



Pre-Completion Sound Insulation Testing Report

Manchester New Square
Manchester
M1 3NR

Stroma Built Environment Ltd.
SBE Ref: 12-18-71818 - N4

Compiled By		Authorised By	
Samuel Sumner AMIOA Acoustic Consultant	Tom Chaffer MIOA Principal Acoustic Consultant		21/09/2020

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1. Stroma Built Environment Ltd. - Acoustic Credentials

Stroma Built Environment Ltd. (SBE) have specialised in providing the UK construction industry with a range of acoustics services since 2006.

SBE is accredited for on-site acoustic testing by United Kingdom Accreditation Service (UKAS) (Testing Laboratory Number 2731).

SBE meet the relevant acoustic requirements typically required in the UK, including for sound insulation testing as defined in Approved Document E for the purpose of testing for Part E of Schedule 1 to the Building Regulations 2010.

This report has been authorised by Tom Chaffer, Principal Acoustic Consultant who meets the BREEAM requirements for a suitably qualified acoustician (SQA) as follows;

1. Holds an MSc degree in Audio Acoustics from the University of Salford
2. Has been an Acoustic Consultant for more than three year's (within the last five years). This experience includes a practical understanding of factors affecting acoustics in relation to construction and the built environment; including, acting in an advisory capacity to provide recommendations for suitable acoustic performance levels and mitigation measures.
3. Holds Corporate Membership of the Institute of Acoustics - MIOA membership.

This report has been read and reviewed by Tom Chaffer and has been found to;

1. Represent sound industry practice
2. Be appropriate given the building being assessed and scope of works proposed
3. Avoid invalid, biased and exaggerated recommendations.

2. Test Details

Permanent Address of Testing Laboratory:	Stroma Built Environment. 81 Burton Road, Sheffield, S3 8BZ
Authorised Tester(s):	Samuel Sumner AMIOA
Name of Client:	Lendlease Construction Ltd
Site Name:	Manchester New Square
Site Address:	Manchester New Square, Manchester, Lancashire, M1 3NR
Build:	Purpose built
Type:	Other – Commercial/Retail

Summary of Test Results Included Within Report

	Airborne floor
No. Tested	6
No. Passed ADE	6
No. Failed ADE	0

See relevant tables included within this report for test details.

SBE are not covered by our UKAS accreditation for opinions and/or interpretations of results.

3. Standards & Criteria

UKAS Accredited Airborne Sound Insulation Test Standards

- Annex B of Approved Document E '*Resistance to the passage of sound*' (2003 edition incorporating 2004, 2010, 2013 and 2015 amendments)
- BS EN ISO 140-4:1998 '*Acoustics – Measurement of Sound Insulation in Buildings and of Building Elements – Part 4: Field Measurements of Airborne Sound Insulation between Rooms*'
- BS EN ISO 717-1:1997 '*Acoustics – Rating of Sound Insulation in Buildings and of Building Elements – Part 1: Airborne Sound Insulation*'

The assessment of the acoustic performance set out in this report has been based on the applicable performance standards given in:

- Section 0.1 of Approved Document E '*Resistance to the passage of sound*' (2003 edition incorporating 2004, 2010, 2013 & 2015 amendments)

4. UKAS Accredited Airborne Sound Insulation Test Results

Date Tested	Test Number	Source Room	Receiving Room	Separating Element	Measured $D_{nT,w} + C_{tr}$ (dB)	Approved Document E	
						Performance Criterion $D_{nT,w} + C_{tr}$ (dB)	Compliance
21.09.2020	12-18-71818-SI-1	Ground Floor - Retail	Flat 109 - Living/Kitchen	Floor	58	≥ 45	PASS
21.09.2020	12-18-71818-SI-2	Ground Floor - Retail	Flat 109 - Bedroom	Floor	56	≥ 45	PASS
21.09.2020	12-18-71818-SI-3	Ground Floor - Gym	Flat 103 - Living/Kitchen	Floor	61	≥ 45	PASS
21.09.2020	12-18-71818-SI-4	Ground Floor - Gym	Flat 103 - Bedroom 1	Floor	58	≥ 45	PASS
21.09.2020	12-18-71818-SI-5	Ground Floor - Gym	Flat 104 - Living/Kitchen	Floor	61	≥ 45	PASS
21.09.2020	12-18-71818-SI-6	Ground Floor - Gym	Flat 104 - Bedroom 2	Floor	57	≥ 45	PASS

