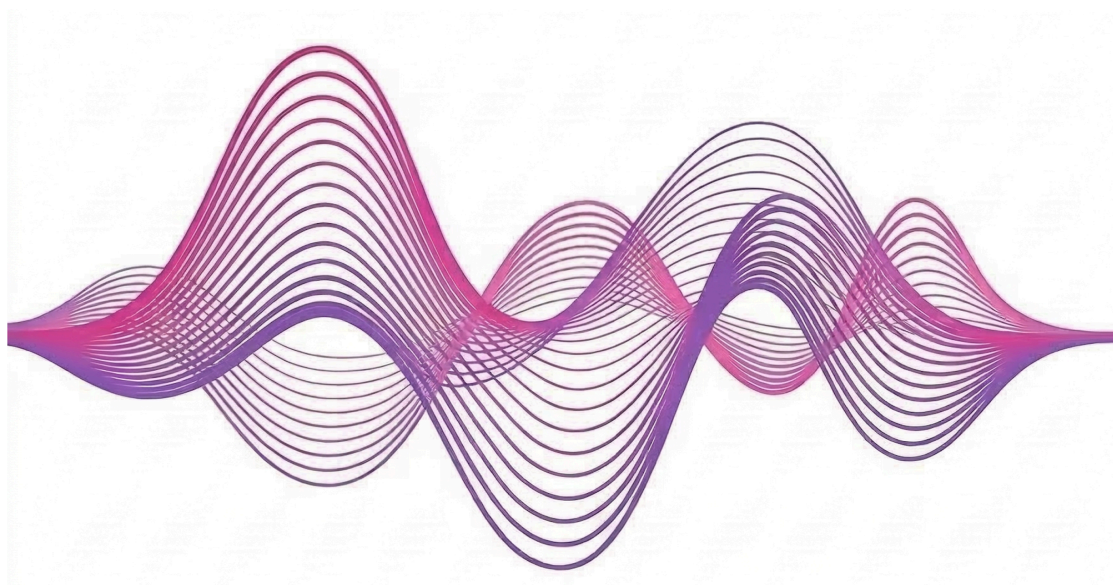


NOISE IMPACT ASSESSMENT



Project: Residential Heat Pump Installation – 6 Northfield Road,
Hinckley, LE10 0LJ

Subject: Technical Methodology and Results Analysis for Planning
Application

Date: 9th of July, 2026

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Contents

NOISE IMPACT ASSESSMENT	0
1. INTRODUCTION AND EXECUTIVE SUMMARY	2
2. REGULATORY FRAMEWORK AND NATIONAL POLICY CONTEXT	3
2.1. National Planning Policy Framework (NPPF) (2024)	3
2.2. British Standard BS 8233:2014	3
2.3. British Standard BS 4142	3
3.1. Data Selection	4
3.2. Sound Power Verification	4
3.3. Spectral Analysis	4
4. COMPUTATIONAL MODELING METHODOLOGY	6
5. PREDICTED RESULTS AND ANALYSIS	7
5.1. External Assessment	7
5.2. Internal Noise Level Calculation	7
6. CONTEXTUAL ASSESSMENT AND AMBIENT ENVIRONMENT	9
DEFRA Daytime Noise Modeling:	10
DEFRA Nighttime Noise Modeling:	10
7. CONCLUSION	11
APPENDIX A: TECHNICAL REFERENCES AND MODELING DATA	12
A.1. SOURCE NOISE DATA SPECIFICATION	12
A.2. LEGISLATIVE AND STANDARDS FRAMEWORK	12
A.3. COMPUTATIONAL MODELING ASSUMPTIONS (ISO 9613-2)	12
A.4. GLOSSARY OF ACOUSTIC TERMS	12

1. INTRODUCTION AND EXECUTIVE SUMMARY

1.1. This Technical Note has been prepared to support a planning application regarding the installation of a **Cosy 9** Air Source Heat Pump (ASHP) at **6, Northfield Road**. The primary objective of this assessment is to quantify, using a robust and conservative estimation, the potential acoustic impact of the proposed unit on the surrounding residential amenity through rigorous computational modeling.

1.2. The assessment utilizes the internationally recognized **ISO 9613-2:1996** standard for sound propagation. To ensure the robustness of the application, the model employs a highly conservative "worst-case" scenario approach. This includes the use of hard ground assumptions and high facade reflection coefficients to ensure the predicted levels represent a definitive upper limit of potential noise impact.

1.3. Comprehensive modeling confirms that the predicted external **Rating Noise Level (L_{Ar,Tr})** at the critical neighboring assessment position (**8, Northfield Road**) is **30 dB(A)**.

1.4. These results demonstrate that the proposed installation achieves an external noise level that remains **25-30 dB** below the prevailing ambient daytime noise climate (**55-60 dB**) and **10-15 dB** below the prevailing ambient nighttime noise climate (**40-45dB**) indicated by DEFRA strategic mapping. Furthermore, the internal noise level in the nearest bedroom is calculated at **20 dB(A)**, which is below the BS 8233:2014 target of **30 dB** for sleeping conditions. Consequently, the proposal preserves residential amenity and complies with National Planning Policy.

2. REGULATORY FRAMEWORK AND **NATIONAL POLICY CONTEXT**

The assessment has been conducted with strict adherence to national planning policies and recognized acoustic standards. Detailed definitions of these policies are provided in Appendix A.2.

2.1. National Planning Policy Framework (NPPF) (2024)

Paragraph 198 mandates that planning decisions must "mitigate and reduce to a minimum potential adverse impact resulting from noise from new development". This report demonstrates compliance by proving the unit operates below the background noise floor and within acceptable internal limits.

2.2. British Standard BS 8233:2014

This standard establishes internal ambient noise level targets to safeguard rest and sleep. The relevant criterion for this application is:

- **Sleeping (Bedrooms):** 30 dB LAeq, 8hr

2.3. British Standard BS 4142

This standard provides methods for rating and assessing industrial and commercial sound. It introduces the concept of the Rating Level (L_{Ar,Tr}), which is the specific sound level of the source corrected for acoustic features such as tonality, impulsivity, or intermittency.

3. SOURCE NOISE DATA SPECIFICATION

3.1. Data Selection

To provide a technically defensible assessment, this report utilizes the manufacturer's certified sound power data. Specifically, we have selected the data for a water outlet temperature of **55°C** (Test No. HV324-060), which represents the most accurate operational condition for the proposed system design.

