

Report

Land off High Street, Sutton Benger

Noise Assessment

For Charles Church

28 November 2025

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1 Introduction

1.1 Scope and Background

1.1.1 Noise Consultants Ltd (NCL), part of Logika Group, has been commissioned by Charles Church to undertake a noise assessment in support of a reserved matters application (RMA) for an outline approved residential development (the 'Proposed Development') on Land off High Street, Sutton Benger (the 'Site').

1.1.2 The Site falls within the administrative boundary of Wiltshire Council (WC). The outline planning application¹ was supported by a Noise Screening Report (NSR)² prepared by NCL, which found that road traffic from the M4 and the B4069 was the main source of environmental noise impacting the Development. The outline planning application was refused on grounds other than noise, and later approved at appeal³.

1.1.3 The purpose of this noise assessment is to support a reserved matters planning application to WC in connection with Condition 23 of the Schedule of Conditions contained within the Inspector's Decision Notice, which states:

"23. An Acoustic Design Statement [ADS], as defined by the [ProPG] Professional Practice Guidance: Planning and Noise – New Residential Development (May 2017), for protecting the proposed development from noise from the M4 motorway and B4069 shall be submitted to and approved by the local planning authority; all works which form part of the scheme shall be completed before any part of the noise sensitive development is occupied.

For the avoidance of doubt, using closed windows to achieve the internal noise level target shall only be considered once all other good acoustic design acoustic mitigation (sic) measures have been utilised."

1.1.4 There is some ambiguity in the condition wording, as a high-level ADS was included in the NSR accompanying the outline application that was necessarily based on an illustrative layout (development framework plan, DFP) that constrained residential developable areas to specific areas of the Site, rather than precise locations and orientation of dwellings and gardens.

1.1.5 The condition requires a further ADS to be prepared to support the submission of a detailed layout under reserved matters. Therefore, this report presents the results of a baseline noise survey and noise modelling exercise and demonstrate how principles of good acoustic design have been incorporated into the layout and design of the development and identifies, where necessary, additional noise mitigation measures required to achieve the relevant noise criteria for the proposed dwellings.

1.1.6 This report has been prepared in accordance with National legislation, policies, and guidance and by reference to appropriate British and International standards, which are summarised in **Appendix A1**, as well as Wiltshire Council Planning Consultation Guidance Note (PCGN) and its Design Hierarchy. A glossary of terms is provided in **Section A1**.

1.2 Existing Site and Environs

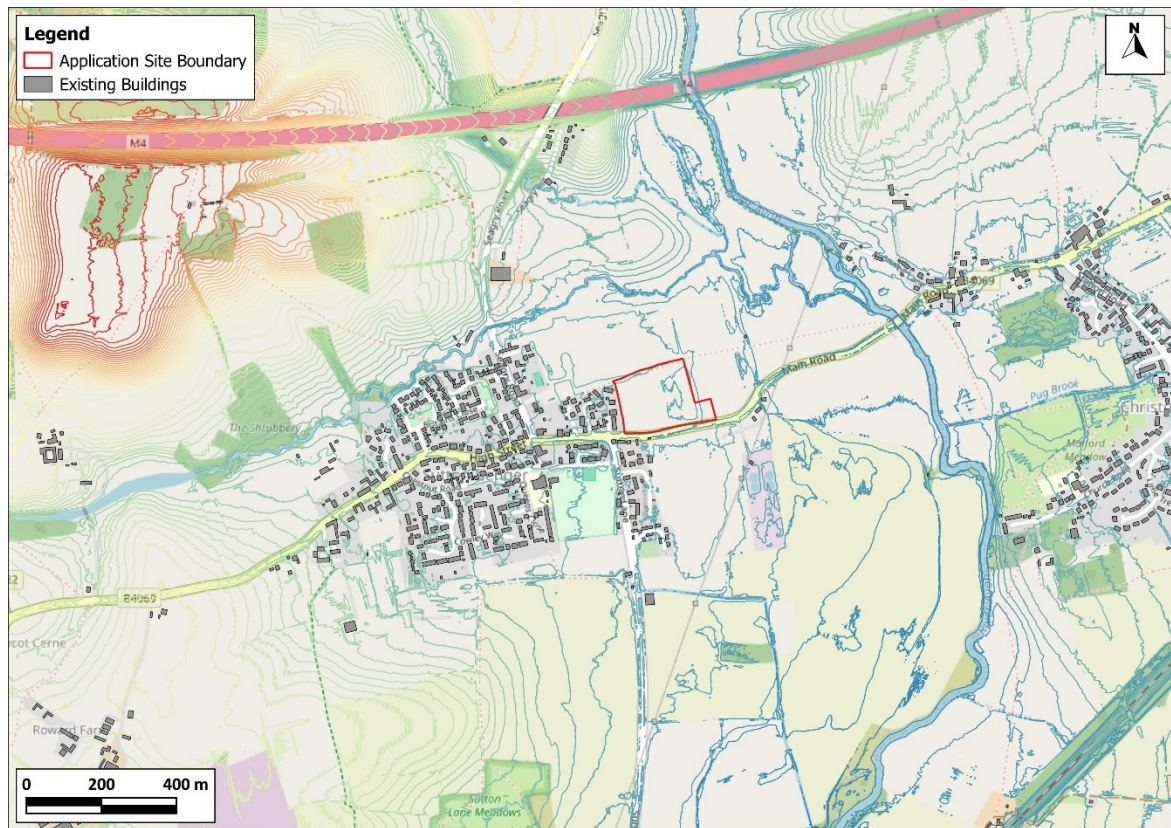
The Site location and application boundary are shown in **Figure 1-2**, and is an open field on the eastern edge of Sutton Benger village. The Site is bounded to the north and east by open fields, with the M4 motorway located approximately 730 metres north of the main body of the Site. To the south, the Site is bordered by the B4069 (Main Road), and to the west by existing residential development.

