



Hurstwood Farm, Haywards Heath Planning Noise Assessment

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prepared for

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1.0 Introduction

1.1 Permission is sought for approval of Reserved Matters pursuant to Outline Planning Permission DM/22/2272 (Mid Sussex DC) and LW/22/0517 (Lewes DC) for the development of 375 dwellings at the Hurstwood Farm site on the southeastern edge of Haywards Heath, West Sussex.

1.2 The site is located within the jurisdictions of both Mid Sussex District Council and Lewes District Council. Condition 18 attached to the decision notice for the scheme requires that a scheme of glazing and ventilation to control noise ingress be submitted to the local authorities, based on the levels of noise outlined in the *WSP* 'Environmental Statement Volume 1 Chapter 12 – Noise and Vibration' document.

1.3 Noise related local and national planning policy and guidance has been considered, noise conditions across the site have been quantified, good acoustic design practices have been considered, and an assessment has been undertaken to inform the noise control strategy for the scheme.

2.0 Locality and Planning Context

2.1 Wider Site Location and Description

2.2 The proposed development site is to be located on the southeastern edge of Haywards Heath, to the east of Sandrocks. The approximate extent of the site can be seen outlined in **red** on the following **Image 1**.

2.3 It should be noted that the remainder of the site to the east of that shown by the approximate site boundary outlined in **red** on **Image 1** does not contain any proposed dwellings.

Image 1: Aerial photograph showing site location

--- Approximate development site boundary



Aerial imagery courtesy of Google

Development Proposals

2.4 The current development proposals are for 375 no. dwellings, burial ground, allotments, open space with associated infrastructure, landscaping and parking areas. Vehicular access will be provided to the site via Hurstwood Lane.

3.0 Design Criteria

3.1 The site is within the jurisdictions of Mid Sussex District Council and Lewes District Council. Both councils are part of a wider group of Sussex-based councils who have issued joint noise-related planning advice within the 'Planning Noise Advisory Document: Sussex 2023'. Full details of this are set out within the attached **Appendix C** for the sake of brevity.

3.2 Condition 18 applied by Mid Sussex District Council sets out the following requirement with regard to noise:

'The development, in any particular phase (as defined on the approved 'phasing plan) hereby permitted, shall not commence above slab level until the developer has submitted a scheme to the LPA for approval, showing the exact level of glazing and/or ventilation needs for each home, based on the noise levels for the site outlined in, Chapter 12 - Noise and Vibration, of the Environmental Statement by WSP, dated July 2022. Each property identified as requiring specific glazing and / or ventilation shall not be occupied unless the relevant glazing and / or ventilation has been installed.'

Reason: To protect the amenity of future residents with regard to external noise and to comply with policy DP29 of the Mid Sussex District Plan 2014 - 2031.'

3.3 Similarly, point 10.19 of the Lewes District Council Committee Report (dated: 9th August 2023) sets out the following comments with regard to noise:

'The development, in any particular phase (as defined on the approved 'phasing plan) hereby permitted, shall not commence until the developer has submitted a scheme to the LPA for approval, showing the exact level of glazing and/or ventilation needs for each home, based on the noise levels for the site outlined in, Chapter 12 – Noise and Vibration, of the Environmental Statement by WSP, dated July 2022.

Each property identified as requiring specific glazing and / or ventilation shall not be occupied unless the relevant glazing and / or ventilation has been installed.

Reason: To protect the amenity of future residents with regard to external noise and to comply with LLP2 policy DM23.'

3.4 In light of the above, the following acoustic design criteria set out within **Table 1** have been adopted, which are based upon relevant local & national standards and guidance documents¹ as set out within the attached **Appendix C**.

Table 1 It is noted that the 'Planning Noise Advisory Document' references the WHO Guidelines (2009) which sets out thresholds for annoyance within external amenity areas. This corresponds to the values set out within the more recent British Standard 8233:2014 and the ProPG as described within the attached **Appendix C** and reflected within **Table 1**. Noise assessment criteria

Location	Time Period	Single Number Criterion, dB	Noise Index	Note(s)
Habitable rooms (internal)	0700-2300	≤ 35	$L_{Aeq,16hr}$	-
	2300-0700	≤ 30	$L_{Aeq,8hr}$	-
		≤ 45	$L_{Amax,F}$	Not normally exceeded more than 10 times per night
External amenity areas (external)	0700-2300	≤ 55	$L_{Aeq,16hr}$	Aspirational threshold to be achieved where practicable

3.5 Additionally, to satisfy the noise requirements of the Building Regulations Approved Document O (ADO), in locations where external free field noise levels exceed 50 dB $L_{Aeq,8hr}$ and / 65 dB $L_{Amax,f}$ during the night time period, it is necessary to provide a building overheating control strategy that does not necessarily rely on partially open windows to bedrooms at night. As discussed later in this report, the above approach is based upon acoustics industry guidance² on how to demonstrate compliance with the Building Regulations Approved Document O and may be subject to change should the guidance be revised.

¹ Largely drawn from the 'Planning Noise Advisory Document: Sussex 2023', BS 8233:2014 – "Guidance on sound insulation and noise reduction for buildings" and the ProPG: Planning & Noise 2017.

² Approved Document O Noise Guide, Version 1.1 (IoA and ANC, November 2024)

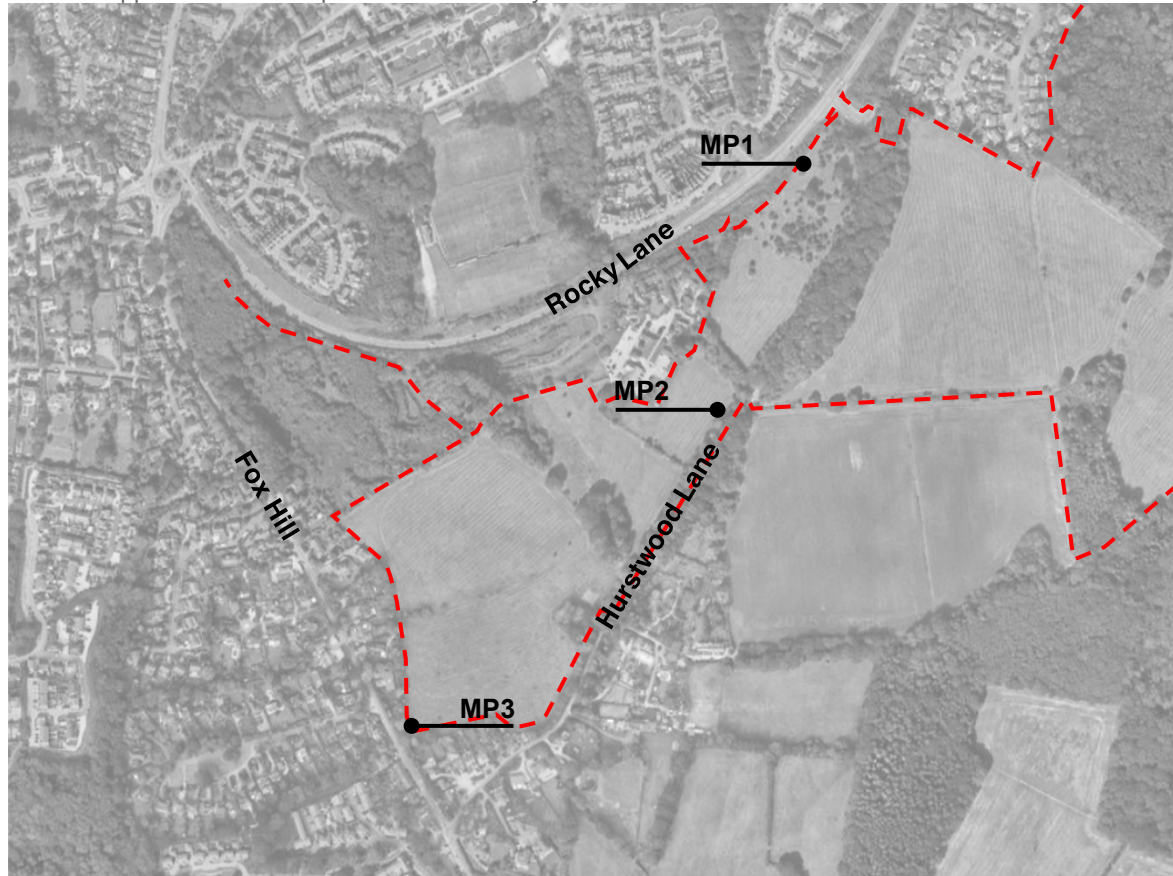
4.0 Noise Survey

Methodology

4.1 An unattended noise survey was undertaken at free field positions on across the development site between 1300 on Friday 16th May and 1115 on Wednesday 21st May 2025. The unattended measurement positions are denoted as 'MP1' to 'MP3' on the following **Image 2**. Full details of the noise survey can be found within the attached **Appendix A**.

Image 2: Aerial photography showing noise measurement positions

--- Approximate development site boundary



Aerial imagery courtesy of Google

4.2 The measurement positions were chosen to be representative of noise ingress to the proposed residential development from the road transportation noise sources surrounding the site as labelled on **Image 2**.

Results

4.3 Time history graphs illustrating the captured results of the unattended noise monitoring are set out within the attached **Appendix A**.

4.4 Daytime $L_{Aeq,16hr}$ and night-time $L_{Aeq,8hr}$ period noise levels along with the typical $L_{Amax,f}$ event noise levels recorded over the course of the unattended noise survey are set out within **Table 2**, with the corresponding octave band spectra set out within the attached **Appendix A**.

Table 2 Summary period noise levels measured during the unattended noise survey

Measurement Position	Daytime (0700-2300)	Night-time (2300-0700)	
	$L_{Aeq,16hr}$	$L_{Aeq,8hr}$	L_{Amax}
MP1: Northern site boundary	59	53	70
MP2: Central site boundary	55	54	64
MP3: Southern site boundary	69	62	85

4.5 Ambient noise levels across the site were noted to be dominated by traffic noise from the surrounding road traffic links; most notably Rocky Lane and Fox Hill.

5.0 Noise Assessment

Computational Model

5.1 A computational noise model of the site has been developed. The model has been created using digital plans of the site and wider area, and 1 m topographical contours produced by DEFRA.

5.2 The noise model has been used to predict day and night-time noise levels across the site in terms of $L_{Aeq,16hr}$, $L_{Aeq,8hr}$ and $L_{Amax,f}$ respectively. All calculations to determine mitigation measures have been based on the octave band noise levels previously referenced within this report and set out within **Appendix A** to ensure a robust approach.

5.3 A description of the noise modelling methodology and noise contour results with the development in place are set out within the attached **Appendix B**.

5.4 The following window heights (to centre of windows) have been used within contour and point calculations at the proposed building façades to determine the likely required façade noise mitigation:

- Ground floor: 1.5 m;
- First floor: 4.5 m;
- Second floor: 7.5 m;
- Third floor: 10.5 m.

5.5 The southern carriageway of Rocky Lane is currently separated from the development site by a noise barrier roughly 3 metres in height, which extends from the area opposite the dwellings to the north of the road on Cheney Crescent to the road's intersection with Robertson Drive. This has been accounted for within the computational noise model.

5.6 The section of Hurstwood Lane within the centre of the site is to be pedestrianised as part of the development proposals. As a result, Hurstwood Lane will no longer act as a through road along the site. The noise model accounts for the change in road layout, however the modelled noise levels are based on the noise survey results of Hurstwood Lane in its current condition as a through road. It is anticipated that this provides a robust basis for assessment as vehicular noise levels at the resultant site entrances are likely to be lower due to reduced traffic speeds and reduced vehicle numbers.

5.7 Calculation sheets showing the results of noise break-in to the development following the computational noise modelling are not included within this report but can be provided upon request.

Baseline Noise Conditions

5.8 The baseline noise climate was described in the *WSP* 'Environmental Statement Volume 1 Chapter 1 – Noise and Vibration' document, as referenced by Condition 18. It is noted that *WSP*'s document above references noise survey data obtained via survey works in 2015 (by Acoustic Associates Sussex Ltd) which was then augmented by *WSP* with traffic flow data representative of conditions in 2021 for the baseline year. Substantial time has passed since the original survey works and it is therefore deemed appropriate to have undertaken the previously described survey work in 2025 to support this assessment.

5.9 The following **Image 3** and **Image 4** show the predicted day and night-time, baseline noise conditions (in terms of $L_{Aeq,16hr}$ and $L_{Aeq,8hr}$) respectively across the proposed development site, based on the results of the 2025 noise survey undertaken by Suono.

5.10 Baseline noise predictions/contours have also been prepared for L_{Amax} event noise levels at first storey height but are not presented here for the sake of brevity (these are included within the full suite of noise contours set out within **Appendix B**).