3.2. Sound Power Verification

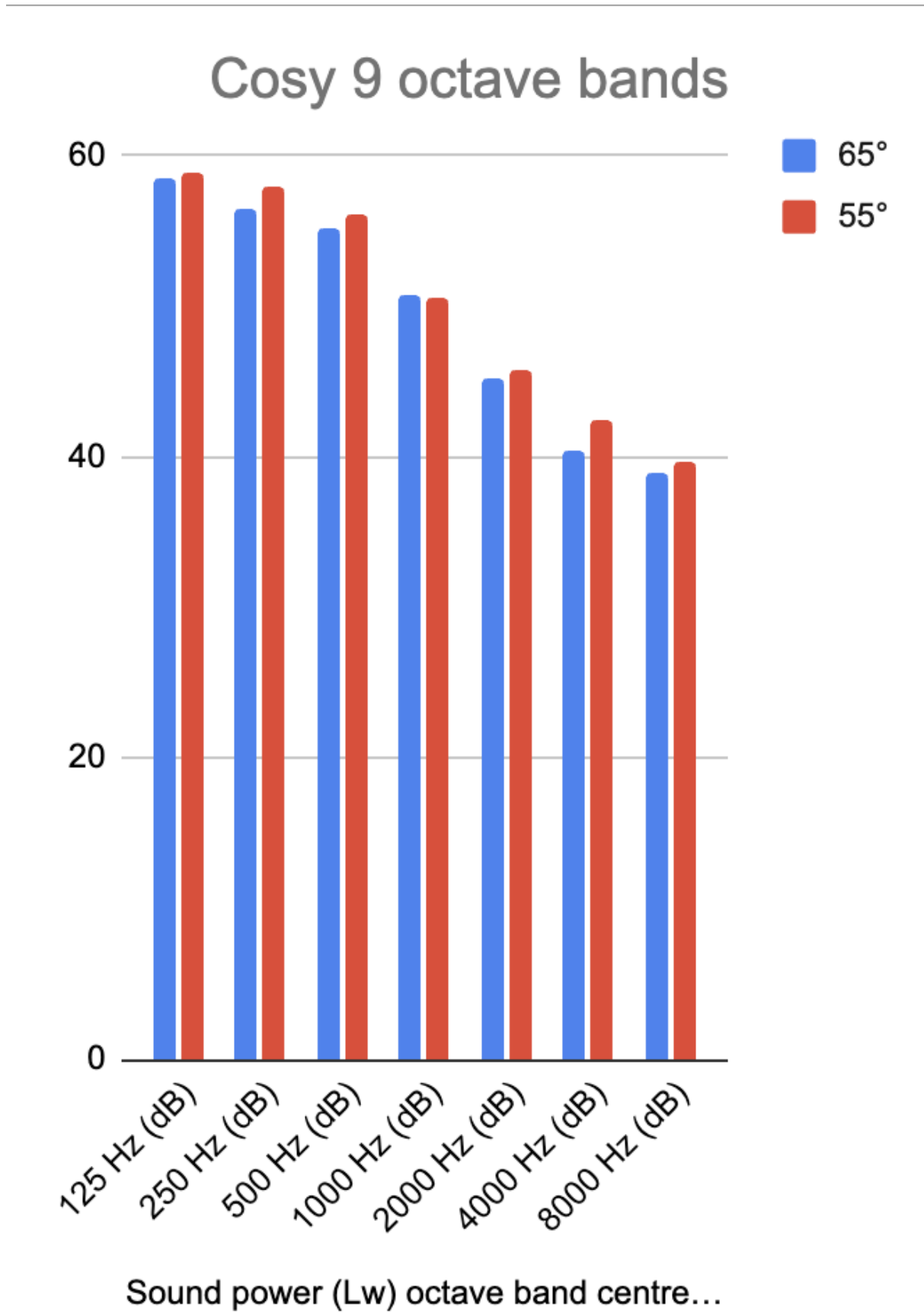
Unlike "nominal" pressure data which requires geometric conversion, the data utilized here is provided as **Sound Power Level (L_W)**. This eliminates uncertainty regarding measurement distance or hemispherical conversion. To ensure robustness, the total Sound Power (LWA) of **56.9 dB(A)** has been used directly in the propagation model.

3.3. Spectral Analysis

Full octave band data (125Hz – 8kHz) has been input into the model to accurately predict the propagation of different frequencies over distance.

Table 1: Cosy 9 Sound Power Spectral Data (55°C Flow)

Cosy 9 Sound Power Spectral Data							
Frequency Hz	125	250	500	1000	2000	4000	8000
dB Level	58.9	58	56.1	50.5	45.3	42.4	39.7
Total	63						
A-weighted dB Level	42.8	49.4	52.9	50.5	46.5	43.4	38.6
Total	56.9						



4. COMPUTATIONAL MODELING

METHODOLOGY

The noise map and propagation calculations were generated utilizing the ISO 9613-2:1996 standard.

4.1. Facade Reflection (Coefficient 0.982):

A reflection coefficient of 0.982 was strictly applied to all vertical surfaces (brickwork/glazing). This assumes 98.2% of sound energy is reflected back into the environment, effectively modeling the building envelope as a near-perfect acoustic mirror.

4.2. Ground Factor (G=0):

A global Ground Factor of G=0 (Hard Ground) was applied to the entire propagation path. This treats the ground as reflective, negating attenuation provided by garden turf.

4.3. Directivity (Q=4):

Hemispherical radiation (Q=4) is assumed to account for source directivity resulting from installation in close proximity (250mm) to the reflective host facade as well as the ground.

4.4. Acoustic Feature Correction:

In accordance with BS 4142, a dB tonal correction has been applied to the specific sound level to derive the Rating Level (L_{Ar},Tr). In accordance with the joint CIEH and IOA guidance on heat pump installations, a +2dB correction has been applied to account for tonality. As tonal intermittency is proven to be low, this minimal correction is considered appropriate for the character of the sound.

5. PREDICTED RESULTS AND ANALYSIS

Predictions were calculated at the critical receiver locations. The values below represent the **Rating Level (L_{Ar,Tr})**, which includes the **+2 dB** tonality penalty.

Property Address	Assessment position	Ground floor	First floor
8 Northfield Road	Main Assessment point	30 dB(A)	-
	Assessment point 2	27 dB(A)	-
	Assessment point 3	-	21 dB(A)
4 Northfield Road	Assessment point 4	34 dB(A)	-
	Assessment point 5	24 dB(A)	29 dB(A)

5.1. External Assessment

Critical Receptors: 4 and 8 Northfield Road

Worst Case Predicted Rating Level (L_{Ar,Tr}): 30 dB(A)

5.2. Internal Noise Level Calculation

It is standard acoustic practice (accepted by the World Health Organization and BS 8233) to assume that a partially open window provides **10-15 dB** of attenuation from external noise sources. A conservative attenuation factor of **10 dB** has been adopted to ensure a robust assessment.

Internal Level = External Rating Level - Open Window
Attenuation

Internal Level = 30dB(A) - 10dB

Internal Level = 20dB(A)

Compliance: The calculated internal level of **20 dB(A)** is **10 dB lower** than the BS 8233 target of 30 dB. There is no risk of sleep disturbance.

ISO 9613-2 First-Floor Assessment Points:



ISO 9613-2 Ground-Floor Assessment Points:



6. CONTEXTUAL ASSESSMENT AND AMBIENT ENVIRONMENT

6.1. Ambient Noise Climate:

Strategic noise data from **DEFRA** identifies the ambient daytime noise baseline for this location falling within the **55 to 60 dB(A)** bands, and the ambient nighttime noise baseline for this location falling within the **40 to 45 dB(A)** bands.