Tested and reported in accordance with;

- Annex B of Approved Document E '*Resistance to the passage of sound*' (2003 edition incorporating 2004, 2010, 2015 & 2015 amendments)

5. Equipment

Equipment used to carry out testing is calibrated accordingly to fulfil the requirements of the UKAS publication LAB 23 '*Traceability for Equipment Used in Acoustical Testing*'. Current calibration certificates are available upon request.

Sound Level Meter	Brüel & Kjaer Type 2260
Microphone	Brüel & Kjaer Type 4189
Calibrator	Brüel & Kjaer Type 4231
Signal Generator	QTX QR15PA – MP3
Power Amplifier	QTX QR15PA (x2)
Sound Source	QTX QR15PA (x2)

6. Test Methodology

Test Conditions	
All test rooms essentially complete and unfurnished. All doors and windows shut including ventilators where applicable. All cupboard/en-suite doors open where applicable.	
Sound Field Sampling Method	Fixed Microphone Positions
Frequency Range of Measurements	100 Hz – 3150 Hz
Sound Level Meter Sensitivity Variation	No significant variation in sensitivity levels observed between start and end check or with periodic calibration sensitivity
Reverberation Time Measurement	
Measurement Method	Interrupted
Source Positions	2 No. minimum
Microphone Positions	3 No. minimum per speaker position (taking an ensemble average of minimum 3 No. measurements per microphone position)
Evaluation Range	20dB (T_{20})
Reference Reverberation Time (T_0)	As appropriate according to relevant standard
Background Noise Measurement	
Measurement Method	1 No. fixed microphone position minimum. Duration as appropriate
Measurement of Airborne Sound Insulation	
Measurement Duration	6 seconds minimum
Source Positions	2 No. minimum (2 speakers used)
Microphone Positions	5 No. minimum per source position

Appendix I – Test Certificates

Standardised level difference according to Approved Document E (2003 inc. 2004, 2010, 2013 & 2015 Amendments)
Field measurements of sound insulation for the purposes of Building Regulations 41 & 20(1 & 5)

Client: Lendlease Construction Ltd

Site: Manchester New Square

SBE Test No: 12-18-71818-SI-1

Date of test: 21.09.2020

Test Details: Airborne Floor test from Ground Floor - Retail to Flat 109 -
Living/Kitchen