Image 3. Daytime baseline noise contour

Daytime $L_{Aeq,16hr}$ noise levels across undeveloped site at ground floor level

--- Approximate development site boundary

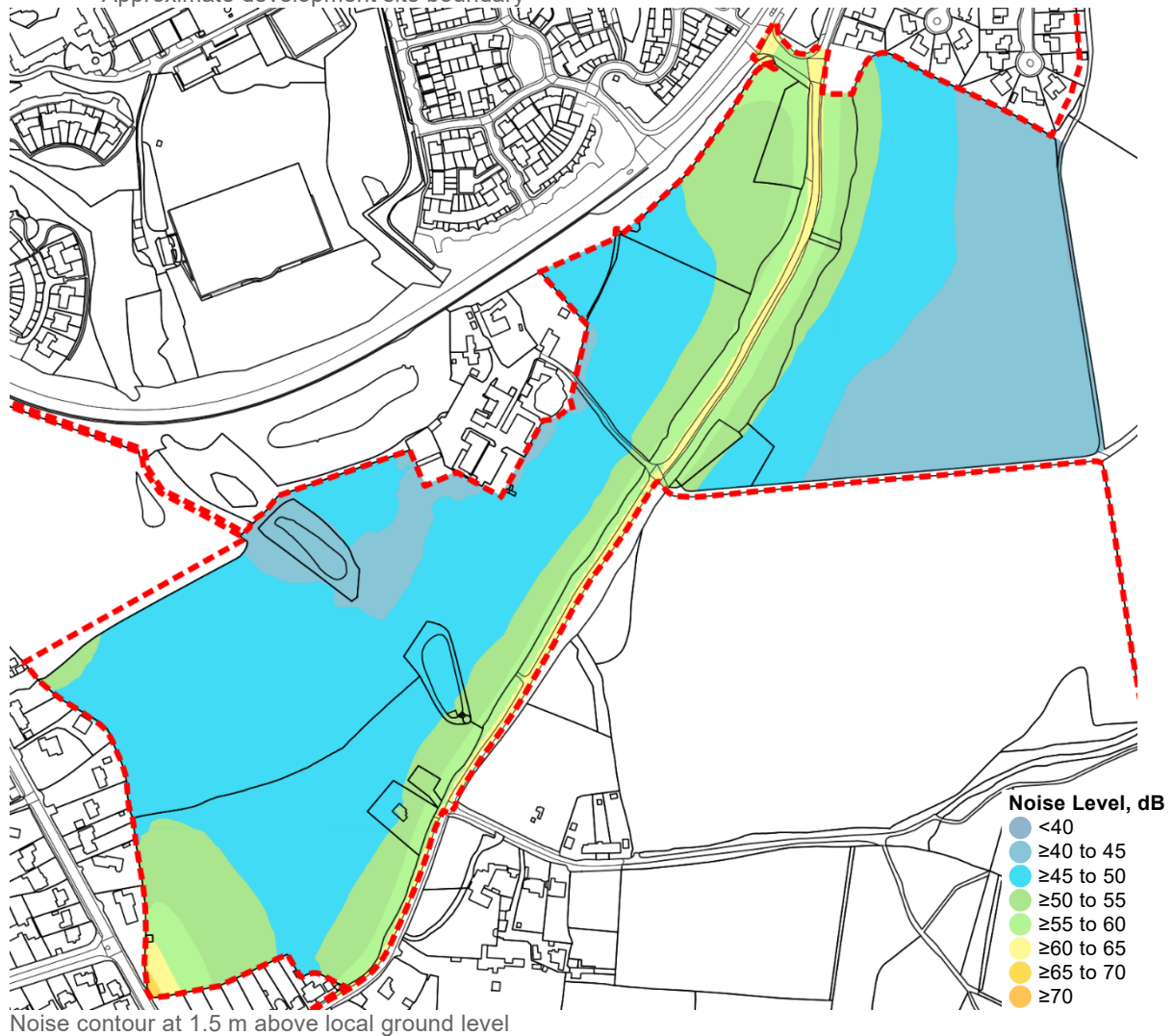
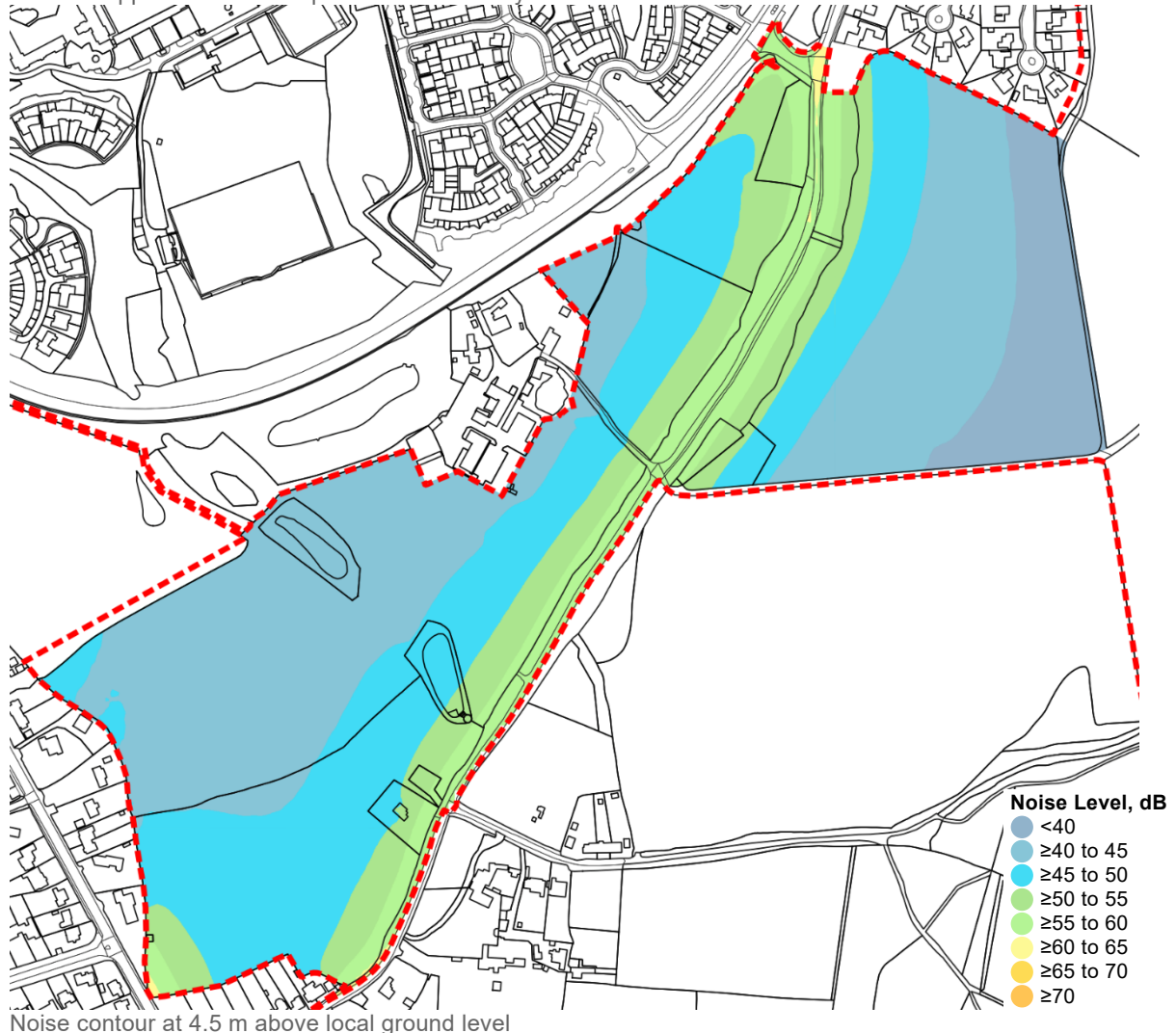


Image 4. Night-time baseline noise contour

Night-time $L_{Aeq,8hr}$ noise levels across undeveloped site at first floor level

--- Approximate development site boundary



5.11 Based on the measured noise levels set out within **Appendix A** and the subsequent modelled noise contours shown in **Image 3** and **Image 4**, it is expected that the majority of the site falls within 'Low' to 'Negligible' during both the day and night time periods as per the ProPG Stage 1 Initial Site Risk Assessment (further details of which are set out within the attached **Appendix C**).

5.12 It is also noteworthy that the results of the baseline noise conditions set out within **Image 3** and **Image 4** show good agreement with those modelled by *WSP* and future traffic forecasts produced during the completion of the Environmental Statement for the scheme. It is therefore suggested that the requirements of Condition 18 in respect to baseline noise data has been met.

Good Acoustic Design Principles and Layout Development

5.13 The assessment of noise levels with the proposed development site in place is based on the *IDP Group* 'Site Layout Draft#7' drawing (reference: C5990 SK002_01, dated: 6th June 2025).

5.14 The proposed development layout has been developed to offer inherent noise mitigation. This has been achieved through incorporating good acoustic design practices as described within this section. A key principle of good acoustic design is seeking to reduce external levels of noise

affecting receptors as far as is practicable. Where practicable, it is desirable to mitigate noise near to the source.

5.15 The section of Hurstwood Lane within the centre of the site is to be pedestrianised as part of the development proposals. This offers inherent noise mitigation to the closest dwellings to the road in this area, where traffic noise will be substantially reduced as a result. This has been reflected within the noise model for the 'with development' scenario.

5.16 Dwellings are set back from the northern edge of the site shared with Rocky Lane, and either side of Hurstwood Lane to provide acoustic 'buffer zones'. Two storey dwellings have been allocated to plots nearest Rocky Lane in the northwesternmost area of the site in order to benefit from the screening afforded by the local topography, where the site sits lower than the carriageway.

5.17 With respect to the development of the site layout, where practicable and taking into account non-acoustic factors, such as access, dwellings have been orientated such that garden areas are screened from noise sources by their attached dwellings or brick walls where necessary. This approach has reduced noise across the wider development site beyond the majority of the initial rows of dwellings either side of Hurstwood Lane. Due to the level of screening of road traffic noise provided by the variation in local topography along the northwesternmost site boundary, this approach has not been deemed necessary to plots 7 to 20.

5.18 Noise conditions across the site with the proposed development in place are presented in the following **Image 5** and **Image 6**, for daytime at ground floor (1.5 m above local ground level) and night-time at first floor (4.5 m above local ground level) respectively. Corresponding noise contour plots for the remaining dwellings are not provided here for the sake of brevity, but are set out within the attached **Appendix B**.

Image 5. Daytime noise levels with proposed development in place

Daytime $L_{Aeq,16hr}$ noise levels across undeveloped site at ground floor level

--- Approximate development site boundary

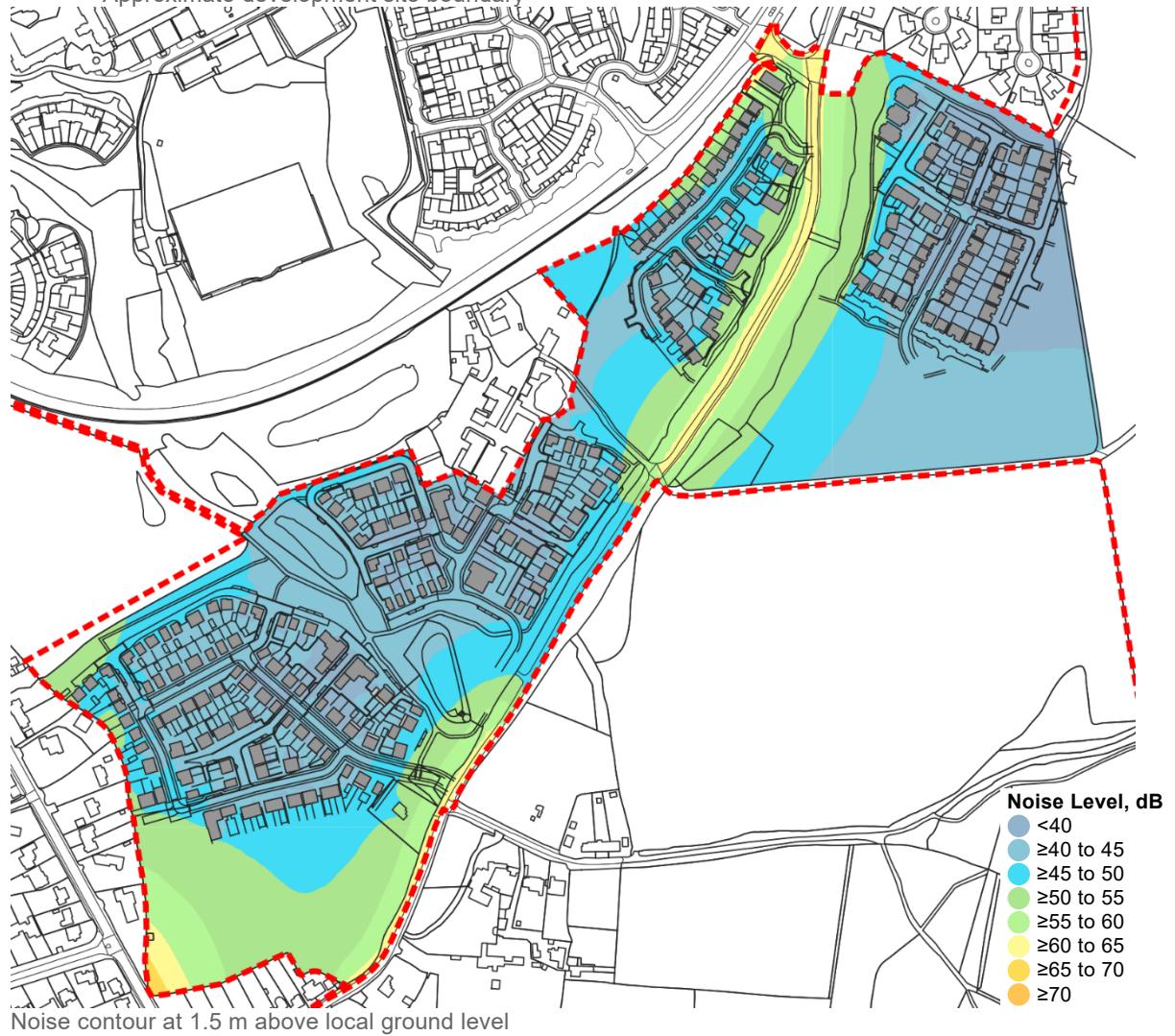
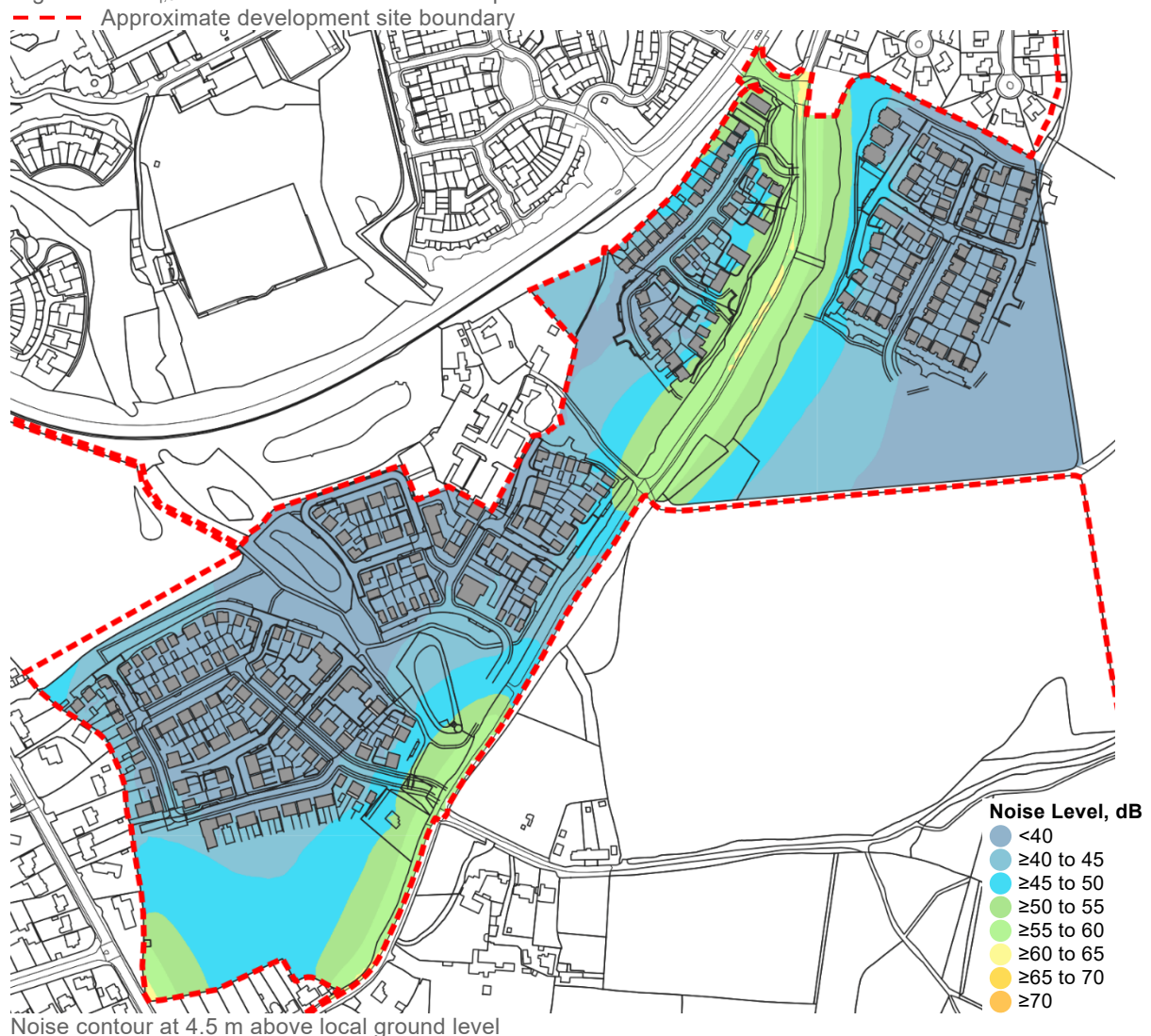


