

Noise Impact Assessment

For: Howarth Homes

Site: Former Big Cat Sanctuary, Codicote

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Quality Assurance

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Limitations

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1. Introduction

1.1 Brief

This report has been prepared for the sole and exclusive use of Howarth Homes in accordance with the scope of work presented via email by Arthian, dated 01/04/2026. This report is based on information and data collected by Arthian. Should any of the information be incorrect, incomplete, or subject to change, Arthian may wish to revise the report accordingly.

Arthian have been appointed to carry out a noise impact assessment to support a full planning application for a proposed residential development of 109 dwellings at Former Big Cat Sanctuary, Codicote Road, Welwyn, AL6 9TU.

Arthian have undertaken the following key tasks:

- Attended the Site to undertake an environmental noise survey to determine the prevailing ambient, background and maximum noise levels;
- Assessed the noise levels following the process outlined in the Professional Practice Guidelines for Planning and Noise, proposing additional noise mitigation measures where appropriate; and
- Prepared a technical report detailing our findings which is suitable for submission to the local planning authority.

This report is a planning-stage assessment only to determine the suitability of the site for residential development. A detailed acoustic assessment will be undertaken at the detailed design stage.

As this is a technical report it will be necessary to make use of some technical terms. To assist the reader a glossary has been included in Appendix A.

1.2 Consultants

This report has been prepared by the Acoustics, Noise and Vibration Team at Arthian, the following technical team members have been involved in its preparation.

- Ruth Sargent BSc (Hons) MSc MIOA, Principal Acoustic Consultant
- Sam Shapley BSc(Hons) MIOA, Senior Acoustic Consultant
- Chris Turner BSc(Hons) MSc IEng MIOA MIoD MInstP, Technical Director - Acoustics, Noise and Vibration

Professional CVs of the technical team members are available upon request.



2. Criteria

2.1 National Planning Policy

The National Planning Policy Framework (NPPF) (Ministry of Housing, Communities & Local Government 2024) is the overarching guidance document for planning purposes in England. The latest edition December 2024 states the following regarding the effects of noise and vibration:

Paragraph 198

“Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

- a) Mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life...”*

Paragraph 200

“Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or ‘agent of change’) should be required to provide suitable mitigation before the development has been completed.”

2.2 Noise Policy Statement for England

The Noise Policy Statement for England (NPSE) (Department for Environment, Food and Rural Affairs 2010) advises the following regarding the numerical values of the No Observed Adverse Effect Level (NOEL), the Lowest Observed Adverse Effect Level (LOAEL) and the Significant Observed Adverse Effect Level (SOAEL):

“It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise.”

The NPSE provides the following additional requirements for periods where noise levels exceed the LOAEL but are below the SOAEL.

“It requires that all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development. This does not mean that such adverse effects cannot occur.”



2.3 Professional Practice Guidance: Planning and Noise

Professional Practice Guidance on Planning & Noise (ProPG) was issued in 2017 by the Association of Noise Consultants (ANC), the Institute of Acoustics (IOA) and the Chartered Institute of Environmental Health (CIEH) (Association of Noise Consultants, Institute of Acoustics, Chartered Institute of Environmental Health 2017). It seeks to secure good acoustic design for *new residential development* within England's planning system. It does not constitute official government guidance but seeks to assist Local Planning Authorities with a methodology for securing good acoustic design and performance for new residential development.

The scope of the guidance is restricted to sites that are exposed predominantly to noise from transportation sources. Where industrial or commercial noise is present on the application site that is not dominant, this incidental contribution may be included in the ProPG assessed noise level used to establish the degree of risk. More significant industrial or commercial noise should not use ProPG risk assessment and should instead utilise the methodology and guidance in BS4142:2014.

ProPG requires the preparation of an Acoustic Design Statement (ADS), which is expected to be more detailed for a site assessed as high risk than for one identified as low risk.

The level of risk is dependent on the projected long term L_{Aeq} average levels for a site as identified in the adjacent inset panel below.

ProPG advises that a 2-stage approach should be undertaken with an initial screening assessment (Stage 1) identifying potential concerns and a more detailed (Stage 2) assessment which is a systematic consideration of four key elements. These are:

- Demonstrating a Good Acoustic Design Process;
- Observing internal Noise Level Guidelines;
- Undertaking an External Amenity Area Noise Assessment; and
- Consideration of "Other Relevant Issues".

In meeting the above four key elements, any proposed acoustic treatment measures necessary to mitigate or eliminate impacts should then reduce noise and demonstrably achieve the required standards. The ProPG approach is directly applicable only to new residential development but provides a useful benchmark for determining scale of impact.

2.3.1 Initial Risk Assessment

ProPG recommends that an initial (stage 1) risk assessment of the proposed development site should be conducted to provide an indication of the likely risk of adverse effects from noise were no subsequent mitigation to be included. The risk of adverse effect is determined based on the external day and night-time noise levels across the development site as shown below in Table 1 (taken from Figure 1 of the ProPG).



Table 1 Noise Risk Assessment

Indicative Daytime Noise Levels $L_{Aeq,16hr}$	Indicative Night-time Noise Levels $L_{Aeq,8hr}$	Risk	Potential Effect Without Mitigation
> 70 dB	> 60 dB	High	 Increasing risk of adverse effect
60 – 70 dB	50 – 60 dB	Medium	
50 – 60 dB	40 – 50 dB	Low	
< 50 dB	< 40 dB	Negligible	No adverse effect

a. Indicative noise levels should be assessed without inclusion of the acoustic effect of any scheme specific noise mitigation measures.

b. Indicative noise levels are the combined free-field noise level from all sources of transport noise and may also include industrial/commercial noise where this is present but is “not dominant”.

c. $L_{Aeq,16hr}$ is for daytime 0700 – 2300, $L_{Aeq,8hr}$ is for night-time 2300 – 0700.

d. An indication that there may be more than 10 noise events at night (2300 – 0700) with $L_{Amax,F} > 60$ dB means the site should not be regarded as negligible risk.

2.4 BS 8233:2014: Guidance on Sound Insulation and Noise Reduction in Buildings

British Standard ‘BS 8233:2014’ provides guidance on the appropriate design criteria for internal ambient noise levels within dwelling houses, flats, and rooms in residential use when unoccupied. The levels presented in the standard are guideline values and should not be applied as strict limits. They are considered threshold values below which a physiological response is not observed and are, therefore, commonly considered to be equivalent to the Lowest Observed Adverse Effect Level.

For steady external noise sources, i.e., noise which does not contain features such as a distinguishable, discrete, and continuous tone, is irregular enough to attract attention, or has a strong low-frequency content, the following guideline values are presented.

Table 2 Desirable Indoor Ambient Noise Levels in Dwellings (Source: BS 8233:2014)

Activity	Location	Daytime 07:00 to 23:00	Night-time 23:00 to 07:00
Resting	Living room	35dB $L_{Aeq,16hour}$	-
Dining	Dining room/area	40dB $L_{Aeq,16hour}$	-
Sleeping (daytime resting)	Bedroom	35dB $L_{Aeq,16hour}$	30dB $L_{Aeq,8hour}$

The notes accompanying these guideline values provide the following advice, some of which have been further clarified in the Professional Practice Guidelines on Planning and Noise new Residential Development (‘the ProPG’). These advise:



Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{A\text{Max},F}$, depending on the character and number of events per night. Sporadic noise events could require separate values. In most circumstances in noise sensitive rooms at night (e.g. bedrooms) good acoustic design can be used so that individual noise events do not normally exceed 45dB $L_{A\text{max},F}$ more than 10 times a night. However, where it is not reasonably practicable to achieve this guideline then the judgement of acceptability will depend not only on the maximum noise levels but also on factors such as the source, number, distribution, predictability and regularity of noise events.

Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal L_{Aeq} target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved. The more often internal L_{Aeq} levels start to exceed the internal L_{Aeq} target levels by more than 5 dB, the more that most people are likely to regard them as “unreasonable”. Where such exceedances are predicted, applicants should be required to show how the relevant number of rooms affected has been kept to a minimum. Once internal L_{Aeq} levels exceed the target levels by more than 10 dB, they are highly likely to be regarded as “unacceptable” by most people, particularly if such levels occur more than occasionally. Every effort should be made to avoid relevant rooms experiencing “unacceptable” noise levels at all and where such levels are likely to occur frequently, the development should be prevented in its proposed form.

In addition to internal noise levels recommendations, BS 8233 also provides guidance on acceptable levels within external areas such as gardens and patios. BS 8233 states that “it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments”.



3. Environmental Noise Survey

3.1 Methodology

A survey of the background sound levels at representative off-site receptors was carried out from Friday 29 May 2026 to Tuesday 02 June 2026.

Long-term unattended sound measurements were carried out at two locations. In addition, a measurement following the Calculation of Road Traffic Noise (CRTN) shortened measurement methodology was undertaken at a third location near Codicote Road. The sound monitoring locations are detailed in Table 3:

Table 3: Sound Measurement Locations

Measurement Location Reference	Details	Grid Reference
M1	Located in the more northern area of the site, approximate at the location of plot 5. Long-term unattended measurements.	TL 22482 17180
M2	Located in the more central area of the site, approximately at the location of plot 47. Long-term unattended measurements.	TL 22497 17130
M3	Located at 7m from the edge of Codicote Road. Short-term attended CRTN measurement.	TL 22521 17182

Details of the sound measurement location and instrumentation used are presented in Appendix C.

Weather conditions during the surveys predominantly fell within the requirements of BS 7445. Full weather details are given in Appendix C.

3.2 Survey Results

At all measurement locations the dominant noise source during the surveys was road traffic on Codicote Road. Birdsong was also audible, as well as short periods of noise from activities undertaken on the site.

The measured data were processed to define the L_{Aeq} , L_{A90} and L_{AFmax} sound levels during the daytime and night-time periods for monitoring locations M1 and M2, and the results are presented Table 4. Data measured during periods of rain and/or wind speeds above 5 m/s have been removed from the results. Further details are provided in Appendix C.



Table 4: Sound Measurement Results – Unattended Measurements

Time of Day	Sound Levels				
	L _{Aeq,T} dB		Typical L _{A90,T} dB		L _{AFmax} dB
	Range	Typical	Range	Typical	Range
Location M1					
Daytime	49-59	54	34-47	40	60-86
Night-time	40-53	47	28-41	37	59-78
Location M2					
Daytime	45-54	50	36-46	43	56-78
Night-time	38-55	50	30-46	34	54-74

Time history graphs of the above monitoring are detailed in Figures C.2 and C.3 in Appendix C.

The measured data for location M3 were processed to define the L_{Aeq}, L_{A90} and L_{AFmax} sound levels during the monitoring period, and the L_{A10,18hr} level calculated to allow calibration of modelled road traffic flows on Codicote Road in the noise model. The results are presented in Table 5.

Table 5: Sound Measurement Results – Attended Measurements

Time of Day	Sound Levels dB				
	L _{Aeq,T} dB	L _{A90,T}	L _{AFmax} dB	L _{A10} dB	Calculated L _{A10,18hr}
Location M3					
11:00-12:00	67	48	82	72	-
12:00-13:00	66	47	82	70	-
13:00-14:00	65	44	79	69	-
Average/Typical	66	-	-	70	69*

* The LA10,18hr is calculated by taking the average of the measured LA10 measurements and subtracting 1dB, as per the methodology given in the Calculation of Road Traffic Noise (CRTN)



4. Noise Assessment

4.1 Predicted Noise Levels

An acoustic model of the Proposed Development and the surrounding area has been developed using SoundPLAN (v9.1) sound modelling software. The software implements the standard sound prediction methodology detailed in ISO 9613:2024¹.

The model has been used to calculate the noise impact on the proposed noise sensitive receptors. The acoustic model includes the ground topography, all proposed and existing buildings within and surrounding the site, and all of the surrounding noise sources, including:

- Traffic noise from Codicote Road

Full details of the acoustic model are included in Appendix D.

The predicted free-field and façade levels at selected proposed dwellings are given in Table 6. The location of each selected proposed dwelling is illustrated in Figure B.2 in Appendix B. The façade levels have been calculated by the arithmetic addition of 3 dB to the predicted free-field levels.

Table 6: Predicted Noise Levels

Receptor	Plot Number	Façade	Predicted Façade Level	
			Day L _{Aeq,16hr} dB	Night L _{Aeq,8hr} dB
R1	1-3	Front	70	61
		Rear	49	49
R2	4	Side (SE Façade)	59	52
		Rear (NW façade)	50	49
R3	8	Front	57	51
		Rear	43	41
R4	10	Front	51	46
		Rear	44	40
R5	11	Front	50	45
		Rear	44	41
R6	16	Front	48	43
		Rear	46	46
R7	45	Front	47	42
		Rear	45	43
R8	46	Front	48	43

¹ International Organization for Standardization (2024) ISO 9613-2:2024 Part 2 Attenuation of sound during propagation outdoors, ISO.

Receptor	Plot Number	Façade	Predicted Façade Level	
			Day $L_{Aeq,16hr}$ dB	Night $L_{Aeq,8hr}$ dB
		Rear	46	43
R9	47	Front	57	51
		Rear	41	38
R10	49	Front	56	50
		Rear	52	48
R11	50	Front	54	48
		Rear	51	47
R12	51	Front	52	46
		Rear	50	45
R13	91	Front	49	43
		Rear	45	42
R14	92	Front	57	50
		Rear	41	38
R15	95	Front	53	47
		Rear	52	47
R16	96	Front	51	46
		Rear	51	46
R17	97	Front	49	43
		Rear	50	45

Noise contour plots illustrating the propagation of noise across the development site during daytime and night-time periods are given in Figures D.1 and D.2 in Appendix D.

4.2 Suitability of the Site for Residential Development

4.2.1 Stage 1 Risk Assessment

With reference to Figures D.1 and D.2 in Appendix D, the risk of adverse effect is medium at the site boundary.

Towards the centre of the site, further from Codicote Road, the risk of noise impact is reduced to negligible to low.

Where the level of risk is assessed as greater than 'negligible', a further, more detailed, assessment is required.

The ProPG suggests that where the risk of adverse effect is low, the site is likely to be acceptable from a noise perspective provided that a good acoustic design process is followed and is demonstrated in an Acoustic Design Statement which confirms how the adverse impacts of noise will be mitigated and minimised in the finished development. As the level of risk increases it becomes more important that a good acoustic design process is followed in order that the adverse impacts of noise are mitigated and minimised, and that a significant adverse noise impact will be avoided in the finished development.



4.2.2 Predicted Internal Ambient Noise Levels

An assessment of the likely internal noise levels within living spaces during the day and bedrooms at night with a partially open window and a closed standard double-glazed window has been undertaken to demonstrate the impact from the road and rail traffic on the proposed development.

The internal level with a partially open window has been calculated by subtracting 15 dB from the predicted façade level, as recommended in the WHO Community Noise Guidelines.

Taking into account uncertainty within the predictions of 5dB, the internal level with a closed double-glazed window has been calculated by subtracting 28 dB from the predicted façade level.

The predicted internal levels are provided in Table 7 for the daytime periods and Table 8 for the night-time period. Figures in bold indicate where the recommended maximum internal noise level is exceeded for the corresponding assessment period (Daytime – 35 dB $L_{Aeq,16hr}$, Night-time 30 dB $L_{Aeq,8hr}$). The predicted levels are illustrated in Appendix D, Figures D.3 for daytime and D.4 for night-time.