¹ Wiltshire Council planning application ref: PL/2023/06204

² Noise Consultants Ltd (2023). Report ref: 14477C-20-R01-04, (July 2023)

³ PINS ref: APP/Y3940/W/24/3349828

The Site is generally at grade with the surrounding land; however, as illustrated in **Figure 1-2**, sections of the M4 are situated within cuttings through undulating terrain, reducing any direct line of sight to, and therefore road traffic noise from the M4 to the north.



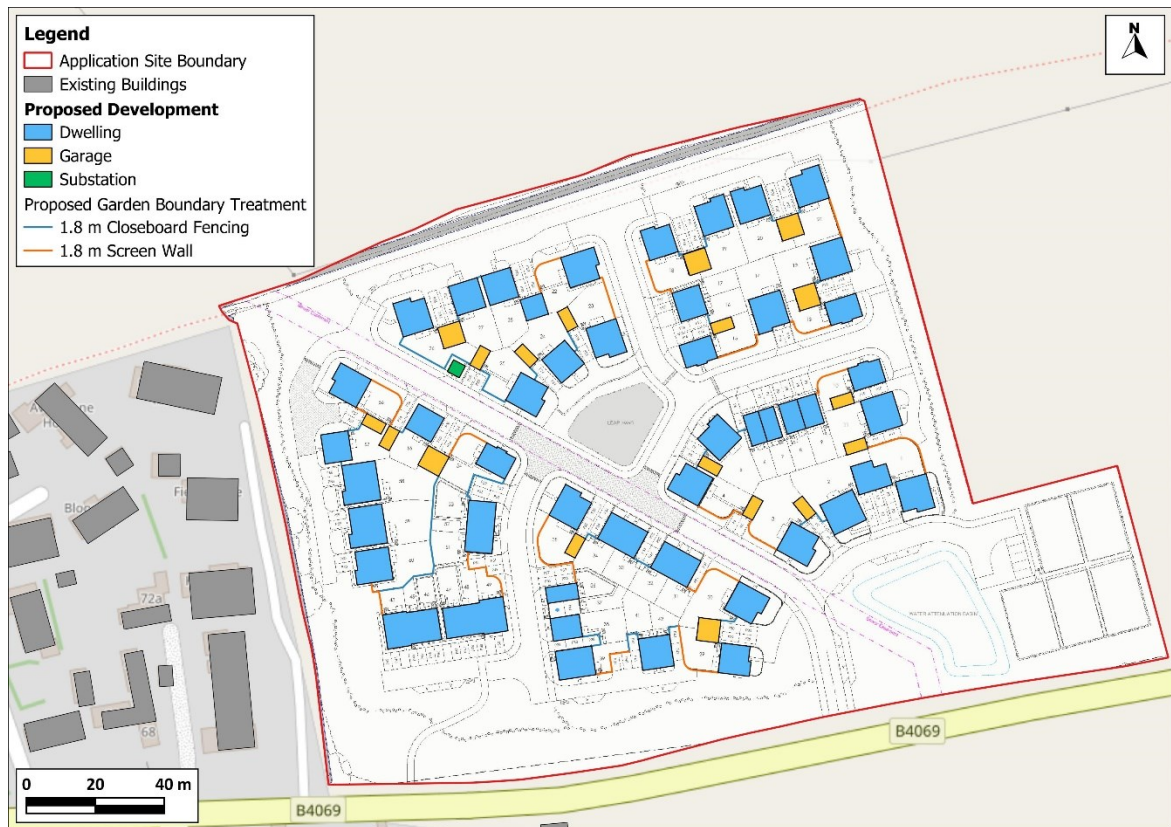
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Figure 1-1: Site Location and Proposed Development Layout