Image 6. Night-time noise levels with proposed development in place

Night-time $L_{Aeq,8hr}$ noise levels across undeveloped site at first floor level



External Amenity Areas

5.19 As can be seen on the previous **Image 5**, all gardens are calculated to observe noise levels below the aspirational target of 55 dB $L_{Aeq,16hr}$. This is achieved through good acoustic design being incorporated within the layout via the provision of screening through building and wall placement between external amenity areas and the nearby road links. This can be seen as evidenced within the following **Image 7** which shows the most exposed external amenity areas around plots 7-13. Additional benefit is provided by the existing noise barrier situated along the southern edge of Rocky Lane.

5.20 The screening benefits of a solid and imperforate garden wall of up to 2.5 metres in height has been considered along the northwestern boundary of plots 7-13 between the external amenity areas and Rock Lane. It has been concluded that due to the variation in topography around this area, any barrier effective in controlling noise to be 50 dB $L_{Aeq,16hr}$ would need to be higher than that would be reasonably possible in the interest of visual constraints.

Image 7. Worst-case (highest) modelled external amenity noise levels

Daytime $L_{Aeq,16hr}$ noise levels across developed site



Noise contour at 1.5 m above local ground level

5.21 Brick walls of a height of 1.8 m have been modelled as part of the development layout (shown with thick **black** lines on **Image 7**) as indicated on the *IDP Group* 'Site Layout Draft#7' drawing. Close boarded barriers of the same height would also be suitable alternative if preferred for aesthetic reasons; these must feature no holes or gaps and exhibit a mass of at least 10 kg/m².

Glazing, Ventilation and Control of Overheating

Dwelling Parameters

5.22 The façades of the proposed dwellings are understood to comprise of a cavity masonry brick / blockwork construction. This does not preclude the use of alternative lightweight constructions if there is a subsequent preference to do so, but Suono must be consulted to verify that any such proposed construction offers the required sound insulation performance.

5.23 Similarly, the proposed roofs are understood to be of a typical tiled construction, plasterboard ceilings to the rooms below and thermal insulation to the loft spaces.

5.24 Typical internal room dimensions have been taken as follows (understood to be suitably representative of the proposed dwellings):

- 5 m x 4 m x 2.7 m for living rooms with 3 m² of glazing;
- 4 m x 3 m x 2.7 m for bedrooms with 1.8 m² of glazing.

5.25 These dimensions should not be taken as limitations, but rather reasonable figures used for the purposes of the assessment.

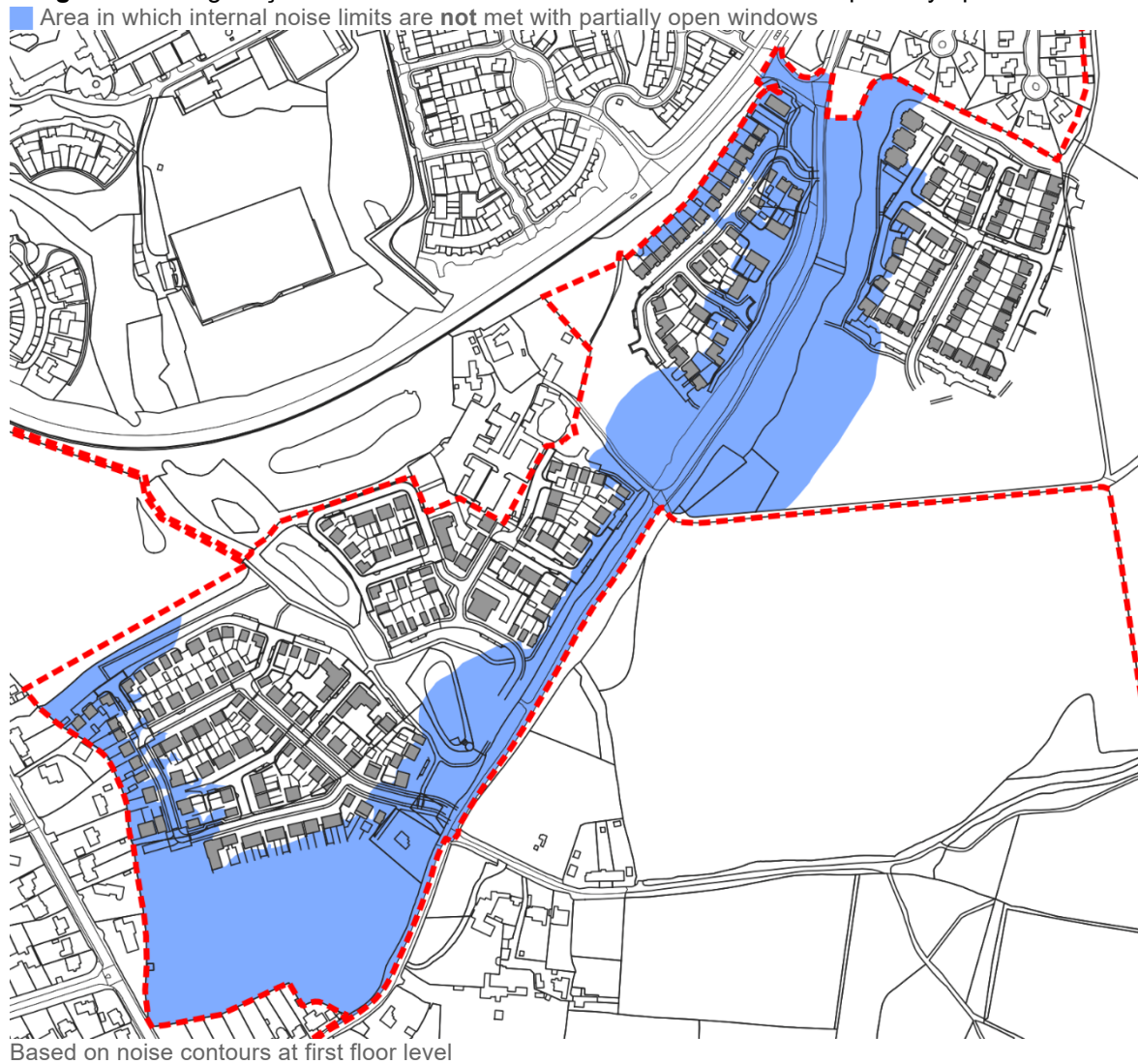
Partially Open Windows

5.26 Noise levels across the site are controlled by road traffic noise along Rocky Lane and Hurstwood Lane. As noted previously, acoustic 'buffer zones' have been implemented to either side of Hurstwood Lane, with only one aspect of a given dwelling orientated towards a road. Two storey dwellings have been allocated to plots nearest Rocky Lane in the northwesternmost area of the site in order to benefit from the screening afforded by the local topography, where the site sits lower than the carriageway.

5.27 Based on the results of the noise modelling, it has been calculated that rooms across central areas of the site behind the first row of dwellings to each of the road link will meet the internal noise level requirements with partially open windows (taken to offer a loss of approximately 13 dB from free field external level to reverberant internal level). The areas within which the internal noise criteria are **not** expected to be met with partially open windows are shaded in **blue** in the following **Image 8**.

5.28 It is important to note that there is no requirement to achieve the relevant internal noise criteria with windows partially open and good acoustic design practices have been incorporated within the layout to maximise where this is possible.

Image 8. Dwellings/façades where internal noise limits are not met with partially open windows



5.29 In all locations, windows should still be openable as desired by the occupants of all the proposed dwellings and, as discussed in the following sections, noise intrusion can be expected to be comfortably controlled when windows are closed. This approach is in line with the relevant guidance set out within **section 3.0 (Design Criteria)** and the attached **Appendix C**.

5.30 It should be noted that the dwellings shaded in **blue** within **Image 8** should not be read in conjunction with the overheating assessment noise constraints plot set out later in this document as **Image 9** as these relate to different considerations and use differing losses based on separate assessment methodologies.

Glazing

5.31 The results of the noise modelling indicate that standard thermal double glazing (expected to provide a single figure sound reduction performance of circa 30 dB R'_w) will be sufficient for all habitable rooms across the development, and ensure the relevant internal noise criteria are met when windows are closed.

5.32 It is again noteworthy that windows do not need to be sealed shut in any part of the development and should be openable for times when purge ventilation is required or for thermal comfort (taking due regard of the commentary later in this section).

Ventilation

5.33 Based on the assessed development layout, non-acoustic trickle ventilators (through wall or frame) meeting a sound reduction performance of 35 dB $D_{n,e,w}$ will be sufficient for all habitable rooms across the development, and ensure the relevant internal noise criteria are met when windows are closed.

5.34 The noise intrusion calculation allows for three ventilators in living rooms and two in bedrooms, however the 35 dB $D_{n,e,w}$ value is to be achieved by each ventilator. If a greater number of trickle ventilators is required to the areas above, the ventilator specification should be reconfirmed by Suono.

Overheating

5.35 It is also necessary to consider ventilation in the context of overheating (noting this matter is for compliance with the Building Regulations, not a planning constraint). Considering the guidance set out within the previous subsections (and taking into account the simplified method of assessing overheating in ADO), it has been determined that it will be possible to provide acceptable internal noise conditions during periods of overheating with partially open windows within the majority of the site.

5.36 Based on the above, **Image 9** shows the location of **bedrooms** on the façades of dwellings marked in **orange** (noting the marked areas on the dwellings' side elevations) where it will **not** be possible to rely on partially open windows to provide relief from building overheating due to the noise requirements of ADO.

Image 9: Overheating assessment noise constraints

■ Areas where it may not be possible to rely on partially open windows for overheating control to bedrooms



Based on noise contours at first floor level

5.37 For all other areas of the site (i.e. those not marked in **Image 9**), acceptable internal noise conditions are expected to be provided during periods of overheating when partially open windows are used to provide cooling.

5.38 The developer's typical approach for providing additional ventilation to offer overheating control where windows must be kept shut due to noise is to employ the use of boost fans (in addition to the background ventilation system), in combination with other measures such as (but not limited to low G-value glazing and thermally efficient building constructions). This strategy is not prescriptive and other means may be available to manage how overheating issues can be overcome in respect to noise constraints.

5.39 External noise emissions from any boost/mechanical ventilation systems installed in relation to the above should ideally be limited to 30 dB $L_{A,T,r}$ at 3 m (when running at normal operating duty) from each termination to avoid disturbance to the properties they are serving and to immediate neighbours.

6.0 Conclusions

6.1 Planning permission has been granted for the development of 375 dwellings at the Hurstwood Farm site on the southeastern edge of Haywards Heath, West Sussex. The site sits within the jurisdiction of both Mid Sussex District Council and Lewes District Council. Condition 18 attached to the decision notice for the scheme requires that a scheme of glazing and ventilation to control noise ingress be submitted to the local authorities, based on the levels of noise outlined in the *WSP* 'Environmental Statement Volume 1 Chapter 12 – Noise and Vibration' document.