Table 7: Predicted Daytime Internal Noise Levels

Receptor	Plot Number	Façade	Predicted $L_{Aeq,16}$ dB (Façade)	Calculated Internal Level $L_{Aeq,16hr}$ dB	
				Partially Open Window	Closed Standard Double-Glazed Window
R1	1-3	Front	70	55	42
		Rear	49	34	21
R2	4	Side (SE Façade)	59	44	31
		Rear (NW façade)	50	35	22
R3	8	Front	57	42	29
		Rear	43	28	15
R4	10	Front	51	36	23
		Rear	44	29	16
R5	11	Front	50	35	22
		Rear	44	29	16
R6	16	Front	48	33	20
		Rear	46	31	18
R7	45	Front	47	32	19
		Rear	45	30	17
R8	46	Front	48	33	20
		Rear	46	31	18
R9	47	Front	57	42	29
		Rear	41	23	10
R10	49	Front	56	41	28
		Rear	52	37	24



Receptor	Plot Number	Façade	Predicted $L_{Aeq,16}$ dB (Façade)	Calculated Internal Level $L_{Aeq,16hr}$ dB	
				Partially Open Window	Closed Standard Double-Glazed Window
R11	50	Front	54	39	29
		Rear	51	36	24
R12	51	Front	52	37	25
		Rear	50	35	22
R13	91	Front	49	34	21
		Rear	45	30	17
R14	92	Front	57	42	29
		Rear	41	26	13
R15	95	Front	53	38	25
		Rear	52	37	24
R16	96	Front	51	36	23
		Rear	51	36	23
R17	97	Front	49	34	21
		Rear	51	36	23

Table 8: Predicted Night-time Internal Ambient Levels

Receptor	Plot Number	Façade	Predicted $L_{Aeq,8}$ dB (Façade)	Calculated Internal Level $L_{Aeq,8hr}$ dB	
				Partially Open Window	Closed Standard Double-Glazed Window
R1	1-3	Front	61	46	33
		Rear	49	34	21
R2	4	Side (SE Façade)	52	37	24
		Rear (NW façade)	49	34	21
R3	8	Front	51	36	23
		Rear	41	26	13
R4	10	Front	46	31	18
		Rear	40	25	12
R5	11	Front	45	30	17
		Rear	41	26	13
R6	16	Front	43	28	15
		Rear	45	30	17
R7	45	Front	42	27	14



Receptor	Plot Number	Façade	Predicted $L_{Aeq,8}$ dB (Façade)	Calculated Internal Level $L_{Aeq,8hr}$ dB	
				Partially Open Window	Closed Standard Double-Glazed Window
		Rear	43	28	15
R8	46	Front	43	28	15
		Rear	43	28	15
R9	47	Front	51	36	23
		Rear	38	23	10
R10	49	Front	50	35	22
		Rear	48	33	20
R11	50	Front	48	33	20
		Rear	47	32	19
R12	51	Front	46	31	18
		Rear	45	30	20
R13	91	Front	43	28	15
		Rear	42	27	14
R14	92	Front	50	35	14
		Rear	38	23	10
R15	95	Front	47	32	19
		Rear	47	32	19
R16	96	Front	46	31	18
		Rear	46	31	18
R17	97	Front	43	28	15
		Rear	45	30	17

As illustrated in Table 7, the predicted daytime internal noise levels indicate that with a partially open window the criterion is likely to be exceeded within the plots located closest to and facing Codicote Road. With a closed standard double-glazed window, the internal noise levels are likely to exceed the recommended maximum level of 35 dB $L_{Aeq,16hr}$ for the front facades of plots 1-3 only.

As illustrated in Table 8, the predicted night-time internal ambient noise levels within the dwellings facing Codicote Road are indicated to exceed the criterion with a partially open window. With a closed standard double-glazed window, the internal noise levels are likely to exceed the recommended maximum level of 30 dB $L_{Aeq,8hr}$ for the front facades of plots 1-3 only. Noise mitigation measures should be required to reduced internal ambient levels to acceptable levels. Such mitigation measures are discussed in Section 5: Mitigation.

4.2.3 Predicted Internal L_{Amax} Levels

Due to the close proximity of Codicote Road to some of the proposed dwellings, an assessment of potential internal L_{Amax} levels has been undertaken.



The typical internal $L_{A_{Max}}$ level with a partially open window has been calculated by the addition of 3 dB to the predicted free-field level to provide the façade level and then subtracting 15 dB for a partially open window, as recommended in the WHO Community Noise Guidelines.

The typical internal $L_{A_{Max}}$ level with a closed double-glazed window has been calculated by the addition of 3dB to the predicted free-field level to provide the façade level and then subtracting 28 dB.

The predicted internal $L_{A_{Max}}$ levels are provided in Table 9 for the night-time period. Figures in bold indicate where the recommended maximum internal $L_{A_{Max}}$ noise level is exceeded for the night-time period (45 dB $L_{A_{Max,fast}}$).

Table 9: Predicted Internal $L_{A_{Max}}$ Levels

Receptor	Plot Number	Typical Measured $L_{A_{Max}}$		Calculated External Level at Receptor $L_{AF_{Max}}$ (façade) dB	Calculated Internal $L_{AF_{Max}}$ dB	
		Level dB	Distance (m)		Partially Open Window	Closed Standard Double-Glazed Window
R1	1-3	82	7	86	71	58
R2	4	82	7	74	59	46
R3	8	82	7	71	56	43
R9	47	82	7	70	55	42
R10	49	82	7	70	55	42
R14	92	82	7	68	53	40
R15	95	82	7	66	51	40

As illustrated in Table 9, the predicted internal $L_{A_{Max}}$ levels within bedrooms at night are expected to exceed the recommended maximum $L_{A_{Max}}$ level of 45 dB $L_{A_{Max,fast}}$. As there are likely to be more than 10 to 15 vehicle pass-bys over the night-time period, noise mitigation measures would be required to reduced internal $L_{A_{Max}}$ levels to acceptable levels. Such mitigation measures are discussed in Section 5: Mitigation.

4.2.4 Noise Levels in External Areas

An assessment of noise levels within external amenity areas (i.e. rear gardens) has been undertaken and assessed against the upper guideline level of 55 dB $L_{Aeq,16h}$, as given in BS 8233.

Table 10: Predicted Noise Levels Within Gardens

Receptor	Plot Number	Predicted $L_{Aeq,16hr}$ dB (free-field)	Meets BS8233 Upper Guideline Level (55 dB $L_{Aeq,16hr}$)?
R1	1-3	52	Yes
R2	4	50	Yes
R3	8	46	Yes
R4	10	42	Yes



Receptor	Plot Number	Predicted $L_{Aeq,16hr}$ dB (free-field)	Meets BS8233 Upper Guideline Level (55 dB $L_{Aeq,16hr}$)?
R5	11	42	Yes
R6	16	48	Yes
R7	45	45	Yes
R8	46	45	Yes
R9	47	41	Yes
R10	49	50	Yes
R11	50	49	Yes
R12	51	47	Yes
R13	91	45	Yes
R14	92	46	Yes
R15	95	48	Yes
R16	96	47	Yes
R17	97	47	Yes

As indicated in Table 10, predicted levels within gardens are predicted to meet the BS 8233 upper guideline level of 55 dB $L_{Aeq,16hr}$ at receptors in all proposed gardens. No further noise mitigation measures are required.



5. Mitigation

5.1 Overview

The predictions of the assessment have shown that the impact of the road traffic noise are predicted not to meet the internal sound level requirements of BS 8233 at the closest plots to Codicote Road.

The following measures are presented to mitigate this.

5.1.1 Site Layout

Consideration should be given to the layout of the site to reduce the noise impact upon proposed dwellings. The ProPG Good Acoustic Design Supplementary Document 2 states the following should be considered:

- Maximising the spatial separation of the noise source and receptors.
- Investigating the necessity and feasibility of reducing existing noise levels and relocating existing noise sources.
- Using existing topography and existing structures (that are likely to last the expected life of the noise-sensitive scheme) to screen the proposed development site from significant sources of noise.
- Incorporating noise barriers as part of the scheme to screen the proposed development site from significant sources of noise.
- Using the layout of the scheme to reduce noise propagation across the site.
- Using the orientation of buildings to reduce the noise exposure of noise sensitive rooms.
- Using the building envelope to mitigate noise to acceptable levels.