1.3 Proposed Development Details

- 1.3.1 The proposed Development comprises 60 dwellings, centrally located LEAP⁴, water attenuation basin towards the southern boundary, and access from the B4069. The outer boundary of gardens comprises either 1.8 m high close boarded timber fencing or screen walls.

⁴ Local equipped area for play



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Figure 1-2: Proposed Development Layout

1.4 Local Authority

Local Policy and Guidance

- 1.4.1 The Site is located within the administrative boundary of Wiltshire Council (WC).

Wiltshire Council Core Strategy Plan (2015)

- 1.4.2 The Wiltshire Council Core Strategy Plan was adopted in January 2015 and includes the following policies in respect of noise, which are relevant to the Proposed Development:

- Core Policy 51 refers to Landscape and states the following:
 - “Development should protect, conserve and where possible enhance landscape character and must not have a harmful impact upon landscape character, while any negative impacts must be mitigated as far as possible through sensitive design and landscape measures. Proposals should be informed by and sympathetic to the distinctive character areas identified in the relevant Landscape Character Assessment(s) and any other relevant assessments and studies. In particular, proposals will need to demonstrate that the following aspects of landscape character have been conserved and where possible enhanced through sensitive design, landscape mitigation and enhancement measures:
 - vii. Tranquillity and the need to protect against intrusion from light pollution, noise, and motion.”
- Core Policy 57 refers to Ensuring high quality design and place shaping and states the following:
 - “A high standard of design is required in all new developments, including extensions, alterations, and changes of use of existing buildings. Development is expected to create a

strong sense of place through drawing on the local context and being complementary to the locality. Applications for new development must be accompanied by appropriate information to demonstrate how the proposal will make a positive contribution to the character of Wiltshire through:

- *vii. having regard to the compatibility of adjoining buildings and uses, the impact on the amenities of existing occupants, and ensuring that appropriate levels of amenity are achievable within the development itself, including the consideration of privacy, overshadowing, vibration, and pollution (e.g. light intrusion, noise, smoke, fumes, effluent, waste or litter)."*

Wiltshire Council Local Plan (Pre-submission Draft, 2020-2038)

- 1.4.3 Wiltshire Council's pre-submission draft local plan (the 'Plan') sets out Wiltshire Council's strategic vision for growth, providing land to meet objectively assessed development needs, providing for infrastructure, environmental improvements and necessary mitigating and adapting measures to tackle the impacts of climate change.
- 1.4.4 This Plan is central to the strategic development plan for Wiltshire, from which other strategic and non-strategic plans flow. The current development plan includes other plans that allocate sites for development for new homes across Wiltshire. The Plan seeks to guide future development to ensure that communities have a balance of jobs, services, facilities and homes. This Plan ensures that housing needs are met and identifies land for jobs and services to ensure that Wiltshire remains strong and prosperous.

