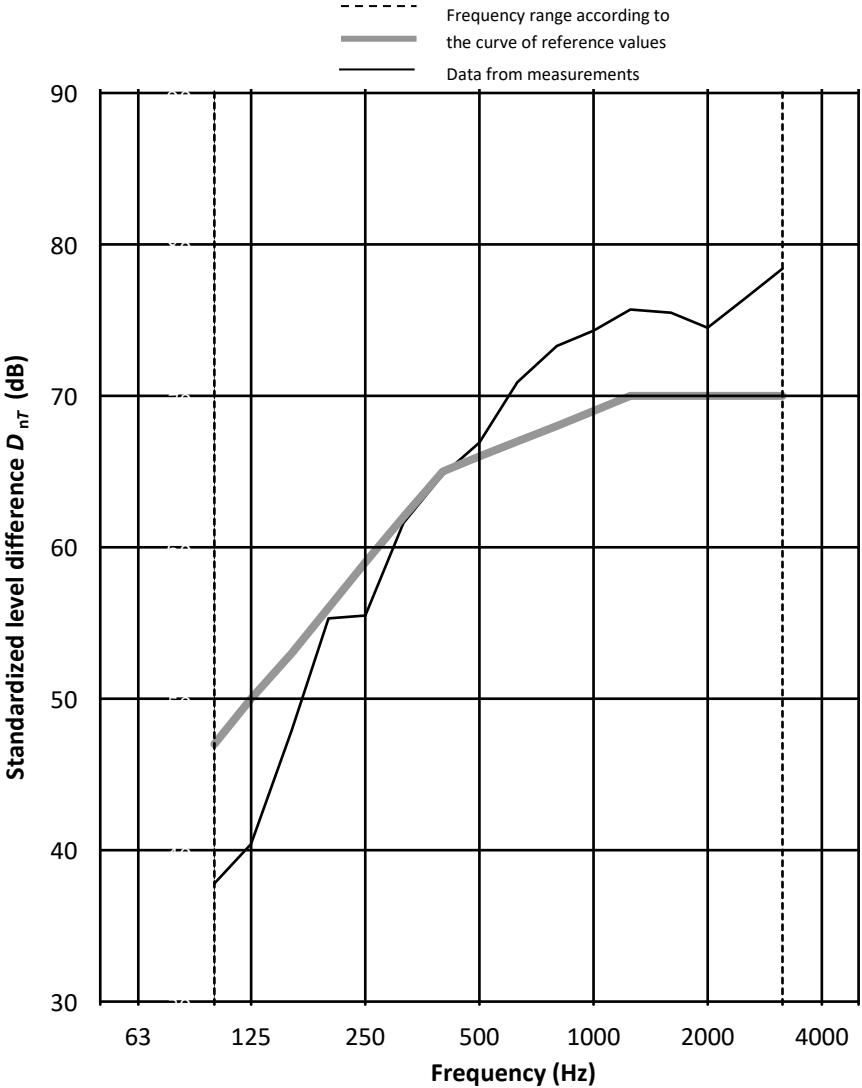
Reference reverberation time T_0 = 0.5 seconds

Standardized level difference according to ISO 140-4

Field measurement of airborne sound insulation between rooms

Client name and address	Recom, Unit 31, Salford, M5 3EZ	File ref	20270/DM
		ANC test ref	141/118343
Job name and address	58-66 King Street, Manchester, M2 4LY	Test ref	17
		Test date	5 Jun 24
Test rooms and direction	Apartment 22 (living) to Apartment 17 (living)		
Construction details	InstaCoustic C40 floating floor system, existing floorboards, exiting joints (various depths), cavity containing 100 mm mineral fibre insulation (≥ 30 kg/m ³), 2x12.5 mm standard plasterboard suspended on an MF grid supported by resilient isolation hangers, with 50 mm mineral fibre insulation within the cavity		
Area of separating element	29	m ²	
Source room volume	91	m ³	
Receiving room volume	87	m ³	

Frequency (Hz)	D_{nT} (1/3 octave, dB)	
50		
63		
80		
100	37.8	
125	40.4	
160	47.9	
200	55.3	
250	55.5	
315	61.6	
400	64.8	B
500	≥ 66.9	
630	≥ 70.9	
800	≥ 73.3	
1000	≥ 74.3	
1250	≥ 75.7	
1600	≥ 75.5	
2000	≥ 74.5	
2500	≥ 76.4	
3150	≥ 78.4	
4000		
5000		



'B' indicates where receiving room sound pressure levels in that frequency band were within 6-10 dB of the background noise levels and have been corrected

' $\geq$ ' indicates where receiving room sound pressure levels in that frequency band were within 6 dB of the background noise levels and are the limit of measurement and have been corrected