5.1.2 Glazing Specification

The predicted internal sound levels based on a standard glazed double-glazed window, indicate that acceptable internal L_{Aeq} and L_{Amax} noise levels cannot be achieved within plots located in close proximity to Codicote Road. To provide acceptable levels, higher specification glazing providing a greater sound reduction than standard double-glazing units is likely to be required.

5.1.3 Acoustic Passive Ventilation

The predicted internal sound levels based on a partially open window for ventilation, indicate that acceptable internal noise levels cannot be achieved in the majority of the proposed dwellings located closest to Codicote Road. The fitting of acoustic passive ventilators is likely to be required within the plots as indicated in Figure 1.

5.1.4 Whole House Ventilation System

It is indicated that a ventilation strategy which doesn't rely on the opening of windows to achieve 'extract ventilation' and 'whole building ventilation' rates as detailed Building Regulations Part F would be required for some dwellings. For this strategy, either continuous mechanical extract or continuous mechanical supply and extract with heat recovery are likely to be required utilising acoustic trickle vents in order to meet ventilation requirements. Guidance for these strategies are detailed in sections 1.61-1.62 and 1.69 of Building Regulations Part F respectively. Alternatively, a mechanical ventilation with Heat Recovery strategy is likely to be required which does not utilise any background ventilators in the external façade.



5.1.5 Detailed Mitigation Strategy

The final glazing, ventilation and façade specifications for individual plots will be established through a subsequent detailed acoustic assessment at the detailed design stage. Based on the initial predictions, Figure 1 illustrates the noise mitigation measures are likely to be required for each plot.



Figure 1: Plots Where Noise Mitigation Measures Are Required



6. Overheating Assessment

6.1 Design Requirements

Approved Document O sets out the building standards relating to the issue of overheating in residential developments in England. It is advised the development addresses the risk of overheating within the proposed dwellings.

Approved Document O states:

“Noise

- 3.2 *In locations where external noise may be an issue (for example, where the local planning authority considered external noise to be an issue at the planning stage), the overheating mitigation strategy should take account of the likelihood that windows will be closed during sleeping hours (11pm to 7am).*
- 3.3 *Windows are likely to be closed during sleeping hours if noise within bedrooms exceeds the following limits.*
 - a. *40dB $L_{Aeq,T}$, averaged over 8 hours (between 11pm and 7am).*
 - b. *55dB L_{AFmax} , more than 10 times a night (between 11pm and 7am).*
- 3.4 *Where in-situ noise measurements are used as evidence that these limits are not exceeded, measurements should be taken in accordance with the Association of Noise Consultants’ Measurement of Sound Levels in Buildings with the overheating mitigation strategy in use.*

NOTE: Guidance on reducing the passage of external noise into buildings can be found in the National Model Design Code: Part 2 – Guidance Notes (MHCLG, 2021) and the Association of Noise Consultants’ Acoustics, Ventilation and Overheating: Residential Design Guide (2020).”

6.2 Level 1 Site Risk Assessment

Following the methods detailed in ANC’s Acoustics Ventilation and Overheating guidance documentation, a Stage 1 Noise Risk Assessment has been undertaken based upon the predicted noise levels at the façades of the Proposed Development.



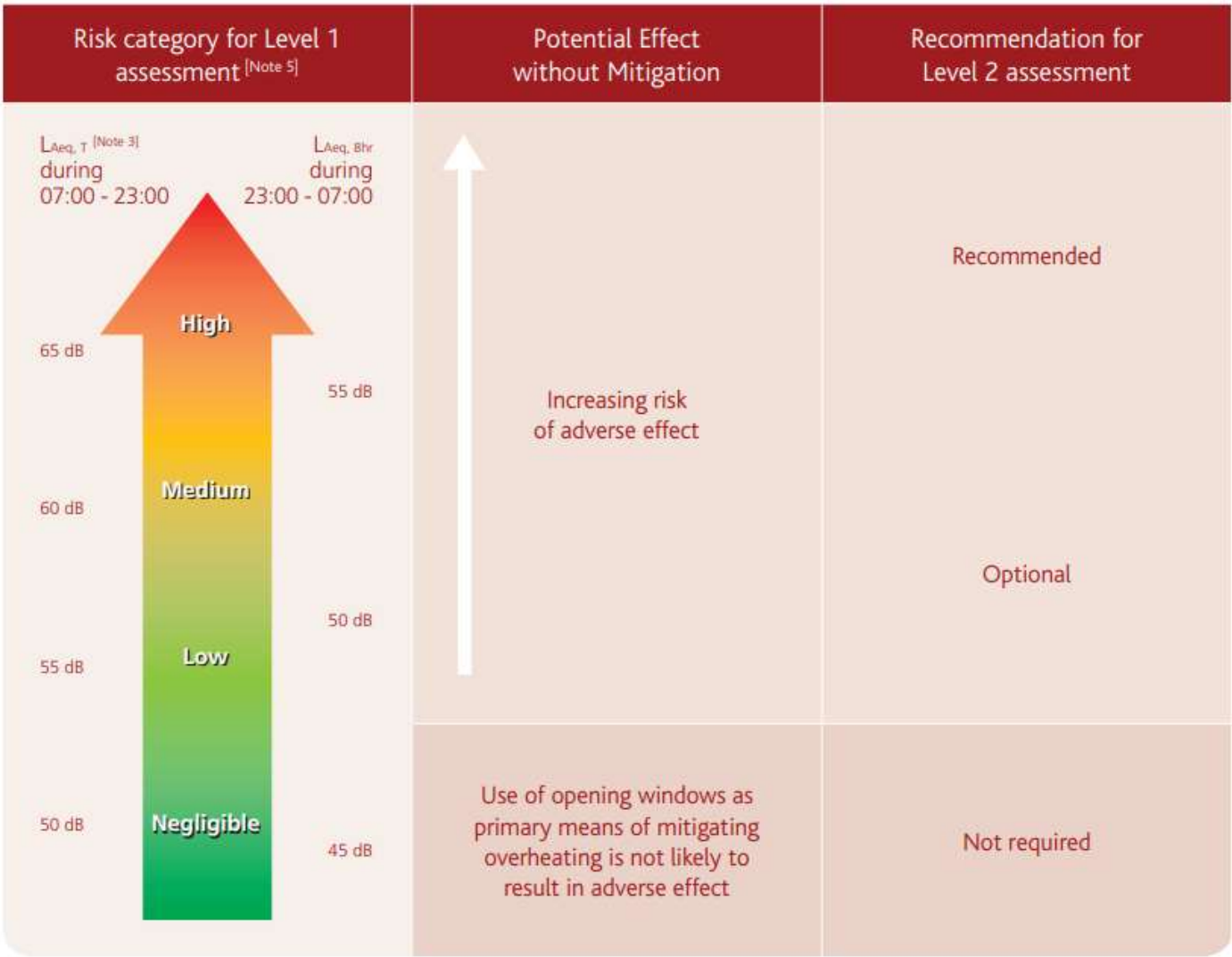


Figure 2: Guidance for Level 1 site risk assessment of noise from transport noise sources relating to overheating condition

Results for the maximum permissible geometric open area for bedroom windows are detailed in Appendix E. This should be confirmed as acceptable by a suitably qualified thermal modelling engineer. If it is deemed insufficient, an alternative approach to controlling overheating is likely to be required.



7. Conclusions

An assessment to determine the impact of noise on a proposed residential development at Former Big Cat Sanctuary, Codicote Road, Welwyn has been undertaken.

Baseline sound measurements were carried out at the site over a period of 5 days to quantify the representative ambient and background sound levels across the site.

