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### SOUND INSULATION REPORT

MARTEC ENVIRONMENTAL CONSULTANTS LTD

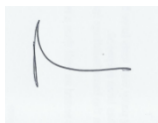
ANC REGISTERED TESTERS NO.134

For Certificates - www.theanc.co.uk -> ADvANCE	
ADvANCE Task No.	54362
ADvANCE Password	XVMZ7R
Report Date	09-Mar-18
Site Address	Rose Villa, Tilberthwaite Ave, Consiton LA21 8ED
Property Type	Flats
Tested Construction -	Conversion
Client	Emma Brown
Client Address	Rose Villa, Tilberthwaite Ave, Consiton LA21 8ED
Leq No	8246
Software Version	2.08

Prepared by: M A Kenyon MSc BSc MIOA



Checked by: P M Dyson BSc Dip Acoustics MIOA



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## 1.0 INTRODUCTION

This report is an ANC Register Report with the unique registration number [task number] 54362.

Martec Environmental Consultants Ltd were instructed to carry out sound insulation tests on separating structures as detailed on the title page of this report; the purpose of the tests was to determine whether the tested constructions met the performance standards of The Building Regulations.

This report describes the rooms tested by Mel Kenyon on 9<sup>th</sup> March 2018, the equipment used, the results obtained, and draws conclusions as to the performance of the structure in comparison with the standards required in the current Building Regulations. The detailed result graphs appear at the rear of the report.

## 2.0 CONSTRUCTION AND BACKGROUND NOISE

It is understood that the separating floors are the original construction with the addition of a secondary ceiling broadly in conformance with Floor Treatment 1 of Approved Document E.

It is understood that BCO agreed to the tests being conducted with the carpets in place.

The rooms were all furnished and the background noise levels were low and constant.

## 3.0 CRITERIA

For airborne sound insulation, Part E of The Building Regulations relies on a single number value for assessment of sound insulation; this term is known as  $D_{nT,w}+C_{tr}$ ;  $D_{nT,w}$  was the previous single figure term and  $C_{tr}$  is a spectrum adaptation term designed to give more weight to the performance of separating structures at low frequencies. For dwellings and rooms for residential purposes formed by a material change of use, the airborne sound insulation of both separating walls and floors should achieve a value of 43 dB  $D_{nT,w}+C_{tr}$  or higher. The larger the  $D_{nT,w}+C_{tr}$  the better the airborne sound insulation.

For impact sound and separating floors, the required value is an  $L'_{nT,w}$  of 64 dB or less for constructions subject to a material change of use. The smaller the  $L'_{nT,w}$  the better the impact sound insulation.

## 4.0 MEASUREMENTS

Approximate room dimensions were measured on site. Where cupboards were located on walls, they were opened during the measurements. In addition all the procedures described in Annex B of Approved Document E of the Building Regulations have been followed except where stated otherwise.

### For Airborne Sound Insulation Tests

The airborne sound insulation of the separating structures was tested in full accordance with the methodology of ISO 140:1998 Part 4 and single number values for  $D_{nT,w}$  &  $D_{nT,w}+C_{tr}$  were calculated using the methodology of ISO 717: 1996 part 1.

The source level for each room was determined according to the following method. The sound sources were placed on stands in the larger of the two rooms and the second source position was at least 1.4m from the first, with neither speaker facing towards the partition tested; the minimum distance from each speaker to any room boundary was at least 500mm and the minimum difference in those distances was 100mm. The speakers operated simultaneously using separate, uncorrelated, pink noise sources.

A preliminary sweep measurement was made over the course of at least 30 seconds and any differences between adjacent 1/3 octaves, greater than 6 dB, were eliminated by a combination of adjusting the source settings, moving the loudspeakers or by moving diffusers (or furniture). Subsequently 10 second measurements were made at six microphone positions for both the source and receiver rooms (received levels and background noise measurements), i.e. an average over 1 minute;

No microphone position was closer than 0.5m from the room boundaries. In smaller rooms (<25m<sup>3</sup>) five microphone positions may have been used for 12 seconds at each position; however, the separation distance requirements were complied with.