North Wiltshire Local Plan (2011) - Saved Policy NE18

- 1.4.5 In June 2009, the Secretary of State issued a direction setting out the policies within the North Wiltshire Local Plan 2011 that can be 'saved' beyond 27 June 2009. Saved Policy NE18 (Noise and Pollution) is relevant to the application and states:

"Development will only be permitted where it would not generate, or itself be subject to, harm upon public health or cause pollution to the environment by the emission of excessive noise, light intrusion, smoke, fumes, other forms of air pollution, heat, radiation, effluent or vibration"

Wiltshire Council Planning Consultation Guidance Note – Noise and Vibration (PCGN)

- 1.4.6 Wiltshire Council have produced a technical guidance document detailing their interpretation of how various noise guidance and standards interact with national planning policy.
- 1.4.7 In summary, the note sets out the noise survey and assessment methodology required for any new development, a hierarchy of good acoustic design principles and how they should be considered during the development design, target noise levels, and how ventilation strategies need to be considered for new residential development. Relevant extracts of WC's PCGN are summarised in **Appendix A5.4.**

Consultation

- 1.4.8 NCL contacted WC's Environmental Control and Protection Team by email on 08 October 2025, setting out the proposed survey and assessment methodology. Whilst the proposed assessment methodology was not questioned, NCL was referred to the PCGN, and it was confirmed that a 5 dB relaxation of the PCGN target noise levels would no longer be permitted under natural ventilation conditions for this Development, as was previously agreed in respect of other residential development within WC's administrative boundary.

2 Assessment Approach

2.1 Future Baseline Conditions

- 2.1.1 Road traffic is the main source of noise across the Site. An increase of traffic flows of 25 % would be necessary to increase existing $L_{Aeq,T}$ noise levels by 1 dB(A), the minimum perceptible change. This is highly unlikely, and therefore, the future noise climate attributable to road traffic is not expected to be materially different from current conditions.
- 2.1.2 The proposed electrical substation that serves the proposed Development is not expected to be of a scale that would generate any potentially significant adverse levels of noise outside the proposed dwellings.
- 2.1.3 Therefore, representative future baseline conditions have been determined by way of a baseline noise measurement survey conducted between 11:20 on Friday 19 and 12:22 on Tuesday 23 September 2025.

Baseline Noise Survey

- 2.1.4 The noise survey was undertaken during the daytime (07:00–23:00) and night-time (23:00–07:00) periods over a 5-day period, at three part-attended monitoring locations. Short-term attended measurements were also undertaken at one location during the daytime. The survey was specifically designed to quantify road traffic noise levels to support the noise modelling assessment and to inform the design of the proposed development.
- 2.1.5 The baseline noise conditions are described in **Section 3**. Full details of the baseline noise measurement survey are provided in **Appendix A2**.

Road Traffic Noise Modelling

- 2.1.6 The results of the noise measurement survey have been used to calibrate a road traffic noise model of the Site. Road traffic noise emissions were modelled using the results of the baseline noise measurements. The noise model has been prepared using DGMR's iNoise, which implements the ISO 9613-2⁵ calculation methodology. Noise modelling assumptions are provided in **Appendix A3**.

2.2 Assessment

- 2.2.1 Following a good acoustic design process is an implicit part of achieving good design as required by Government planning and noise policy, set out in the Noise Policy Statement for England (NPSE, 2010) and the National Planning Policy Framework (NPPF, 2025), and WC's PCGN.
- 2.2.2 A good acoustic design process should achieve optimal acoustic conditions, both internally and within external amenity spaces, and should avoid "unreasonable" acoustic conditions. Good acoustic design should prevent "unacceptable" acoustic conditions and embrace integrated solutions to deliver the optimum acoustic outcome for a particular site without design compromises that will adversely affect living conditions and the quality of life of the inhabitants or other sustainable design objectives and requirements.
- 2.2.3 The assessment criteria set out in the following sections have been derived in accordance with the relevant guidance and appropriate acoustics standards (**Appendix A1**), as adopted for other recent residential developments within WC's administrative boundary.

⁵ British Standards Institute (2024) ISO 9613-2:2024 Acoustics — Attenuation of sound during propagation outdoors Part 2: Engineering method for the prediction of sound pressure levels outdoors.