A sound propagation model has been constructed, based on measured noise levels from road traffic on Codicote Road, to determine noise levels across the site to therefore the suitability of the site for residential development.

Internal ambient and L_{Amax} noise levels have been predicted and assessed against the requirements of BS 8233 for living rooms during the daytime and within bedrooms at night. With a partially open window, internal noise levels are predicted to exceed the recommended maximum internal levels during both daytime and night-time periods within the plots located closest to and facing Codicote Road. With a standard closed double-glazed window, daytime and night-time ambient levels can be achieved at most of the plots. However, at night internal L_{Amax} levels are predicted to exceed the recommended maximum levels at all plots adjacent to Codicote Road. Mitigation measures have been presented in this report, the most practical of which may be the installation of higher specification glazing and acoustic ventilators/whole house ventilation systems in selected dwellings.

An assessment of noise levels within external amenity spaces indicates that the of 55 dB $L_{Aeq,16}$ upper guideline level can be achieved in all garden spaces.

An initial overheating assessment has been undertaken, maximum permissible geometric open areas are detailed in Appendix E for each plot to control overheating in bedrooms during the night-time period.

Overall, with the application of mitigation to individual plots, the site is deemed acceptable for residential development. It is recommended that a detailed assessment of mitigation requirements for individual plots be required at the detailed design stage, which can be achieved via an appropriate planning condition



Appendix A Glossary

For the avoidance of confusion, the terms used in this report follow the definitions given below:

Fundamentally, ‘sound’ are vibrations of the air which are detectable by the ear. Noise is defined as a sound or sounds which is unwanted, considered unpleasant or loud. Sound or noise levels are commonly measured in terms of the sound pressure level in terms of decibels (dB). The sound pressure level is commonly given as ‘A’-weighted to simulate the human ear’s response to sounds at different frequencies. Examples of typical A-weighted sound pressure levels from typical noise sources are shown in the table below.

Sound Level dB(A)	Typical Noise Source
130	Threshold of pain
120	Large jet aircraft on take-off
110	Rock Band
100	Pneumatic Drill
90	Heavy lorry
80	Medium-sized lorry
70	Passenger car
60	Normal conversation
50	Suburban residential neighbourhood
40	Quiet living room
30	Quiet rural setting, within a bedroom at night
20	Speaking in a whisper
10	
0	

In this report, the terms sound and noise are used interchangeably.

Noise levels are usually expressed with an associated measurement parameter. Commonly used measurement parameters are presented below.

Parameter	Definition
dB	Decibel – A logarithmic scale applied to acoustic units such as sound pressure and sound power.
L _{PA}	The instantaneous A-weighted sound pressure level measured in terms of dB
L _{A90}	This is the ‘A’-weighted sound pressure level exceeded for 90% of the measurement period over which the measurement is taken. It is commonly used to represent the “background noise level”.



Parameter	Definition
L_{Aeq}	This is the equivalent 'A'-weighted sound pressure level of steady noise which, under the period under consideration, contains the same amount of (A-Weighted) sound energy as the time-varying noise over the same period. Also called the time-averaged sound level.
L_{A10}	This is the 'A'-weighted sound pressure level exceeded for 10% of the measurement period over which the measurement is taken. It is the accepted noise metric for describing road traffic noise.
L_{AMax}	This is the maximum root-mean-square (RMS) 'A'-weighted sound pressure level measured during the measurement period.



Appendix B Report Drawings



Imagery © 2026 GoogleMaps

Figure B.1: Site Location





Figure B.2: Indicative Site Layout and Selected Receptors



Appendix C Sound Measurements



Imagery © 2026 GoogleMaps

Figure C.1: Sound Measurement Locations

Instrumentation

All measurements were taken at approximately 1.5 m above ground level, and in general accordance with the requirements of British Standard BS 7445. The measurement locations were positioned at least 3.5 m from any reflecting surface, other than the ground (i.e. free-field). Details of ongoing activities and typical noise sources in the area were recorded during the set-up and retrieval of the monitoring equipment.

The SLMs used were a Class 1 precision instruments, programmed to log a number of parameters including L_{Aeq} , L_{A90} , L_{A10} and L_{Amax} values, in 15-minute contiguous intervals.

The calibration levels were checked prior to and following all measurements. No significant drift, more than 0.5 dB, occurred during the measurements. Full calibration details are available upon request.

The following equipment was used for the sound measurement exercise:



Table C.1: Sound Monitoring Equipment Information

Measurement Location	Equipment Item	Model & Type	Meter Number	Serial	Calibration Date
M1	Sound Level Meter	CR:171B	G301957		02 July 2024
	Microphone	MK:224	215932D		24 June 2024
	Acoustic Calibrator	CR:515	107940		01 April 2025
M2 and M3	Sound Level Meter	CR:171B	G300493		01 August 2025
	Microphone	MK:224	215932D		24 July 2025
	Acoustic Calibrator	CR:515	99089		02 July 2024

Weather Conditions

Weather conditions during the sound measurements are detailed in Table C.2.

Table C.2: Typical Weather Conditions during Sound Measurements

Date	Period	Typical Temperature	Typical Wind speed	Typical Wind Direction	Conditions	Notes
29/05/2026	Day	22°C	3 ms ⁻¹	WSW	Dry	
	Night	14°C	2 ms ⁻¹	NNW	Dry	
30/05/2026	Day	27°C	2 ms ⁻¹	SSE/W	Dry	
	Night	15°C	3 ms ⁻¹	W	Dry	
31/05/2026	Day	21°C	5 ms ⁻¹	W	Dry	
	Night	12°C	4 ms ⁻¹	W	Dry	
01/06/2026	Day	20°C	5 ms ⁻¹	SW	Dry	
	Night	15°C	3 ms ⁻¹	S	Rain from approximately 9pm	Data removed from results
02/06/2026	Day	14°C	3 ms ⁻¹	W	Rain until approximately 10am	Data removed from results