Evaluation based on field measurement results obtained by an engineering method

Rating according to ISO 717-1

$D_{nT,w}$ (C;C_{tr}) = 66 (-4;-11) dB

Reference reverberation time T_0 = 0.5 seconds

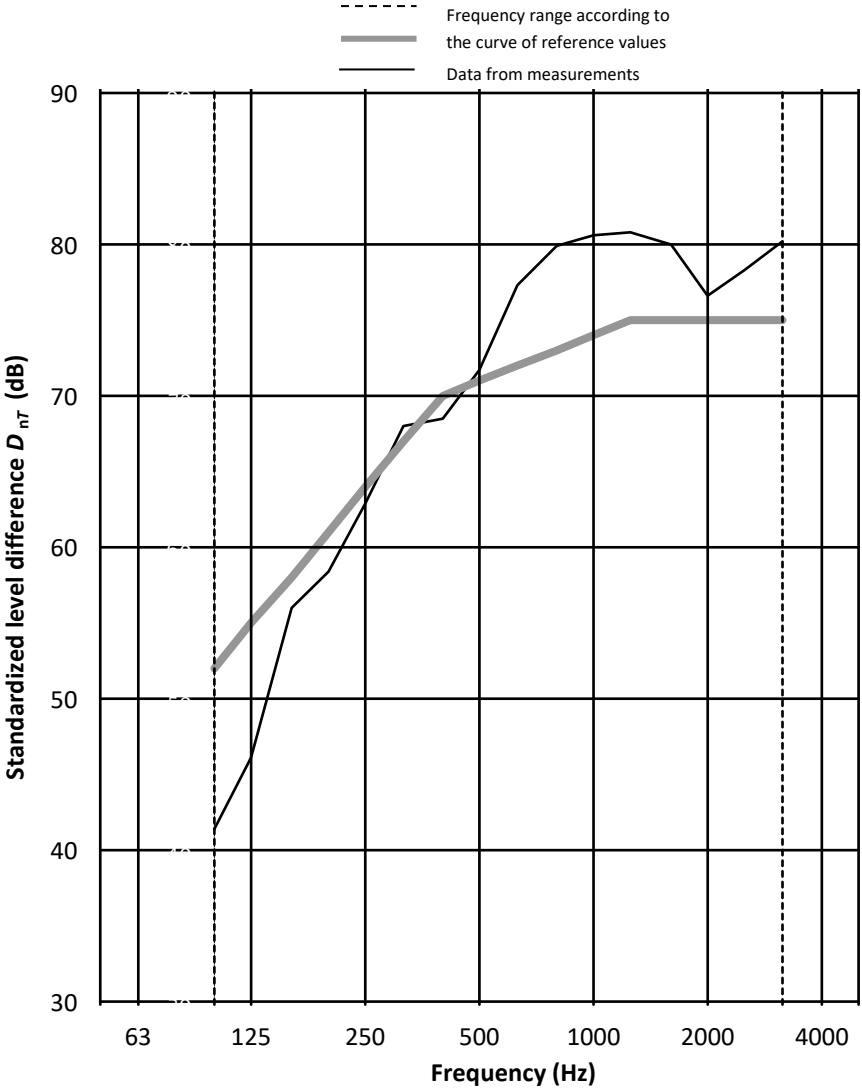
Test personnel Jose M. Gonzalez

Standardized level difference according to ISO 140-4

Field measurement of airborne sound insulation between rooms

Client name and address	Recom, Unit 31, Salford, M5 3EZ	File ref	20270/DM
		ANC test ref	141/118343
Job name and address	58-66 King Street, Manchester, M2 4LY	Test ref	18
		Test date	5 Jun 24
Test rooms and direction	Apartment 22 (living) to Apartment 17 (bedroom)		
Construction details	InstaCoustic C40 floating floor system, existing floorboards, exiting joints (various depths), cavity containing 100 mm mineral fibre insulation (≥ 30 kg/m ³), 2x12.5 mm standard plasterboard suspended on an MF grid supported by resilient isolation hangers, with 50 mm mineral fibre insulation within the cavity		
Area of separating element	9	m ²	
Source room volume	91	m ³	
Receiving room volume	26	m ³	

Frequency (Hz)	D_{nT} (1/3 octave, dB)	
50		
63		
80		
100	41.4	
125	46.1	
160	56.0	
200	58.4	
250	62.9	
315	68.0	
400	68.5	
500	71.7	B
630	≥ 77.3	
800	≥ 79.9	
1000	≥ 80.6	
1250	≥ 80.8	
1600	≥ 80.0	
2000	≥ 76.6	
2500	≥ 78.3	
3150	≥ 80.2	
4000		
5000		



'B' indicates where receiving room sound pressure levels in that frequency band were within 6-10 dB of the background noise levels and have been corrected

' $\geq$ ' indicates where receiving room sound pressure levels in that frequency band were within 6 dB of the background noise levels and are the limit of measurement and have been corrected

Evaluation based on field measurement results obtained by an engineering method

Rating according to ISO 717-1

$D_{nT,w}$ (C;C_{tr}) = 71 (-4;-11) dB

Reference reverberation time T_0 = 0.5 seconds

Test personnel Jose M. Gonzalez

Standardized level difference according to ISO 140-4

Field measurement of airborne sound insulation between rooms

Client name and address	Recom, Unit 31, Salford, M5 3EZ	File ref	20270/DM
		ANC test ref	141/118343
Job name and address	58-66 King Street, Manchester, M2 4LY	Test ref	21
		Test date	5 Jun 24
Test rooms and direction	Apartment 21 (bedroom) to Apartment 14 (bedroom)		
Construction details	InstaCoustic C40 floating floor system, existing floorboards, exiting joints (various depths), cavity containing 100 mm mineral fibre insulation (≥ 30 kg/m3), 2x12.5 mm standard plasterboard suspended on an MF grid supported by resilient isolation hangers, with 50 mm mineral fibre insulation within the cavity		
Area of separating element	13	m ²	
Source room volume	43	m ³	
Receiving room volume	43	m ³	

Frequency	D_{nT}
(Hz)	(1/3 octave, dB)
50	
63	
80	
100	43.8
125	54.3
160	61.2
200	61.9
250	62.0
315	63.2
400	64.4
500	66.9
630	66.4
800	67.6
1000	68.0
1250	67.6
1600	68.7
2000	63.8
2500	48.6
3150	35.5
4000	
5000	

----- Frequency range according to the curve of reference values

— Data from measurements

Evaluation based on field measurement results obtained by an engineering method

Rating according to ISO 717-1

$D_{nT,w} \quad (C;C_{tr}) = \quad 54 \text{ } (-10;-4) \text{ dB}$

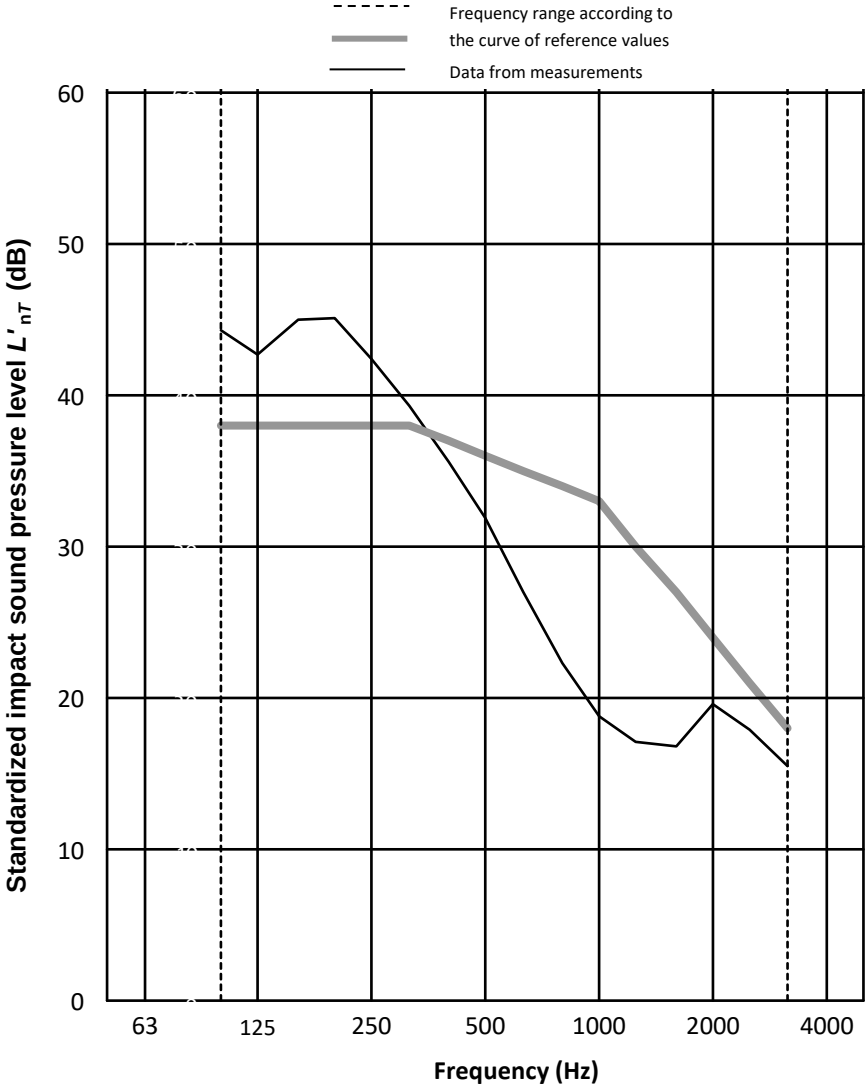
Reference reverberation time $T_0 = \quad 0.5 \text{ seconds}$

Test personnel Jose M. Gonzalez

Standardized impact sound pressure level according to ISO 140-7
Field measurement of impact sound insulation of floors

