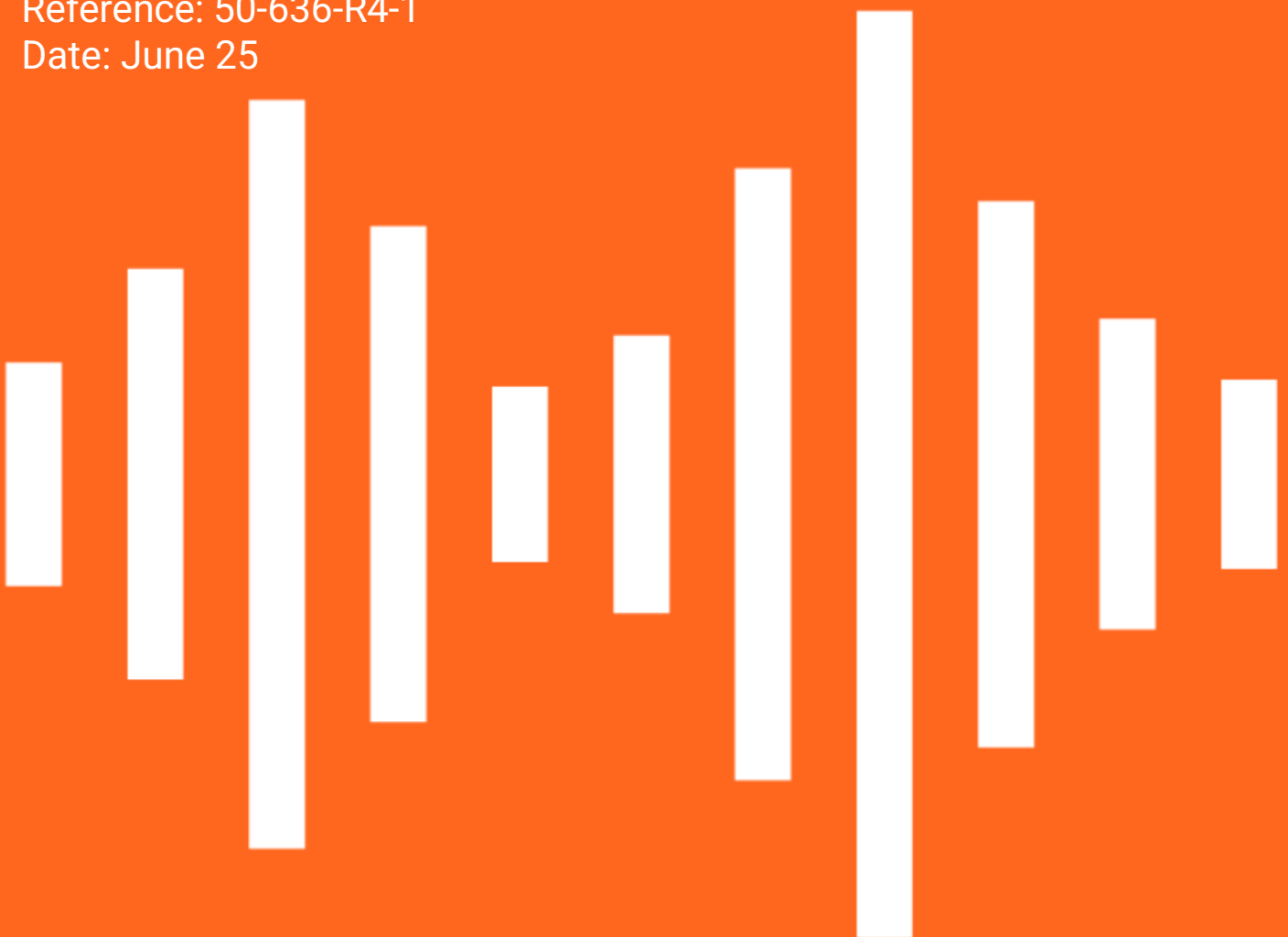


Post Completion Noise Testing and Verification Report – Plots 97, 99, 105, 118, 123 and 252

Site: Bennett Street, Manchester
Reference: 50-636-R4-1
Date: June 25





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REV REF:	DESCRIPTION	AUTHOR	CHECKED	AUTHORISED	DATE
R4-1	First issue	LF	MB	LF	24/06/25
R4-2					

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EXECUTIVE SUMMARY

Site Address	Bennett Street, Manchester M12 5NE
National Grid Reference	E 386210, N 397025.
Background	Post completion acoustic testing is required in order to discharge a planning condition in relation to the residential development at the above address.
Surveys Completed	E3P have undertaken unattended measurements inside a worst-case living room and bedroom of selected plots during a typical weekday period. As mechanical ventilation was installed with no trickle vents, windows were not required to be opened for this and, as such, a 24-hour survey was conducted with windows closed. Verification of any mitigation measures, including barriers, was also undertaken.
Assessments Completed	Measured internal noise levels have been corrected to allow for unfurnished rooms and then compared to BS 8233 and WHO guidelines for internal habitable rooms. The surveys determined compliance with the applicable criteria in both rooms of Plots 97, 99, 105, 118, 123 and 252.
Remedial Mitigation Measures	Due to the outcome of the survey and verification, no remedial measures are required. All currently installed mitigation are as recommended in the original Noise Assessment.



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1. INTRODUCTION

1.1. BACKGROUND

E3P were commissioned by Kellen Homes to undertake Post Completion Noise Testing for Plots 97, 99, 105, 118, 123 and 252 at the development site on Bennett Street in Manchester, to be referred to hereafter as 'the Site'.

Following submission of the Noise Impact Assessment (50-636-R1-6) by E3P, planning permission was granted with the following condition applied:

18b) Prior to first occupation of the residential units which have been acoustically insulated, a verification report shall be required to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved acoustic consultant's report. The report shall also undertake post completion testing to confirm that the internal noise criteria have been met. Any instance of non-conformity with the recommendations in the report shall be detailed along with any measures required to ensure compliance with the internal noise criteria.

1.2. REPORT OBJECTIVES

The objectives of this report are as follows.