- 2.2.4 A Stage 1 assessment under ProPG⁶ is intended to provide an initial indication of the suitability of a site for residential development at the planning stage, typically where limited design information is available.
- 2.2.5 As the principle of development has already been established, the assessment therefore proceeds directly to Stage 2 of ProPG, which requires the preparation of an ADS. The ADS provides a more detailed appraisal of the site's acoustic environment, outlining the relevant internal and external noise criteria applied and demonstrating how good acoustic design has been achieved.
- 2.2.6 The following sections outline the relevant target noise criteria considered in the assessment.

Assessment Criteria

Target Noise Levels – Habitable Rooms

- 2.2.7 Target internal noise levels relate to habitable rooms (bedrooms and living rooms) under whole dwelling ventilation conditions⁷ and are based on the internal noise guidelines set out in BS 8233:2014⁸ and WC's PCGN, and are presented in **Table 2-1**.
- 2.2.8 There is no requirement, with reference to BS 8233:2014 and the Building Regulations Approved Document F – Ventilation (ADF), for the target internal noise levels to be achieved with open windows.
- 2.2.9 However, WC's PCGN states that;
- Strategies that rely on closed windows to mitigate transport noise will only be considered if all other reasonable measures in the PCGN hierarchy have been utilised and only for an absolute minimum number of rooms.
 - Where closed windows are required to achieve WC's internal target noise levels, the ventilation scheme shall provide thermal comfort during summer months, and consequently, trickle vents are not sufficient in such circumstances. Where an alternative form of natural ventilation is not practicable, then a Mechanical Ventilation Heat Recovery (MVHR) system with a fully automated summer bypass may be acceptable.
- 2.2.10 Previously in relation to other developments, WC have agreed with NCL that the target noise levels should ideally be met on at least one elevation of a dwelling on an open windows basis, and that a 5 dB relaxation of the internal ambient ($L_{Aeq,T}$) noise levels may be acceptable under the open window condition in more challenging noise climates that are dominated by transportation noise. This relaxation aligns with guidance found in BS 8233:2014 which states: "where development is considered necessary or desirable, despite external noise levels above WHO⁹ guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved". However, WC are no longer willing to accept this relaxation in relation to the proposed Development.
- 2.2.11 The initial assumptions on the sound insulation performance of the building envelope constructions are provided in **Appendix A6.1**.
- 2.2.12 For living room and bedroom volumes and window sizes, a composite façade construction comprising a brick and block cavity wall, standard double glazing and a non-acoustic background ventilator provides a sound level difference from outside to inside of approximately 23 dB(A).

⁶ Association of Noise Consultants (ANC), the Institute of Acoustics (IOA) and the Chartered Institute of Environmental Health (CIEH), (2017) ProPG Planning & Noise – Professional Practice Guidance on Planning & Noise. Available at: <https://www.ioa.org.uk/publications/propg>

⁷ As required by The Building Regulations Approved Document F - Ventilation.

⁸ British Standard 8233:2014 Guidance on sound insulation and noise reduction for buildings.

⁹ Guidelines for Community Noise' (WHO GCN, 1999)

- 2.2.13 Where open windows are considered in the assessment, a sound level difference from outside to inside of 13 dB(A) has been assumed for a partially open window¹⁰. This equates to an equivalent open area of approximately 2% of the floor area of the associated habitable room.

External Daytime Noise Levels in Private Gardens

- 2.2.14 Target external noise levels relate to private amenity spaces (i.e. private gardens for the sole use of residents of the Development) are based on the guidance set out in BS 8233:2014 and WC's PCGN, and are presented in **Table 2-1**.