Client name and address	Recom, Unit 31, Salford, M5 3EZ	File ref	20270/DM
		ANC test ref	141/118343
Job name and address	58-66 King Street, Manchester, M2 4LY	Test ref	5
		Test date	5 Jun 24
Test rooms and direction	Apartment 12 (living) to Apartment 5 (living)		
Construction details	InstaCoustic C40 floating floor system, existing floorboards, exiting joints (various depths), cavity containing 100 mm mineral fibre insulation (≥ 30 kg/m ³), 2x12.5 mm standard plasterboard suspended on an MF grid supported by resilient isolation hangers, with 50 mm mineral fibre insulation within the cavity		
Area of separating element:	31	m ²	
Source room volume:	93	m ³	
Receiving room volume:	109	m ³	

Frequency (Hz)	L'_{nT} (1/3 octave, dB)
50	
63	
80	
100	44.3 B
125	42.7 B
160	45.0
200	45.1
250	42.4
315	39.3
400	35.6 B
500	31.9 B
630	≤ 27.0
800	≤ 22.3
1000	≤ 18.8
1250	≤ 17.1
1600	≤ 16.8
2000	≤ 19.6
2500	≤ 17.9
3150	≤ 15.5
4000	
5000	



'B' indicates where receiving room sound pressure levels in that frequency band were within 6-10 dB of the background noise levels and have been corrected

'≤' indicates where receiving room sound pressure levels in that frequency band were within 6 dB of the background noise levels and are the limit of measurement and have been corrected

Evaluation based on field measurement results obtained by an engineering method

Rating according to ISO 717-2

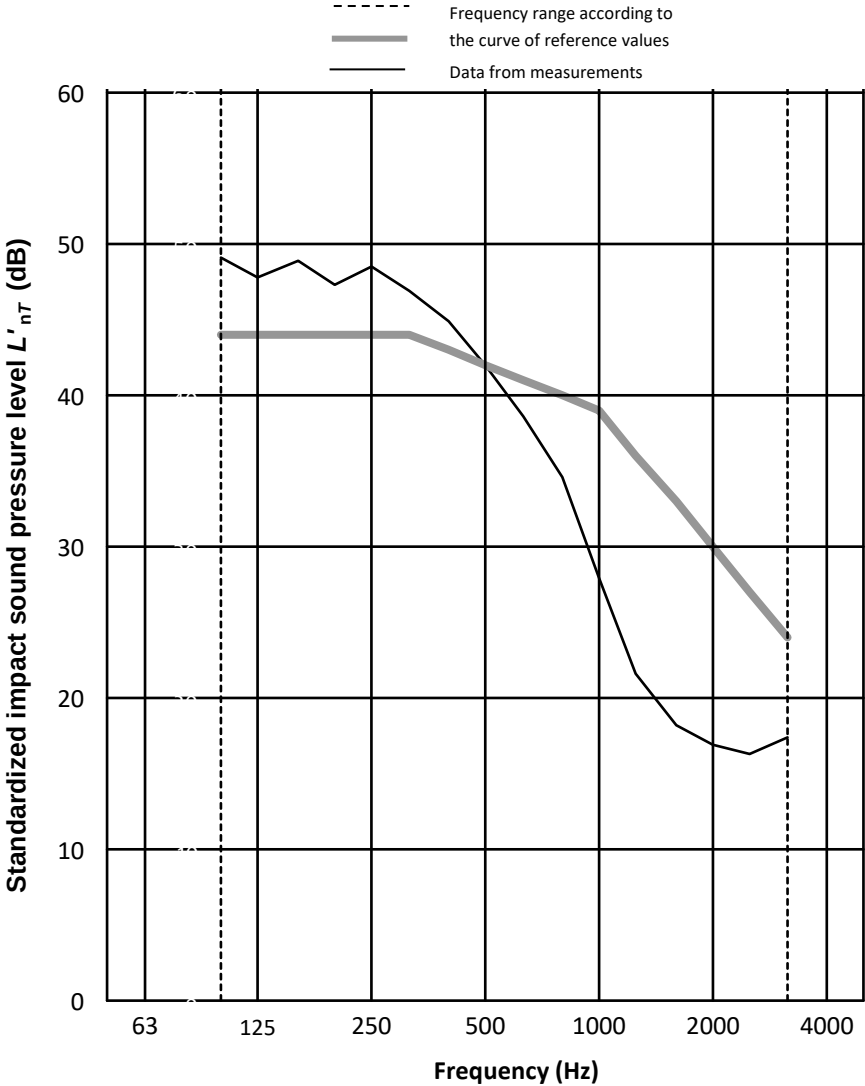
$L'_{nT,w}$ (C_1) = 36 (1) dB

Reference reverberation time $T_0 = 0.5$ seconds

Standardized impact sound pressure level according to ISO 140-7
Field measurement of impact sound insulation of floors

Client name and address	Recom, Unit 31, Salford, M5 3EZ	File ref	20270/DM
		ANC test ref	141/118343
Job name and address	58-66 King Street, Manchester, M2 4LY	Test ref	6
		Test date	5 Jun 24
Test rooms and direction	Apartment 12 (bedroom) to Apartment 5 (bedroom)		
Construction details	InstaCoustic C40 floating floor system, existing floorboards, exiting joints (various depths), cavity containing 100 mm mineral fibre insulation (≥ 30 kg/m ³), 2x12.5 mm standard plasterboard suspended on an MF grid supported by resilient isolation hangers, with 50 mm mineral fibre insulation within the cavity		
Area of separating element:	11	m ²	
Source room volume:	43	m ³	
Receiving room volume:	37	m ³	

Frequency (Hz)	L'_{nT} (1/3 octave, dB)	
50		
63		
80		
100	49.1	
125	47.8	
160	48.9	
200	47.3	
250	48.5	
315	46.9	
400	44.9	
500	42.0	
630	38.6	
800	34.6	
1000	27.9	B
1250	≤ 21.6	
1600	≤ 18.2	
2000	≤ 16.9	
2500	≤ 16.3	
3150	≤ 17.4	
4000		
5000		



'B' indicates where receiving room sound pressure levels in that frequency band were within 6-10 dB of the background noise levels and have been corrected

'≤' indicates where receiving room sound pressure levels in that frequency band were within 6 dB of the background noise levels and are the limit of measurement and have been corrected