6.2 The proposed development site features dwellings to either side of Hurstwood Lane, with north-easternmost dwellings in close proximity to Rocky Lane. Both road links have the potential to have an adverse impact on future residents. A noise survey has been undertaken at the site to quantify the prevailing noise climate. From this data, an assessment of internal and external noise levels across the development site has been undertaken.

6.3 Good acoustic design practices have been implemented as part of the development of the illustrative masterplan for the scheme. This has included elements such as 'buffer zones' between Hurstwood Lane and the first row of dwellings to either side of the road, in addition to the orientation of dwellings and solid walls to ensure noise to external amenity areas is screened as far as is practicable.

6.4 A noise mitigation strategy has been developed to ensure suitable noise conditions for future residents, taking into account noise effects relating to building overheating control measures where appropriate.

6.5 For much of the site, standard thermal double glazing and non-acoustic trickle ventilators will be sufficient to suitably control noise to the proposed dwellings. Openable windows will be sufficient to control overheating effects for portions of the site screened from road traffic noise emanating from the neighbouring local road links (in combination with the proposed ventilation strategy). These measures have been developed in line with the local and national planning requirements as set out within the attached **Appendix C**.

6.6 Noise levels in external areas are expected to fall below the aspirational noise criterion in all areas, with 3D noise modelling showing that all gardens will feature areas where the criterion is met.

6.7 It has been demonstrated that it will be entirely possible to ensure a suitable noise climate internally and externally for future residents of the proposed development and a detailed noise mitigation strategy is set out herein for approval by the Local Authority.



Appendix A: Noise Survey

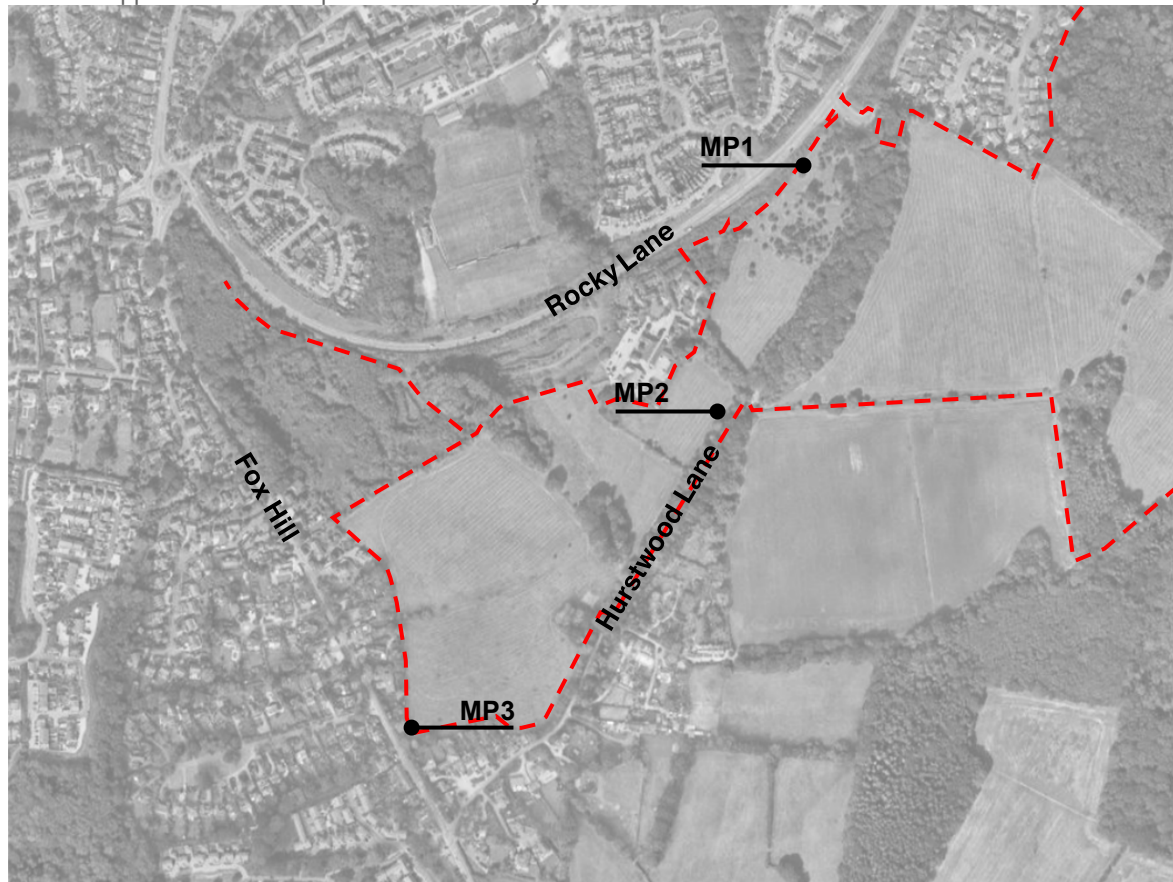
Details and results of the environmental noise survey

Methodology and Instrumentation

An unattended noise survey was undertaken at free field positions on across the development site between 1300 on Friday 16th May and 1115 on Wednesday 21st May 2025. The unattended measurement positions are denoted as 'MP1' to 'MP3' on the following image.

Image A1. Aerial photograph showing noise measurement locations

--- Approximate development site boundary



Aerial imagery courtesy of Google

Measurements of the L_{Aeq} , L_{Amax} and L_{A90} indices were recorded over consecutive 15-minute periods for the duration of the survey. One-minute noise profile information was also recorded. Detailed summaries of the measurement positions are set out in the following table.

Noise measurement locations

Location	Detail
MP1	Microphone at approximately 3 m above local ground level, in a free-field position on the northern tip of the wider development's main western parcel, to the south of the noise barrier running along the A272 Rocky Lane. Measurements were unattended. The noise climate was controlled by road traffic noise along Rocky Lane and birdsong.
MP2	Microphone at approximately 2 m above local ground level, in a free-field position on the eastern boundary of the wider development's main western parcel, to the west of Hurstwood Lane. Measurements were unattended. The noise climate was controlled by distant road traffic noise along Rocky Lane and other distant roads to the north. Elevated noise levels were noted during instances of road traffic activity on Hurstwood Lane and birdsong.
MP3	Microphone at approximately 3 m above local ground level, in a free-field position on the southern corner of the wider development's main western parcel, to the north east of the B2112 Fox Hill. Measurements were unattended. The noise climate was controlled road traffic noise along Fox Hill.

Noise measurements were made using the equipment set out within the following table. The sound level meters were fitted within weatherproof enclosures and the meters calibrated both before and after the survey to confirm an acceptable level of accuracy. No significant drift was noted to have occurred.

Noise measurement equipment

Location	Item	Detail
MP1 & MP2	Sound Level Analyser	Svantek 971
	Outdoor Microphone Kit	Svantek SA 271A
	Acoustic Calibrator	Svantek SV33B
MP3	Sound Level Analyser	Rion NL-52
	Outdoor Microphone Kit	UC-59
	Acoustic Calibrator	NC-74

The weather conditions when setting up the survey equipment were sunny and hot with little to no breeze or cloud cover. When collecting the equipment, the conditions were overcast and cool with damp roads and a slight breeze. Historical weather data captured at a nearby weather station³ shows periods of rainfall across the survey duration. These periods (rounded to 15-minute windows to match the noise survey data) have been set out within the following table, and the corresponding measurement omitted from our assessments.

Recorded instances of rainfall during noise survey duration

Date	Start Time	End Time
21/05/2025	0415	0515

³ <https://www.wunderground.com/dashboard/pws/IHAYWA81>

Results

The following tables set out the period noise levels captured across the duration of the unattended noise survey.

Summary period noise levels measured during the unattended noise survey, dB

Measurement Position	Daytime (0700-2300)	Night-time (2300-0700)	
	$L_{Aeq,16hr}$	$L_{Aeq,8hr}$	L_{Amax}
MP1: Northern site boundary	59	53	70
MP2: Central site boundary	55	54	64
MP3: Southern site boundary	69	62	85

The following table sets out the octave band spectra pertaining to the period noise levels set out in the table above.

Unattended noise survey octave band results

Measurement Position	Index	Noise Level, dB at Octave Band Centre Frequency, Hz							
		63	125	250	500	1k	2k	4k	8k
MP1	$L_{Aeq,16hr}$	60	58	56	55	57	50	38	32
	$L_{Aeq,8hr}$	52	48	46	47	50	45	38	34
	L_{Amax}	72	69	66	65	66	63	61	57
MP2	$L_{Aeq,16hr}$	55	51	47	47	49	46	49	47
	$L_{Aeq,8hr}$	44	41	38	36	40	40	51	50
	L_{Amax}	66	60	57	56	61	56	53	53
MP3	$L_{Aeq,16hr}$	67	66	65	65	67	60	50	42
	$L_{Aeq,8hr}$	60	56	56	57	60	54	46	41
	L_{Amax}	82	80	78	80	82	77	68	62

The following table sets out a summary of the representative background noise levels captured during the day and night-time periods.

Representative background noise levels

Measurement Position	Representative Background Noise Level, $L_{A90,T}$ dB	
	Daytime (0700-2300)	Night-time (2300-0700)
MP1	46	23
MP2	40	23
MP3	47	22

The following time history graphs present the measured noise levels captured at both assessment positions throughout the survey duration.

Image A2. Noise measurement results at position MP1

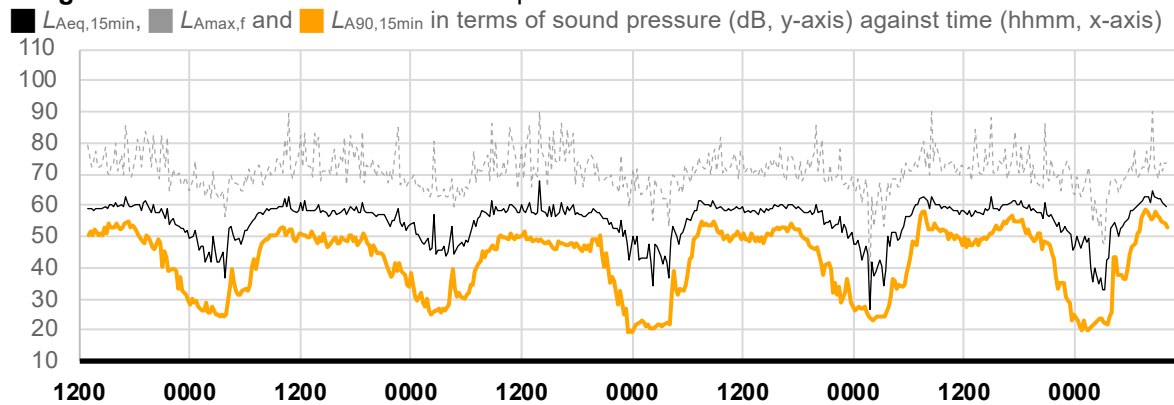


Image A3. Noise measurement results at position MP2

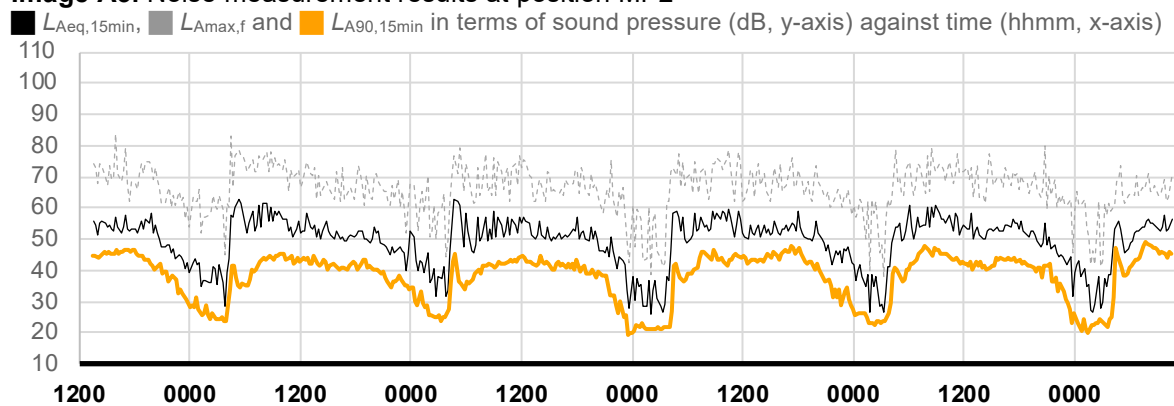
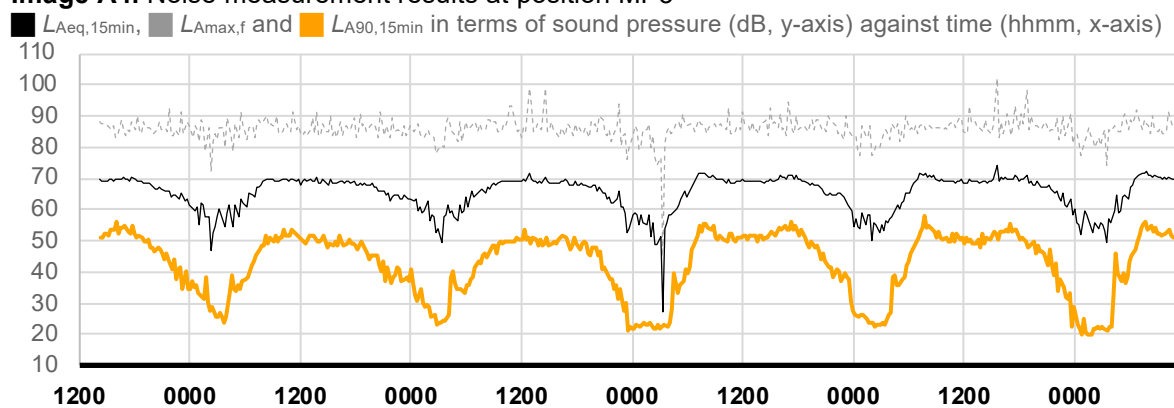


Image A4. Noise measurement results at position MP3



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Appendix B: Noise Modelling

Noise Modelling Software

A computer-based noise prediction program (*Wölfel* IMMI 2024) has been used to determine the road traffic noise levels generated across the site by this noise source, using CRTN⁴ and ISO 9613⁵ as a basis to determine noise propagation paths throughout the model.