- ✦ Establish and measure the existing sound levels within affected rooms during typical weekday periods.
- ✦ Assess internal noise levels in accordance with criteria given in BS 8233.
- ✦ Verify any mitigation measures, where required.

1.3. DEVELOPMENT

A snapshot of the development layout is indicated in Figure 1.

Accommodation Schedule
Olympic Storage, Manchester

Unit Type	Bed No.	Type	No.	Sqft	Total Sqft	Sqft
1 Bed	1	1 Bed	100	100	100	100
2 Bed	2	2 Bed	100	200	200	200
3 Bed	3	3 Bed	100	300	300	300
4 Bed	4	4 Bed	100	400	400	400
5 Bed	5	5 Bed	100	500	500	500
6 Bed	6	6 Bed	100	600	600	600
7 Bed	7	7 Bed	100	700	700	700
8 Bed	8	8 Bed	100	800	800	800
9 Bed	9	9 Bed	100	900	900	900
10 Bed	10	10 Bed	100	1000	1000	1000
11 Bed	11	11 Bed	100	1100	1100	1100
12 Bed	12	12 Bed	100	1200	1200	1200
13 Bed	13	13 Bed	100	1300	1300	1300
14 Bed	14	14 Bed	100	1400	1400	1400
15 Bed	15	15 Bed	100	1500	1500	1500
16 Bed	16	16 Bed	100	1600	1600	1600
17 Bed	17	17 Bed	100	1700	1700	1700
18 Bed	18	18 Bed	100	1800	1800	1800
19 Bed	19	19 Bed	100	1900	1900	1900
20 Bed	20	20 Bed	100	2000	2000	2000
21 Bed	21	21 Bed	100	2100	2100	2100
22 Bed	22	22 Bed	100	2200	2200	2200
23 Bed	23	23 Bed	100	2300	2300	2300
24 Bed	24	24 Bed	100	2400	2400	2400
25 Bed	25	25 Bed	100	2500	2500	2500
26 Bed	26	26 Bed	100	2600	2600	2600
27 Bed	27	27 Bed	100	2700	2700	2700
28 Bed	28	28 Bed	100	2800	2800	2800
29 Bed	29	29 Bed	100	2900	2900	2900
30 Bed	30	30 Bed	100	3000	3000	3000
31 Bed	31	31 Bed	100	3100	3100	3100
32 Bed	32	32 Bed	100	3200	3200	3200
33 Bed	33	33 Bed	100	3300	3300	3300
34 Bed	34	34 Bed	100	3400	3400	3400
35 Bed	35	35 Bed	100	3500	3500	3500
36 Bed	36	36 Bed	100	3600	3600	3600
37 Bed	37	37 Bed	100	3700	3700	3700
38 Bed	38	38 Bed	100	3800	3800	3800
39 Bed	39	39 Bed	100	3900	3900	3900
40 Bed	40	40 Bed	100	4000	4000	4000
41 Bed	41	41 Bed	100	4100	4100	4100
42 Bed	42	42 Bed	100	4200	4200	4200
43 Bed	43	43 Bed	100	4300	4300	4300
44 Bed	44	44 Bed	100	4400	4400	4400
45 Bed	45	45 Bed	100	4500	4500	4500
46 Bed	46	46 Bed	100	4600	4600	4600
47 Bed	47	47 Bed	100	4700	4700	4700
48 Bed	48	48 Bed	100	4800	4800	4800
49 Bed	49	49 Bed	100	4900	4900	4900
50 Bed	50	50 Bed	100	5000	5000	5000
51 Bed	51	51 Bed	100	5100	5100	5100
52 Bed	52	52 Bed	100	5200	5200	5200
53 Bed	53	53 Bed	100	5300	5300	5300
54 Bed	54	54 Bed	100	5400	5400	5400
55 Bed	55	55 Bed	100	5500	5500	5500
56 Bed						



2. ASSESSMENT METHODOLOGY

2.1. BRITISH STANDARD BS 8233:2014+A1:2019 – GUIDANCE ON SOUND INSULATION AND NOISE REDUCTION FOR BUILDINGS

The scope of this standard is the provision of recommendations for the control of noise in and around buildings including residential dwellings. It suggests appropriate criteria and limits for different situations, which are primarily intended to guide the design of new buildings or refurbished buildings undergoing a change of use, rather than to assess the effect of changes in the external noise climate.

The standard suggests suitable internal noise levels within different types of buildings, including residential dwellings, as shown in Table 1.

Table 1 **BS 8233:2014 Recommended Internal Noise Levels**

Criterion	Typical situation	Design criterion, $L_{Aeq,t}$ (dB)
Suitable resting and sleeping conditions	Living Room	35
	Bedroom	30



3. SURVEY RESULTS

It was noted at installation that mechanical ventilation was installed and, as such, no vents/windows were required to be opened for ventilation. However, the system was deactivated to allow for the measurement of external to internal noise break-in.

The rooms were unfurnished and so a correction to the measured values may be required.

3.1. PLOT 97

3.1.1. LIVING ROOM – INTERNAL SOUND MEASUREMENT

E3P has conducted an internal sound survey within the living room with all windows and doors closed. The survey was conducted during the following periods:

📅 12:00 Tuesday 10th June to 12:00 Wednesday 11th June 2025.

The following noise measurement position was chosen for the Noise Survey:

📍 Noise Measurement Position 1 (NMP1): Located in the centre of the living room at a height of 1.5 m above floor level. Noise sources were noted to be distant traffic, road and rail, and on-site construction works, intermittently.

A summary of the hourly measured sound pressure levels inside the living room are presented in Table 2.