Time History Plot

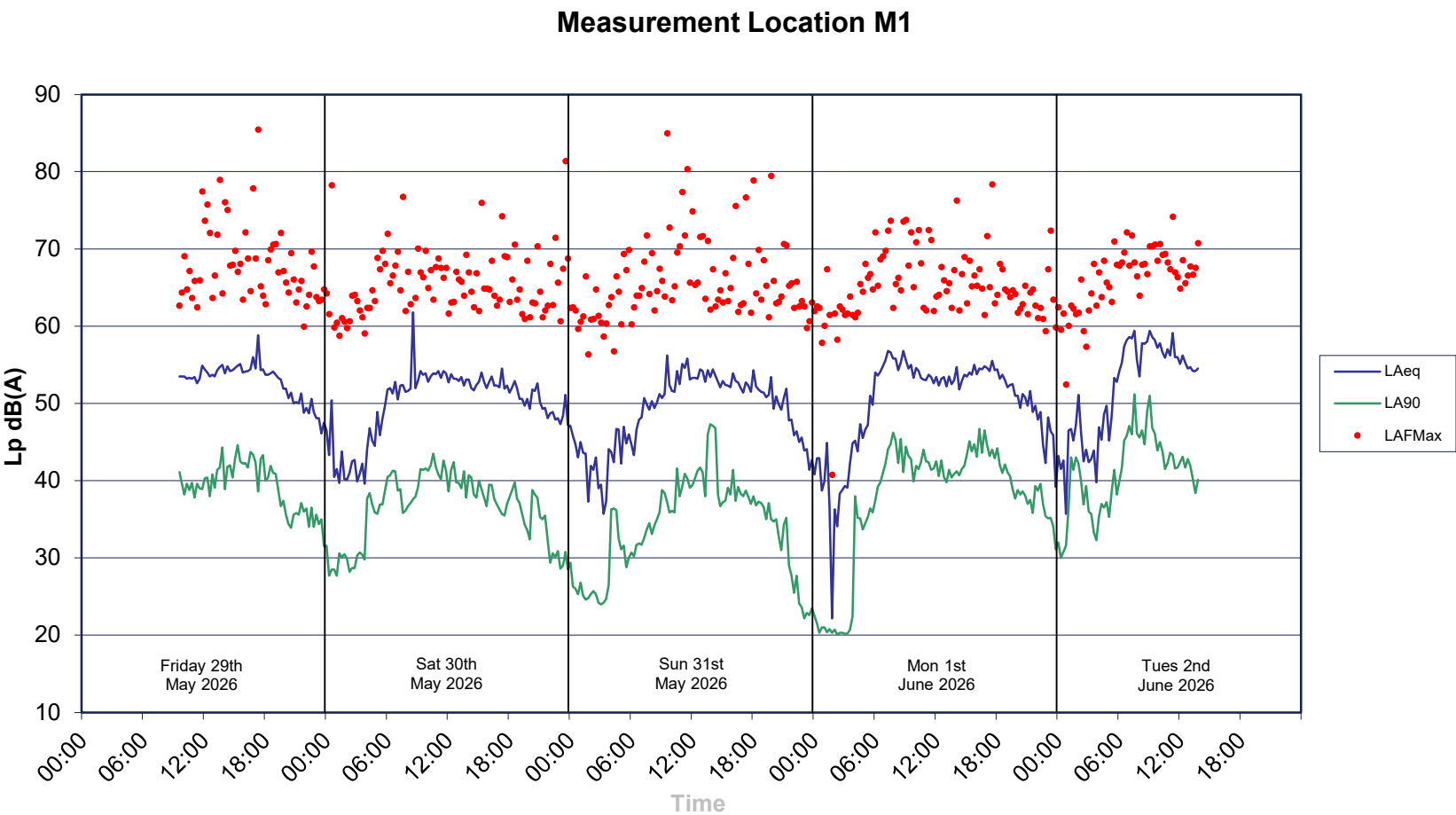


Figure C.2: Time History Plot – Location M1



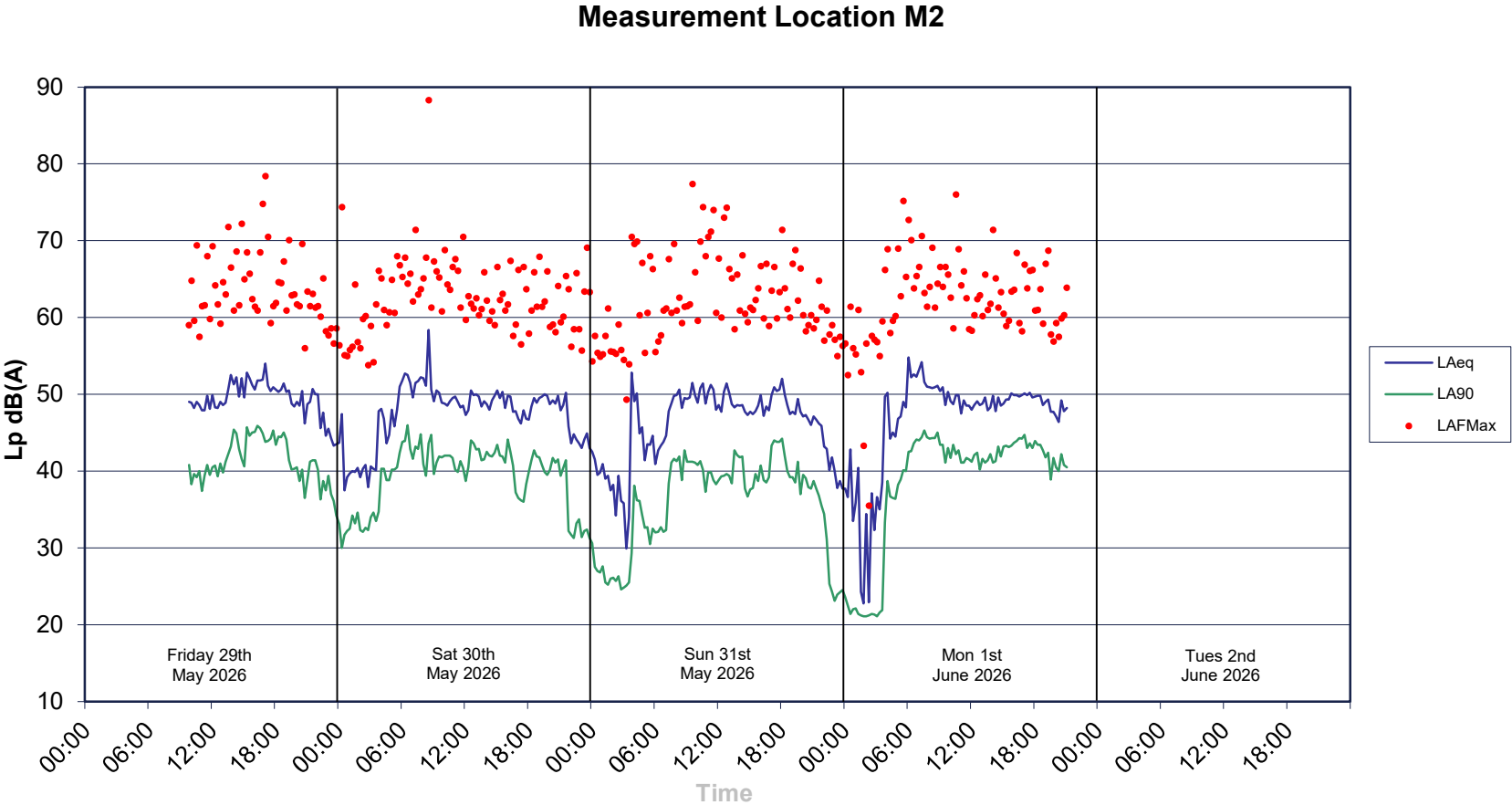


Figure C.3: Time History Plot – Location M2



Appendix D Sound Model Inputs

Data sources

OS mapping: 1:10,000 Vector Raster Map, free download from Ordnance Survey Open Data

Terrain data: Free lidar 1m composite tiles, downloaded from DEFRA Survey Data Database

Modelling assumptions & parameters

Ground absorption: 0.6 – residential areas

Ground absorption: 0.80 - grassland areas

(Note: Acoustically Soft = 1, Acoustically Hard = 0)

Calculation grid size: 3m

Other Settings

Order of Reflections = 3

BS ISO 9613: 2024 prediction methodologies

Grid height = 1.5 metres for ground floor height

Grid height = 4 metres for first floor height

Noise Source Data

Road traffic on Codicote Road, in the form of AAWT flows, was input to the model to correlate with the calculated $L_{A10,18hr}$, based on the measurements undertaken at location M3 following the shortened measurement methodology given in the Calculation of Road Traffic Noise.