This software allows for the calculation of noise levels at specific points around a model, from a series of noise sources simultaneously, or produce noise contour plots. The noise model used has taken account of the following effects:

- Distance;
- Screening;
- Surface reflections;
- Topography (taken to be flat within the model);
- The surrounding built up area.

Model Input and Calibration

The modelled development layout is based on the *IDP Group* 'Site Layout Draft#7' drawing (reference: C5990 SK002_01, dated: 6th June 2025).

Building heights across the scheme are as advised by Barratt Redrow Southern Counties and are as set out below. Brick walls indicated on the development layout have been modelled at a height of 1.8 m. These heights are deemed to be suitable for the purposes of this assessment.

- Two-storey dwellings: 8 m;
- Three-storey dwellings: 11.5 m;
- Four-storey dwellings: 14 m.

Topographical data has been based on LIDAR information publicly available through DEFRA.

The model used CRTN to define traffic noise propagation from nearby local roads in terms of daytime $L_{Aeq,16hr}$ and night-time $L_{Aeq,8hr}$ period noise levels.

Noise propagation from night-time L_{Amax} event noise levels has been calculated in accordance with the methodology set out within ISO 9613.

Noise Modelling Assumptions and Limitations

Assumptions have been made to allow for effective noise modelling to be undertaken.

The following window heights (to approximate centre of windows) have been used within contour and point calculations at the proposed building façades as follows:

- Ground floor: 1.5 m;

⁴ Calculation of Road Traffic Noise, Department of Transport, 1988

⁵ ISO 9613-1:1993 – Acoustics – Attenuation of sound during propagation outdoors — Part 1: Calculation of the absorption of sound by the atmosphere

- First floor: 4.5 m;
- Second floor: 7.5 m;
- Third floor: 10.5 m.

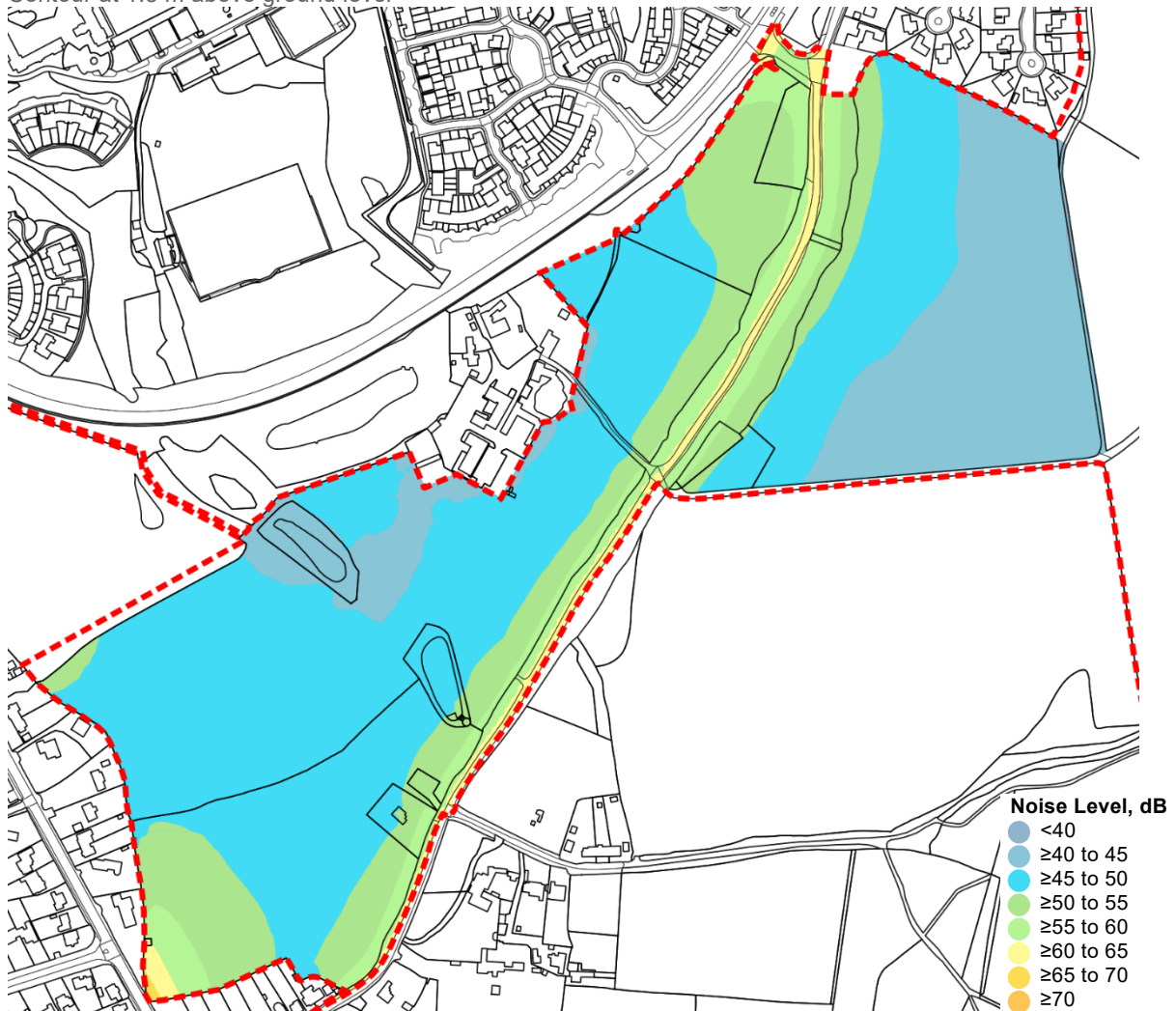
The following section sets out noise contour plots for the 'Baseline' and 'With Development' scenarios. While noise contours for all three calculated indices (daytime $L_{Aeq,16hr}$, night-time $L_{Aeq,8hr}$ and L_{Amax} event noise levels) have been calculated for each of the storey heights previously listed for the purposes of our assessment, only the following plots are included within this appendix. Specific noise contour plots other than these can be supplied upon request.

- Daytime $L_{Aeq,16hr}$ (with and without development): Ground floor;
- Night-time $L_{Aeq,8hr}$ (with and without development): First floor;
- Night-time L_{Amax} (with and without development): First floor.