Evaluation based on field measurement results obtained by an engineering method

Rating according to ISO 717-2

$L'_{nT,w}$ (C_1) = 42 (0) dB

Reference reverberation time $T_0 = 0.5$ seconds

Standardized impact sound pressure level according to ISO 140-7

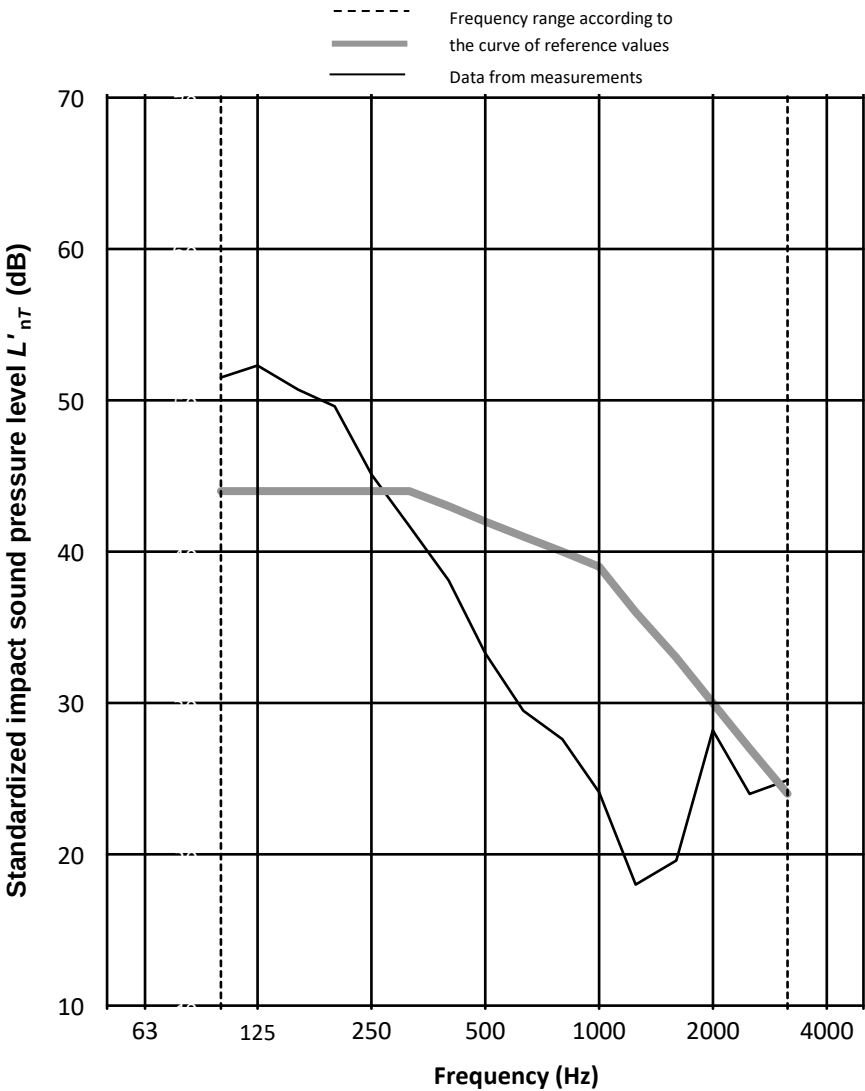
Field measurement of impact sound insulation of floors

Client name and address	Recom, Unit 31, Salford, M5 3EZ	File ref	20270/DM
		ANC test ref	141/118343
Job name and address	58-66 King Street, Manchester, M2 4LY	Test ref	11
		Test date	5 Jun 24
Test rooms and direction	Apartment 18 (living) to Apartment 11 (living)		
Construction details	InstaCoustic C40 floating floor system, existing floorboards, exiting joints (various depths), cavity containing 100 mm mineral fibre insulation ($\geq 30 \text{ kg/m}^3$), 2x12.5 mm standard plasterboard suspended on an MF grid supported by resilient isolation hangers, with 50 mm mineral fibre insulation within the cavity		

Area of separating element:	29	m^2
Source room volume:	73	m^3
Receiving room volume:	94	m^3

Frequency (Hz)	L'_{nT} (1/3 octave, dB)
50	
63	
80	
100	51.5
125	52.3
160	50.7
200	49.6
250	45.1
315	41.7
400	38.1
500	33.3
630	29.5
800	27.6
1000	24.1
1250	18.0
1600	19.6
2000	28.2
2500	24.0
3150	24.9
4000	
5000	

'B' indicates where receiving room sound pressure levels in that frequency band were within 6-10 dB of the background noise levels and have been corrected



Evaluation based on field measurement results obtained by an engineering method

Rating according to ISO 717-2

$L'_{nT,w}$ (C_1) = 42 (1) dB

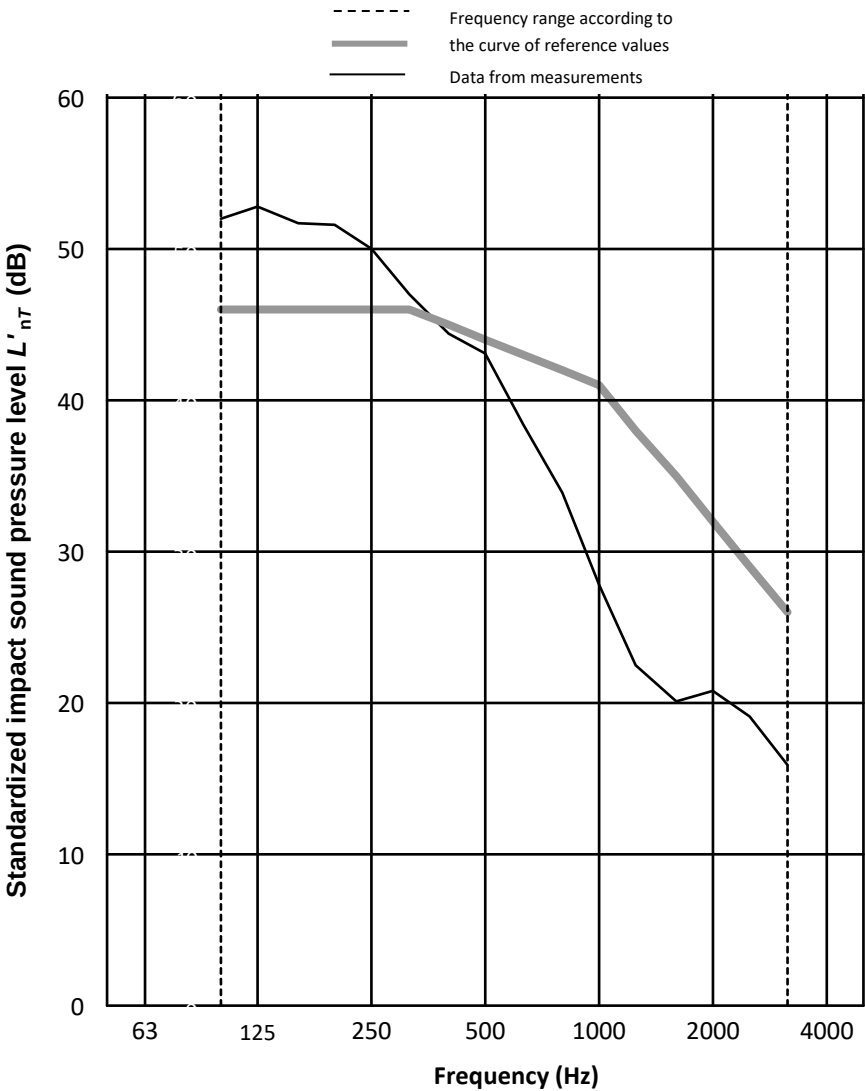
Reference reverberation time $T_0 = 0.5$ seconds

Standardized impact sound pressure level according to ISO 140-7
Field measurement of impact sound insulation of floors

Client name and address	Recom, Unit 31, Salford, M5 3EZ	File ref	20270/DM
		ANC test ref	141/118343
Job name and address	58-66 King Street, Manchester, M2 4LY	Test ref	12
		Test date	5 Jun 24
Test rooms and direction	Apartment 18 (bedroom) to Apartment 11 (bedroom)		
Construction details	InstaCoustic C40 floating floor system, existing floorboards, exiting joints (various depths), cavity containing 100 mm mineral fibre insulation (≥ 30 kg/m ³), 2x12.5 mm standard plasterboard suspended on an MF grid supported by resilient isolation hangers, with 50 mm mineral fibre insulation within the cavity		