### For Impact Sound Insulation Tests

The impact sound insulation of the separating floors was tested in full accordance with the methodology of ISO 140:1998 Part 7 (impact) and single number values for  $L'_{nT,w}$  were calculated using the methodology of ISO 717: 1996 part 2.

The tapping machine was located in four separate positions upstairs and the average sound pressure level determined in the room over one minute below using a combination of 10 second results from six measurement positions.

## Instrumentation

Details of the measuring instrumentation are shown below:

Model	Instrument	Serial No.	Lab Cal Certificate	Date of Due Calibration
E Svan 957	Sound Level Meter	23202	23202/69865	08/03/2019
Svan SV12L	Preamp	24264	23202/69865	08/03/2019
PCB 377B02	Microphone	LW135130	23202/69865	08/03/2019
B&K 4231	Calibrator	2054928	2084928/68198	25/07/2018
Prosound	A87RZ Speaker Amp	03/15	n/a	n/a
Prosound	A87RZ Speaker Amp	04/15	n/a	n/a
Stereo recording of pink noise sources played on PC			n/a	n/a
Sound Solutions	Tapping Machine	TP2015	TP02015/01/18	05/01/2020

## Reverberation Time Measurements

The reverberation times were determined by using the sound level meter and its internal software or external PC software. The average value of T20 for six starting pistol impulses at six different source and receiver positions was used, except where receiver rooms were small (<10m<sup>3</sup>) where the average of three impulses at each of two positions was used. Reverberation time calculations were made using the “reverse-Schroeder integration method”.

## 5.0 RESULTS

The full results appear at the rear of the report. The single figure rating values are presented below:

Table 1: Airborne Sound Insulation Results [dB] - 09/03/2018						$D_{nT,w}+C_{tr}$				
ANC Test	Source	Vol Receiver (m <sup>3</sup> )		Vol Element (m <sup>3</sup> )		Criterion	$D_{nT,w}$	$C_{tr}$	$D_{nT,w}+C_{tr}$	Pass/ Fail
1345436201	Rose Loft FF Front Bed	38	Rose Villa GF Front Bed	30	Floor	≥43	51	-7	44	pass
1345436202	Rose Villa GF Living Rm	33	Rose Loft FF Rear Bed	24	Floor	≥43	53	-7	46	pass

Table 2: Impact Sound Insulation Results [dB] - 09/03/2018						$L'_{nT,w}$			
ANC Test	Source	Vol Receiver (m <sup>3</sup> )		Vol Element (m <sup>3</sup> )		Criterion	$L'_{nT,w}$	Pass/ Fail	
1345436203	Rose Loft FF Front Bed	38	Rose Villa GF Front Bed	30	Floor Impact	≤64	32	pass	
1345436204	Rose Loft FF Rear Bed	24	Rose Villa GF Living Rm	33	Floor Impact	≤64	32	pass	

## 6.0 ASSESSMENT AND CONCLUSIONS

It can be seen that the tested separating floors PASSED the sound insulation standards of The Building Regulations.



## 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](http://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: 54362