Baseline daytime ($L_{Aeq,16hour}$) noise contour plots

Image B1

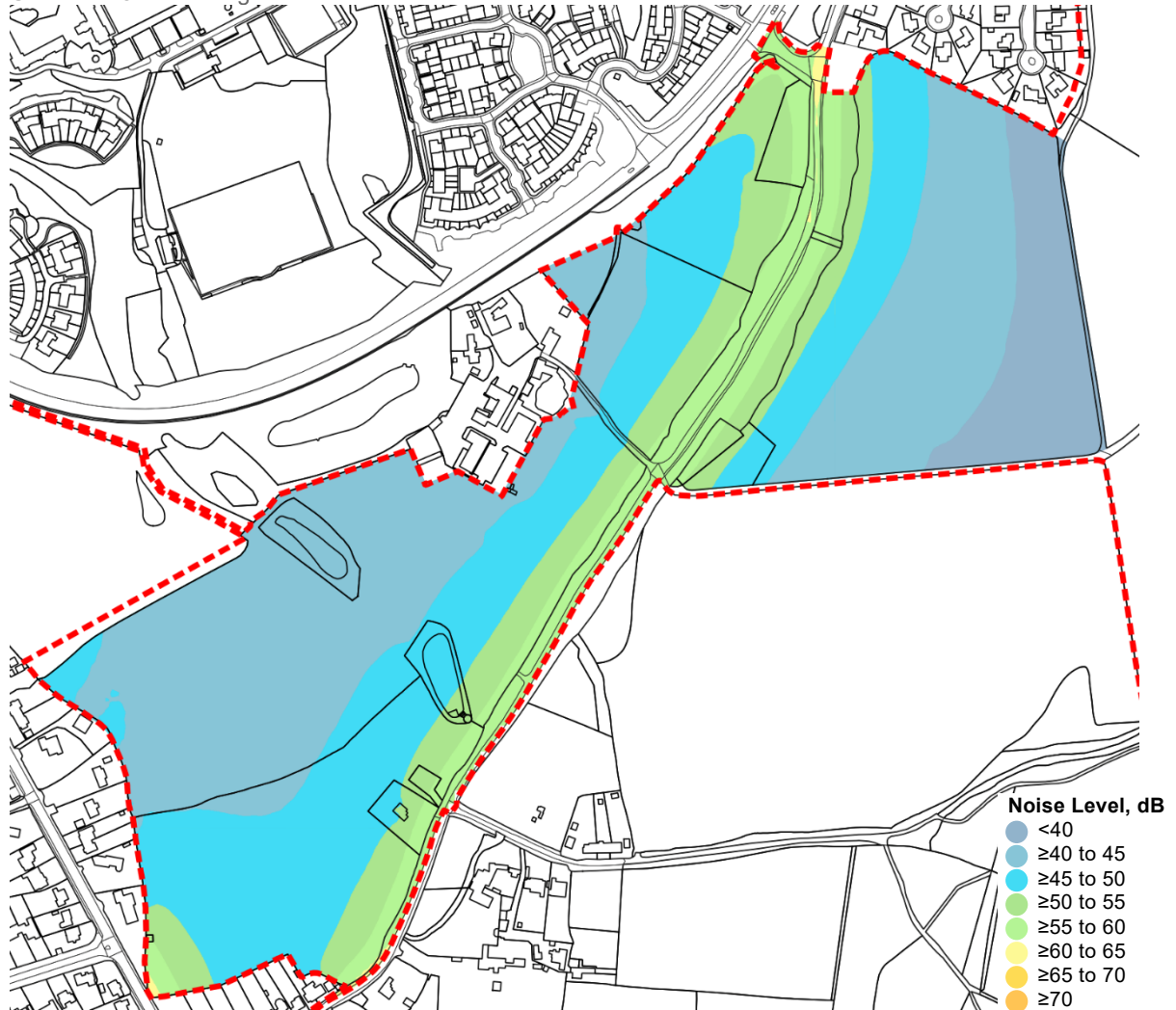
Contour at 1.5 m above ground level



Baseline night-time ($L_{Aeq,8hour}$) noise contour plots

Image B2

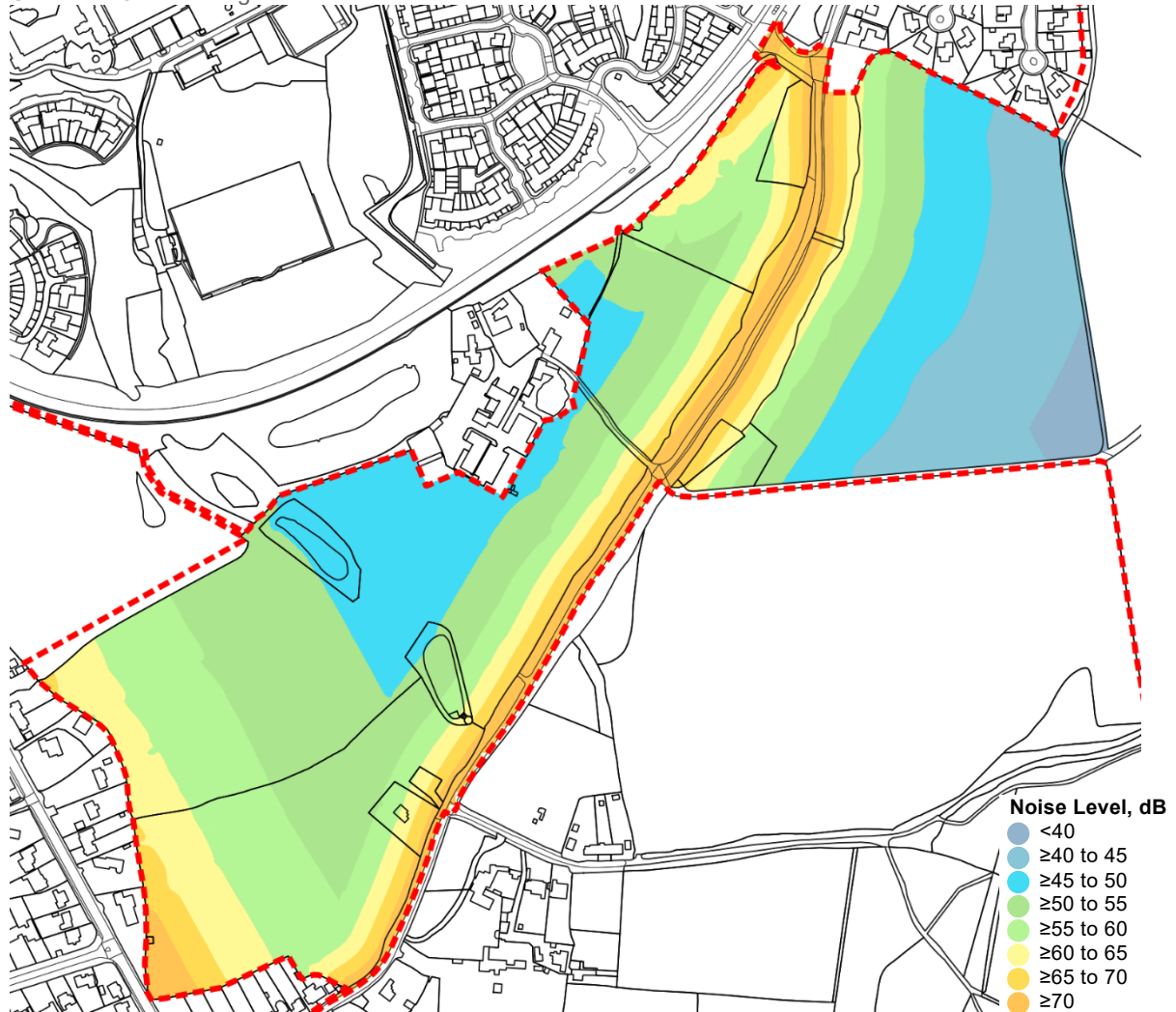
Contour 4.5 m above ground level



Baseline night-time max (L_{Amax}) noise contour plots

Image B3

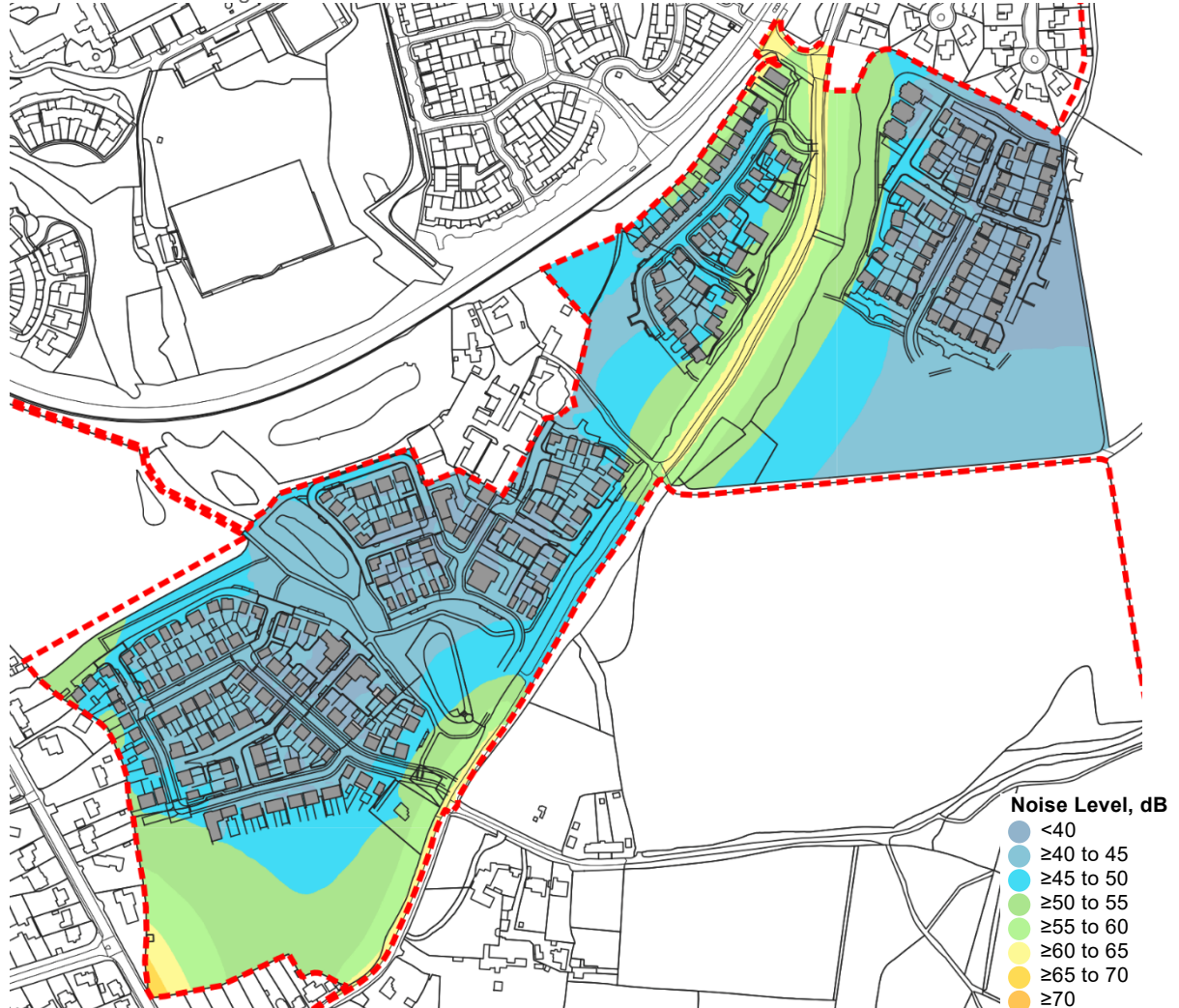
Contour 4.5 m above ground level



Daytime ($L_{Aeq,16\text{hour}}$) noise contour plots with development

Image B4

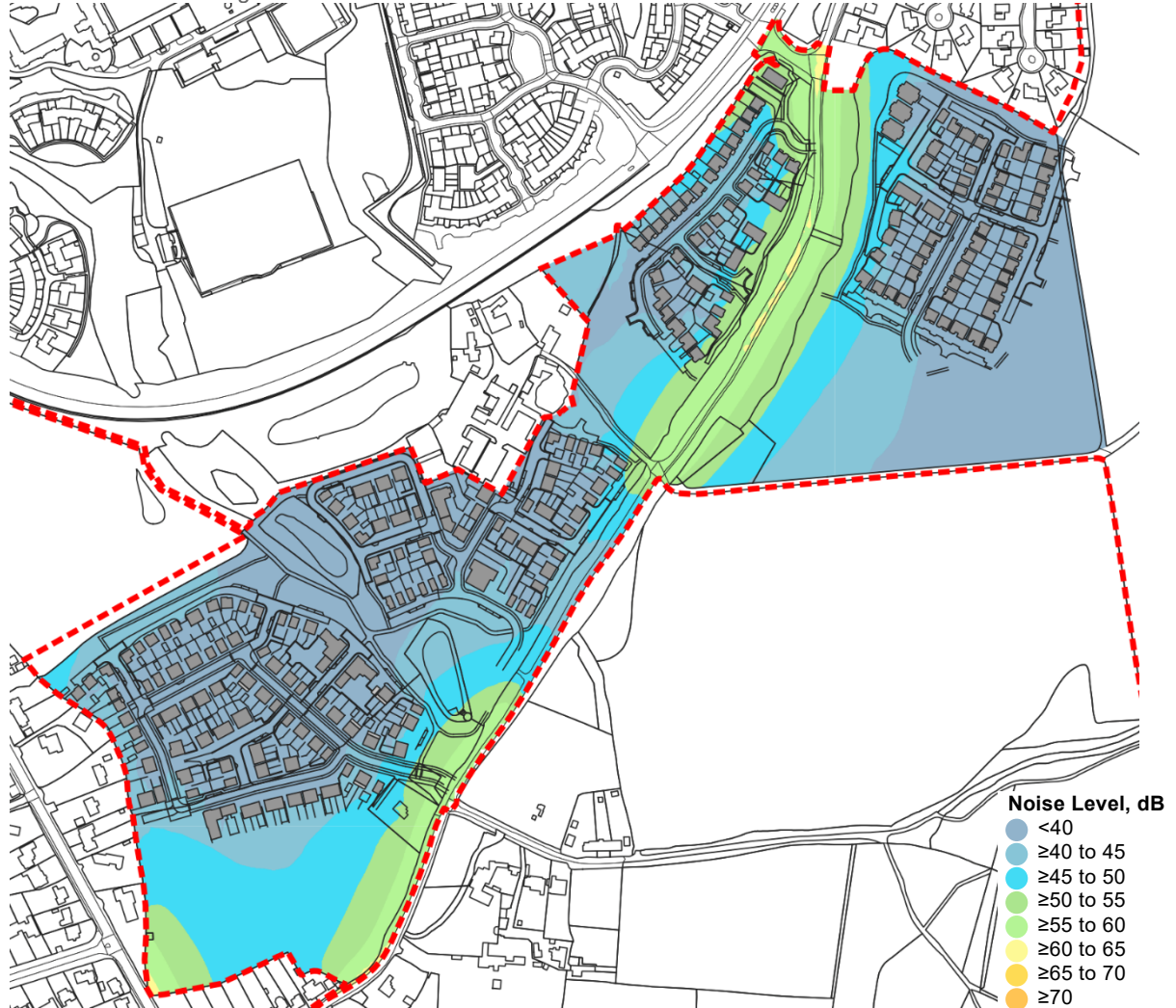
Contour 1.5 m above ground level



Night-time ($L_{Aeq,8\text{hour}}$) noise contour plots with development

Image B5

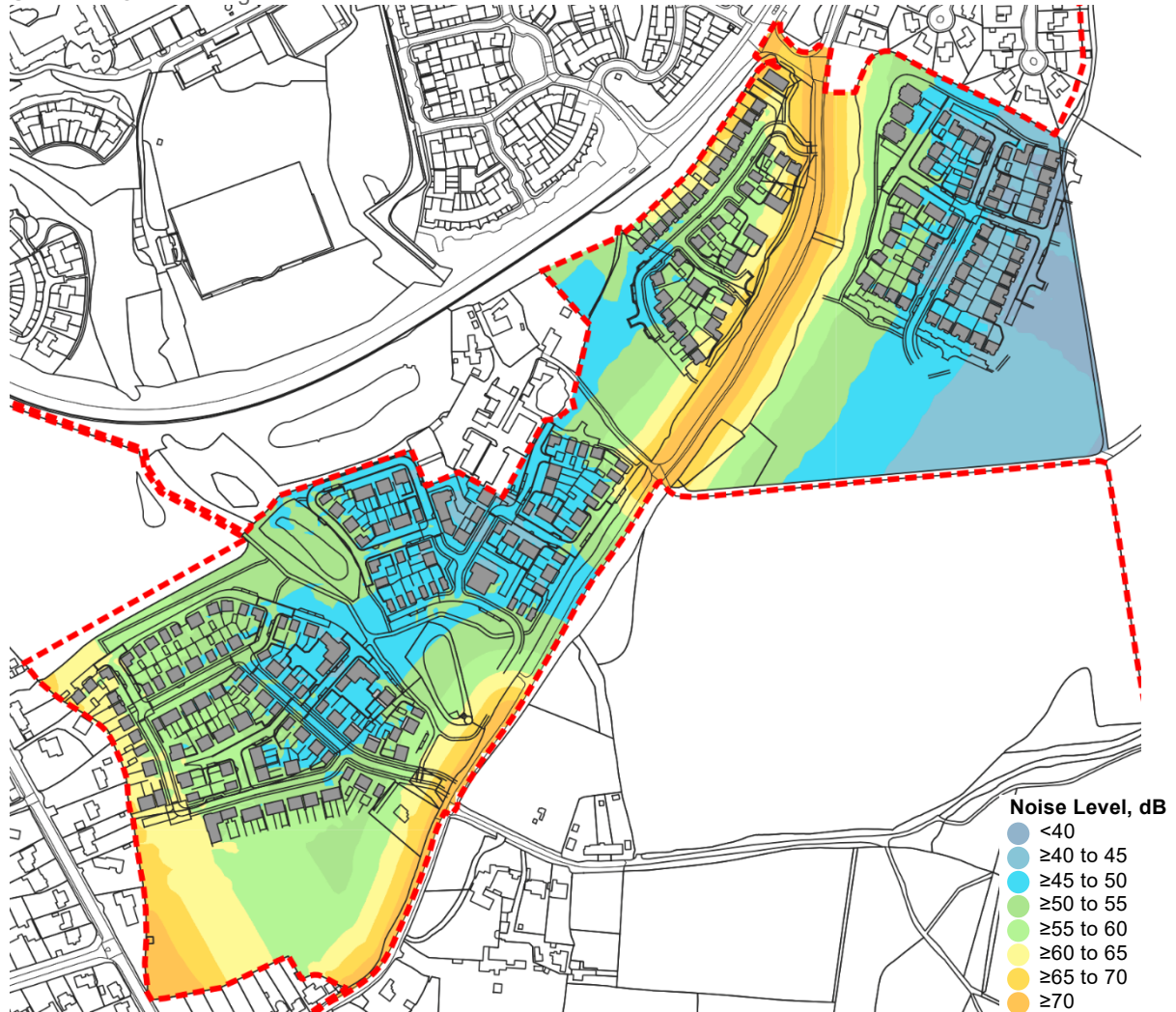
Contour 4.5 m above ground level



Night-time max (L_{Amax}) noise contour plots with development

Image B6

Contour 4.5 m above ground level



Appendix C: Planning Policy & Guidance

National Policy

National Planning Policy Framework

The NPPF is the relevant document for defining the national policy toward noise sensitive development. The document was originally published in March 2012 and most recently updated in December 2024.

Paragraph 135 states that planning policies and decisions should ensure that developments:

“create places that [...] promote health and well-being, with a high standard of amenity for existing and future users...”

Further to this and on the subject of noise, paragraph 187 states that planning policies and decisions should contribute to and enhance the natural and local environment by:

“preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution”

Paragraph 198 of the NPPF states:

“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;*
- b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason;”*

Clause “a)” in paragraph 198 makes reference the Noise Policy Statement for England which is discussed in the following section.

The ‘agent of change’ principle is discussed in paragraph 200 of the NPPF. In terms of noise, this principle requires that those proposing a new noise sensitive development incorporate sufficient mitigation such that the operation of existing premises in the area is not unreasonably restricted in order to control noise impact upon the new development:

“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.”

Noise Policy Statement for England

The NPSE (March 2010) also does not set quantitative guidelines for the suitability of noise sensitive development in an area depending on the prevailing levels of noise. Absent, therefore, is reference to specific noise thresholds which determine whether noise sensitive development is suitable and, if so, whether mitigation factors need to be considered.