Area of separating element:	12	m ²
Source room volume:	35	m ³
Receiving room volume:	42	m ³

Frequency (Hz)	L'_{nT} (1/3 octave, dB)	
50		
63		
80		
100	52.0	
125	52.8	
160	51.7	
200	51.6	
250	50.0	
315	47.0	
400	44.4	
500	43.1	
630	38.4	
800	33.9	
1000	27.8	B
1250	≤ 22.5	
1600	≤ 20.1	
2000	≤ 20.8	
2500	≤ 19.1	
3150	≤ 15.9	
4000		
5000		



'B' indicates where receiving room sound pressure levels in that frequency band were within 6-10 dB of the background noise levels and have been corrected

'≤' indicates where receiving room sound pressure levels in that frequency band were within 6 dB of the background noise levels and are the limit of measurement and have been corrected

Evaluation based on field measurement results obtained by an engineering method

Rating according to ISO 717-2

$L'_{nT,w}$ (C_1) = 44 (0) dB

Reference reverberation time $T_0 = 0.5$ seconds

Standardized impact sound pressure level according to ISO 140-7

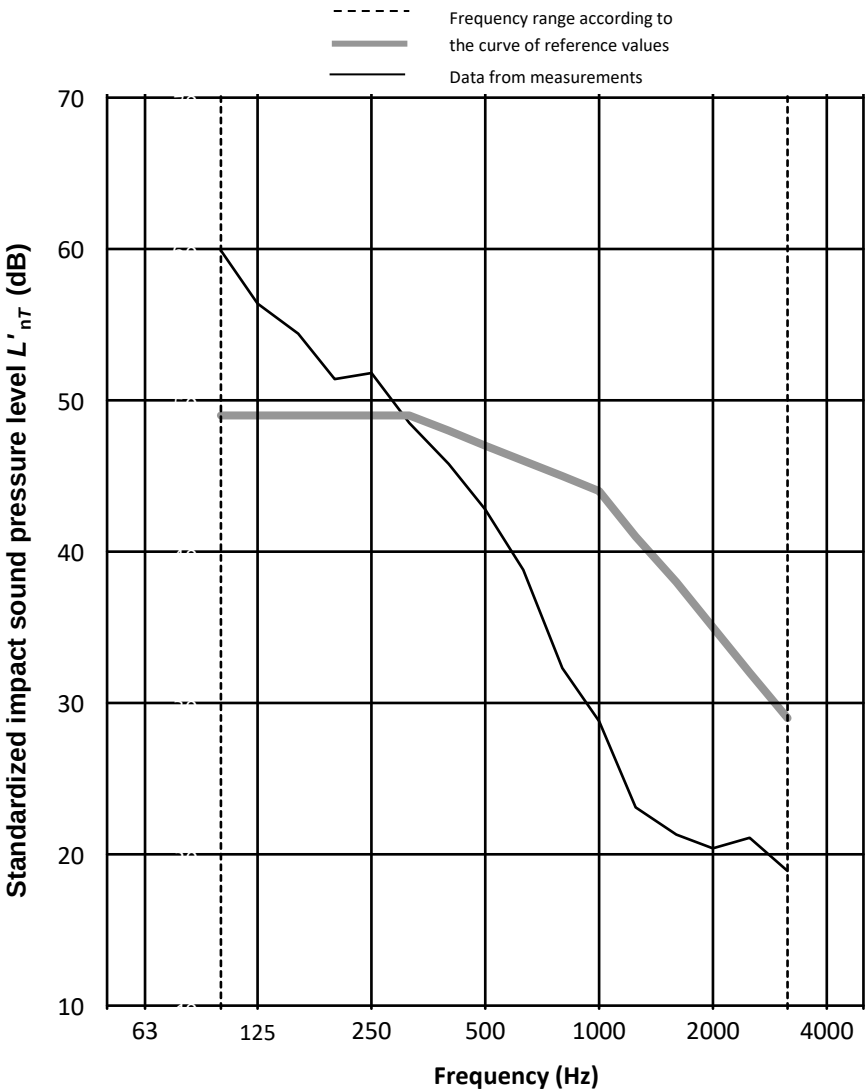
Field measurement of impact sound insulation of floors

Client name and address	Recom, Unit 31, Salford, M5 3EZ	File ref	20270/DM
		ANC test ref	141/118343
Job name and address	58-66 King Street, Manchester, M2 4LY	Test ref	19
		Test date	5 Jun 24
Test rooms and direction	Apartment 22 (living) to Apartment 17 (living)		
Construction details	InstaCoustic C40 floating floor system, existing floorboards, exiting joints (various depths), cavity containing 100 mm mineral fibre insulation (≥ 30 kg/m ³), 2x12.5 mm standard plasterboard suspended on an MF grid supported by resilient isolation hangers, with 50 mm mineral fibre insulation within the cavity		

Area of separating element:	29	m ²
Source room volume:	91	m ³
Receiving room volume:	87	m ³

Frequency	L'_{nT}
(Hz)	(1/3 octave, dB)
50	
63	
80	
100	59.9
125	56.4
160	54.4
200	51.4
250	51.8
315	48.5
400	45.8
500	42.8
630	38.8
800	32.3
1000	28.8
1250	23.1
1600	21.3
2000	20.4
2500	21.1
3150	18.9
4000	
5000	

'B' indicates where receiving room sound pressure levels in that frequency band were within 6-10 dB of the background noise levels and have been corrected



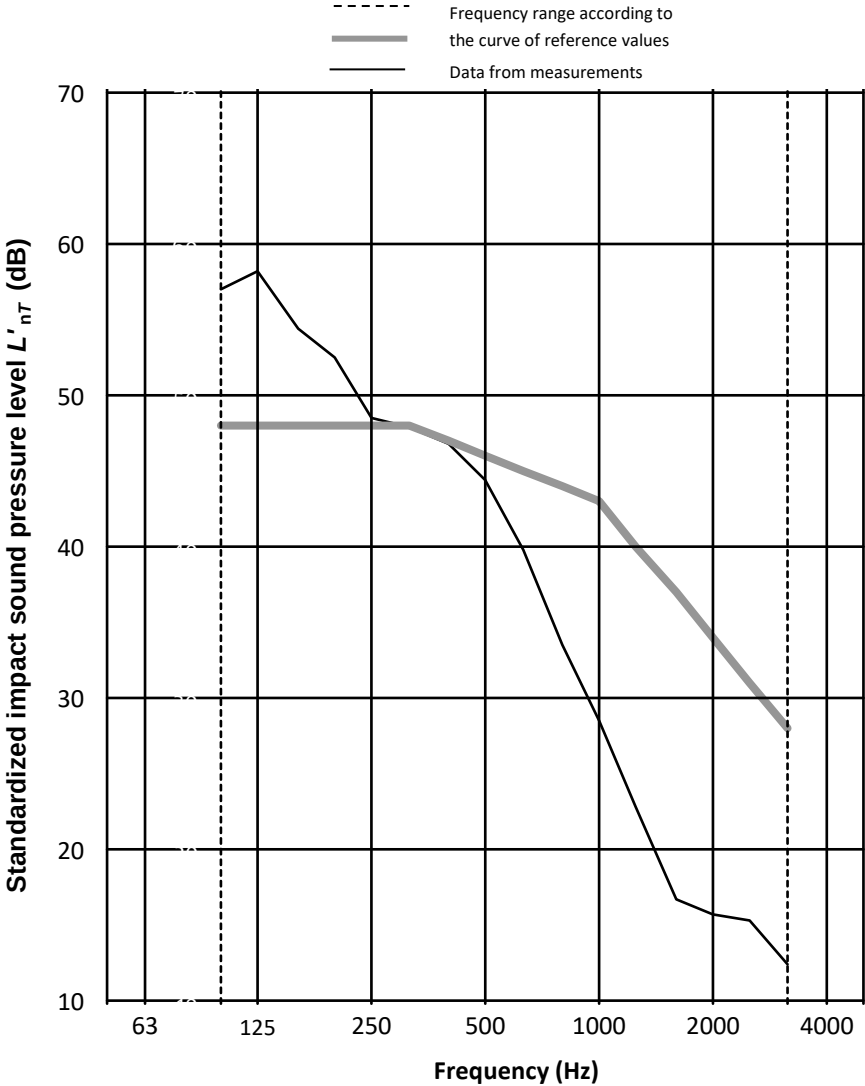
Evaluation based on field measurement results obtained by an engineering method