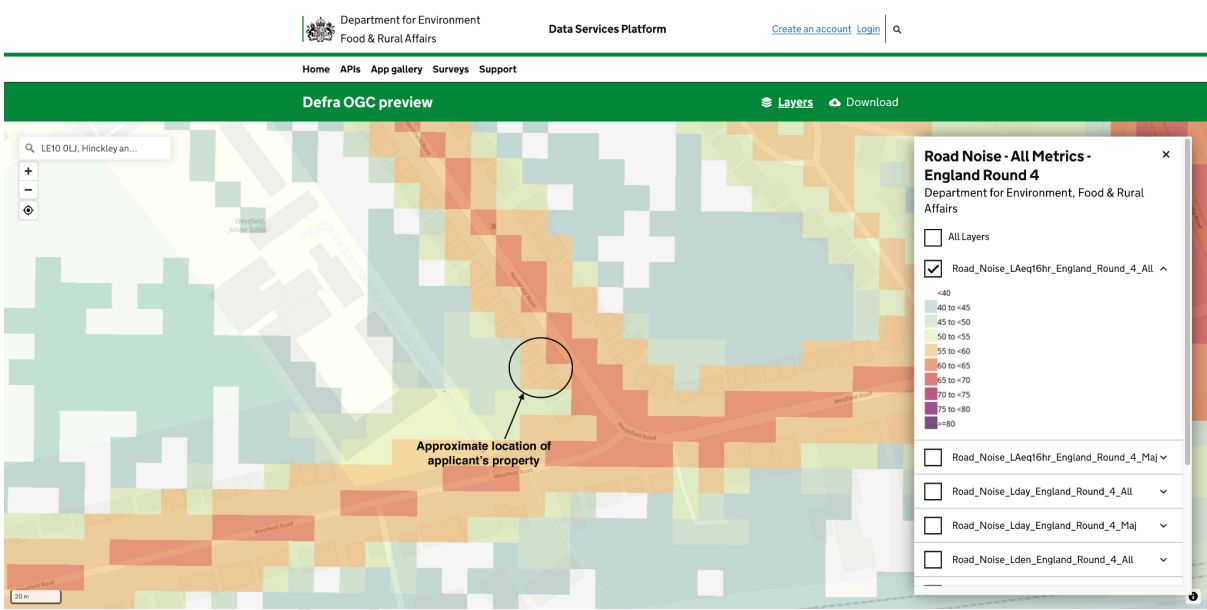
6.2. Assessment of Impact:

- Prevailing Ambient Daytime Noise Climate: 55 – 60 dB(A).
- Plant Rating Level: 30 dB(A).
- Differential: **25 to 30 dB**.
- Prevailing Ambient Nighttime Noise Climate: 40–45 dB(A).
- Plant Rating Level: 30 dB(A).
- Differential: **10 to 15 dB**

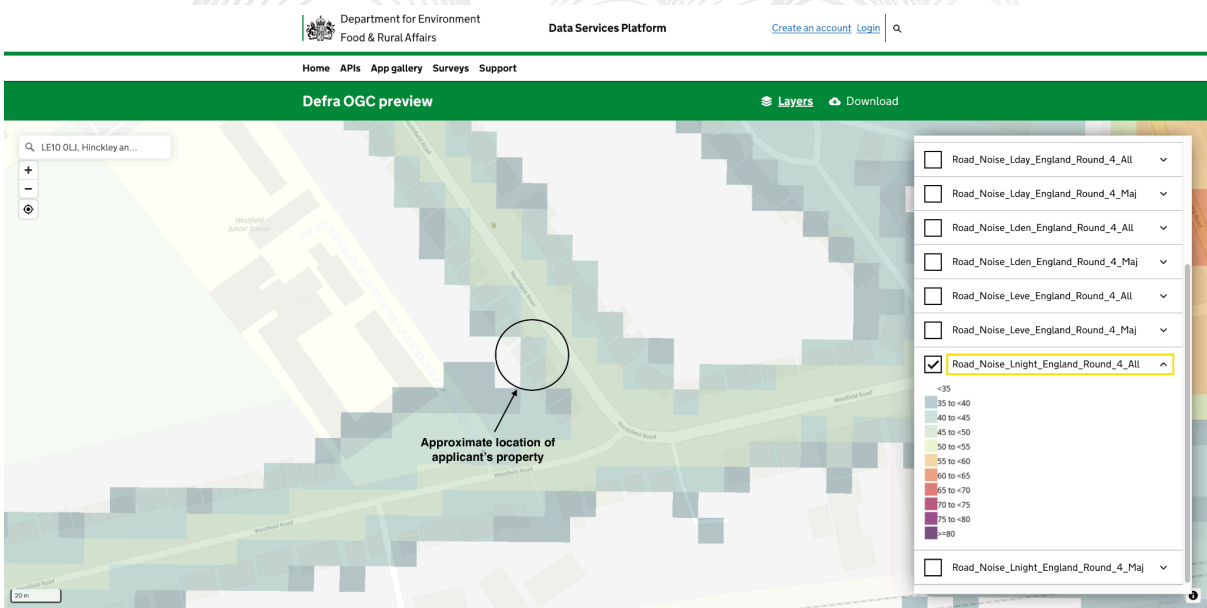
6.3. Discussion:

The phenomenon of Acoustic Masking dictates that the broadband noise of the environment will mask the lower-level sound of the new source. When a source's rating level falls **below** the prevailing ambient noise floor, it is fundamentally rendered acoustically indistinguishable from the background. When the rating level is **within** the ambient floor, the principle of Acoustic Masking ensures the specific noise remains contained by the existing environmental noise climate. In both scenarios, the source is prevented from introducing a new, significant noise character or adverse impact on residential amenity.

DEFRA Daytime Noise Modeling:



DEFRA Nighttime Noise Modeling:



7. CONCLUSION

7.1. This comprehensive computational assessment demonstrates that the proposed installation of the **Cosy 9 at 6, Northfield Road** complies with all relevant national planning policies regarding noise.

7.2. External Impact:

The worst-case Rating Level (**30 dB**) is lower than both the prevailing ambient daytime noise levels (**55–60 dB**), and the prevailing ambient nighttime noise levels (**40–45 dB**).

7.3. Internal Amenity:

The indoor noise level (**20 dB**) is well within the **BS 8233** sleep protection limit (30 dB).

7.4. The proposal preserves residential amenity and should be considered acceptable for planning approval.

APPENDIX A: TECHNICAL REFERENCES AND MODELING DATA

A.1. SOURCE NOISE DATA SPECIFICATION

- **Unit Model:** Cosy 9 Air Source Heat Pump.
- **Spectral Data:** Full octave band data (125Hz - 8kHz) has been utilized for the calculation rather than a single weighted figure to ensure low-frequency content is accurately propagated.
- **Reference Pressure:** 0 dB = 20μPa.

A.2. LEGISLATIVE AND STANDARDS FRAMEWORK

- **NPPF (2024):** Paragraph 198 mandates that planning decisions must "mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development".
- **NPSE:** Defines NOAEL (No Observed Adverse Effect Level); results place this development within this acceptable range where no significant adverse impact occurs.
- **BS 8233:2014:** Recommends a criterion of 30dB LAeq,8hr for sleeping conditions in bedrooms.
- **BS 4142:2014:** Methodology for rating and assessing industrial and commercial sound.

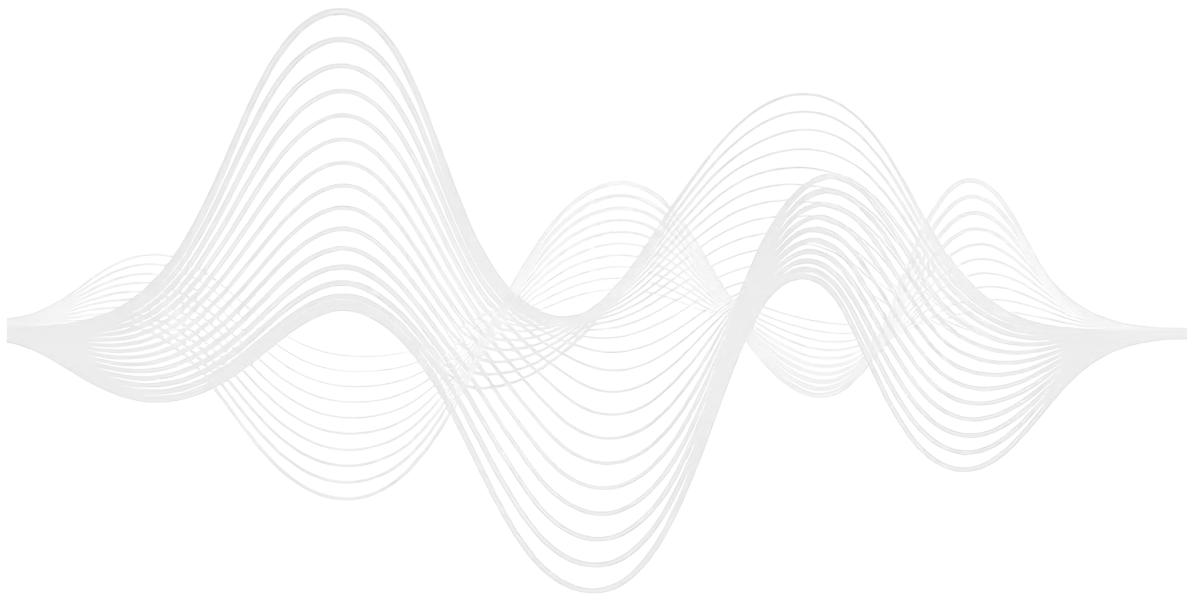
A.3. COMPUTATIONAL MODELING ASSUMPTIONS (ISO 9613-2)