Table 2-1: Target Noise Levels

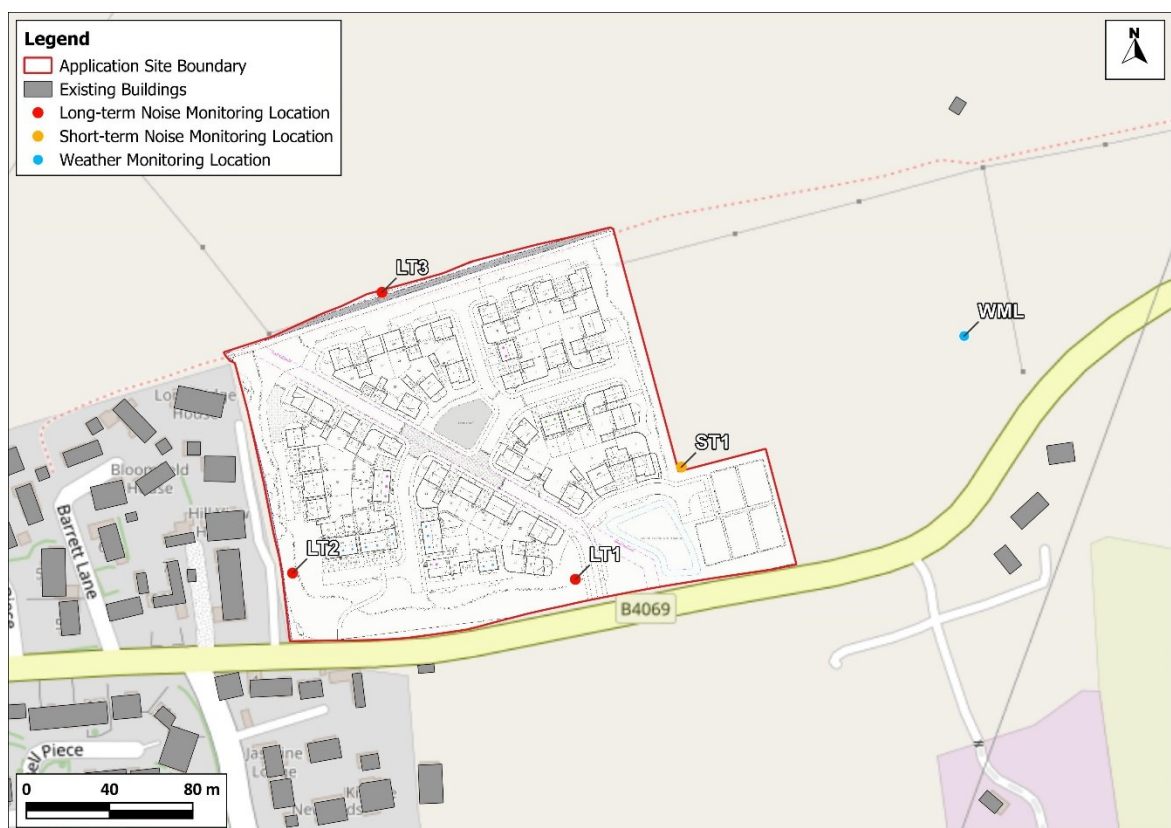
Location	Activity	Daytime Noise Level (07:00 – 23:00)	Night-time Noise Level (23:00 – 07:00)
Living Room	Resting	≤ 35 dB L _{Aeq,16hr}	-
Dining Room	Dining	≤ 40 dB L _{Aeq,16hr}	-
Bedroom	Sleeping (daytime resting)	≤ 35 dB L _{Aeq,16hr}	≤ 30 dB L _{Aeq,8hr} ≤ 45 dB L _{A,max} (normally less than 10 times per night)
Private Gardens	Resting	≤ 50 dB L _{Aeq,16hr}	-

¹⁰ Waters-Fuller, T., Lurcock, D., Mackenzie, R. & MacKenzie, R. (2007). NANR 116: 'Open/Closed Window Research' Sound Insulation Through Ventilated Domestic Windows.

3 Baseline Conditions

3.1 Noise Measurement Survey

- 3.1.1 **Figure 3-1** presents the noise monitoring locations, which are described in **Table 3-1** below. The noise monitoring locations were chosen to provide an understanding of the noise conditions across the site and, where necessary, establish emission levels for the M4 and B4069 for use in the road traffic noise modelling.
- 3.1.2 Any extraneous noise excluded from the survey data obtained at each location is also summarised in **Table 3-1**.
- 3.1.3 Full details of the baseline noise survey are provided in **Appendix A2**. Photographs of the noise monitoring locations are provided in **Appendix A2.2**.



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Figure 3-1: Baseline Survey Monitoring Locations

Table 3-1: Summary of Noise Measurement Locations

Location	Description	Observations
LT1	Part-attended, free-field measurement 1.5m above ground. Approximately 10m from the southern Site boundary. Location chosen to measure road traffic noise from the B4069.	Road traffic on the B4069 was the main source of noise throughout the day and night. Distant road traffic from the M4 was audible during extended lulls of road traffic on the B4069. Periods with construction noise from nearby site and loud birdsong have been excluded.