Rating according to ISO 717-2		Reference reverberation time $T_0 = 0.5$ seconds
$L'_{nT,w}$	$(C_1) = 47 (1) \text{ dB}$	

Standardized impact sound pressure level according to ISO 140-7
Field measurement of impact sound insulation of floors

Client name and address	Recom, Unit 31, Salford, M5 3EZ	File ref	20270/DM
		ANC test ref	141/118343
Job name and address	58-66 King Street, Manchester, M2 4LY	Test ref	20
		Test date	5 Jun 24
Test rooms and direction	Apartment 22 (living) to Apartment 17 (bedroom)		
Construction details	InstaCoustic C40 floating floor system, existing floorboards, exiting joints (various depths), cavity containing 100 mm mineral fibre insulation (≥ 30 kg/m ³), 2x12.5 mm standard plasterboard suspended on an MF grid supported by resilient isolation hangers, with 50 mm mineral fibre insulation within the cavity		
Area of separating element:	9	m ²	
Source room volume:	91	m ³	
Receiving room volume:	26	m ³	

Frequency (Hz)	L'_{nT} (1/3 octave, dB)
50	
63	
80	
100	57.0
125	58.2
160	54.4
200	52.5
250	48.5
315	47.9
400	46.8
500	44.4
630	39.8
800	33.5
1000	28.5
1250	22.8
1600	≤ 16.7
2000	≤ 15.7
2500	≤ 15.3
3150	≤ 12.4
4000	
5000	



' $\leq$ ' indicates where receiving room sound pressure levels in that frequency band were within 6 dB of the background noise levels and are the limit of measurement and have been corrected

Evaluation based on field measurement results obtained by an engineering method

Rating according to ISO 717-2

$L'_{nT,w}$ (C_1) = 46 (2) dB

Reference reverberation time $T_0 = 0.5$ seconds

Standardized impact sound pressure level according to ISO 140-7

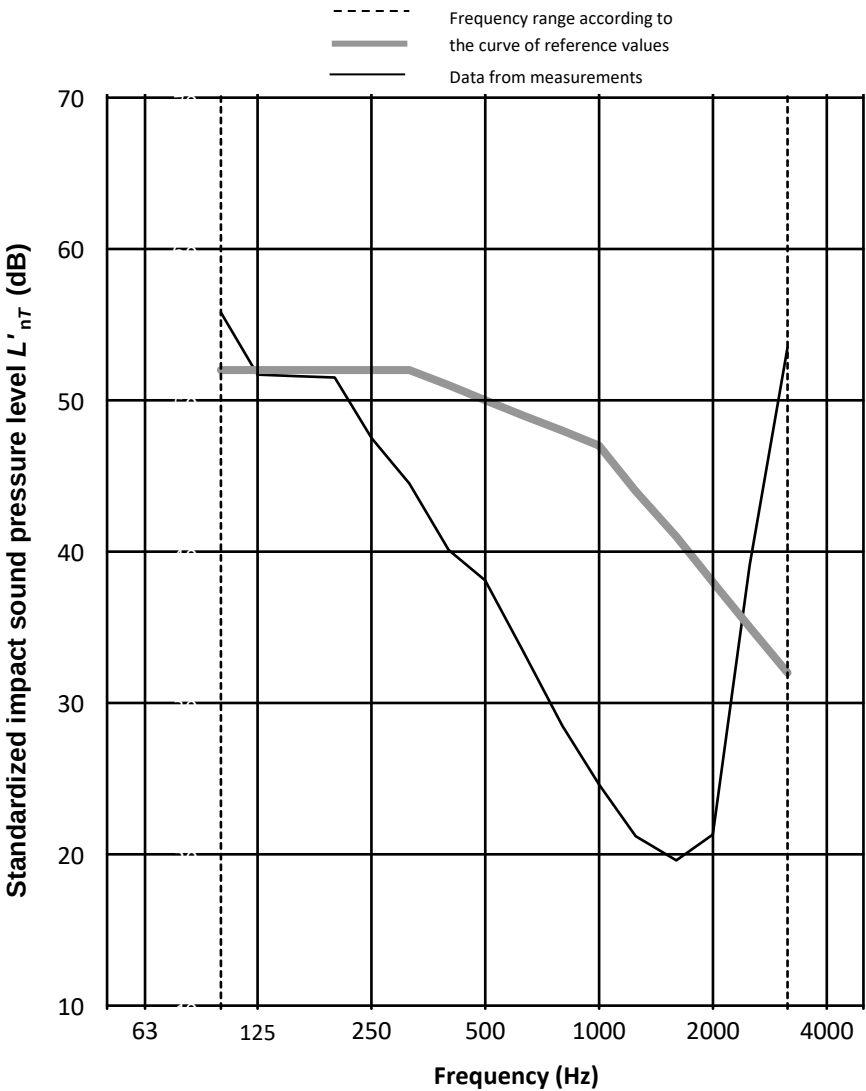
Field measurement of impact sound insulation of floors

Client name and address	Recom, Unit 31, Salford, M5 3EZ	File ref	20270/DM
		ANC test ref	141/118343
Job name and address	58-66 King Street, Manchester, M2 4LY	Test ref	22
		Test date	5 Jun 24
Test rooms and direction	Apartment 21 (bedroom) to Apartment 14 (bedroom)		
Construction details	InstaCoustic C40 floating floor system, existing floorboards, exiting joints (various depths), cavity containing 100 mm mineral fibre insulation ($\geq 30 \text{ kg/m}^3$), 2x12.5 mm standard plasterboard suspended on an MF grid supported by resilient isolation hangers, with 50 mm mineral fibre insulation within the cavity		

Area of separating element:	13	m^2
Source room volume:	43	m^3
Receiving room volume:	42	m^3

Frequency (Hz)	L'_{nT} (1/3 octave, dB)
50	
63	
80	
100	55.8
125	51.7
160	51.6
200	51.5
250	47.5
315	44.5
400	40.1
500	38.1
630	33.4
800	28.5
1000	24.6
1250	21.2
1600	19.6
2000	21.3
2500	39.1
3150	53.5
4000	
5000	