Table 2 Living Room – Unfurnished – Plot 97

Measurement Start Time	Measured ambient noise level, $L_{Aeq,T}$ (dB)	Measured maximum noise level, $L_{Amax,fast}$ (dB)
10/06/2025 12:00	22.6	43.3
10/06/2025 13:00	21.2	38
10/06/2025 14:00	25.1	47.5
10/06/2025 15:00	25.2	42.3
10/06/2025 16:00	25.2	50.8
10/06/2025 17:00	23.3	39.2
10/06/2025 18:00	22.8	47.7
10/06/2025 19:00	21.3	40.7
10/06/2025 20:00	23.2	44.6
10/06/2025 21:00	20.6	36.2
10/06/2025 22:00	20.3	39.9
10/06/2025 23:00	20.6	34.4
11/06/2025 00:00	19.4	36.7
11/06/2025 01:00	21.3	41.7
11/06/2025 02:00	20.2	32.6
11/06/2025 03:00	18.8	34.1
11/06/2025 04:00	21.5	44.5
11/06/2025 05:00	22.6	50.3
11/06/2025 06:00	23.4	53.5
11/06/2025 07:00	23.9	37.3



Measurement Start Time	Measured ambient noise level, $L_{Aeq,T}$ (dB)	Measured maximum noise level, $L_{Amax,fast}$ (dB)
11/06/2025 08:00	24.4	43.1
11/06/2025 09:00	26.4	54.5
11/06/2025 10:00	27.5	57.1
11/06/2025 11:00	23.7	42.0

The resultant 16-hour noise level is noted to be 24 dB applicable to the unfurnished room. If furnishing corrections were applied, the noise level would be lower.

This falls below the 35 dB internal criterion by 11 dB. As such, the installed glazing and façade insulation are acceptable.

3.1.2. BEDROOM – INTERNAL SOUND MEASUREMENT

E3P has conducted a full 24-hour survey within the bedroom with all windows and doors closed. The survey was conducted during the following periods:

- 📅 12:00 Tuesday 10th June to 12:00 Wednesday 11th June 2025.

The following noise measurement position was chosen for the Noise Survey:

- 📍 Noise Measurement Position 2 (NMP2): Located in the centre of the bedroom at a height of 1.5 m above floor level. Noise sources were noted to be distant road and rail traffic and on-site construction works, intermittently.

A summary of the hourly measured sound pressure levels inside the bedroom are presented in Table 3.

Table 3 Bedroom – Unfurnished – Plot 97

Measurement Start Time	Measured ambient noise level, $L_{Aeq,T}$ (dB)	Measured maximum noise level, $L_{Amax,fast}$ (dB)
10/06/2025 12:00	23.7	51.1
10/06/2025 13:00	26.4	52.8
10/06/2025 14:00	41.7	75.1
10/06/2025 15:00	27.3	51.4
10/06/2025 16:00	34.7	69.7
10/06/2025 17:00	26.5	50.8
10/06/2025 18:00	27.2	53.5
10/06/2025 19:00	25.7	49.5
10/06/2025 20:00	27.1	54.6
10/06/2025 21:00	22.3	36.5
10/06/2025 22:00	22.3	45.9
10/06/2025 23:00	22.2	34.4
11/06/2025 00:00	22.5	50.0
11/06/2025 01:00	21.7	36.1
11/06/2025 02:00	22.3	49.8
11/06/2025 03:00	20.5	32.5
11/06/2025 04:00	21.3	33.9



Measurement Start Time	Measured ambient noise level, $L_{Aeq,T}$ (dB)	Measured maximum noise level, $L_{Amax,fast}$ (dB)
11/06/2025 05:00	22.6	37.5
11/06/2025 06:00	23.1	41.4
11/06/2025 07:00	23.2	41.3
11/06/2025 08:00	23.1	38.1
11/06/2025 09:00	29.9	57.4
11/06/2025 10:00	28.8	59.5
11/06/2025 11:00	25.1	45.7

The resultant 16-hour noise level is noted to be 31 dB and the 8 hour night-time noise level is 22 dB. The 10th highest maximum noise level during the night-time period was also measured and noted to be 36 dB. All applicable to the unfurnished room. With the correction applied to allow for furnishings, such as carpet, furniture, curtains, etc, the resultant noise levels would be lower.

These fall below the 35 dB, 30 dB and 45 dB internal criterion respectively. As such, the installed glazing and façade insulation are acceptable.

3.2. PLOT 99

3.2.1. LIVING ROOM – INTERNAL SOUND MEASUREMENT

E3P has conducted an internal sound survey within the living room with all windows and doors closed. The survey was conducted during the following periods:

- 📅 13:00 Tuesday 10th June to 13:00 Wednesday 11th June 2025.

The following noise measurement position was chosen for the Noise Survey:

- 📍 Noise Measurement Position 3 (NMP3): Located in the centre of the living room at a height of 1.5 m above floor level. Noise sources were noted to be distant traffic, road and rail, and on-site construction works, intermittently.

A summary of the hourly measured sound pressure levels inside the living room are presented in Table 4.

Table 4 Living Room – Unfurnished – Plot 99

Measurement Start Time	Measured ambient noise level, $L_{Aeq,T}$ (dB)	Measured maximum noise level, $L_{Amax,fast}$ (dB)
10/06/2025 13:00	39.6	77.9
10/06/2025 14:00	26.2	52.4
10/06/2025 15:00	35.4	74.4
10/06/2025 16:00	25.8	47.8
10/06/2025 17:00	23.7	42.6
10/06/2025 18:00	23.0	44.7
10/06/2025 19:00	24.2	45.3
10/06/2025 20:00	23.0	43.0
10/06/2025 21:00	22.2	45.9



Measurement Start Time	Measured ambient noise level, $L_{Aeq,T}$ (dB)	Measured maximum noise level, $L_{Amax,fast}$ (dB)
10/06/2025 22:00	23.4	43.0
10/06/2025 23:00	23.0	41.5
11/06/2025 00:00	22.3	41.1
11/06/2025 01:00	23.4	42.4
11/06/2025 02:00	23.4	34.3
11/06/2025 03:00	21.6	36.2
11/06/2025 04:00	22.9	37.8
11/06/2025 05:00	23.8	40.3
11/06/2025 06:00	24.4	49.2
11/06/2025 07:00	24.3	45.1
11/06/2025 08:00	25.2	50.4
11/06/2025 09:00	29.4	54.0
11/06/2025 10:00	26.2	52.5
11/06/2025 11:00	28.8	60.8
11/06/2025 12:00	39.6	77.9

The resultant 16-hour noise level is noted to be 30 dB applicable to the unfurnished room. If furnishing corrections were applied, the noise level would be lower.