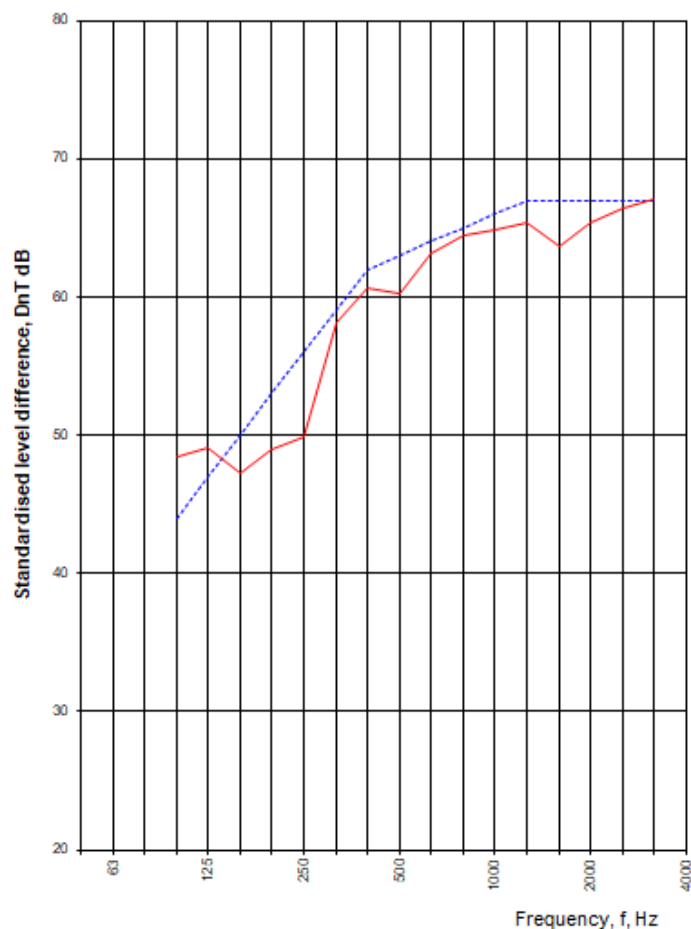
Source room volume: > 200 m³

Receiver room volume: 81 m³

Frequency
f
Hz
(one-third
octave)
dB

50	
63	
80	
100	48.4
125	49.1
160	47.2
200	48.9
250	49.9
315	58.1
400	60.7
500	60.3
630	63.1
800	64.4
1000	64.9
1250	65.3
1600	63.7
2000	65.4
2500	66.4
3150	67.1
4000	
5000	

b or B Indicates background
noise or max. background
noise correction applied respectively



Rating according to ISO 717-1
Evaluation based on field measurement
results obtained by an engineering method

$D_{nT,w} (C; C_{tr}) \geq 63 (-2 ; -5) \text{ dB}$

SBE Job Ref: 12-18-71818

Date: 21.9.20

Name of test institute: Stroma Built Environment

Signature: 

AcDoc004 BREW Airborne SI Sheet - Issue 15.xls & C:\MANCEN\0001A.BA1



Standardised level difference according to Approved Document E (2003 inc. 2004, 2010, 2013 & 2015 Amendments)
Field measurements of sound insulation for the purposes of Building Regulations 41 & 20(1 & 5)

Client: Lendlease Construction Ltd

Site: Manchester New Square

SBE Test No: 12-18-71818-SI-2

Date of test: 21.09.2020

Test Details: Airborne Floor test from Ground Floor - Retail to Flat 109 -
Bedroom