Noise Contour Maps

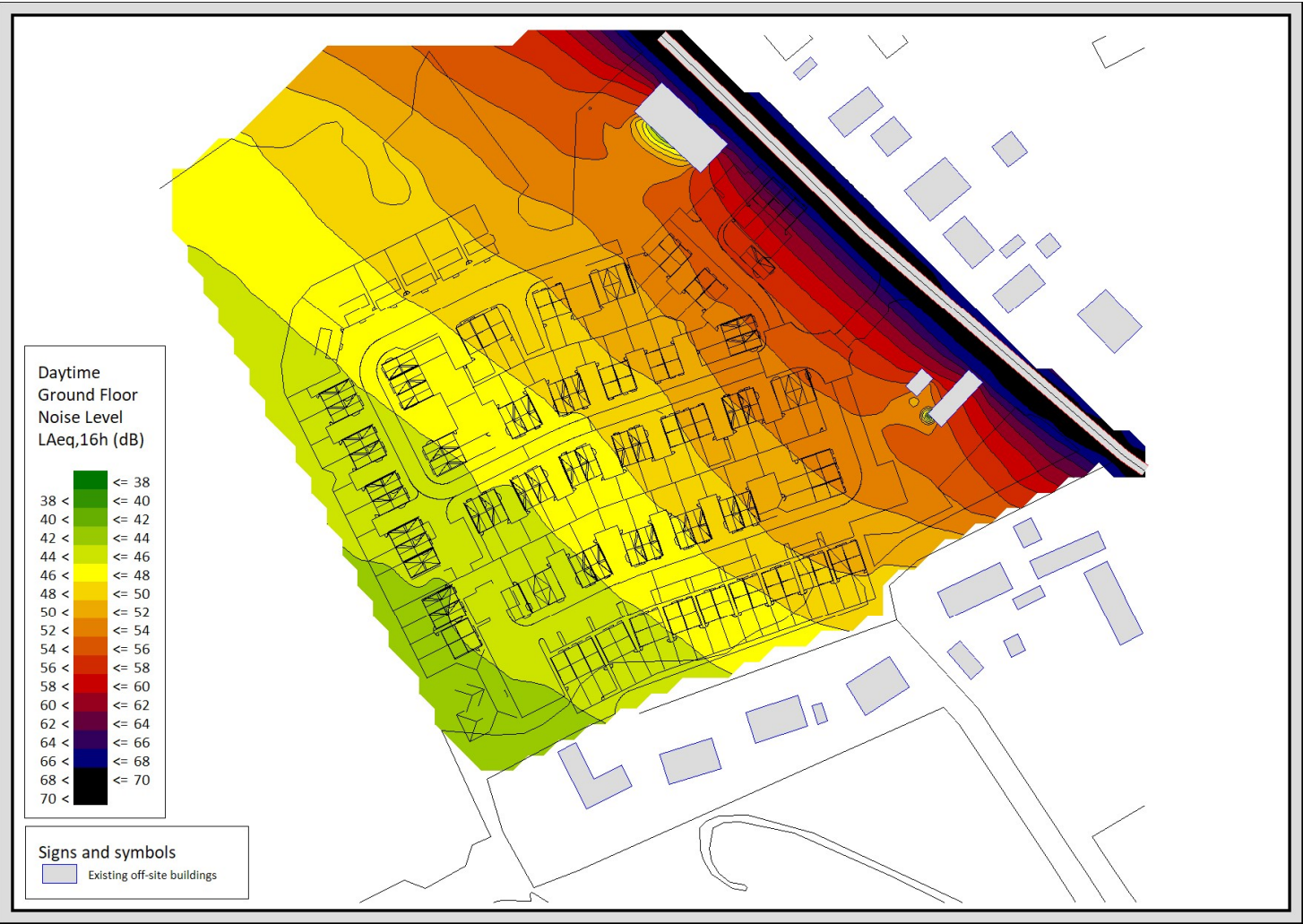


Figure D.1: Stage 1 Risk Assessment Predicted Levels – Daytime (1.5m)



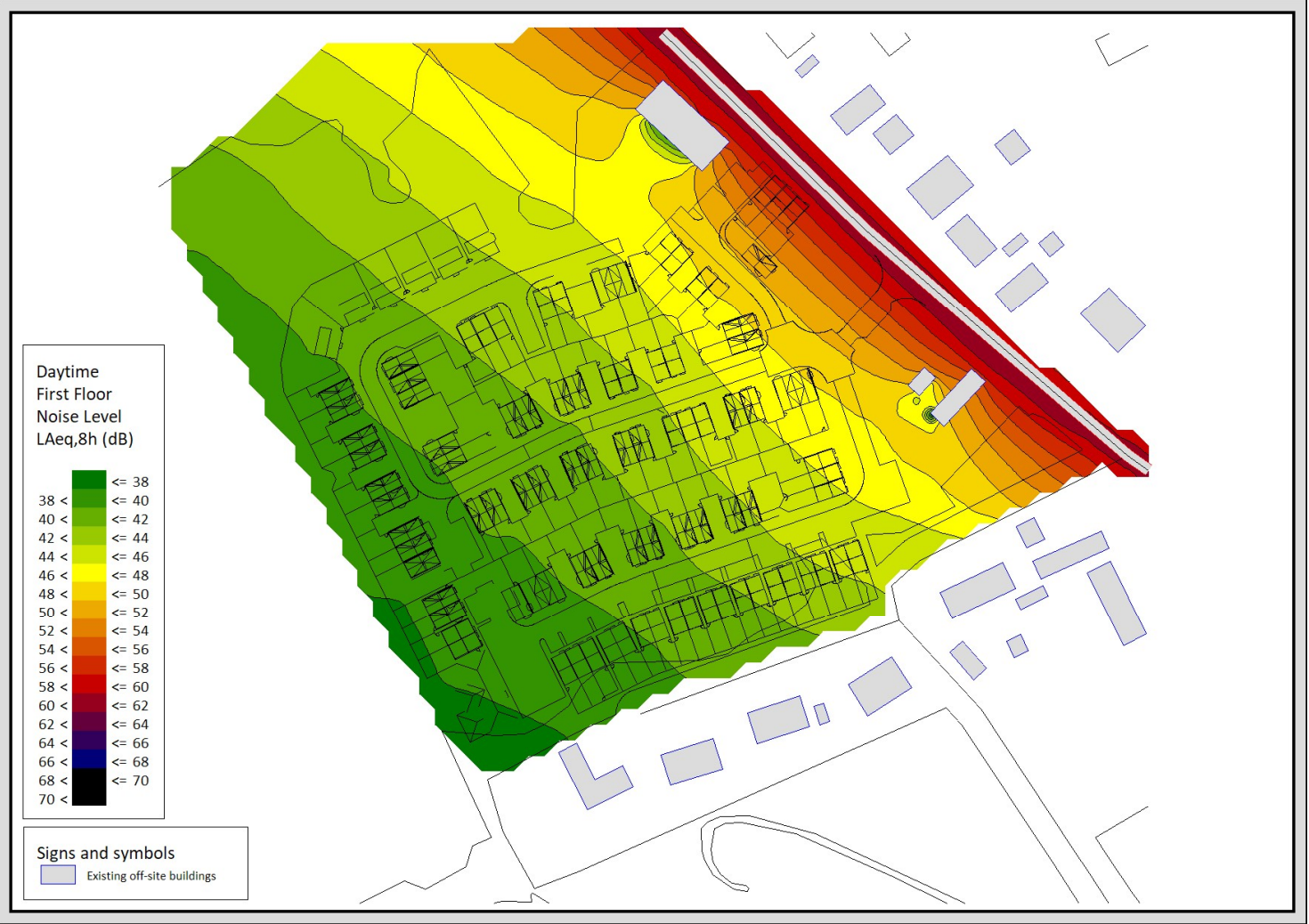


Figure D.2: Stage 1 Risk Assessment Predicted Levels – Night-time (4m)





Figure D.3: Predicted Levels – Daytime (1.5m)





Figure D.4: Predicted Levels – Night-time (4m)