This falls below the 35 dB internal criterion by 5 dB. As such, the installed glazing and façade insulation are acceptable.

3.2.2. BEDROOM – INTERNAL SOUND MEASUREMENT

E3P has conducted a full 24-hour survey within the bedroom with all windows and doors closed. The survey was conducted during the following periods:

- 📅 13:00 Tuesday 10th June to 13:00 Wednesday 11th June 2025.

The following noise measurement position was chosen for the Noise Survey:

- 📍 Noise Measurement Position 4 (NMP4): Located in the centre of the bedroom at a height of 1.5 m above floor level. Noise sources were noted to be distant road and rail traffic and on-site construction works, intermittently.

A summary of the hourly measured sound pressure levels inside the bedroom are presented in Table 5.

Table 5 Bedroom – Unfurnished – Plot 99

Measurement Start Time	Measured ambient noise level, $L_{Aeq,T}$ (dB)	Measured maximum noise level, $L_{Amax,fast}$ (dB)
10/06/2025 13:00	25.0	41.0
10/06/2025 14:00	25.9	47.1
10/06/2025 15:00	25.9	47.2
10/06/2025 16:00	26.0	39.5
10/06/2025 17:00	26.3	53.8
10/06/2025 18:00	25.4	43.4



Measurement Start Time	Measured ambient noise level, $L_{Aeq,T}$ (dB)	Measured maximum noise level, $L_{Amax,fast}$ (dB)
10/06/2025 19:00	26.0	47.8
10/06/2025 20:00	24.2	46.3
10/06/2025 21:00	25.3	49.2
10/06/2025 22:00	22.0	37.6
10/06/2025 23:00	22.1	42.0
11/06/2025 00:00	22.0	38.4
11/06/2025 01:00	19.5	39.6
11/06/2025 02:00	20.7	39.9
11/06/2025 03:00	19.2	36.5
11/06/2025 04:00	18.6	35.5
11/06/2025 05:00	21.3	36.6
11/06/2025 06:00	23.6	44.9
11/06/2025 07:00	22.8	37.8
11/06/2025 08:00	23.2	37.1
11/06/2025 09:00	23.9	39.4
11/06/2025 10:00	25.1	51.1
11/06/2025 11:00	23.2	49.2
11/06/2025 12:00	24.1	50.2

The resultant 16-hour noise level is noted to be 27 dB and the 8 hour night-time noise level is 21 dB. The 10th highest maximum noise level during the night-time period was also measured and noted to be 41 dB. All applicable to the unfurnished room. With the correction applied to allow for furnishings, such as carpet, furniture, curtains, etc, the resultant noise levels would be lower.

These fall below the 35 dB, 30 dB and 45 dB internal criterion respectively. As such, the installed glazing and façade insulation are acceptable.

3.3. PLOT 105

3.3.1. LIVING ROOM – INTERNAL SOUND MEASUREMENT

E3P has conducted an internal sound survey within the living room with all windows and doors closed. The survey was conducted during the following periods:

- 📍 11:00 Wednesday 4th June to 11:00 Thursday 4th June 2025.

The following noise measurement position was chosen for the Noise Survey:

- 📍 Noise Measurement Position 5 (NMP5): Located in the centre of the living room at a height of 1.5 m above floor level. Noise sources were noted to be distant traffic, road and rail, and on-site construction works, intermittently.

A summary of the hourly measured sound pressure levels inside the living room are presented in Table 6.



Table 6 Living Room – Unfurnished – Plot 105

Measurement Start Time	Measured ambient noise level, $L_{Aeq,T}$ (dB)	Measured maximum noise level, $L_{Amax,fast}$ (dB)
04/06/2025 11:00	34.7	67.2
04/06/2025 12:00	30.1	57.0
04/06/2025 13:00	37.8	62.2
04/06/2025 14:00	30.7	61.1
04/06/2025 15:00	30.9	54.3
04/06/2025 16:00	32.4	59.7
04/06/2025 17:00	30.8	59.6
04/06/2025 18:00	31.6	54.6
04/06/2025 19:00	30.1	53.4
04/06/2025 20:00	28.9	58.2
04/06/2025 21:00	27.9	48.4
04/06/2025 22:00	29.4	47.5
04/06/2025 23:00	25.3	52.4
05/06/2025 00:00	26.5	50.1
05/06/2025 01:00	24.6	44.5
05/06/2025 02:00	22.6	46.1
05/06/2025 03:00	26.5	43.3
05/06/2025 04:00	26.8	47.9
05/06/2025 05:00	31.7	45.4
05/06/2025 06:00	37.4	46.9
05/06/2025 07:00	40.4	51.0
05/06/2025 08:00	31.2	46.5
05/06/2025 09:00	29.9	45.5
05/06/2025 10:00	27.5	46.9

The resultant 16-hour noise level is noted to be 33 dB applicable to the unfurnished room. If furnishing corrections were applied, the noise level would be lower.

This falls below the 35 dB internal criterion by 2 dB. As such, the installed glazing and façade insulation are acceptable.

3.3.2. BEDROOM – INTERNAL SOUND MEASUREMENT

E3P has conducted a full 24-hour survey within the bedroom with all windows and doors closed. The survey was conducted during the following periods:

- 📍 11:00 Wednesday 4th June to 11:00 Thursday 4th June 2025.

The following noise measurement position was chosen for the Noise Survey:

- 📍 Noise Measurement Position 6 (NMP6): Located in the centre of the bedroom at a height of 1.5 m above floor level. Noise sources were noted to be distant road and rail traffic and on-site construction works, intermittently.

A summary of the hourly measured sound pressure levels inside the bedroom are presented in Table 7.