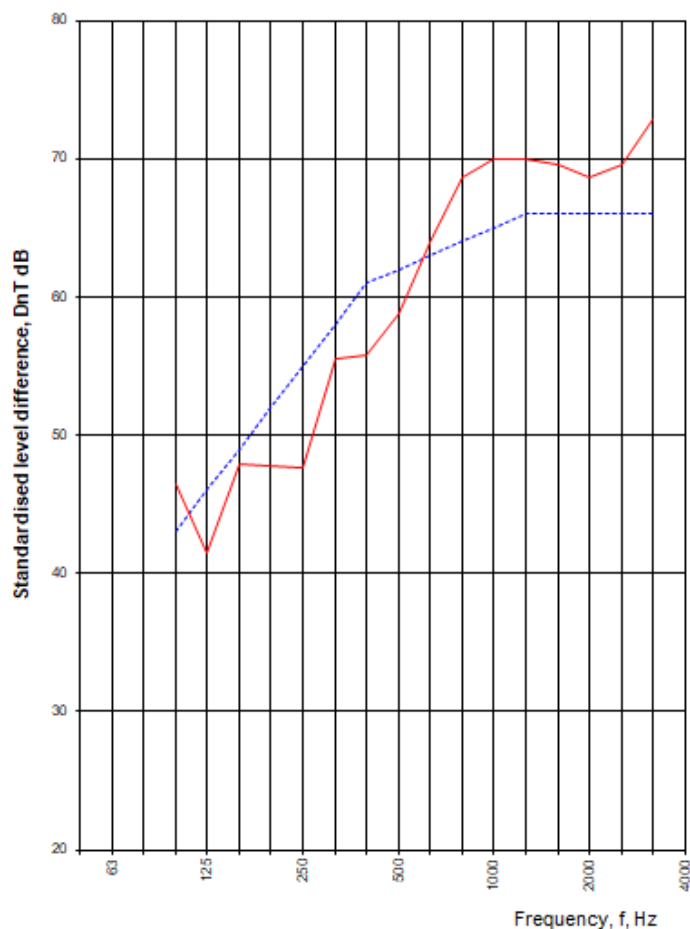


Source room volume: > 200 m³

Receiver room volume: 30 m³

Frequency f Hz	D _{nT} (one-third octave) dB	
50		
63		
80		
100	46.4	
125	41.5	
160	47.9	b
200	47.8	
250	47.6	
315	55.5	b
400	55.8	
500	58.8	b
630	63.9	b
800	68.7	B
1000	69.9	B
1250	69.9	B
1600	69.5	b
2000	68.7	B
2500	69.5	B
3150	72.9	B
4000		
5000		

b or B Indicates background
noise or max. background
noise correction applied respectively



Rating according to ISO 717-1
Evaluation based on field measurement
results obtained by an engineering method

$D_{nT,w} (C; C_{tr}) \geq 62 (-2; -6) \text{ dB}$

SBE Job Ref: 12-18-71818

Date: 21.9.20

Name of test institute: Stroma Built Environment

Signature: 

AcDoc004 BREW Airborne SI Sheet - Issue 15.xls & C:\MANCEN\0001A.BA1



Standardised level difference according to Approved Document E (2003 inc. 2004, 2010, 2013 & 2015 Amendments)
Field measurements of sound insulation for the purposes of Building Regulations 41 & 20(1 & 5)

Client: Lendlease Construction Ltd

Site: Manchester New Square

SBE Test No: 12-18-71818-SI-3

Date of test: 21.09.2020

Test Details: Airborne Floor test from Ground Floor - Gym to Flat 103 -
Living/Kitchen

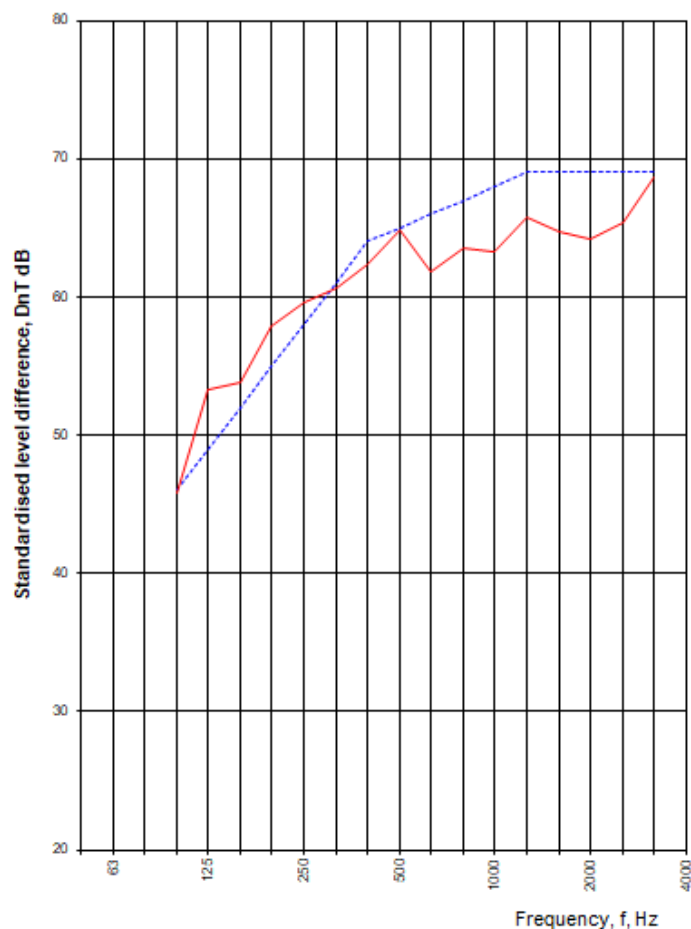


Source room volume: > 200 m³

Receiver room volume: 64 m³

Frequency f Hz	D _{nT} (one-third octave) dB	
50		
63		
80		
100	45.8	B
125	53.3	B
160	53.8	B
200	57.9	B
250	59.6	B
315	60.6	B
400	62.4	B
500	64.9	B
630	61.8	B
800	63.5	B
1000	63.2	B
1250	65.8	B
1600	64.7	B
2000	64.2	B
2500	65.3	B
3150	68.7	B
4000		
5000		

b or B Indicates background
noise or max. background
noise correction applied respectively