- **Reflection Coefficient (0.982):** Applied to all vertical surfaces, assuming 98.2% of sound energy is reflected back into the environment.
- **Ground Factor (G=0):** Hard ground applied to the entire propagation path to negate soft ground attenuation, ensuring the predicted levels are conservative.
- **Directivity (Q=2):** Hemispherical radiation assumed due to proximity (250mm) to the reflective host facade.
- **Atmospheric Absorption:** Standard ISO conditions (10°C, 70%RH) applied.

A.4. GLOSSARY OF ACOUSTIC TERMS

- **dB(A):** A-weighted decibels; a logarithmic scale reflecting the frequency response of the human ear.

- **$L_{Aeq,T}$** : The "Equivalent Continuous Sound Level" over a specified time period "T".
- **Rating Level (L_{Ar}, Tr)**: The specific noise level of the source plus any adjustment for characteristic features.
- **Sound Power Level (L_W)**: The total sound energy radiated by a source per unit of time.





Westfield Junior School

Approximate location of
applicant's property

Road Noise - All Metrics -
England Round 4

Department for Environment, Food & Rural
Affairs

- ☐ All Layers
- ☒ Road_Noise_LAeq16hr_England_Round_4_All



- ☐ Road_Noise_LAeq16hr_England_Round_4_Maj
- ☐ Road_Noise_Lday_England_Round_4_All
- ☐ Road_Noise_Lday_England_Round_4_Maj
- ☐ Road_Noise_Lden_England_Round_4_All

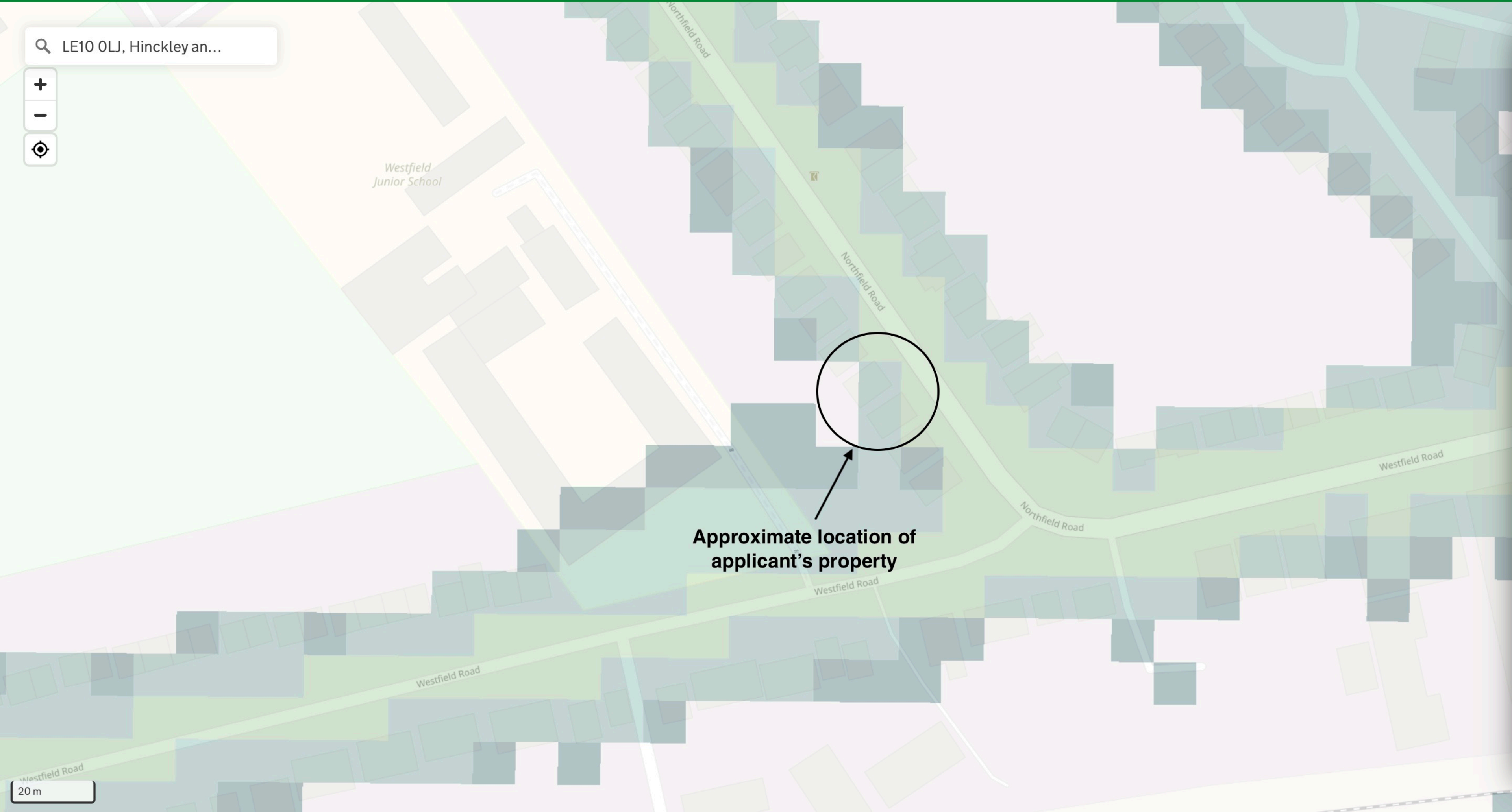


Defra OGC preview

[Layers](#)

[Download](#)

LE10 0LJ, Hinckley an...