Instead, the NPSE sets out the principle of “SOAEL, LOAEL and NOEL” which are defined as follows:

Significant Observed Adverse Effect Level (SOAEL): This is the level [of noise exposure⁶] above which significant adverse effects on health and quality of life occur.

Lowest Observed Adverse Effect Level (LOAEL): This is the level [of noise exposure²] above which adverse effects on health and quality of life can be detected.

No Observed Effect Level (NOEL): This is the level [of noise exposure²] below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

Given the overall thrust of the NPSE, the SOAEL is an important assessment threshold although the NPSE also comments in section 2.22 that:

“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.”

Attention is drawn to the fact that the SOAEL is the level above which significant adverse effects can be observed. Importantly, it should be noted again in respect of the NPPF that the overall objective is to avoid or minimise significant adverse impacts; some degree of impact is acceptable, and it is not necessary or reasonable to seek to achieve no impact at all.

In addition to the principles set out above, the NPSE sets out three key aims:

The first aim of the Noise Policy Statement for England

“Avoid significant adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.”

The second aim of the Noise Policy Statement for England

“Mitigate and minimise adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.”

The third aim of the Noise Policy Statement for England

“Where possible, contribute to the improvement of health and quality of life through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.”

⁶ Additional text drawn from the Planning Practice Guidance Definition

Paragraph 2.24 of the NPSE states that all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life. It also states that this does not mean that such adverse effects cannot occur.

Each development site must be judged on its ability to deliver on each of these aims, and while rating the prevailing noise against predefined thresholds is no longer necessary, defining the prevailing noise levels is an essential first step in assessing a given site under the current regime.

Planning Practice Guidance (PPG)

In March 2014 the Department for Communities and Local Government (DCLG) launched the national Planning Practice Guidance (PPG) web-based resource. The PPG on Noise (last updated in July 2019) expands upon the NPPF and NPSE and sets out more detailed guidance on noise assessment.

Like the NPPF and NPSE, the guidance does not include any specific noise levels but sets out further principles that should underpin an assessment. The PPG includes a section on noise, paragraph 003 of the which states:

“Plan-making and decision making need to take account of the acoustic environment and in doing so consider:

- whether or not a significant adverse effect is occurring or likely to occur;*
- whether or not an adverse effect is occurring or likely to occur; and*
- whether or not a good standard of amenity can be achieved.”*

It then refers to the NPSE and states that the aim is to identify where the overall effect of the noise exposure falls in relation to the relevant SOAEL, LOAEL and, by inference, the NOEL. Definitions for these thresholds are provided again with the PPG, which differ very slightly in wording to the NPSE, but are taken to be identical in their meaning.

In relation to the SOAEL, LOAEL and NOEL, the PPG makes the following important statement:

“Although the word ‘level’ is used here, this does not mean that the effects can only be defined in terms of a single value of noise exposure. In some circumstances adverse effects are defined in terms of a combination of more than one factor such as noise exposure, the number of occurrences of the noise in a given time period, the duration of the noise and the time of day the noise occurs.”

The guidance then presents a table, which is reproduced in the following table. The implication of the final line of the table is that only the 'present and very disruptive' outcomes are unacceptable and should be prevented. All other outcomes (i.e. all other lines in the table) can be acceptable, depending upon the specific circumstances and factors such as the practicalities of mitigation.

On that basis, noise levels deemed to be below the SOAEL can be considered acceptable providing noise has been mitigated and reduced to a minimum.

Planning Practice Guidance summary of noise exposure hierarchy.

Perception	Examples of Outcomes	Increasing Effect Level	Action
Not present	No Effect	No Observed Effect	No specific measures required
NOEL - No Observed Effect Level			
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.	No Observed Adverse Effect	No specific measures required
LOAEL - Lowest Observed Adverse Effect Level			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
SOAEL - Significant Observed Adverse Effect Level			
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

It is noteworthy that the PPG states that:

“Noise impacts may be partially offset if residents have access to one or more of:

- a relatively quiet facade (containing windows to habitable rooms) as part of their dwelling;

- a relatively quiet external amenity space for their sole use, (e.g. a garden or balcony).
Although the existence of a garden or balcony is generally desirable, the intended benefits will be reduced if this area is exposed to noise levels that result in significant adverse effects;

- a relatively quiet, protected, nearby external amenity space for sole use by a limited group of residents as part of the amenity of their dwellings; and/or

- a relatively quiet, protected, external publically accessible amenity space (e.g. a public park or a local green space designated because of its tranquillity) that is nearby (e.g. within a 5 minute walking distance).

Guidance Documents

The ProPG and BS 8233:2014

The Professional Practice Guidance on Planning & Noise – New Residential Development, 2017 (ProPG) was prepared by the Institute of Acoustics, the Chartered Institute of Environmental Health and the Association of Noise Consultants.

In relation to residential development, the ProPG builds on the principles and criteria set out BS 8233:2014 – Guidance on sound insulation and noise reduction for buildings (BS 8233).

While the ProPG it is helpful in many ways, it must be noted that the guidance and supplementary documents “does not constitute an official government code of practice and neither replaces nor provides an authoritative interpretation of the law or government policy on which users should take their own advice as appropriate”.

Section 2.27 of the ProPG states:

“It is considered that suitable guidance on internal noise levels can be found in “BS8233:2014: Guidance on sound insulation and noise reduction for buildings”. Table 4 in Section 7.7.2 of the standard suggests indoor ambient noise levels for dwellings (when unoccupied) and states that “in general, for steady external noise sources, it is desirable that the internal ambient noise level does not exceed the guideline values”. The standard states (Section 7.7.1) that “occupants are usually more tolerant of noise without a specific character” and only noise without such character is considered in Table 4 of the standard.”

Indeed, ProPG expands on the advice and notes of BS 8233 Table 4, with relevant sections presented below:

BS8233/ProPG internal noise criteria

Activity	Location	Internal Ambient Noise Level	
		Daytime (0700-2300)	Night time (2300-0700)
Resting	Living Room	35 dB $L_{Aeq,16hour}$	-
Dining	Dining room / area	40 dB $L_{Aeq,16hour}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hour}$	30 dB $L_{Aeq,8hour}$ 45 dB $L_{Amax,f}$ (Note 4)

Note 4

“... 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 $L_{Amax,F}$ 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”

Note 5

“... Where it is not possible to meet internal target levels with windows open, internal noise levels can be assessed with windows closed, however any façade openings used to provide whole dwelling ventilation (e.g. trickle ventilators) should be assessed in the “open” position and, in this scenario, the internal L_{Aeq} target levels should not normally be exceeded subject to the further advice in Note 7.”

Note 7

“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.”

With respect to external amenity spaces, ProPG again points to BS 8233 that states:

“the acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 – 55 dB $L_{Aeq,16hr}$...”

“...These guideline values may not be achievable in all circumstances where development might be desirable. In such a situation, development should be designed to achieve the lowest practicable noise levels in these external amenity spaces but should not be prohibited.”

The above thresholds (adjust as necessary taking into account the relevant notes) are taken to correspond to LOAELs, when considered in relation to the PPG and NPSE.

The ProPG sets out the principle of the “Acoustic Design Statement” (ADS) in which noise is quantified and assessed, and mitigation measures determined in line with the methodology set out therein. The preparation of an ADS is not relevant or appropriate for all sites, however many of the principles are those which would typically be adopted when preparing noise assessment for planning submissions etc.

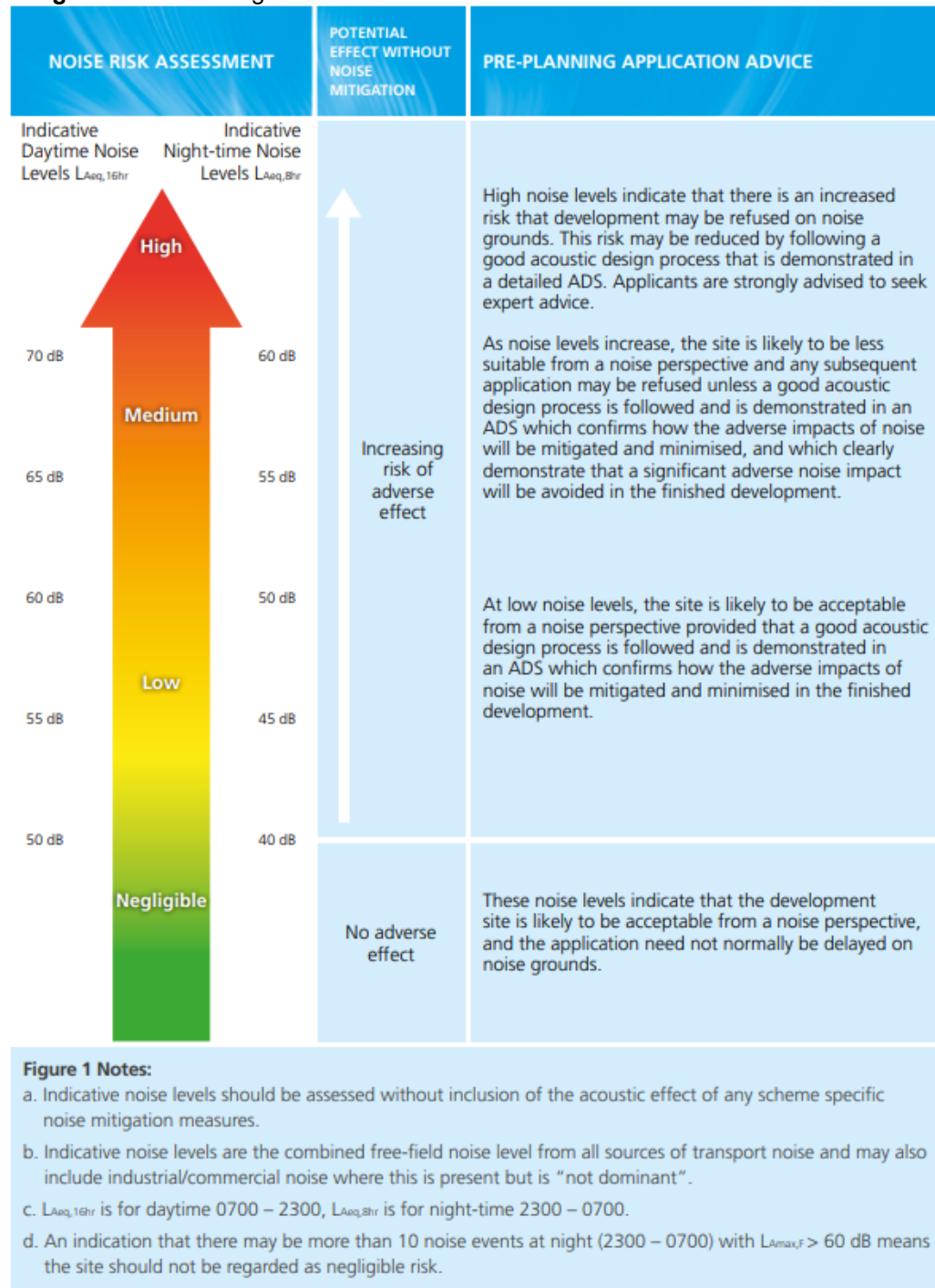
Features which may be included within an ADS comprise:

- An initial site noise risk assessment;
- A description of external site noise levels before and after mitigation measures;
- Demonstrations of good acoustic design principles;

- Details of how internal noise guidelines will be achieved;
- Assessment of the impact of $L_{Amax,F}$ noise levels where guidelines values are exceeded;
- An aim to achieve internal noise guidelines with windows open where practical, noting this approach will not necessarily be possible. Due consideration should be given to ventilation and thermal comfort with windows closed;
- Acoustic design to achieve good living conditions where internal noise guidelines can only be achieved with windows closed (noting the guidelines are not applicable when windows are open to provide purge ventilation);
- Information regarding the steps taken to minimise overheating where this is relevant to noise;
- A consideration of noise to external amenity areas;
- A presentation of the findings of the assessment, resulting noise impacts and any mitigation measures that may be required.

With regard to the initial site noise risk assessment, the ProPG sets out the following table. It is important to understand that a site with external noise levels categories as high risk does not mean that site is necessary unsuitable for development. Instead, it means that a good acoustic design process must be followed to ensure suitable conditions are provided to future occupants.

Image C1. ProPG Stage 1 Initial Site Risk Assessment



As neither the ProPG of BS 8233 form statutory guidance or regulations, it falls to the acoustics practitioner (or other similar party) to determine how the documents should be interpreted and how their contents are applied to any given scheme.

Building Regulations Approved Document O: Overheating

The Building Regulations Approved Document O (ADO) on overheating was published In December 2021. It sets out requirements to ensure that overheating (and related effects) within new residential buildings are suitably controlled.

ADO took effect on 15 June 2022 in England but does not apply to work subject to a building notice, full plans application or initial notice submitted before that date, provided the work for each building was started before 15 June 2023.

The statutory, legal requirements of ADO are replicated below, with particular attention drawn to part O1(2)(a):

Requirement O1(2)(a)

This section deals with requirement O1(2)(a) of Schedule 1 to the Building Regulations 2010.

Requirement	
Requirement	Limits on application
O1 Overheating mitigation	
(1) Reasonable provision must be made in respect of a dwelling, institution or any other building containing one or more rooms for residential purposes, other than a room in a hotel ("residences") to—	
(a) limit unwanted solar gains in summer;	
(b) provide an adequate means to remove heat from the indoor environment.	
(2) In meeting the obligations in paragraph (1)—	
(a) account must be taken of the safety of any occupant, and their reasonable enjoyment of the residence; and	
(b) mechanical cooling may only be used where insufficient heat is capable of being removed from the indoor environment without it.	

Intention

In the Secretary of State's view, requirement O1(2)(a) is met in a new residential building if the building's overheating mitigation strategy for use by occupants takes account of all of the following.

- Noise at night – paragraphs 3.2 to 3.4.
- Pollution – paragraph 3.5.
- Security – paragraphs 3.6 and 3.7.
- Protection from falling – paragraphs 3.8 to 3.10.
- Protection from entrapment – paragraph 3.11.