Rating according to ISO 717-1
Evaluation based on field measurement
results obtained by an engineering method

$D_{nT,w} (C; C_{tr}) \geq 65 (-2 ; -4) \text{ dB}$

SBE Job Ref: 12-18-71818

Date: 21.9.20

Name of test institute: Stroma Built Environment

Signature: 

AcDoc004 BREW Airborne SI Sheet - Issue 15.xls & C:\MANCEN\0001A.BA1



Standardised level difference according to Approved Document E (2003 inc. 2004, 2010, 2013 & 2015 Amendments)
Field measurements of sound insulation for the purposes of Building Regulations 41 & 20(1 & 5)

Client: Lendlease Construction Ltd

Site: Manchester New Square

SBE Test No: 12-18-71818-SI-4

Date of test: 21.09.2020

Test Details: Airborne Floor test from Ground Floor - Gym to Flat 103 -
Bedroom 1

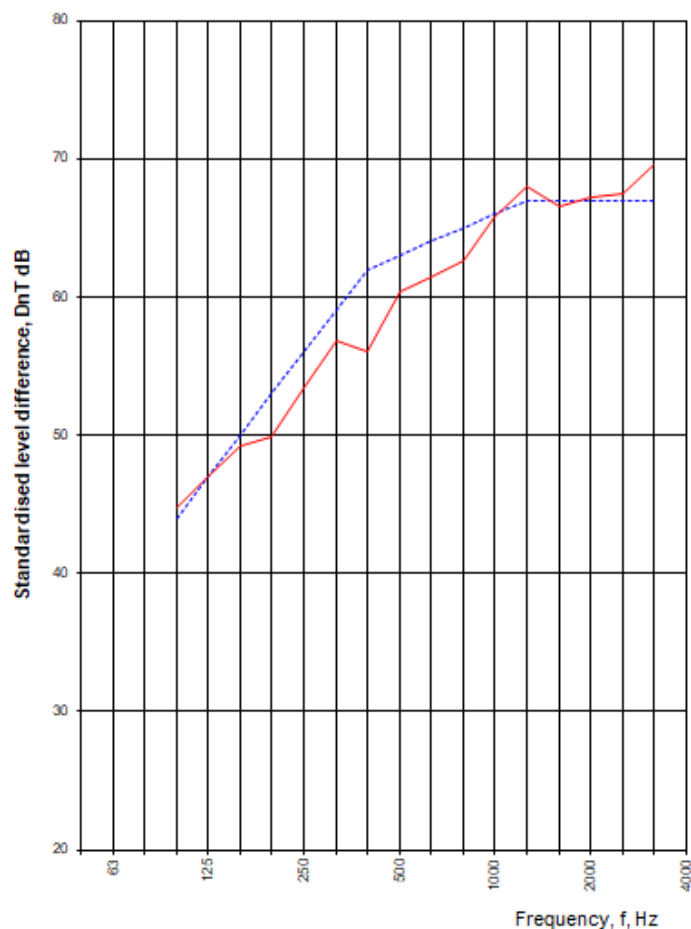


Source room volume: > 200 m³

Receiver room volume: 30 m³

Frequency f Hz	D _{nT} (one-third octave) dB	
50		
63		
80		
100	44.8	B
125	47.0	b
160	49.2	B
200	49.9	B
250	53.4	B
315	56.8	B
400	56.0	b
500	60.4	b
630	61.4	B
800	62.6	B
1000	65.8	B
1250	68.0	B
1600	66.6	B
2000	67.2	B
2500	67.5	B
3150	69.5	B
4000		
5000		

b or B Indicates background
noise or max. background
noise correction applied respectively