Approximate location of
applicant's property

☐ Road_Noise_Lday_England_Round_4_All

☐ Road_Noise_Lday_England_Round_4_Maj

☐ Road_Noise_Lden_England_Round_4_All

☐ Road_Noise_Lden_England_Round_4_Maj

☐ Road_Noise_Leve_England_Round_4_All

☐ Road_Noise_Leve_England_Round_4_Maj

☒ Road_Noise_Lnight_England_Round_4_All

- <35
- 35 to <40
- 40 to <45
- 45 to <50
- 50 to <55
- 55 to <60
- 60 to <65
- 65 to <70
- 70 to <75
- 75 to <80
- >=80

☐ Road_Noise_Lnight_England_Round_4_Maj





Noise Mapping Results																
--- Receiver Results - Summary ---																
Receiver Name	Height (m)	Total dB(A)	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz						
Assessment point 4		4.2	34.2		14.96	22.6	30.96	28.54	24.5	21.25	15.89					
Main assessment point		1.2	30		19.52	23.99	26.3	22.33	16.64	10.97	4.55					
Assessment point 5		1.1	23.72		13.01	14.49	21.04	16.08	11.7	6.17	-1.79					
Assessment point 5		4.2	29.19		18.46	22.1	25.11	22.29	18.04	14.84	9.91					
Assessment point 2		1	27.39		14.56	21.03	24.07	20.08	14.37	8.59	2.57					
Assessment point 3		4	21.02		12.67	16.62	16.9	10.34	2.36	-3.55	-9.53					
--- Receiver Results - Sources Analysis ---																
Receiver Name	Height (m)	Total dB(A)	ASHP (Cosy 9)													
Assessment point 4		4.2	34.2	34.2												
Main assessment point		1.2	30	30												
Assessment point 5		1.1	23.72	23.72												
Assessment point 5		4.2	29.19	29.19												
Assessment point 2		1	27.39	27.39												
Assessment point 3		4	21.02	21.02												
--- Receiver Results - Full Detail ---																
Receiver Name	Source Name	Distance to source (m)	Height including ground level (m)	Source height including ground level (m)	Frequency (Hz)	Lw	Ad	Aa	Ag	Ab (total)	Ab (top edge)	Ab (lateral 1)	Ab (lateral 2)	Adjustment	Weighting	Lp
Assessment point 4	ASHP (Cosy 9)	7.52	4.2	0.7	500	56.1	-28.52	-0.02	2.61	0	0			2	-3.2	28.97
Assessment point 4	ASHP (Cosy 9) (reflected by Fence 1)	9.95	4.2	0.7	500	56.01	-30.96	-0.02	2.76	0	0			2	-3.2	26.6
Assessment point 4	ASHP (Cosy 9)	7.52	4.2	0.7	1000	50.5	-28.52	-0.03	2.61	0	0			2	0	26.56
Assessment point 4	ASHP (Cosy 9) (reflected by Fence 1)	9.95	4.2	0.7	1000	50.41	-30.96	-0.04	2.76	0	0			2	0	24.18
Assessment point 4	ASHP (Cosy 9)	7.52	4.2	0.7	250	58	-28.52	-0.01	2.61	-2.88	-2.88			2	-8.6	22.6
Assessment point 4	ASHP (Cosy 9)	7.52	4.2	0.7	2000	45.3	-28.52	-0.06	2.61	0	0			2	1.2	22.53
Assessment point 4	ASHP (Cosy 9) (reflected by Fence 1)	9.95	4.2	0.7	2000	45.21	-30.96	-0.09	2.76	0	0			2	1.2	20.13
Assessment point 4	ASHP (Cosy 9)	7.52	4.2	0.7	4000	42.4	-28.52	-0.2	2.61	0	0			2	1	19.29
Assessment point 4	ASHP (Cosy 9) (reflected by Fence 1)	9.95	4.2	0.7	4000	42.31	-30.96	-0.26	2.76	0	0			2	1	16.86
Assessment point 4	ASHP (Cosy 9)	7.52	4.2	0.7	125	58.9	-28.52	0	2.61	-3.93	-3.93			2	-16.1	14.96
Assessment point 4	ASHP (Cosy 9)	7.52	4.2	0.7	8000	39.7	-28.52	-0.7	2.61	0	0			2	-1.1	13.99
Assessment point 4	ASHP (Cosy 9) (reflected by Fence 1)	9.95	4.2	0.7	8000	39.61	-30.96	-0.93	2.76	0	0			2	-1.1	11.39
Main assessment point	ASHP (Cosy 9)	2.92	1.2	0.7	500	56.1	-20.31	-0.01	2.34	-12.14	-12.14			2	-3.2	24.78
Main assessment point	ASHP (Cosy 9)	2.92	1.2	0.7	250	58	-20.31	0	2.34	-9.86	-9.86			2	-8.6	23.56
Main assessment point	ASHP (Cosy 9)	2.92	1.2	0.7	1000	50.5	-20.31	-0.01	2.34	-14.74	-14.74			2	0	19.78
Main assessment point	ASHP (Cosy 9)	2.92	1.2	0.7	125	58.9	-20.31	0	2.34	-8.02	-8.02			2	-16.1	18.8
Main assessment point	ASHP (Cosy 9) (reflected by Fence 1)	9	1.2	0.7	500	56.01	-30.08	-0.02	2.91	-9.21	-9.21			2	-3.2	18.41
Main assessment point	ASHP (Cosy 9) (reflected by Barrier 4)	9.43	1.2	0.7	500	56.01	-30.49	-0.02	2.92	-11.63	-11.63			2	-3.2	15.59
Main assessment point	ASHP (Cosy 9) (reflected by Fence 1)	9	1.2	0.7	1000	50.41	-30.08	-0.04	2.91	-11.36	-11.36			2	0	13.84
Main assessment point	ASHP (Cosy 9) (reflected by 6 and 8)	6.32	1.2	0.7	250	57.91	-27.01	-0.01	2.83	-13.73	-13.73			2	-8.6	13.39
Main assessment point	ASHP (Cosy 9)	2.92	1.2	0.7	2000	45.3	-20.31	-0.03	2.34	-17.52	-17.52			2	1.2	12.98
Main assessment point	ASHP (Cosy 9) (reflected by 6 and 8)	6.32	1.2	0.7	500	56.01	-27.01	-0.01	2.83	-17.8	-17.8			2	-3.2	12.82
Main assessment point	ASHP (Cosy 9) (reflected by Fence 1 + Fence 1)	11.72	1.2	0.7	1000	50.32	-32.38	-0.05	2.95	-11	-11			2	0	11.85
Main assessment point	ASHP (Cosy 9) (reflected by Fence 1 + Barrier 4)	15.56	1.2	0.7	1000	50.32	-34.84	-0.06	2.97	-9.09	-9.09			2	0	11.3
Main assessment point	ASHP (Cosy 9) (reflected by 6 and 8)	6.32	1.2	0.7	125	58.81	-27.01	0	2.83	-9.59	-9.59			2	-16.1	10.94
Main assessment point	ASHP (Cosy 9) (reflected by Barrier 4)	9.43	1.2	0.7	1000	50.41	-30.49	-0.04	2.92	-14.17	-14.17			2	0	10.63
Main assessment point	ASHP (Cosy 9) (reflected by Barrier 4 + Fence 1)	12.35	1.2	0.7	1000	50.32	-32.83	-0.05	2.95	-14.14	-14.14			2	0	8.26
Main assessment point	ASHP (Cosy 9)	2.92	1.2	0.7	4000	42.4	-20.31	-0.08	2.34	-20	-20			2	1	7.35
Main assessment point	ASHP (Cosy 9) (reflected by Fence 1)	9	1.2	0.7	2000	45.21	-30.08	-0.08	2.91	-13.87	-13.87			2	1.2	7.3
Main assessment point	ASHP (Cosy 9) (reflected by 6 and 8)	6.32	1.2	0.7	1000	50.41	-27.01	-0.03	2.83	-22.06	-22.06			2	0	6.15
Main assessment point	ASHP (Cosy 9) (reflected by Fence 1 + Fence 1)	11.72	1.2	0.7	2000	45.12	-32.38	-0.1	2.95	-13.46	-13.46			2	1.2	5.33
Main assessment point	ASHP (Cosy 9) (reflected by Fence 1 + Barrier 4)	15.56	1.2	0.7	2000	45.12	-34.84	-0.13	2.97	-11.22	-11.22			2	1.2	5.1
Main assessment point	ASHP (Cosy 9) (reflected by Barrier 4)	9.43	1.2	0.7	2000	45.21	-30.49	-0.08	2.92	-16.93	-16.93			2	1.2	3.84
Main assessment point	ASHP (Cosy 9) (reflected by 6 and 8 Northfield Road)	14.03	1.2	0.7	250	57.91	-33.94	-0.02	2.96	-17.93	-17.93			2	-8.6	2.39
Main assessment point	ASHP (Cosy 9)	2.92	1.2	0.7	8000	39.7	-20.31	-0.27	2.34	-20	-20			2	-1.1	2.36
Main assessment point	ASHP (Cosy 9) (reflected by Fence 1 + Garden building)	26.21	1.2	0.7	2000	45.12	-39.37	-0.23	2.99	-9.59	-9.59			2	1.2	2.13
Main assessment point	ASHP (Cosy 9) (reflected by Fence 1)	33.44	1.2	0.7	2000	45.21	-41.49	-0.29	2.99	-7.53	-7.53			2	1.2	2.1
Main assessment point	ASHP (Cosy 9) (reflected by 6 and 8 Northfield Road)	14.03	1.2	0.7	500	56.01	-33.94	-0.03	2.96	-21.83	-21.83			2	-3.2	1.97
Main assessment point	ASHP (Cosy 9) (reflected by Fence 1 + 8)	35.45	1.2	0.7	2000	45.12	-41.99	-0.31	2.99	-7.21	-7.21			2	1.2	1.81
Main assessment point	ASHP (Cosy 9) (reflected by Barrier 4)	33.44	1.2	0.7	2000	45.21	-41.49	-0.29	2.99	-8.03	-8.03			2	1.2	1.6
Main assessment point	ASHP (Cosy 9) (reflected by Barrier 4 + Fence 1)	12.35	1.2	0.7	2000	45.12	-32.83	-0.11	2.95	-16.89	-16.89			2	1.2	1.45
Main assessment point	ASHP (Cosy 9) (reflected by 6 + Barrier 4)	34.58	1.2	0.7	2000	45.12	-41.78	-0.3	2.99	-7.9	-7.9			2	1.2	1.35
Main assessment point	ASHP (Cosy 9) (reflected by Fence 1)	9	1.2	0.7	4000	42.31	-30.08	-0.24	2.91	-16.6	-16.6			2	1	1.3
Main assessment point	ASHP (Cosy 9) (reflected by Barrier 4 + 8)	35.46	1.2	0.7	2000	45.12	-41.99	-0.31	2.99	-7.77	-7.77			2	1.2	1.24
Main assessment point	ASHP (Cosy 9) (reflected by 6 and 8 Northfield Road)	14.03	1.2	0.7	125	58.81	-33.94	-0.01	2.96	-13.18	-13.18			2	-16.1	0.55
Main assessment point	ASHP (Cosy 9) (reflected by Fence 1 + Fence 1)	11.72	1.2	0.7	4000	42.22	-32.38	-0.31	2.95	-16.17	-16.17			2	1	-0.68
Main assessment point	ASHP (Cosy 9) (reflected by Fence 1 + Barrier 4)	15.56	1.2	0.7	4000	42.22	-34.84	-0.41	2.97	-13.71	-13.71		</			