Task Password: XVMZ7R

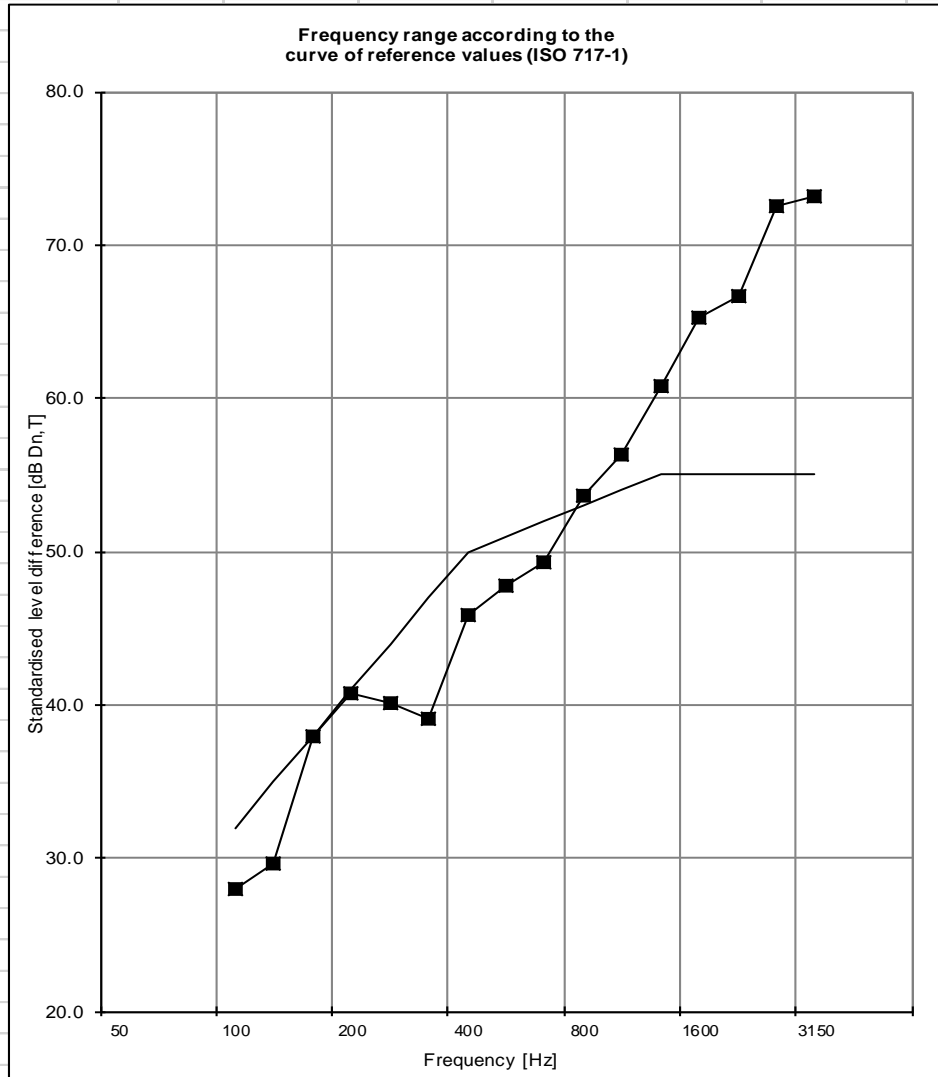
4. Select role "Building Control Officer" and press "Login"
5. You will then see a summary list of results of all the Tests undertaken to date for this project (Task) as held on the secure primary server and you can print this table for your records.

**ISO 140-4:Part 4 - Standardised level Difference**  
**Field measurements of airborne sound insulation between rooms**

<b>Client:</b>	Emma Brown	<b>Date of Test:</b>	09/03/2018
<b>Desc:</b>	Site: Rose Villa, Tilberthwaite Ave, Consiton LA21 8ED	<b>Version</b>	2.08
Source	Rose Loft FF Front Bed		
Receiver	Rose Villa GF Front Bed		
Type	Floor		
Cnstrn	ADE FT1 & Carpet		
<b>Source room vol [m3]</b>	37.6	<b>Receiving room vol [m3]</b>	29.9

Freq Hz	D <sub>nT</sub> [1/3 oct] dB
50	0.0
63	0.0
80	0.0
100	28.0
125	29.6
160	38.0
200	40.7
250	40.1
315	39.1
400	45.9
500	47.8
630	49.3
800	53.6
1000	56.3
1250	60.8
1600	65.3
2000	66.7
2500	72.5
3150	73.2
4000	0.0
5000	0.0