Rating according to ISO 717-1

$D_{nT,w} (C; C_{tr}) \geq 63 (-1 ; -5) \text{ dB}$

Evaluation based on field measurement
results obtained by an engineering method

SBE Job Ref: 12-18-71818

Date: 21.9.20

Name of test institute: Stroma Built Environment

Signature: 

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Standardised level difference according to Approved Document E (2003 inc. 2004, 2010, 2013 & 2015 Amendments)
Field measurements of sound insulation for the purposes of Building Regulations 41 & 20(1 & 5)

Client: Lendlease Construction Ltd

Site: Manchester New Square

SBE Test No: 12-18-71818-SI-5

Date of test: 21.09.2020

Test Details: Airborne Floor test from Ground Floor - Gym to Flat 104 -
Living/Kitchen

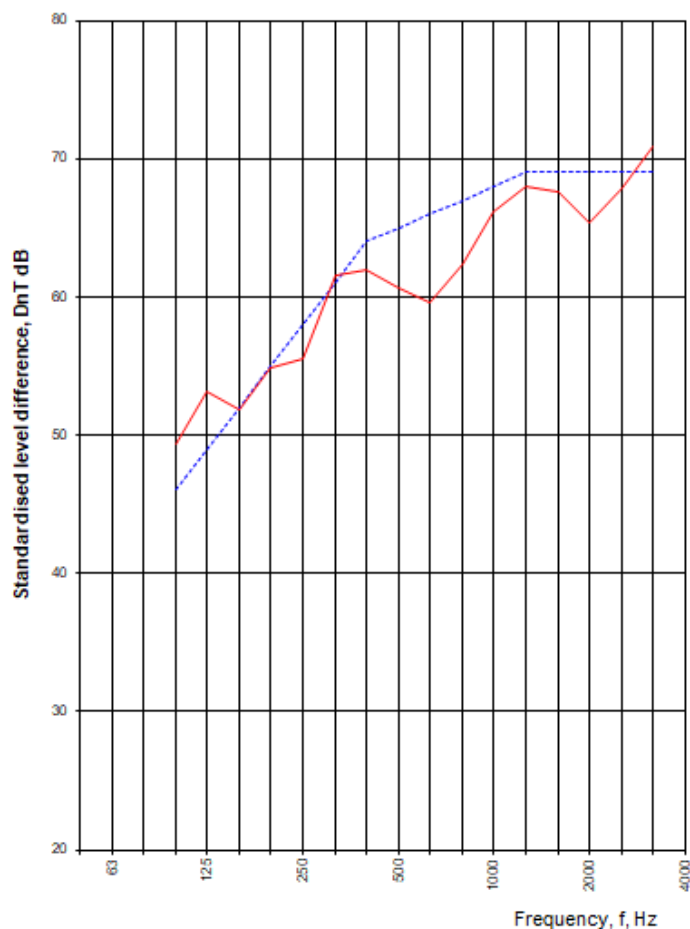


Source room volume: > 200 m³

Receiver room volume: 58 m³

Frequency f Hz	D _{nT} (one-third octave) dB
50	
63	
80	
100	49.3
125	53.1
160	51.8
200	54.9
250	55.5
315	61.6
400	61.9
500	60.6
630	59.6
800	62.4
1000	66.2
1250	68.0
1600	67.6
2000	65.4
2500	67.9
3150	70.9
4000	
5000	

b or B Indicates background
noise or max. background
noise correction applied respectively



Rating according to ISO 717-1
Evaluation based on field measurement
results obtained by an engineering method

$D_{nT,w} (C; C_{tr}) \geq 65 (-2 ; -4) \text{ dB}$

SBE Job Ref: 12-18-71818

Date: 21.9.20

Name of test institute: Stroma Built Environment

Signature: 

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Standardised level difference according to Approved Document E (2003 inc. 2004, 2010, 2013 & 2015 Amendments)
Field measurements of sound insulation for the purposes of Building Regulations 41 & 20(1 & 5)

Client: Lendlease Construction Ltd

Site: Manchester New Square

SBE Test No: 12-18-71818-SI-6

Date of test: 21.09.2020

Test Details: Airborne Floor test from Ground Floor - Gym to Flat 104 -
Bedroom 2