LT2	Part-attended, free-field measurement 1.5m above ground. Approximately 5m from the west Site boundary, and 33m from the southern Site boundary. Location chosen to measure road traffic noise levels at a location representative of dwellings set back from the B4069.	Road traffic on the B4069 was the main source of noise throughout the day and night. Distant road traffic from the M4 was audible in long lulls of road traffic on the B4069. Periods with construction noise, loud birdsong, and a lawnmower have been excluded.
LT3	Part-attended, free-field measurement 1.5m above ground on the northern Site boundary. Location chosen to measure road traffic noise from the M4. Duration limited to 24 hours due to the microphone being knocked over.	Road traffic on the M4 was the main source of noise throughout the day and night. Periods with construction noise, loud birdsong, and a lawnmower have been excluded. The majority of data has been excluded due to interference (possibly by wildlife) with the tripod and microphone assembly.
ST1	Attended, free-field measurement 1.5m above ground on the Site's eastern boundary, and 55 m from the southern boundary with the B4069. Location chosen to measure road traffic noise from the B4069 and M4.	Road traffic on the B4069 was the main source of noise. Distant road traffic from the M4 was audible during extended lulls of road traffic on the B4069.

- 3.1.4 A weather station was installed at location WML, away from any existing structures or wooded areas to ensure reliable wind speed and direction data were obtained. Measurements during high winds or rain have been excluded at all locations. Full details of the weather monitoring and excluded periods is provided in **Appendix A2.3**.
- 3.1.5 The sound level meters were field calibrated before and after each measurement, with no significant drift (i.e. >0.5 dB) in calibration recorded. Windshields were fitted to the microphones to minimise the effects of any wind-induced noise for the duration of the survey.
- 3.1.6 Details of the monitoring instrumentation (model/serial numbers and calibration details) are presented in **Appendix A2.4**. All noise instrumentation was configured to report the environmental parameters L_{eq} , L_{10} , L_{90} and L_{Fmax} in octave bands and A-weighted broadband levels in 2-minute periods, at a 100ms sample rate.
- 3.1.7 The results at long-term noise measurement locations are summarised in **Table 3-2**, rounded to the nearest decibel. The full noise measurement survey results are presented in **Appendix A1**. The tripod supporting the sound level meter microphone at location LT3 was knocked over on Saturday 20 September, and therefore, all subsequent data has been excluded from the assessment.

Table 3-2: Summary of Unattended Measured Free-Field Noise Levels

Location	Period	$L_{Aeq,T}$ (dB)	L_{AFmax} (10 th Highest) (dB)
LT1	Daytime (07:00 – 23:00)	55	-
	Night-time (23:00 – 07:00)	51	68
LT2	Daytime (07:00 – 23:00)	42	-
	Night-time (23:00 – 07:00)	49	53
LT3	Daytime (07:00 – 23:00)	47	-
	Night-time (23:00 – 07:00)	37	50

- 3.1.8 The result of the attended short-term noise measurements is presented in **Table 3-3**, rounded to the nearest decibel.

Table 3-3: Summary of Attended Measured Free-Field Noise Levels

Location	Period	L _{Aeq,T} (dB)
ST1	Daytime (11:20 – 12:20)	47

4 Assessment and Recommendations

Good Acoustic Design

- 4.1.1 The Development layout has considered existing road traffic noise levels across the Site, the ADS of the NSR submitted with the application, and the noise mitigation hierarchy of WC's PCGN, as follows.

Hierarchy 1: Control of Noise at Source

- 4.1.2 The primary source of environmental noise impacting the Development is road traffic. Achieving a meaningful reduction of road traffic noise exposure would require a significant reduction of the speed limit of the M4 and B4069, which is not considered to be reasonably practicable.

Hierarchy 2: Site Layout and Design

Distance Attenuation

- 4.1.3 Where a noise source and receptor are in close proximity, the provision of additional distance attenuation can be effective. However, at large distances, the relative benefits increasingly diminish, and distance attenuation tends to be a relatively inefficient mitigation approach.
- 4.1.4 Further increasing the already large separation distance between the M4 is therefore not beneficial. However, the distance between residential properties and the B4069 to the south of the Site has been maximised where practicable, having regard to the constraints of the DFP submitted with the outline application, and other additional design constraints.