Assessment point 5	ASHP (Cosy 9) (reflected by Garden building)	30.99	1.1	0.7	2000	45.21	-40.83	-0.27	2.99	-8.48	-8.48				2	1.2	1.83
Assessment point 5	ASHP (Cosy 9) (reflected by 6 + Garden building)	32.14	1.1	0.7	2000	45.12	-41.14	-0.28	2.99	-8.31	-8.31				2	1.2	1.59
Assessment point 5	ASHP (Cosy 9) (reflected by Garden building + 4 and 2 N	33	1.1	0.7	2000	45.12	-41.37	-0.28	2.99	-8.15	-8.15				2	1.2	1.51
Assessment point 5	ASHP (Cosy 9) (reflected by Fence 1 + Garden building)	31.47	1.1	0.7	2000	45.12	-40.96	-0.27	2.99	-9.27	-9.27				2	1.2	0.82
Assessment point 5	ASHP (Cosy 9) (reflected by 4 Northfield Road + Fence 1	10.11	1.1	0.7	4000	42.22	-31.1	-0.27	2.94	-16.76	-16.76				2	1	0.04
Assessment point 5	ASHP (Cosy 9)	7.12	1.1	0.7	2000	45.3	-28.05	-0.06	2.87	-23.42	-23.42				2	1.2	-0.15
Assessment point 5	ASHP (Cosy 9) (reflected by Fence 1 + 6 and 8)	10.47	1.1	0.7	4000	42.22	-31.4	-0.28	2.94	-16.94	-16.94				2	1	-0.45
Assessment point 5	ASHP (Cosy 9) (reflected by Gate)	8.98	1.1	0.7	2000	45.21	-30.07	-0.08	2.92	-23.68	-23.68				2	1.2	-2.49
Assessment point 5	ASHP (Cosy 9) (reflected by Garden building)	30.99	1.1	0.7	4000	42.31	-40.83	-0.81	2.99	-10.49	-10.49				2	1	-3.82
Assessment point 5	ASHP (Cosy 9) (reflected by 6 + Garden building)	32.14	1.1	0.7	4000	42.22	-41.14	-0.84	2.99	-10.27	-10.27				2	1	-4.04
Assessment point 5	ASHP (Cosy 9) (reflected by Garden building + 4 and 2 N	33	1.1	0.7	4000	42.22	-41.37	-0.87	2.99	-10.07	-10.07				2	1	-4.09
Assessment point 5	ASHP (Cosy 9)	7.12	1.1	0.7	4000	42.4	-28.05	-0.19	2.87	-25	-25				2	1	-4.96
Assessment point 5	ASHP (Cosy 9) (reflected by Fence 1 + Garden building)	31.47	1.1	0.7	4000	42.22	-40.96	-0.83	2.99	-11.44	-11.44				2	1	-5.01
Assessment point 5	ASHP (Cosy 9) (reflected by Gate)	8.98	1.1	0.7	4000	42.31	-30.07	-0.24	2.92	-25	-25				2	1	-7.07
Assessment point 5	ASHP (Cosy 9) (reflected by 8)	9.11	1.1	0.7	4000	42.31	-30.19	-0.24	2.92	-25	-25				2	1	-7.2
Assessment point 5	ASHP (Cosy 9) (reflected by 4 Northfield Road + Fence 1	10.11	1.1	0.7	8000	39.52	-31.1	-0.95	2.94	-19.63	-19.63				2	-1.1	-8.31
Assessment point 5	ASHP (Cosy 9) (reflected by Fence 1 + 6 and 8)	10.47	1.1	0.7	8000	39.52	-31.4	-0.98	2.94	-19.82	-19.82				2	-1.1	-8.83
Assessment point 5	ASHP (Cosy 9)	7.12	1.1	0.7	8000	39.7	-28.05	-0.67	2.87	-25	-25				2	-1.1	-10.24
Assessment point 5	ASHP (Cosy 9) (reflected by Gate)	8.98	1.1	0.7	8000	39.61	-30.07	-0.84	2.92	-25	-25				2	-1.1	-12.47
Assessment point 5	ASHP (Cosy 9) (reflected by 8)	9.11	1.1	0.7	8000	39.61	-30.19	-0.85	2.92	-25	-25				2	-1.1	-12.61
Assessment point 5	ASHP (Cosy 9) (reflected by Garden building)	30.99	1.1	0.7	8000	39.61	-40.83	-2.9	2.99	-12.89	-12.89				2	-1.1	-13.11
Assessment point 5	ASHP (Cosy 9) (reflected by 6 + Garden building)	32.14	1.1	0.7	8000	39.52	-41.14	-3.01	2.99	-12.65	-12.65				2	-1.1	-13.38
Assessment point 5	ASHP (Cosy 9) (reflected by Garden building + 4 and 2 N	33	1.1	0.7	8000	39.52	-41.37	-3.09	2.99	-12.42	-12.42				2	-1.1	-13.46
Assessment point 5	ASHP (Cosy 9) (reflected by Fence 1 + Garden building)	31.47	1.1	0.7	8000	39.52	-40.96	-2.95	2.99	-13.97	-13.97				2	-1.1	-14.45
Assessment point 5	ASHP (Cosy 9) (reflected by 6 and 8 + Barrier 3)	44.64	1.1	0.7	4000	42.22	-43.99	-1.17	3	-25	-25				2	1	-21.95
Assessment point 5	ASHP (Cosy 9) (reflected by 6 and 8 Northfield Road + B	52.64	1.1	0.7	4000	42.22	-45.43	-1.38	3	-25	-25				2	1	-23.59
Assessment point 5	ASHP (Cosy 9) (reflected by 6 and 8 + Barrier 3)	44.64	1.1	0.7	8000	39.52	-43.99	-4.18	3	-25	-25				2	-1.1	-29.75
Assessment point 5	ASHP (Cosy 9) (reflected by 6 and 8 Northfield Road + B	52.64	1.1	0.7	8000	39.52	-45.43	-4.93	3	-25	-25				2	-1.1	-31.93
Assessment point 5	ASHP (Cosy 9)	7.92	4.2	0.7	500	56.1	-28.98	-0.02	2.64	-3.44	-9.41	-4.7			2	-3.2	25.11
Assessment point 5	ASHP (Cosy 9)	7.92	4.2	0.7	1000	50.5	-28.98	-0.03	2.64	-3.84	-11.6	-4.64			2	0	22.29
Assessment point 5	ASHP (Cosy 9)	7.92	4.2	0.7	250	58	-28.98	-0.01	2.64	-2.95	-7.68	-4.74			2	-8.6	22.1
Assessment point 5	ASHP (Cosy 9)	7.92	4.2	0.7	125	58.9	-28.98	0	2.64	0	0				2	-16.1	18.46
Assessment point 5	ASHP (Cosy 9)	7.92	4.2	0.7	2000	45.3	-28.98	-0.07	2.64	-4.06	-14.14	-4.51			2	1.2	18.04
Assessment point 5	ASHP (Cosy 9)	7.92	4.2	0.7	4000	42.4	-28.98	-0.21	2.64	-4.02	-16.89	-4.25			2	1	14.84
Assessment point 5	ASHP (Cosy 9)	7.92	4.2	0.7	8000	39.7	-28.98	-0.74	2.64	-3.68	-19.76	-3.78			2	-1.1	9.85
Assessment point 5	ASHP (Cosy 9) (reflected by 8)	9.75	4.2	0.7	8000	39.61	-30.78	-0.91	2.75	-19.97	-19.97				2	-1.1	-8.4
Assessment point 2	ASHP (Cosy 9)	5.08	1	0.7	500	56.1	-25.12	-0.01	2.78	-12.19	-12.19				2	-3.2	20.36
Assessment point 2	ASHP (Cosy 9)	5.08	1	0.7	250	58	-25.12	-0.01	2.78	-9.9	-9.9				2	-8.6	19.15
Assessment point 2	ASHP (Cosy 9) (reflected by Barrier 4)	7.21	1	0.7	500	56.01	-28.16	-0.02	2.89	-11.97	-11.97				2	-3.2	17.55