Table 7 Bedroom – Unfurnished – Plot 105

Measurement Start Time	Measured ambient noise level, $L_{Aeq,T}$ (dB)	Measured maximum noise level, $L_{Amax,fast}$ (dB)
04/06/2025 11:00	29.9	56.2
04/06/2025 12:00	38.9	58.8
04/06/2025 13:00	30.6	55.3
04/06/2025 14:00	31.9	58.6
04/06/2025 15:00	31.9	56.8
04/06/2025 16:00	31.1	55.4
04/06/2025 17:00	32.0	59.8
04/06/2025 18:00	30.4	53.4
04/06/2025 19:00	29.1	45.6
04/06/2025 20:00	29.1	53.5
04/06/2025 21:00	29.5	51.1
04/06/2025 22:00	27.5	58.1
04/06/2025 23:00	27.7	54.1
05/06/2025 00:00	24.8	51.2
05/06/2025 01:00	24.8	47.3
05/06/2025 02:00	24.2	44.0
05/06/2025 03:00	25.8	49.3
05/06/2025 04:00	27.9	46.6
05/06/2025 05:00	30.3	45.3
05/06/2025 06:00	30.9	47.3
05/06/2025 07:00	29.4	48.9
05/06/2025 08:00	29.4	47.1
05/06/2025 09:00	29.1	46.8
05/06/2025 10:00	29.9	56.2

The resultant 16-hour noise level is noted to be 32 dB and the 8 hour night-time noise level is 27 dB. The 10th highest maximum noise level during the night-time period was also measured and noted to be 45 dB. All applicable to the unfurnished room. With the correction applied to allow for furnishings, such as carpet, furniture, curtains, etc, the resultant noise levels would be lower.

These fall below the 35 dB, 30 dB and 45 dB internal criterion respectively. As such, the installed glazing and façade insulation are acceptable.

3.4. PLOT 118

3.4.1. LIVING ROOM – INTERNAL SOUND MEASUREMENT

E3P has conducted an internal sound survey within the living room with all windows and doors closed. The survey was conducted during the following periods:

 11:00 Thursday 19th June to 11:00 Friday 20th June 2025.

The following noise measurement position was chosen for the Noise Survey:



- ✳ Noise Measurement Position 7 (NMP7): Located in the centre of the living room at a height of 1.5 m above floor level. Noise sources were noted to be distant traffic, road and rail, and on-site construction works, intermittently.

A summary of the hourly measured sound pressure levels inside the living room are presented in Table 8.

Table 8 Living Room – Unfurnished – Plot 118

Measurement Start Time	Measured ambient noise level, $L_{Aeq,T}$ (dB)	Measured maximum noise level, $L_{Amax,fast}$ (dB)
19/06/2025 11:00	31.4	59.6
19/06/2025 12:00	30.0	57.7
19/06/2025 13:00	30.2	54.4
19/06/2025 14:00	29.5	53.3
19/06/2025 15:00	29.6	49.9
19/06/2025 16:00	29.2	48.7
19/06/2025 17:00	31.2	56.4
19/06/2025 18:00	33.5	60.9
19/06/2025 19:00	29.3	59.3
19/06/2025 20:00	29.6	57
19/06/2025 21:00	29.4	52.1
19/06/2025 22:00	28.0	55.6
19/06/2025 23:00	27.5	54.2
20/06/2025 00:00	26.9	55.2
20/06/2025 01:00	21.4	23.5
20/06/2025 02:00	40.2	69.5
20/06/2025 03:00	31.8	43.1
20/06/2025 04:00	32.0	44.1
20/06/2025 05:00	32.1	46.5
20/06/2025 06:00	33.6	51.6
20/06/2025 07:00	33.4	53.7
20/06/2025 08:00	34.4	52.2
20/06/2025 09:00	45.9	77.2
20/06/2025 10:00	31.4	59.6

The resultant 16-hour noise level is noted to be 35 dB applicable to the unfurnished room. If furnishing corrections were applied, the noise level would be lower.

This achieves the 35 dB internal criterion. As such, the installed glazing and façade insulation are acceptable.

3.4.2. BEDROOM – INTERNAL SOUND MEASUREMENT

E3P has conducted a full 24-hour survey within the bedroom with all windows and doors closed. The survey was conducted during the following periods:

- ✳ 10:00 Thursday 19th June to 10:00 Friday 20th June 2025.

The following noise measurement position was chosen for the Noise Survey:



- ✳ Noise Measurement Position 8 (NMP8): Located in the centre of the bedroom at a height of 1.5 m above floor level. Noise sources were noted to be distant road and rail traffic and on-site construction works, intermittently.

A summary of the hourly measured sound pressure levels inside the bedroom are presented in Table 9.

Table 9 Bedroom – Unfurnished – Plot 118

Measurement Start Time	Measured ambient noise level, $L_{Aeq,T}$ (dB)	Measured maximum noise level, $L_{Amax,fast}$ (dB)
19/06/2025 10:00	23.7	43.5
19/06/2025 11:00	23.2	40.9
19/06/2025 12:00	22.6	40.8
19/06/2025 13:00	24.2	45.2
19/06/2025 14:00	23.5	49.1
19/06/2025 15:00	23.2	42.0
19/06/2025 16:00	23.2	41.3
19/06/2025 17:00	24.9	42.4
19/06/2025 18:00	23.7	39.9
19/06/2025 19:00	24.6	52.1
19/06/2025 20:00	25.1	53.4
19/06/2025 21:00	25.0	52.1
19/06/2025 22:00	22.0	48.1
19/06/2025 23:00	22.3	44.1
20/06/2025 00:00	21.8	42.4
20/06/2025 01:00	22.4	36.7
20/06/2025 02:00	21.4	36.1
20/06/2025 03:00	20.1	37.8
20/06/2025 04:00	20.2	39.0
20/06/2025 05:00	26.1	44.5
20/06/2025 06:00	22.8	43.4
20/06/2025 07:00	23.8	44.1
20/06/2025 08:00	23.3	45.2
20/06/2025 09:00	23.8	41.1

The resultant 16-hour noise level is noted to be 24 dB and the 8 hour night-time noise level is 23 dB. The 10th highest maximum noise level during the night-time period was also measured and noted to be 45 dB. All applicable to the unfurnished room. With the correction applied to allow for furnishings, such as carpet, furniture, curtains, etc, the resultant noise levels would be lower.

These fall below the 35 dB, 30 dB and 45 dB internal criterion respectively. As such, the installed glazing and façade insulation are acceptable.

3.5. PLOT 123

Due to elevated levels noted, it is considered prudent to allow for furnishings within the room.