Background noise  
Low -C



<b>Rating According to ISO 717-1</b>	
D <sub>nT,w</sub> (C ; C <sub>tr</sub> ) = 51 ( -2 ; -7 ) dB	D <sub>nT,w</sub> + C <sub>tr</sub> = 44 dB

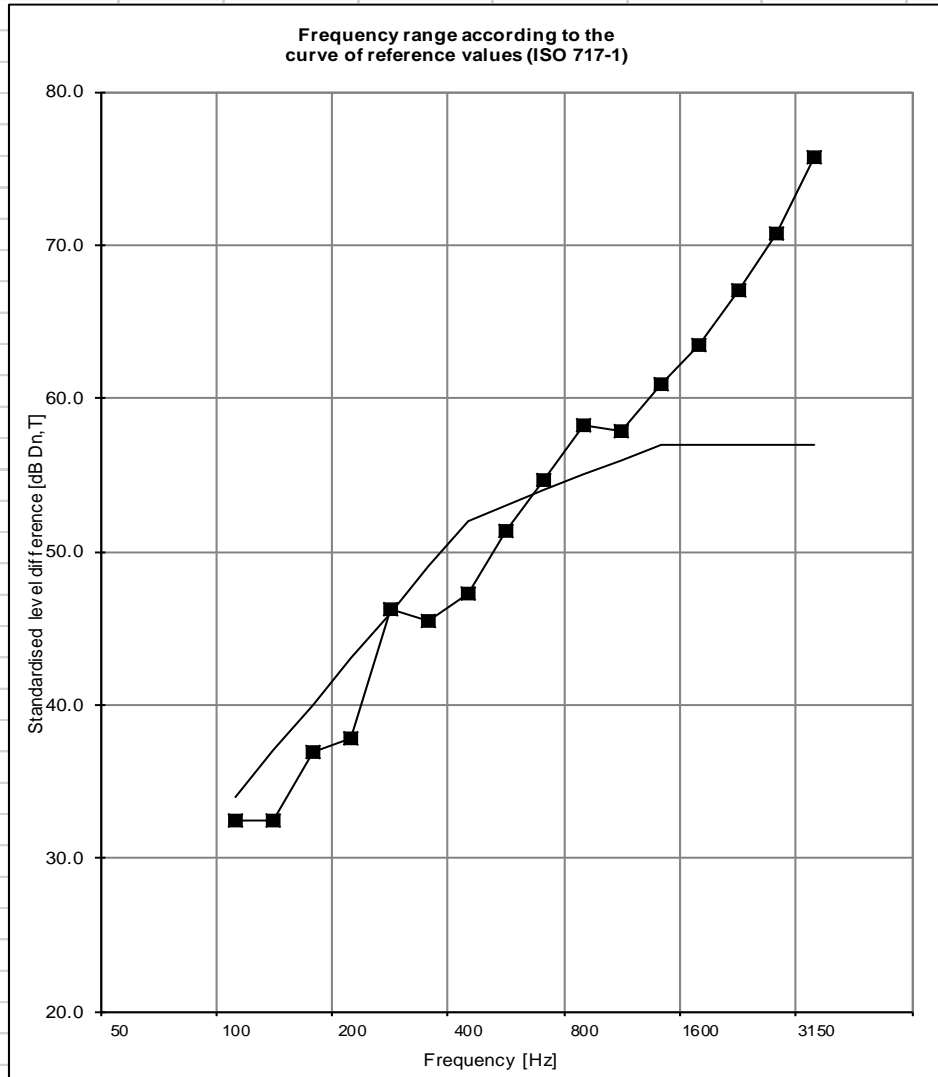
Test No.	8246 -A1	Test Institute:	Martec Environmental Consultants Ltd
ANC Test	1345436201	Signature:	<i>M.A. [Signature]</i>
Date of Report	09-Mar-18		