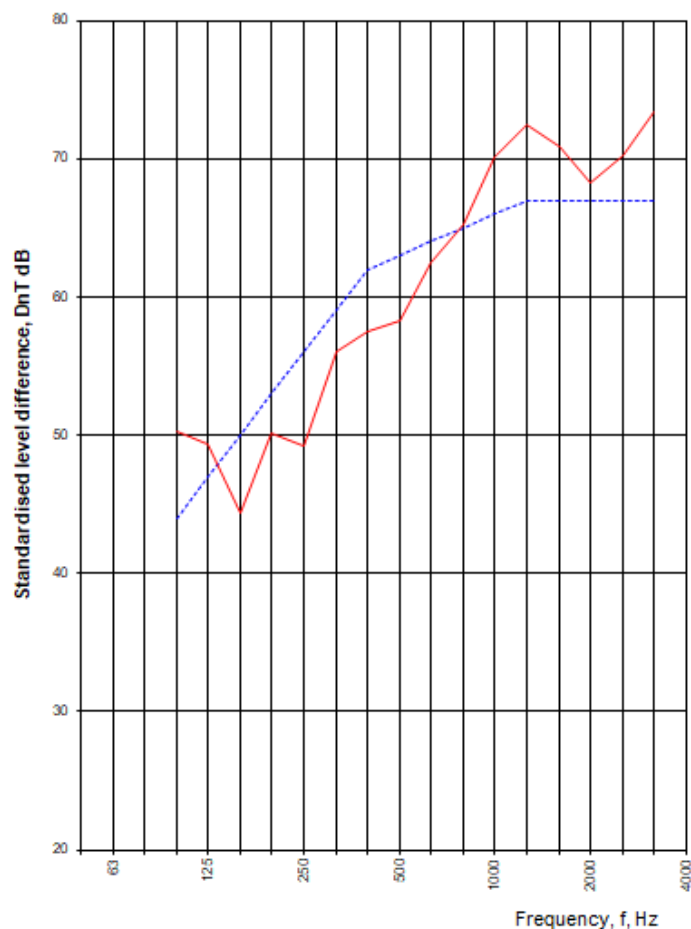
Source room volume: > 200 m³

Receiver room volume: 25 m³

Frequency
f
Hz
D_{nT}
(one-third
octave)
dB

50	
63	
80	
100	50.3
125	49.3
160	44.3
200	50.1
250	49.2
315	56.0
400	57.5
500	58.3
630	62.5
800	65.2
1000	70.1
1250	72.4
1600	70.9
2000	68.3
2500	70.2
3150	73.4
4000	
5000	

b or B Indicates background
noise or max. background
noise correction applied respectively



Rating according to ISO 717-1
Evaluation based on field measurement
results obtained by an engineering method

$D_{nT,w} (C; C_{tr}) \geq 63 (-2 ; -6) \text{ dB}$

SBE Job Ref: 12-18-71818

Date: 21.9.20

Name of test institute: Stroma Built Environment

Signature: 

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Appendix II – Report Conditions

This document has been prepared for the sole use, benefit and information of the Client. The liability of Stroma Built Environment in respect of the information contained herein will not extend to any third party unless prior agreement is obtained in writing from Stroma Built Environment.

This report is limited to addressing the specific acoustic issues contained herein. Advice has been provided for acoustic reasons only and it is recommended that appropriate expert advice be sought on all the ramifications, e.g. safety, fire, structural, CDM etc., associated with any proposals contained herein.

The in-situ performance of acoustic measures is influenced to a large extent by the quality of workmanship and compliance with the specifications on-site during construction, as such, Stroma Built Environment accepts no liability for issues with acoustic performance arising from such factors.

Acoustic survey and testing work carried out for the project is representative of the prevailing conditions at the time of the work. Conditions can vary and no warranty is given as to the possibility of changes in the environment of the site and surrounding area at differing times.

In particular, it should be noted that where calculations are carried out that are based on assumptions regarding certain aspects where information has not been supplied, these are provided for indicative purposes only and should be treated as such.