The rooms were unfurnished and so a correction to the measured values is required, as follows:

$$L_{Aeq,furnished} = L_{Aeq,unfurnished} - 10 \times \log (R_{T,unfurnished} / R_{T,furnished}).$$



Where R_T is reverberation time.

A measurement of reverberation time in the room was not possible at the time. As such, a standard reverberation time of 0.5 seconds is applied for the furnished room.

To calculate the R_T of the unfurnished room, E3P have used Sabine formula and internal layouts to calculate this based on the following formula:

$$T = 0.161 V / A$$

Where V is the volume of the room in m^3 ; and
 A is the total absorption in the room

For 'A' an absorption coefficient for each element is used to calculate the total absorption.

This results in the following corrections:

- 📍 Living Room = -5.7 dB correction to measured values.
- 📍 Bedroom = -4.5 dB correction to measured values.

3.5.1. LIVING ROOM – INTERNAL SOUND MEASUREMENT

E3P has conducted an internal sound survey within the living room with all windows and doors closed. The survey was conducted during the following periods:

- 📍 12:00 Wednesday 4th June to 12:00 Thursday 4th June 2025.

The following noise measurement position was chosen for the Noise Survey:

- 📍 Noise Measurement Position 9 (NMP9): Located in the centre of the living room at a height of 1.5 m above floor level. Noise sources were noted to be distant traffic, road and rail, and on-site construction works, intermittently.

A summary of the hourly measured sound pressure levels inside the living room are presented in Table 10.

Table 10 Living Room – Unfurnished – Plot 123

Measurement Start Time	Measured ambient noise level, $L_{Aeq,T}$ (dB)	Measured maximum noise level, $L_{Amax,fast}$ (dB)
04/06/2025 12:00	32.0	58.9
04/06/2025 13:00	33.4	57.5
04/06/2025 14:00	39.3	61.2
04/06/2025 15:00	33.2	57.9
04/06/2025 16:00	33.9	61.6
04/06/2025 17:00	34.1	61.9
04/06/2025 18:00	32.8	53.7
04/06/2025 19:00	33.5	55.1
04/06/2025 20:00	32.7	61.3
04/06/2025 21:00	30.4	47.8
04/06/2025 22:00	30.6	49.8



Measurement Start Time	Measured ambient noise level, $L_{Aeq,T}$ (dB)	Measured maximum noise level, $L_{Amax,fast}$ (dB)
04/06/2025 23:00	29.4	46.2
05/06/2025 00:00	29.6	58.9
05/06/2025 01:00	28.8	54.0
05/06/2025 02:00	24.4	50.5
05/06/2025 03:00	22.6	42.3
05/06/2025 04:00	25.2	48.9
05/06/2025 05:00	28.2	51.0
05/06/2025 06:00	28.8	43.6
05/06/2025 07:00	35.0	50.6
05/06/2025 08:00	32.8	50.5
05/06/2025 09:00	31.7	50.3
05/06/2025 10:00	31.7	48.9
05/06/2025 11:00	32.0	58.9

The resultant 16-hour noise level is noted to be 34 dB applicable to the unfurnished room. If furnishing corrections were applied, the noise level would be lower.

This falls below the 35 dB internal criterion by 1 dB. As such, the installed glazing and façade insulation are acceptable.

3.5.2. BEDROOM – INTERNAL SOUND MEASUREMENT

E3P has conducted a full 24-hour survey within the bedroom with all windows and doors closed. The survey was conducted during the following periods:

- 📅 12:00 Wednesday 4th June to 12:00 Thursday 4th June 2025.

The following noise measurement position was chosen for the Noise Survey:

- 📍 Noise Measurement Position 10 (NMP10): Located in the centre of the bedroom at a height of 1.5 m above floor level. Noise sources were noted to be distant road and rail traffic and on-site construction works, intermittently.

A summary of the hourly measured sound pressure levels inside the bedroom are presented in Table 11.

Table 11 Bedroom – Unfurnished – Plot 123

Measurement Start Time	Measured ambient noise level, $L_{Aeq,T}$ (dB)	Measured maximum noise level, $L_{Amax,fast}$ (dB)
04/06/2025 11:00	32.4	50.8
04/06/2025 12:00	31.7	50.5
04/06/2025 13:00	34.1	52.5
04/06/2025 14:00	32.5	51.4
04/06/2025 15:00	33.7	51.6
04/06/2025 16:00	33.1	51.9
04/06/2025 17:00	33.1	55.4
04/06/2025 18:00	32.9	51.6



Measurement Start Time	Measured ambient noise level, $L_{Aeq,T}$ (dB)	Measured maximum noise level, $L_{Amax,fast}$ (dB)
04/06/2025 19:00	32.2	51.1
04/06/2025 20:00	31.1	47.4
04/06/2025 21:00	30.4	49.8
04/06/2025 22:00	30.5	48.7
04/06/2025 23:00	29.6	60
05/06/2025 00:00	30.1	58.9
05/06/2025 01:00	23.5	44.6
05/06/2025 02:00	24.8	50.6
05/06/2025 03:00	23.7	46.2
05/06/2025 04:00	27.9	52.7
05/06/2025 05:00	28.4	48.7
05/06/2025 06:00	29.2	46
05/06/2025 07:00	32.3	50.2
05/06/2025 08:00	29.2	49.2
05/06/2025 09:00	31.3	50.4
05/06/2025 10:00	30.2	46.4

The resultant 16-hour noise level is noted to be 32 dB and the 8 hour night-time noise level is 28 dB. The 10th highest maximum noise level during the night-time period was also measured and noted to be 48 dB. With corrections for furnishings, levels are expected to be 28 dB, 24 dB and 44 dB respectively.

These fall below the 35 dB, 30 dB and 45 dB internal criterion respectively. As such, the installed glazing and façade insulation are acceptable.

3.6. PLOT 252

Due to elevated levels of construction noise nearby, it is considered prudent to allow for furnishings within the room.

The rooms were unfurnished and so a correction to the measured values is required, as follows:

$$L_{Aeq,furnished} = L_{Aeq,unfurnished} - 10 \times \log (R_{T,unfurnished} / R_{T,furnished}).$$

Where R_T is reverberation time.