**ISO 140-4:Part 4 - Standardised level Difference**  
**Field measurements of airborne sound insulation between rooms**

<b>Client:</b>	Emma Brown	<b>Date of Test:</b>	09/03/2018
<b>Desc:</b>	Site: Rose Villa, Tilberthwaite Ave, Consiton LA21 8ED	<b>Version</b>	2.08
Source	Rose Villa GF Living Rm		
Receiver	Rose Loft FF Rear Bed		
Type	Floor		
Cnstrn	ADE FT1 & Carpet		
<b>Source room vol [m3]</b>	32.8	<b>Receiving room vol [m3]</b>	24.3

Freq Hz	D <sub>nT</sub> [1/3 oct] dB
50	0.0
63	0.0
80	0.0
100	32.5
125	32.4
160	36.9
200	37.8
250	46.2
315	45.5
400	47.2
500	51.4
630	54.6
800	58.2
1000	57.9
1250	60.9
1600	63.5
2000	67.1
2500	70.7
3150	75.7
4000	0.0
5000	0.0

Background noise  
Low -C



<b>Rating According to ISO 717-1</b>	
D <sub>nT,w</sub> (C ; C <sub>tr</sub> ) = 53 (-1 ; -7) dB	D <sub>nT,w</sub> + C <sub>tr</sub> = 46 dB

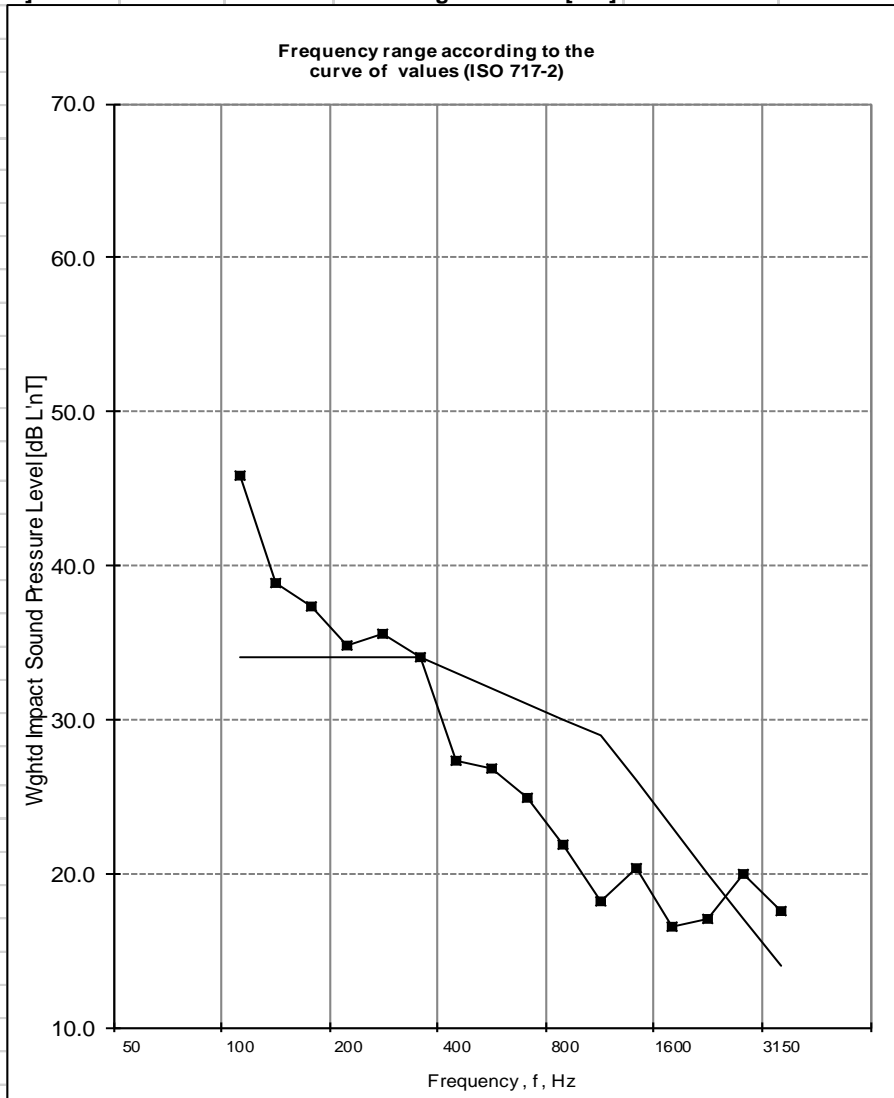
Test No.	8246 -A2	Test Institute:	Martec Environmental Consultants Ltd
ANC Test	1345436202	Signature:	<i>M.A. [Signature]</i>
Date of Report	09-Mar-18		