'B' indicates where receiving room sound pressure levels in that frequency band were within 6-10 dB of the background noise levels and have been corrected



Evaluation based on field measurement results obtained by an engineering method

Rating according to ISO 717-2

$L'_{nT,w}$ (C_1) = 50 (-5) dB

Reference reverberation time $T_0 = 0.5$ seconds

Standardized impact sound pressure level according to ISO 140-7

Field measurement of impact sound insulation of floors

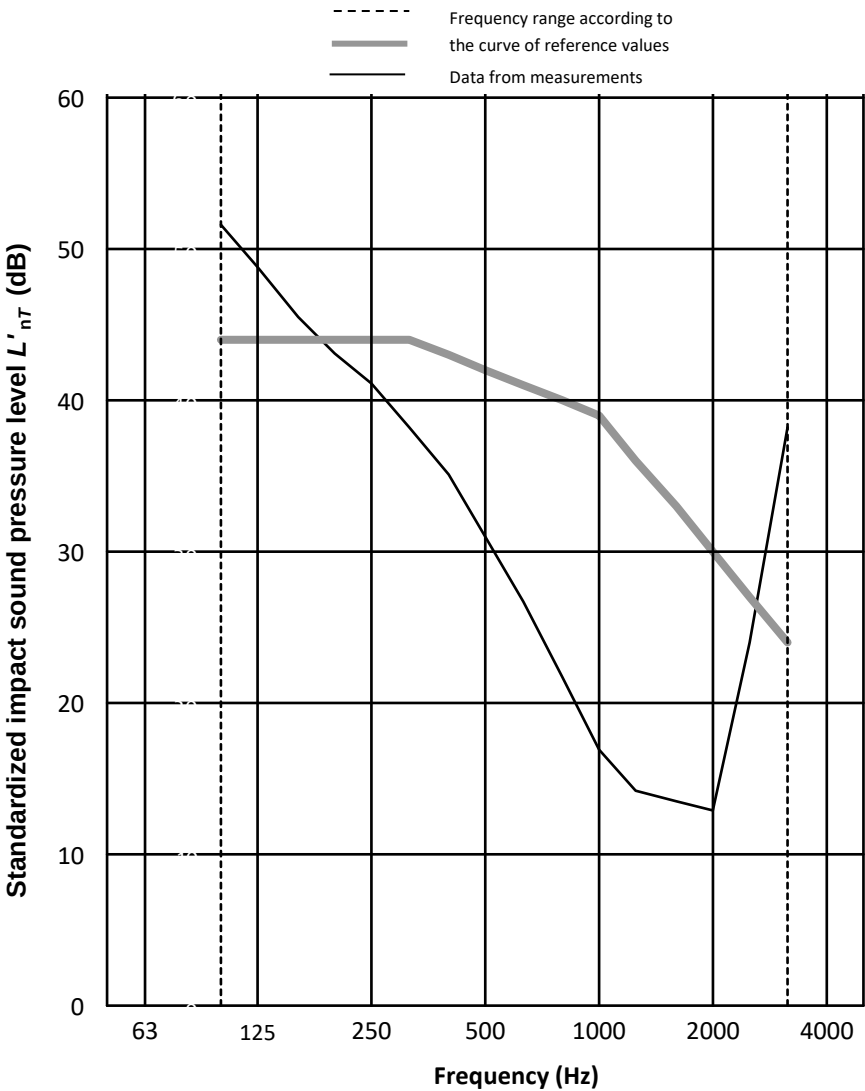
Client name and address	Recom, Unit 31, Salford, M5 3EZ	File ref	20270/DM
		ANC test ref	141/118343
Job name and address	58-66 King Street, Manchester, M2 4LY	Test ref	23
		Test date	5 Jun 24
Test rooms and direction	Apartment 21 (living) to Apartment 14 (living)		
Construction details	InstaCoustic C40 floating floor system, existing floorboards, exiting joints (various depths), cavity containing 100 mm mineral fibre insulation (≥ 30 kg/m ³), 2x12.5 mm standard plasterboard suspended on an MF grid supported by resilient isolation hangers, with 50 mm mineral fibre insulation within the cavity		

Area of separating element:	37	m ²
Source room volume:	112	m ³
Receiving room volume:	112	m ³

Frequency	L'_{nT}
(Hz)	(1/3 octave, dB)
50	
63	
80	
100	51.6
125	48.8
160	45.5
200	43.1
250	41.1
315	38.2
400	35.1
500	31.0
630	26.7
800	21.7
1000	16.9
1250	14.2
1600	≤ 13.5
2000	≤ 12.9
2500	24.0
3150	38.2
4000	
5000	

'B' indicates where receiving room sound pressure levels in that frequency band were within 6-10 dB of the background noise levels and have been corrected

'≤' indicates where receiving room sound pressure levels in that frequency band were within 6 dB of the background noise levels and are the limit of measurement and have been corrected



Evaluation based on field measurement results obtained by an engineering method

Rating according to ISO 717-2		Reference reverberation time $T_0 = 0.5$ seconds
$L'_{nT,w}$	$(C_1) = 42 (-2)$ dB	

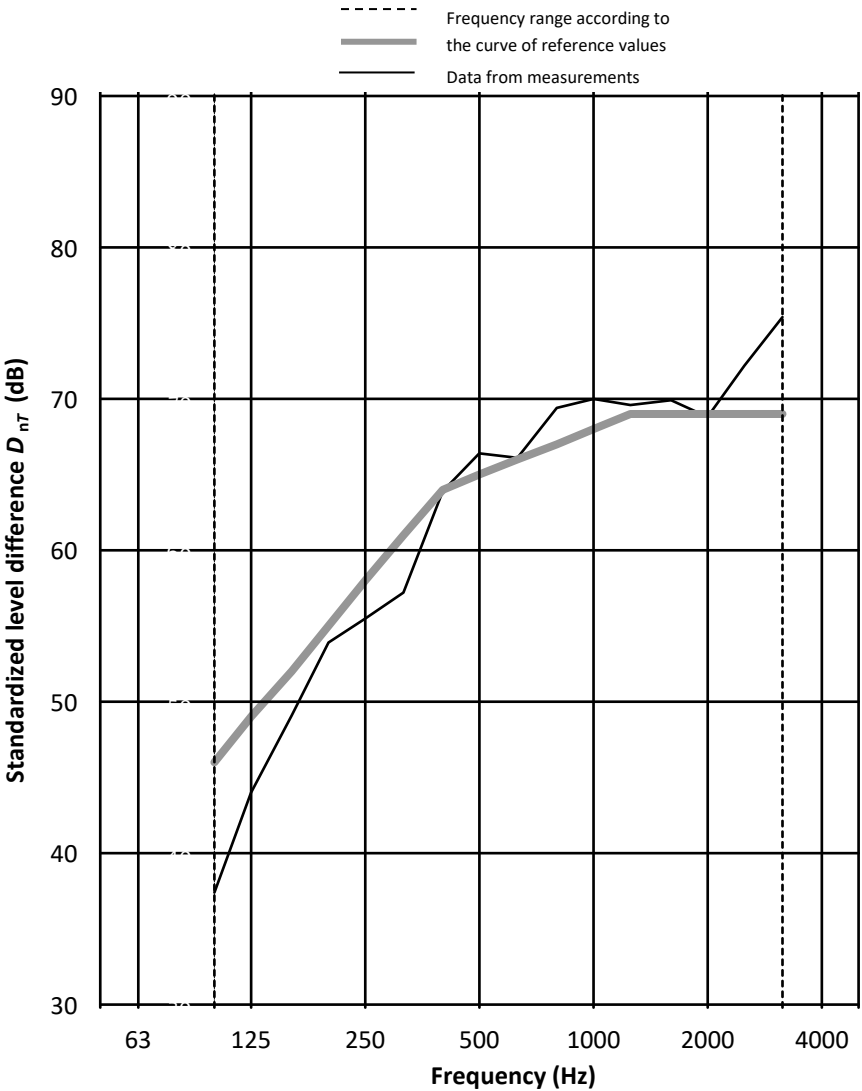
Standardized level difference according to ISO 140-4