A measurement of reverberation time in the room was not possible at the time. As such, a standard reverberation time of 0.5 seconds is applied for the furnished room.

To calculate the R_T of the unfurnished room, E3P have used Sabine formula and internal layouts to calculate this based on the following formula:

$$T = 0.161 V / A$$

Where V is the volume of the room in m^3 ; and
 A is the total absorption in the room

For 'A' an absorption coefficient for each element is used to calculate the total absorption.



This results in the following corrections:

- 📍 Living Room = -5.7 dB correction to measured values.
- 📍 Bedroom = -4.5 dB correction to measured values.

3.6.1. LIVING ROOM – INTERNAL SOUND MEASUREMENT

E3P has conducted an internal sound survey within the living room with all windows and doors closed. The survey was conducted during the following periods:

- 📍 15:00 Thursday 12th June to 15:00 Friday 13th June 2025.

The following noise measurement position was chosen for the Noise Survey:

- 📍 Noise Measurement Position 11 (NMP11): Located in the centre of the living room at a height of 1.5 m above floor level. Noise sources were noted to be distant traffic, road and rail, and on-site construction works, intermittently.

A summary of the hourly measured sound pressure levels inside the living room are presented in Table 12.

Due to nearby construction works and activity in the rooms, periods from 12/06 15:00 to 16:00 have been omitted.

Table 12 Living Room – Unfurnished – Plot 252

Measurement Start Time	Measured ambient noise level, $L_{Aeq,T}$ (dB)	Measured maximum noise level, $L_{Amax,fast}$ (dB)
12/06/2025 16:00	34.3	59.9
12/06/2025 17:00	42.3	63.9
12/06/2025 18:00	41.9	59.6
12/06/2025 19:00	41.0	69.9
12/06/2025 20:00	38.4	58.7
12/06/2025 21:00	37.0	54.3
12/06/2025 22:00	36.8	59.7
12/06/2025 23:00	35.0	56.4
13/06/2025 01:00	34.3	52.6
13/06/2025 02:00	30.9	54.4
13/06/2025 03:00	30.2	52.6
13/06/2025 04:00	30.0	51.4
13/06/2025 05:00	32.5	57.8
13/06/2025 06:00	34.5	54.0
13/06/2025 07:00	38.2	59.0
13/06/2025 08:00	39.5	56.3
13/06/2025 09:00	41.0	68.4
13/06/2025 10:00	40.3	63.0
13/06/2025 11:00	40.6	56.0
13/06/2025 12:00	38.7	58.7
13/06/2025 13:00	39.1	59.4
13/06/2025 14:00	40.1	58.1



The resultant 16-hour noise level is noted to be 40 dB applicable to the unfurnished room. If furnishing corrections were applied, the noise level is expected to be 34 dB.

This falls below the 35 dB internal criterion by 1 dB. As such, the installed glazing and façade insulation are acceptable.

3.6.2. BEDROOM – INTERNAL SOUND MEASUREMENT

E3P has conducted a full 24-hour survey within the bedroom with all windows and doors closed. The survey was conducted during the following periods:

- 📍 15:00 Thursday 12th June to 15:00 Friday 13th June 2025.

The following noise measurement position was chosen for the Noise Survey:

- 📍 Noise Measurement Position 12 (NMP12): Located in the centre of the bedroom at a height of 1.5 m above floor level. Noise sources were noted to be distant road and rail traffic and on-site construction works, intermittently.

A summary of the hourly measured sound pressure levels inside the bedroom are presented in Table 13.

Table 13 Bedroom – Unfurnished – Plot 252

Measurement Start Time	Measured ambient noise level, $L_{Aeq,T}$ (dB)	Measured maximum noise level, $L_{Amax,fast}$ (dB)
12/06/2025 15:00	35.4	59.9
12/06/2025 16:00	34.3	53.8
12/06/2025 17:00	35.4	56.0
12/06/2025 18:00	33.4	60.1
12/06/2025 19:00	32.1	57.6
12/06/2025 20:00	29.3	42.9
12/06/2025 21:00	28.9	46.8
12/06/2025 22:00	27.6	44.1
12/06/2025 23:00	28.8	43.3
13/06/2025 01:00	28.1	45.9
13/06/2025 02:00	23.8	45.7
13/06/2025 03:00	23.0	44.1
13/06/2025 04:00	22.9	40.3
13/06/2025 05:00	24.7	42.0
13/06/2025 06:00	26.9	47.4
13/06/2025 07:00	30.4	49.2
13/06/2025 08:00	31.6	45.1
13/06/2025 09:00	33.4	56.3
13/06/2025 10:00	33.0	50.3
13/06/2025 11:00	33.5	48.6
13/06/2025 12:00	32.0	46.9
13/06/2025 13:00	32.0	46.7
13/06/2025 14:00	33.8	52.8



The resultant 16-hour noise level is noted to be 33 dB and the 8 hour night-time noise level is 27 dB. The 10th highest maximum noise level during the night-time period was also measured and noted to be 46 dB. All applicable to the unfurnished room. With the correction applied to allow for furnishings, such as carpet, furniture, curtains, etc, the resultant noise levels are 29 dB, 22 dB and 42 dB respectively.

These fall below the 35 dB, 30 dB and 45 dB internal criterion respectively. As such, the installed glazing and façade insulation are acceptable.

Weather conditions during the survey were calm and dry.

The equipment outlined in 14 was used for the noise survey.