**ISO 140-7:1998 Standardised Impact Sound Pressure Level**  
**Field measurements of impact insulation of floors**

<b>Client:</b>	Emma Brown	<b>Date:</b>	09/03/2018
<b>Desc:</b>	Site Rose Villa, Tilberthwaite Ave, Coniseton LA21 8ED	<b>Version:</b>	2.08
Source	Rose Loft FF Front Bed	<b>Type:</b>	Floor-Impact
Receive	Rose Villa GF Front Bed		
Cnstrn	ADE FT1 & Carpet		
<b>Source room vol [m3]</b>	37.6	<b>Receiving room vol [m3]</b>	29.9

Freq Hz	L' <sub>nT</sub> [1/3 oct] dB
50	0.0
63	0.0
80	0.0
100	≤45.8
125	≤38.9
160	≤37.3
200	≤34.8
250	≤35.5
315	≤34.1
400	≤27.3
500	≤26.8
630	≤24.9
800	≤21.8
1000	≤18.2
1250	≤20.3
1600	≤16.5
2000	≤17.0
2500	≤19.9
3150	≤17.6
4000	0.0
5000	0.0

Background noise  
Low -C



<b>Rating According to ISO 717-2</b>	
L' <sub>nTw</sub>	≤ 32 dB

Test No	8246 -I1	Test Institute:	Martec Environmental Consultants Ltd
ANC Test	1345436203	<b>Signature:</b>	
Date of Report	09-Mar-18		



ISO 140-7:1998 Standardised Impact Sound Pressure Level Field measurements of impact insulation of floors			
<b>Client:</b>	Emma Brown	<b>Date:</b>	09/03/2018
<b>Desc:</b>	Site Rose Villa, Tilberthwaite Ave, Consiton LA21 8ED	<b>Version</b>	2.08
Source	Rose Loft FF Rear Bed	<b>Type</b>	Floor-Impact
Receive	Rose Villa GF Living Rm		
Cnstrn	ADE FT1 & Carpet		
<b>Source room vol [m3]</b>	24.3	<b>Receiving room vol [m3]</b>	32.8

Freq Hz	L' <sub>nT</sub> [1/3 oct] dB
50	0.0
63	0.0
80	0.0
100	39.1
125	39.7
160	38.9
200	38.4
250	34.3
315	32.9
400	27.5
500	24.6
630	21.4
800	19.4
1000	≤15.0
1250	≤15.3
1600	≤12.9
2000	≤16.2
2500	19.6
3150	21.7
4000	0.0
5000	0.0

Background noise  
Low -C

Frequency range according to the curve of values (ISO 717-2)

Frequency (Hz)	Weighted Impact Sound Pressure Level (dB L'nT)
100	39.1
125	39.7
160	38.9
200	38.4
250	34.3
315	32.9
400	27.5
500	24.6
630	21.4
800	19.4
1000	≤15.0
1250	≤15.3
1600	≤12.9
2000	≤16.2
2500	19.6
3150	21.7

**Rating According to ISO 717-2**  
L'<sub>nTw</sub> ≤ 32 dB

Test No	8246 -I2	Test Institute: Martec Environmental Consultants Ltd
ANC Test	1345436204	<b>Signature:</b> <i>M.A. Kealey</i>
Date of Report	09-Mar-18	