Field measurement of airborne sound insulation between rooms

Client name and address	Recom, Unit 31, Salford, M5 3EZ	File ref	20270/DM
		ANC test ref	141/118343
Job name and address	58-66 King Street, Manchester, M2 4LY	Test ref	24
		Test date	17 Jun 24
Test rooms and direction	Ground floor Commercial Unit to Apartment 3 (living)		
Construction details	InstaCoustic C40 floating floor system, existing floorboards, exiting joints (various depths), cavity containing 100 mm mineral fibre insulation (≥ 30 kg/m ³), existing ceiling below made good		

Area of separating element	27	m ²
Source room volume	378	m ³
Receiving room volume	93	m ³

Frequency (Hz)	D_{nT} (1/3 octave, dB)
50	
63	
80	
100	37.4
125	44.0
160	49.1
200	53.9
250	55.5
315	57.2
400	63.9
500	66.4
630	≥ 66.1
800	≥ 69.4
1000	≥ 70.0
1250	≥ 69.6
1600	≥ 69.9
2000	≥ 68.8
2500	≥ 72.2
3150	≥ 75.4
4000	
5000	



'B' indicates where receiving room sound pressure levels in that frequency band were within 6-10 dB of the background noise levels and have been corrected

' $\geq$ ' indicates where receiving room sound pressure levels in that frequency band were within 6 dB of the background noise levels and are the limit of measurement and have been corrected

Evaluation based on field measurement results obtained by an engineering method

Rating according to ISO 717-1

$D_{nT,w} (C; C_{tr}) = 65 (-3; -9)$ dB

Reference reverberation time $T_0 = 0.5$ seconds

Test personnel Kane Mitchell

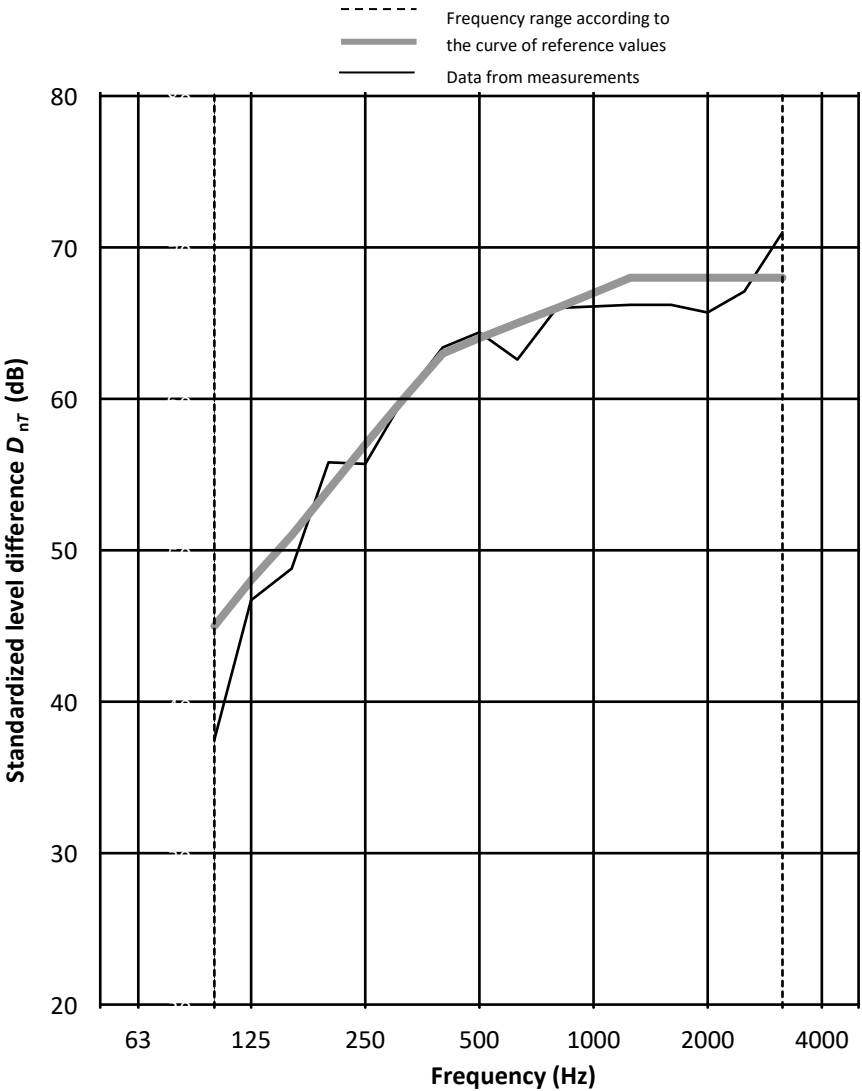
Standardized level difference according to ISO 140-4

Field measurement of airborne sound insulation between rooms

Client name and address	Recom, Unit 31, Salford, M5 3EZ	File ref	20270/DM
		ANC test ref	141/118343
Job name and address	58-66 King Street, Manchester, M2 4LY	Test ref	25
		Test date	17 Jun 24
Test rooms and direction	Ground floor Commercial Unit to Apartment 3 (bedroom)		
Construction details	InstaCoustic C40 floating floor system, existing floorboards, exiting joints (various depths), cavity containing 100 mm mineral fibre insulation (≥ 30 kg/m ³), existing ceiling below made good		

Area of separating element	8	m ²
Source room volume	378	m ³
Receiving room volume	27	m ³

Frequency (Hz)	D_{nT} (1/3 octave, dB)
50	
63	
80	
100	37.5
125	46.7
160	48.8
200	55.8
250	55.7
315	60.0
400	63.4
500	≥ 64.4
630	≥ 62.6
800	≥ 66.0
1000	≥ 66.1
1250	≥ 66.2
1600	≥ 66.2
2000	≥ 65.7
2500	≥ 67.1
3150	≥ 71.0
4000	
5000	



'B' indicates where receiving room sound pressure levels in that frequency band were within 6-10 dB of the background noise levels and have been corrected

' $\geq$ ' indicates where receiving room sound pressure levels in that frequency band were within 6 dB of the background noise levels and are the limit of measurement and have been corrected

Evaluation based on field measurement results obtained by an engineering method

Rating according to ISO 717-1

$D_{nT,w}$ (C;C_{tr}) = 64 (-2;-8) dB

Reference reverberation time T_0 = 0.5 seconds

Test personnel Kane Mitchell