Appendix E Initial Overheating Assessment

Plot	Façade	Assumed Room Volume (m ³)	Predicted Night-time Noise Level at Façade (L _{Aeq} dB)	+3dB Safety Factor	Maximum Geometric Open Area m ²
Plot 1	SW	25	49	52	0.24
	NE	25	61	64	0.02
Plot 2	SW	25	45	48	0.59
	NE	25	61	64	0.02
Plot 3	SW	25	49	52	0.24
	NE	25	61	64	0.02
Plot 4	NW	25	49	52	0.24
	SE	25	52	55	0.12
Plot 5	NE	25	50	53	0.18
	SW	25	39	42	2.68
Plot 6	NE	25	50	53	0.19
	SW	25	39	42	2.81
Plot 7	NE	25	51	54	0.17
	SW	25	38	41	2.94
Plot 8	NE	25	51	54	0.15
	SW	25	41	44	1.77
Plot 9	N	25	47	50	0.41
	S	25	41	44	1.77
Plot 10	N	25	46	49	0.47
	S	25	41	44	1.65
Plot 11	N	25	45	48	0.59
	S	25	41	44	1.54
Plot 12	N	25	45	48	0.69
	S	25	41	44	1.65
Plot 13	NW	25	42	45	1.31
	SE	25	41	44	1.44
Plot 14	NW	25	41	44	1.58
	SE	25	41	44	1.44
Plot 15	NW	25	40	43	1.94
	SE	25	41	44	1.47
Plot 16	S	25	43	46	0.95
	N	25	46	49	0.56
Plot 17	SE	25	42	45	1.17
	N	25	44	47	0.72
Plot 18	SE	25	42	45	1.28
	NW	25	42	45	1.14
Plot 19	SE	25	41	44	1.47
	NW	25	42	45	1.41
Plot 20	SE	25	42	45	1.37
	NW	25	41	44	1.77
Plot 21	SE	25	42	45	1.34
	NW	25	40	43	2.08
Plot 22	SE	25	41	44	1.47
	NW	25	40	43	2.23
Plot 23	E	25	40	43	1.81
	W	25	37	40	4.05
Plot 24	E	25	40	43	2.03
	W	25	36	39	4.99
Plot 25	NE	25	39	42	2.39
	SW	25	34	37	8.28
Plot 26	NE	25	39	42	2.62
	SW	25	34	37	8.87
Plot 27	NE	25	40	43	2.18
	SW	25	33	36	9.50
Plot 28	NE	25	39	42	2.50
	SW	25	33	36	9.50



Plot	Façade	Assumed Room Volume (m ³)	Predicted Night-time Noise Level at Façade (L _{Aeq} dB)	+3dB Safety Factor	Maximum Geometric Open Area m ²
Plot 29	NE	25	38	41	3.01
	SW	25	33	36	10.42
Plot 30	NE	25	39	42	2.68
	SW	25	33	36	10.18
Plot 31	NE	25	38	41	3.22
	SW	25	33	36	10.18
Plot 32	NE	25	39	42	2.81
	SW	25	33	36	10.42
Plot 33	SW	25	33	36	10.42
	NE	25	39	42	2.68
Plot 34	SW	25	34	37	7.55
	NE	25	41	44	1.47
Plot 35	SW	25	34	37	7.73
	NE	25	41	44	1.69
Plot 36	SW	25	34	37	8.09
	NE	25	41	44	1.65
Plot 37	SW	25	34	37	8.87
	NE	25	40	43	2.18
Plot 38	SW	25	34	37	8.47
	NE	25	39	42	2.39
Plot 39	SE	25	40	43	2.08
	NW	25	37	40	3.78
Plot 40	SE	25	41	44	1.77
	NW	25	38	41	3.30
Plot 41	S	25	40	43	1.94
	N	25	38	41	2.87
Plot 42	S	25	40	43	1.85
	N	25	39	42	2.56
Plot 43	N	25	40	43	1.90
	S	25	41	44	1.73
Plot 44	N	25	41	44	1.58
	S	25	41	44	1.54
Plot 45	N	25	43	46	1.12
	S	25	42	45	1.22
Plot 46	N	25	43	46	1.07
	S	25	43	46	1.09
Plot 47	E	25	51	54	0.17
	W	25	38	41	3.53
Plot 48	E	25	50	53	0.19
	W	25	38	41	3.45
Plot 49	N	25	50	53	0.22
	S	25	48	51	0.29
Plot 50	N	25	48	51	0.31
	S	25	47	50	0.40
Plot 51	S	25	45	48	0.57
	N	25	46	49	0.50
Plot 52	S	25	45	48	0.67
	N	25	45	48	0.66
Plot 53	N	25	44	47	0.79
	S	25	44	47	0.79
Plot 54	N	25	42	45	1.31
	S	25	43	46	1.04
Plot 55	N	25	41	44	1.51
	S	25	42	45	1.22
Plot 56	N	25	41	44	1.65
	S	25	42	45	1.28
Plot 57	S	25	41	44	1.69
	N	25	40	43	1.85
Plot 58	S	25	40	43	1.90
	N	25	40	43	2.03
Plot 59	S	25	40	43	2.03
	N	25	39	42	2.28



Plot	Façade	Assumed Room Volume (m ³)	Predicted Night-time Noise Level at Façade (L _{Aeq} dB)	+3dB Safety Factor	Maximum Geometric Open Area m ²
Plot 60	SE	25	40	43	2.23
	NW	25	38	41	2.87
Plot 61	SE	25	39	42	2.39
	NW	25	38	41	3.37
Plot 62	SE	25	39	42	2.50
	NW	25	37	40	3.78
Plot 63	NW	25	37	40	4.15
	SE	25	39	42	2.74
Plot 64	SE	25	39	42	2.44
	NW	25	37	40	4.15
Plot 65	SE	25	39	42	2.28
	NW	25	37	40	4.15
Plot 66	NE	25	38	41	3.22
	SW	25	33	36	10.66
Plot 67	NE	25	38	41	2.87
	SW	25	33	36	10.66
Plot 68	NE	25	40	43	2.08
	SW	25	33	36	10.66
Plot 69	NE	25	41	44	1.73
	SW	25	33	36	10.66
Plot 70-79	NE	25	41	44	1.54
	SE	25	42	45	1.25
	SW	25	32	35	11.43
Plot 80	NW	25	37	40	4.34
	SE	25	39	42	2.62
Plot 81	NW	25	37	40	4.34
	SE	25	39	42	2.56
Plot 82	NW	25	37	40	4.15
	SE	25	39	42	2.50
Plot 83	NW	25	38	41	3.37
	SE	25	39	42	2.39
Plot 84	NW	25	38	41	3.15
	SE	25	39	42	2.28
Plot 85	S	25	40	43	2.18
	N	25	39	42	2.81
Plot 86	S	25	40	43	2.08
	N	25	39	42	2.62
Plot 87	S	25	41	44	1.77
	N	25	40	43	2.18
Plot 88	S	25	41	44	1.61
	N	25	40	43	1.99
Plot 89	S	25	42	45	1.28
	N	25	41	44	1.58
Plot 90	S	25	43	46	1.12
	N	25	42	45	1.37
Plot 91	S	25	43	46	0.95
	N	25	42	45	1.17
Plot 92	W	25	38	41	3.45
	E	25	50	53	0.19
Plot 93	E	25	50	53	0.21
	W	25	38	41	3.53
Plot 94	E	25	50	53	0.22
	W	25	37	40	3.61
Plot 95	N	25	47	50	0.38
	S	25	47	50	0.42
Plot 96	N	25	46	49	0.56
	S	25	46	49	0.53
Plot 97	N	25	43	46	0.93
	S	25	45	48	0.60
Plot 98	N	25	43	46	1.09
	S	25	45	48	0.63
Plot 99	N	25	42	45	1.41



Plot	Façade	Assumed Room Volume (m ³)	Predicted Night-time Noise Level at Façade (L _{Aeq} dB)	+3dB Safety Factor	Maximum Geometric Open Area m ²
Plot 100	S	25	44	47	0.72
	N	25	41	44	1.58
	S	25	44	47	0.77
Plot 101	N	25	40	43	1.99
	S	25	44	47	0.85
Plot 102	N	25	40	43	2.18
	S	25	44	47	0.87
Plot 103	N	25	39	42	2.56
	S	25	43	46	0.95
Plot 104	N	25	39	42	2.74
	S	25	43	46	0.97
Plot 105	NW	25	38	41	3.15
	SE	25	43	46	1.04
Plot 106	NW	25	38	41	3.45
	SE	25	43	46	1.04
Plot 107	NW	25	37	40	3.96
	SE	25	43	46	1.07
Plot 108	NW	25	37	40	4.34
	SE	25	42	45	1.14
Plot 109	NW	25	36	39	4.55
	SE	25	42	45	1.25