Assessment point 2	ASHP (Cosy 9) (reflected by Fence 1)	11.2	1	0.7	500	56.01	-31.98	-0.03	2.95	-8.83	-8.83				2	-3.2	16.93
Assessment point 2	ASHP (Cosy 9) (reflected by Barrier 4)	7.21	1	0.7	250	57.91	-28.16	-0.01	2.89	-9.72	-9.72				2	-8.6	16.31
Assessment point 2	ASHP (Cosy 9) (reflected by Fence 1 + Barrier 4)	13.34	1	0.7	500	55.92	-33.5	-0.03	2.97	-8.25	-8.25				2	-3.2	15.9
Assessment point 2	ASHP (Cosy 9)	5.08	1	0.7	1000	50.5	-25.12	-0.02	2.78	-14.79	-14.79				2	0	15.35
Assessment point 2	ASHP (Cosy 9)	5.08	1	0.7	125	58.9	-25.12	0	2.78	-8.06	-8.06				2	-16.1	14.41
Assessment point 2	ASHP (Cosy 9) (reflected by Barrier 4)	7.21	1	0.7	1000	50.41	-28.16	-0.03	2.89	-14.54	-14.54				2	0	12.57
Assessment point 2	ASHP (Cosy 9) (reflected by Fence 1)	11.2	1	0.7	1000	50.41	-31.98	-0.04	2.95	-10.89	-10.89				2	0	12.45
Assessment point 2	ASHP (Cosy 9) (reflected by Fence 1 + Barrier 4)	13.34	1	0.7	1000	50.32	-33.5	-0.05	2.97	-10.16	-10.16				2	0	11.57
Assessment point 2	ASHP (Cosy 9) (reflected by Fence 1 + Fence 1)	13.93	1	0.7	1000	50.32	-33.88	-0.06	2.97	-10.41	-10.41				2	0	10.95
Assessment point 2	ASHP (Cosy 9)	5.08	1	0.7	2000	45.3	-25.12	-0.04	2.78	-17.58	-17.58				2	1.2	8.54
Assessment point 2	ASHP (Cosy 9) (reflected by Barrier 4 + Fence 1)	14.55	1	0.7	1000	50.32	-34.26	-0.06	2.97	-14.28	-14.28				2	0	6.7
Assessment point 2	ASHP (Cosy 9) (reflected by Fence 1)	11.2	1	0.7	2000	45.21	-31.98	-0.1	2.95	-13.33	-13.33				2	1.2	5.95
Assessment point 2	ASHP (Cosy 9) (reflected by Barrier 4)	7.21	1	0.7	2000	45.21	-28.16	-0.06	2.89	-17.32	-17.32				2	1.2	5.76
Assessment point 2	ASHP (Cosy 9) (reflected by Fence 1 + Barrier 4)	13.34	1	0.7	2000	45.12	-33.5	-0.12	2.97	-12.49	-12.49				2	1.2	5.18
Assessment point 2	ASHP (Cosy 9) (reflected by Fence 1 + Fence 1)	13.93	1	0.7	2000	45.12	-33.88	-0.12	2.97	-12.79	-12.79				2	1.2	4.51
Assessment point 2	ASHP (Cosy 9)	5.08	1	0.7	4000	42.4	-25.12	-0.13	2.78	-20	-20				2	1	2.93
Assessment point 2	ASHP (Cosy 9) (reflected by 6 and 8 Northfield Road)	14.66	1	0.7	250	57.91	-34.32	-0.02	2.97	-17.98	-17.98				2	-8.6	1.97
Assessment point 2	ASHP (Cosy 9) (reflected by Fence 1 + Garden building)	27.01	1	0.7	2000	45.12	-39.63	-0.23	2.99	-9.6	-9.6				2	1.2	1.85
Assessment point 2	ASHP (Cosy 9) (reflected by 6 and 8 Northfield Road)	14.66	1	0.7	500	56.01	-34.32	-0.03	2.97	-21.83	-21.83				2	-3.2	1.6
Assessment point 2	ASHP (Cosy 9) (reflected by 6 and 8 Northfield Road)	14.66	1	0.7	125	58.81	-34.32	-0.01	2.97	-13.26	-13.26				2	-16.1	0.1
Assessment point 2	ASHP (Cosy 9) (reflected by Fence 1)	11.2	1	0.7	4000	42.31	-31.98	-0.29	2.95	-16.03	-16.03				2	1	-0.04
Assessment point 2	ASHP (Cosy 9) (reflected by Barrier 4 + Fence 1)	14.55	1	0.7	2000	45.12	-34.26	-0.13	2.97	-17.04	-17.04				2	1.2	-0.12
Assessment point 2	ASHP (Cosy 9) (reflected by Barrier 4)	7.21	1	0.7	4000	42.31	-28.16	-0.19	2.89	-20	-20				2	1	-0.15
Assessment point 2	ASHP (Cosy 9) (reflected by Barrier 4)	33.66	1	0.7	2000	45.21	-41.54	-0.29	2.99	-10.21	-10.21				2	1.2	-0.64
Assessment point 2	ASHP (Cosy 9) (reflected by Fence 1 + Barrier 4)	13.34	1	0.7	4000	42.22	-33.5	-0.35	2.97	-15.12	-15.12				2	1	-0.78
Assessment point 2	ASHP (Cosy 9) (reflected by 6 + Barrier 4)	34.79	1	0.7	2000	45.12	-41.83	-0.3	2.99	-10.13	-10.13				2	1.2	-0.94
Assessment point 2	ASHP (Cosy 9) (reflected by Barrier 4 + 8 Side)	35.68	1	0.7	2000	45.12	-42.05	-0.31	3	-9.96	-9.96				2	1.2	-0.99
Assessment point 2	ASHP (Cosy 9) (reflected by Fence 1 + Fence 1)	13.93	1	0.7	4000	42.22	-33.88	-0.37	2.97	-15.44	-15.44				2	1	-1.49
Assessment point 2	ASHP (Cosy 9) (reflected by Barrier 4 + Barrier 4)	34.01	1	0.7	2000	45.12	-41.63	-0.29	2.99	-11.35	-11.35				2	1.2	-1.96
Assessment point 2	ASHP (Cosy 9)	5.08	1	0.7	8000	39.7	-25.12	-0.48	2.78	-20	-20				2	-1.1	-2.21
Assessment point 2	ASHP (Cosy 9) (reflected by 6 and 8)	7.56	1	0.7	2000	45.21	-28.57	-0.07	2.9	-25	-25				2	1.2	-2.33
Assessment point 2	ASHP (Cosy 9) (reflected by Fence 1 + Garden building)	27.01	1	0.7	4000	42.22	-39.63	-0.71	2.99	-11.84	-11.84				2	1	-3.98
Assessment point 2	ASHP (Cosy 9) (reflected by 6 and 8 Northfield Road)	14.66	1	0.7	1000	50.41	-34.32	-0.06	2.97	-25	-25				2	0	-4
Assessment point 2	ASHP (Cosy 9) (reflected by Barrier 4)	7.21	1	0.7	8000	39.61	-28.16	-0.68	2.89	-20	-20				2	-1.1	-5.44
Assessment point 2	ASHP (Cosy 9) (reflected by 6 and 8)	7.56	1	0.7	4000	42.31	-28.57	-0.2	2.9	-25	-25				2	1	-5.56
Assessment point 2	ASHP (Cosy 9) (reflected by 8 + Barrier 4)	7.35	1	0.7	8000	39.52	-28.33	-0.69	2.89	-20	-20				2	-1.1	-5.7
Assessment point 2	ASHP (Cosy 9) (reflected by Barrier 4 + Fence 1)	14.55	1	0.7	4000	42.22	-34.26	-0.38	2.97	-19.91	-19.91				2	1	-6.36
Assessment point 2	ASHP (Cosy 9) (reflected by Barrier 4)	33.66	1	0.7	4000	42.31	-41.54	-0.88	2.99	-12.57	-12.57				2	1	-6.68
Assessment point 2	ASHP (Cosy 9) (reflected by 6 + Barrier 4)	34.79	1	0.7	4000	42.22	-41.83	-0.91	2.99	-12.47	-12.47				2		