It can be seen that accounting for potential noise effects at night is an important consideration when addressing the requirements of part O1(2)(a), in relation to ensuring the "reasonable enjoyment of the residence".

Section 3.2-3.4 of ADO sets out the following guidance with respect to noise. This does not form part of the statutory requirement but serves as guidance for how, in the Secretary of State's view, noise should be addressed when considering overheating:

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).

The language of the text preceding the “limits” in section 3.3 suggests that these could be taken as guideline figures to assist the designer in identifying where noise issues may arise. The guidance does not state that noise levels must not exceed the “limits”, or that windows would always be shut where the above thresholds are exceeded, only that “windows are likely to be closed during sleeping hours” under such noise conditions.

At time of writing draft acoustics industry guidance on the interpretation of the ADO is subject to consultation (discussed in the following section). It may therefore be necessary to revise the approach regarding how overheating is considered in the context of noise.

It is important to note that in the context of ADO, the use of mechanical ventilation (e.g. MVHR) is considered a “passive means” of cooling a building. As per the requirements of ADO, “mechanical cooling” such as air conditioning may only be considered where all other passive methods of cooling are found to be insufficient.

Approved Document O Noise Guide, November 2024

The above-titled guide provides guidance for practitioners when implementing the requirements of Approved Document. It is designed to assist the acoustics industry in the understanding of what is published in the regulation and provides an agreed interpretation of the content.

The following external noise thresholds are set out in table 1 of the guidance. These thresholds apply when using the Simplified Method set out within ADO and relate to high and moderate overheating risk areas (again, as described within ADO):

Table 1 External Noise Levels Above Which the Simplified Method Cannot Be Used

Parameter	High Risk Location	Moderate Risk Location
$L_{Aeq,8h}$, averaged over 8 hours (between 11pm and 7am)	45 dB	50 dB
L_{AFmax} , more than 10 times a night (between 11pm and 7am)	60 dB	65 dB

Note: Several assumptions have been used to determine the outside-to-inside level difference. These are: 2.4m bedroom height, 0.5s bedroom RT, simple hole in the façade of area sufficient to provide the required Equivalent Area, no sound transmission other than via the opening. Calculation according to Equation G.1 of BS 8233:2014 [Ref. 7].

The table sets external noise thresholds based on achieving the 40 dB $L_{Aeq,8hour}$ and 55 dB $L_{Amax,f}$ thresholds set out in the ADO, but a 5 dB reduction in noise offered by a façade opening in high overheating risk areas or a 10 dB reduction in moderate overheating risk locations. These losses are linked to the areas of opening that related to the ventilation provision requirements of the ADO Simplified Method.

As Haywards Heath falls outside of London (and the other areas identified in Appendix C of the ADO), it is classed as a having a “moderate” overheating risk when considered in accordance with the simplified method set out within the ADO. Therefore, external levels of 50 dB $L_{Aeq,8hour}$ and 65 dB L_{AFmax} can be taken as a thresholds to identify where open windows could not be used to control overheating effects.

Where the Simplified Method cannot be used, or where the developer decides they want to use an alternative approach to the Simplified Method, dynamic thermal modelling is required. The ADO noise guide provides a means for acoustic consultant to provide guidance to the dynamic thermal modelling consultant (DTMC) to support this more detailed approach.

The ADO Noise Guide sets out a means to calculate the permitted Equivalent Area of facade opening that can be considered during dynamic thermal modelling, based on the noise constraints of a given site. This essentially limits the amount of window (or other ventilation) opening than can be considered by the DTMC, based on the noise level difference that is required through the façade to achieve the relevant ADO noise thresholds. When considering façade incident external noise levels, the following formula applies:

Equation 1⁸ $EA \text{ based on façade level difference} = V \times 10^{\left(\frac{-(D_{2m,nT} + 5)}{10}\right)}$

Where

$D_{2m,nT}$ is the is the façade level difference between the A-weighted level 2m in front of the façade ($L_{1,2m}$), and the standardised internal A-weighted level ($L_{eq,2,nT}$). In the absence of any better alternative method, the same principle can be applied to L_{AFmax} .

V is the room volume (m^3)

EA is the Equivalent Area of the open window (m^2)

When considering free field external noise levels, the following formula applies:

Equation 2⁸

$$EA \text{ based on freefield level difference} = V \times 10^{\left(\frac{-(D_{nT} + 8)}{10}\right)}$$

Further guidance is provided in the guide with respect to ventilation louvres. This is not replicated here for the sake of brevity but shall be considered when necessary and appropriate.

Where it is necessary to either totally or partially restrict the use of open windows due to external noise constraints and provide additional ventilation or cooling through mechanical means, the following suggested internal noise thresholds are set out within the ADO noise guide:

Parameter	Bedrooms
Mechanical ventilation or mechanical cooling system noise	$L_{Aeq,T} 30 (\pm 5) \text{ dB}$

Further to the above, the following is noted:

“Higher noise levels than those in Table 2, e.g. by up to 10 dBA, may be appropriate in some operating scenarios, where rapid changes to the cooling or ventilation rates quickly improve the thermal comfort of the occupant. Equally, lower noise levels may be appropriate for some types of residential development”

The guide also provides information regarding assessment uncertainty, post-completion noise measurements (not recommended to be undertaken), reporting and other factors. These elements are not set out here for the sake of brevity but are considered where necessary and appropriate.

AVO Residential Design Guide, 2020

The Acoustics, Ventilation and Overheating Residential Design (AVO) Guide, prepared by the Association of Noise Consultants was written to provide guidance on the control of noise in the context of overheating control. It is noteworthy that this guidance was published before both the ADO and ANC guidance set out in the previous section and therefore has to a large degree been superseded. It is still however useful reference and a helpful guide for context.

A key principle of the AVO is that internal noise in excess of the normal criteria set out within the ProPG and BS 8233:2014 are acceptable during the overheating condition, when open windows are used to provide a cooling effect. The amount by which internal noise conditions may be elevated is related to the duration over which overheating occurs and the guidance recognises the numerous methods to control overheating (beyond simple open windows).

Where external noise levels are equal to or fall below circa 53 dB $L_{Aeq,16\text{hour}}$ or 48 dB $L_{Aeq,8\text{hour}}$ the use of opening windows as primary means of mitigating overheating is not likely to result in adverse effect. Above these thresholds, it is for the acoustics practitioner to determine the potential for adverse effect.

Where external noise levels are high (above approximately 65 dB $L_{Aeq,16\text{hour}}$ or 55 dB $L_{Aeq,8\text{hour}}$) a “Level 2 assessment” is recommended, where the internal noise levels in the above BS 8223 table are effectively taken as the LOAEL.

Interpreted values of the AVO guide Table 3-3 (for Level 2 assessment) are repeated below with reference to the PPG thresholds for clarity.

Summary of AVO Criteria

Bedroom Internal Ambient Noise Level (with windows open)			Action
Daytime $L_{Aeq,16hour}$	Night $L_{Aeq,8hour}$	Night $L_{Amax,F}$	
NOAEL – No Observed Adverse Effect Level			
≤ 35 dB	≤ 30 dB	Not normally exceeding 45 dB more than 10 times per night	No specific measures required
LOAEL - Lowest Observed Adverse Effect Level			
35 dB	30 dB	Exceeding 45 dB more than 10 times per night but not exceeding 65 dB	Mitigate and reduce to a minimum
SOAEL - Significant Observed Adverse Effect Level			
50 dB	42 dB	Normally exceeds 65 dB	Avoid / Prevent

The implication is that for circumstances where additional ventilation is necessary for cooling, but internal noise levels with windows open are between the LOAEL and a SOAEL, means to reduce noise should be introduced where possible but it is not necessary to achieve the BS 8233 levels.

Local Policy

Mid Sussex District Plan

Policy of the Mid Sussex District Plan 2014-2031 relates to noise, air and light pollution, and sets out the following:

*‘The environment, including nationally designated environmental sites, nationally protected landscapes, areas of nature conservation or geological interest, wildlife habitats, and the quality of people’s life will be protected from unacceptable levels of noise, light and air pollution by only permitting development where:
Noise pollution:*

- It is designed, located and controlled to minimise the impact of noise on health and quality of life, neighbouring properties and the surrounding area;*
- If it is likely to generate significant levels of noise it incorporates appropriate noise attenuation measures;*

Noise sensitive development, such as residential, will not be permitted in close proximity to existing or proposed development generating high levels of noise unless adequate sound insulation measures, as supported by a noise assessment are incorporated within the development.

In appropriate circumstances, the applicant will be required to provide:

- an assessment of the impact of noise generated by a proposed development; or*
- an assessment of the effect of noise by an existing noise source upon a proposed development;’*

Further guidance related to noise adopted by the council is set out within the Planning Noise Advisory Document: Sussex 2023, details of which are set out later within this appendix.

Lewes District Council Local Plan

Policy DM23 of the Lewes District Council's Local Plan 2020 relates to noise, and sets out the following:

'Residential and other noise sensitive development will be only permitted where it can be demonstrated that users of the development will not be exposed to unacceptable noise disturbance from existing or future uses.

Noise-generating development will only be permitted where it can be demonstrated that nearby noise sensitive uses (existing or planned) will not be exposed to noise impact that will adversely affect the amenity of existing or future users. Where appropriate, proposals will be required to mitigate noise impacts through careful planning, layout and design. In assessing mitigation proposals, account will be taken of;

- 1) the location, layout and design of the proposed development;*
- 2) existing levels of background noise;*
- 3) measures to reduce or contain generated noise*
- 4) hours of operation and servicing*

Where noise sensitive uses are likely to be exposed to significant or unacceptable noise disturbance, the Council will require that applications are supported by a Noise Impact Assessment prepared in accordance with the Planning Noise Advice Document: Sussex (July 2015) or any subsequent updated document. Development that would expose noise sensitive uses to unacceptable noise levels will not be permitted.'

The Planning Noise Advisory Document: Sussex 2015 has since been superseded by its 2023 version, details of which are set out within the following subsection.

Planning Noise Advisory Document: Sussex 2023

The Planning Noise Advice Document: Sussex, outlines the design criteria for noise sensitive development and states the following:

'6.5.1. Where the noise assessment has shown that habitable rooms will be exposed to noise levels likely to give rise to any adverse impact, noise mitigation will be required.

6.5.2. Design control measures should aim to meet the recommended standards set out in table 4 of BS 8233:2014 and regular night time noise events such as scheduled aircraft or passing trains which can cause sleep disturbance shall be minimized and assessed as (LAfmax), as recommended in the World Health Organisation's (WHO) Night Noise Guidelines for Europe (2009), unless there are particular reasons why this is not considered appropriate. In such cases, a clear explanation of the reasons should be provided.

6.5.3. As the standards for BS 8233:2014 and the WHO relate only to anonymous noise, eg distant road traffic and noise without characteristics such as impulsivity, low frequency content or tones then, if these are present, additional discussion will be required with the LPA for the purpose of establishing suitable assessment techniques and standards to be achieved eg BS 4142:2014 + A1: 2019 for delivery noise.

6.5.4. While noise mitigation measures can be used to achieve suitable internal sound levels, preference is to be given to criteria based on windows being partially open.

6.5.5 Where the property is at risk of overheating an overheating assessment shall be conducted in accordance with Acoustics Ventilation and Overheating (AVO) Residential Design Guide (January 2020) and CIBSE's Design Methodology for the Assessment of Overheating Risk in Homes (TM59: 2017).

6.5.6 It is considered that the assessment of overheating and the provision of adequate ventilation and noise control are inextricably linked. Noise can be a material consideration at Planning. It is not accepted that an overheating assessment should be addressed post-planning. Overheating assessment and mitigation can have material impacts on design features, orientation of facades etc. As such, it should be incorporated into the design of a development and not as an afterthought.

6.5.7 It shall be demonstrated that the cooling hierarchy, below, has been followed for all development where windows are required to be closed to attain adequate internal sound levels.

- 1) reduce the amount of heat entering a building through orientation, shading, high albedo materials, fenestration, insulation and the provision of green infrastructure;
- 2) minimise internal heat generation through energy efficient design;
- 3) manage the heat within the building through exposed internal thermal mass and high ceilings;
- 4) provide passive ventilation;
- 5) provide mechanical ventilation;
- 6) provide active cooling systems. It is considered that Good Acoustic Design, as advocated within National Policy, includes ventilation and overheating assessment and should be a fundamental consideration in the design of schemes.

6.5.8 The advice set out in the BRE document 'Sound Control for Homes' (1993) should be considered.

6.5.9 Specific points for consideration include:

- Provide appropriate distances between noise sensitive developments and noise sources; Planning Noise Advisory Document: Sussex 2023 32
- Land zoning to separate noisy uses from noise sensitive uses, for example, avoiding the siting of children's playing areas next to accommodation for the elderly;
- Careful orientation of building layout, such as at right angles to the noise source;
- Introduction of single aspect buildings, where cross ventilation is not required to mitigate overheating;
- Internal layout of dwellings, through the location of non-habitable rooms such as bathrooms, kitchens and circulation areas as buffers between the noise source and habitable rooms;
- Screening by non-noise sensitive structures or barrier blocks such as garages and walls;
- The introduction of acoustic screening such as bunding/embankments, fencing and walling;
- Protection of external residential amenity areas by positioning them towards the centre of the development sites;
- The use of vegetation, to include trees and foliage, is not an effective form of acoustic screening and will not be accepted as a suitable mitigation.

6.5.10 The submission of details of layout and design should be supported by a scheme showing details of mitigation techniques. Computer modelling which shows the impact of the design measures should be produced. See Section 2.4 for information on prediction methods and modelling.'

It should be noted that the requirements of paragraph 6.5.5 have been superseded following the publication of the Association of Noise Consultants and Institute of Acoustics 'Approved Document O Noise Guide' (Version 1.1. November 2024).