Table 14 Noise Measurement Equipment and Calibration Dates

Measurement position	Equipment description	Manufacturer & type number	Serial number	Calibration due date
NMP1, NMP10	Sound Level Meter	01dB Fusion	14226	7th December 2025
	Pre-amplifier	01dB Pre22	2135072	
	Microphone	GRAS 40CD	470570	
	Calibrator	Cirrus CR 515	99204	8th August 2025
NMP4, NMP11	Sound Level Meter	01dB Fusion	14616	10th July 2026
	Pre-amplifier	01dB Pre22	20951	
	Microphone	GRAS 40CD	494264	
	Calibrator	Cirrus CR 515	99206	9th July 2025
NMP2	Sound Level Meter	Fusion	12039	28th July 2025
	Pre-amplifier	Pre22	1805124	
	Microphone	40CE	330832	
	Calibrator	Cal31	87281	19th January 2025
NMP3, NMP6, NMP7	Sound Level Meter	Svan SV 307A	119120	23rd August 2025
	Microphone	Svan ST30A	125242	
NMP5	Sound Level Meter	Nor 145	14529152	13th June 2025
	Pre-amplifier	Nor 1209	22293	
	Microphone	Nor 1227	332220	
	Calibrator	Nor 1255	125525208	20th June 2025
NMP8, NMP12	Sound Level Meter	Svantek SV958A	97701	2nd August 2026

The sound level meters were field calibrated before and after measurements with no significant drift witnessed.

END OF REPORT

APPENDIX I

LIMITATIONS





GENERAL

1. This report and any associated works (together comprising the "Services") were compiled and carried out by E3P for the client (as present in Section 1) under the E3P "Terms of Business" or with those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed and outlined in the body of the report.
2. Unless explicitly agreed otherwise, in writing, this report has been prepared under E3P Standard Terms and Business as included within our proposal to the Client.
3. Project-specific appointment documents may be agreed upon at our discretion and a charge may be levied for both the time to review and finalise appointment documents and also for associated changes to the appointment terms. E3P reserves the right to amend the fee should any changes to the appointment terms create an increased risk to E3P.
4. The report needs to be considered in light of the proposal and associated limitations of scope. The report needs to be read in full and isolated sections cannot be used without full reference to other elements of the report and any previous works referenced within the report.

NOISE AND VIBRATION IMPACT ASSESSMENTS

5. Where a noise or vibration survey is required to inform an assessment, E3P will endeavour to ensure that all noise and vibration measurements taken are robust, representative and reliable in order to inform an accurate assessment.
6. Where mitigation measures are specified in this report, it should be noted that these measures are relative to a specific sound or vibration source, both in terms of the measured sound pressure and vibration level and the character of the sound source. Where either the sound pressure level or the character of the sound varies following completion of the sound survey, E3P cannot be held responsible for any subsequent variations in the proposed mitigation performance.
7. The works undertaken to prepare this report comprised a study of available and easily documented information from a variety of sources (including the Client), together with (where appropriate) a brief walkover inspection of the Site and correspondence with relevant authorities and other interested parties. Due to the short timescales associated with these projects responses may not have been received from all parties. E3P cannot be held responsible for any disclosures that are provided post-production of our report and will not automatically update our report.
8. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only for the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, E3P reserves the right to review such information and, if warranted, to modify the opinions accordingly.
9. E3P does not warrant work/data undertaken/provided by others.

APPENDIX II

GLOSSARY





NOISE

Noise is defined as unwanted sound. Human ears are able to respond to sound in the frequency range 20 Hz (deep bass) to 20,000 Hz (high treble) and over the audible range of 0 dB (the threshold of perception) to 140 dB (the threshold of pain). The ear does not respond equally to different frequencies of the same magnitude but is more responsive to mid-frequencies than to lower or higher frequencies. To quantify noise in a manner that approximates the response of the human ear, a weighting mechanism is used. This reduces the importance of lower and higher frequencies, in a similar manner to the human ear.

Furthermore, the perception of noise may be determined by a number of other factors, which may not necessarily be acoustic. In general, the impact of noise depends upon its level, the margin by which it exceeds the background level, its character and its variation over a given period of time. In some cases, the time of day and other acoustic features such as tonality or impulsiveness may be important, as may the disposition of the affected individual. Any assessment of noise should give due consideration to all of these factors when assessing the significance of a noise source. The most widely used weighting mechanism that best corresponds to the response of the human ear is the "A"-weighting scale. This is widely used for environmental noise measurement, and the levels are denoted as dB(A) or LAeq, LA90 etc., according to the parameter being measured.

The decibel scale is logarithmic rather than linear, and hence a 3 dB increase in sound level represents a doubling of the sound energy present. Judgement of sound is subjective but, as a general guide, a 10 dB(A) increase can be taken to represent a doubling of loudness, whilst an increase in the order of 3 dB(A) is generally regarded as the minimum difference needed to perceive a change under normal listening conditions. An indication of the range of sound levels commonly found in the environment is given in the following table.

Table 15 **Typical Sound Pressure Levels**

SOUND PRESSURE LEVEL	LOCATION/EXAMPLE
0	Threshold of hearing
20-30	Quiet bedroom at night
30-40	Living room during the day
40-50	Typical office
50-60	Inside a car
60-70	Typical high street
70-90	Inside a factory
100-110	Burglar alarm at 1 m away
110-130	Jet aircraft on take off
140	Threshold of pain



ACOUSTIC TERMINOLOGY

Table 16 Terminology

DESCRIPTOR	EXPLANATION
dB (decibel)	The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (2E-05 Pa).
dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. "A" weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
LAeq, T	LAeq is defined as the notional steady sound level which, over a stated period of time (T), would contain the same amount of acoustical energy as the A-weighted fluctuating sound measured over that period.
LAmx	LAmx is the maximum A-weighted sound pressure level recorded over the period stated. LAmx is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall Leq noise level but will still affect the noise environment. Unless described otherwise, it is measured using the "fast" sound level meter response.
L10 and L90	If a non-steady noise is to be described, it is necessary to know both its level and the degree of fluctuation. The Ln indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L10 is the level exceeded for 10% of the time and as such can be regarded as the "average maximum level". Similarly, L90 is the "average minimum level" and is often used to describe the background noise. It is common practice to use the L10 index to describe traffic noise.
Free-field Level	A sound field determined at a point away from reflective surfaces other than the ground with no significant contributions due to sound from other reflective surfaces. Generally, as measured outside and away from buildings.
Fast	A time weighting used in the root-mean-square section of a sound level meter with a 125-millisecond time constant.
Slow	A time weighting used in the root-mean-square section of a sound level meter with a 1000-millisecond time constant.
dB (decibel)	The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (2E-05 Pa).
dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. "A" weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.