--- Objects ---																				
Receivers	x		y	Height																
Assessment point 4		39.47	28.22	4.2																
Main assessment point		32.26	22	1.2																
Assessment point 5		41.42	24.5	1.1																
Assessment point 2		30.97	20.2	1																
Assessment point 3		35.98	16.62	4																
Point Sources	x		y	Height	Lw	Hz	Adjust Level													
ASHP (Cosy 9)		34.33	24	0.7	-		63	2												
-	-	-	-	-		58.9	125													
-	-	-	-	-		58	250													
-	-	-	-	-		56.1	500													
-	-	-	-	-		50.5	1000													
-	-	-	-	-		45.3	2000													
-	-	-	-	-		42.4	4000													
-	-	-	-	-		39.7	8000													
Barriers	x		y	Height	Reflection Coefficient															
Fence 1		33.97	22.58	1.8	0.98															
-		19.73	32.67																	
-		22.31	36.27																	
-		41.52	22.67																	
-		40.89	21.83																	
Gate		41.51	22.66	1.8	0.98															
-		42.06	23.45																	
Barrier 3		22.29	36.22	1.8	0.98															
-		25.42	40.28																	
-		39.02875	29.905																	
Barrier 4		19.72	32.66	1.8	0.98															
-		17.08	28.83																	
-		31.20063	18.7175																	
Buildings	x		y	Height	Reflection Coefficient															
6 and 8 Northfield Road		45.06	9.92	5.2	0.98															
-		49.34	16.04	8.3																
-		40.92	21.92																	
-		36.64	15.8																	
6 and 8		34.06	19.24	2.1	0.98															
-		36.92	23.23	3.9																
-		40.23	20.89																	
-		37.37	16.9																	
6		35.11	24.07	1.8	0.98															
-		33.97	22.59																	
-		35.55	21.38																	
-		36.69	22.86																	
8		35.62	21.38	2.3	0.98															
-		33.95	22.59																	
-		32.37	20.45																	
-		34.04	19.24																	
8 Side		32.41	20.45	2.1	0.98															
-		31.17	18.75																	
-		36.13	15.14																	
-		37.37	16.84																	
4 and 2 Northfield Road		46.22	29.52	5.2	0.98															
-		41.97	23.52	8.3																
-		50.41	17.5																	
-		54.63	23.59																	
4 Northfield Road		42.63	24.36	5.2	0.98															
-		39.5	26.53																	
-		40.97	28.59																	
-		44.1	26.42																	
4		39	29.88	1.8	0.98															
-		37.91	28.28																	
-		39.87	26.94																	
-		41.02	28.53																	
Garden building		21.94	35.64	1.8	0.98															
-		20.29	33.25																	
-		23.79	30.84																	
-		25.44	33.23																	
--- Configuration ---																				
General Calculation Method: ISO9613-2:2024																				
Hard Ground (Ground Factor = 0)																				
15.0°C Temperature																				
70% Humidity																				
Results are A-weighted																				
Second order reflections are included																				
Vertical edges (lateral paths) are included. Limited to convex paths. Lateral paths have distance limit applied (ISO17534-3)																				
--- Key ---																				
Lw		Sound Power Level (dB)																		
Lp		Sound Pressure Level (dB)																		
Ad		Distance attenuation																		
Ab		Barrier attenuation																		
Ag		Ground effect																		
Aa		Air absorption																		