Existing Topography Acoustic Screening and Noise Barriers

- 4.1.5 The Site is generally at grade with its boundaries. Consequently, the Site's existing topography does not provide any acoustic screening that could be exploited to minimise road traffic noise exposure of dwellings and their gardens.
- 4.1.6 Given the separation distance to the motorway, a noise barrier would typically need to be unfavourably high and long (i.e. the full length of the northern Site boundary) to provide a meaningful reduction of road traffic on the M4 and is only likely to be effective at ground floor. Importantly, the level of road traffic noise from the M4 is not at a level that would require acoustic screening.
- 4.1.7 The installation of additional noise barriers between the dwellings and the B4069 would be expected to achieve some reduction in road traffic noise levels at ground-floor façades of the most exposed properties. However, the inclusion of proposed allotments and drainage features along the southern boundary, together with landscape and visual impact considerations, limits the feasibility of implementing such measures and their efficacy.

Development Layout

- 4.1.8 The proposed Development layout has been designed to minimise the propagation of transportation noise across the site. This has included the use of building massing towards the Site boundaries to provide acoustic screening of road traffic noise for dwellings and gardens further into the site.

Hierarchy 3: Dwelling Layout and Orientation

External Dwelling Layout

- 4.1.9 The Development layout has considered the need to minimise daytime noise levels in rear gardens. Consequently, the vast majority of gardens are self-screened by their respective dwellings.

Internal Dwelling Layout

- 4.1.10 It is neither practicable nor viable (or required to meet the noise targets in the majority of cases for this development), to locate all habitable rooms on the quietest elevations of all dwellings. However, where practicable, rooms that are less sensitive to noise, such as utility rooms, bathrooms, kitchen/dining rooms, have been located on the noisiest elevations of proposed dwellings.

Hierarchy 4: Planning Restrictions

- 4.1.11 The residential aspects of the development will not generate significant levels of noise. Therefore, the use of planning restrictions is not applicable.

Hierarchy 5: Building Envelope

- 4.1.12 Having optimised the layout of the proposed Development, having regard to other design constraints, including the efficient use of land, drainage and viability, achieving WC's target internal noise criteria on an open window basis would be impractical for some areas of the Site. This is commonly the case for development throughout the UK.
- 4.1.13 Therefore, for some dwellings of the proposed layout, there is a reliance on closed windows to achieve WC's target internal noise criteria.
- 4.1.14 Nonetheless, local policy and WC's PCGN do not preclude windows of habitable rooms on more noise-exposed elevations of proposed dwellings, provided good acoustic design measures have been incorporated into the Development.

Internal Noise Levels

Daytime and Night-time $L_{Aeq,T}$ Internal Noise Assessment

- 4.1.15 Based on the initial sound level difference assumptions for a partially open window (13 dB(A)) and standard double-glazed windows and non-acoustic background ventilators (23 dB(A)), **Figure 4-1** presents the daytime $L_{Aeq,16hr}$ noise contours for the Development, colour-coded to indicate areas where the target internal daytime noise level will likely be achievable. **Figure 4-2** presents the corresponding night-time $L_{Aeq,8hr}$ noise contours.



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Figure 4-1: Daytime $L_{Aeq,16hr}$ Internal Noise Level Assessment



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Figure 4-2: Night-time $L_{Aeq,8hr}$ Internal Noise Level Assessment

4.1.16 **Figure 4-1** and **Figure 4-2** show that the target internal noise levels ($L_{Aeq,T}$);

- Are achievable with open windows across the majority of the Site;
- Daytime noise levels in habitable rooms on the ground floor are achievable with open windows on at least one elevation of all but one dwellings;
- Night-time noise levels require windows to be closed some dwellings closest to the B4069; and
- Enhanced glazing and acoustic background ventilation may be required for bedrooms of a very small number of dwellings closest to the A4069.

Night-time L_{AFmax} Internal Noise Assessment

4.1.17 **Figure 4-3** presents the night-time L_{AFmax} noise contours (based on the tenth highest measured value) for the Development, colour-coded to indicate dwellings where the target internal night-time noise level is likely achievable, assuming partially open windows and standard double glazing and non-acoustic background ventilators.



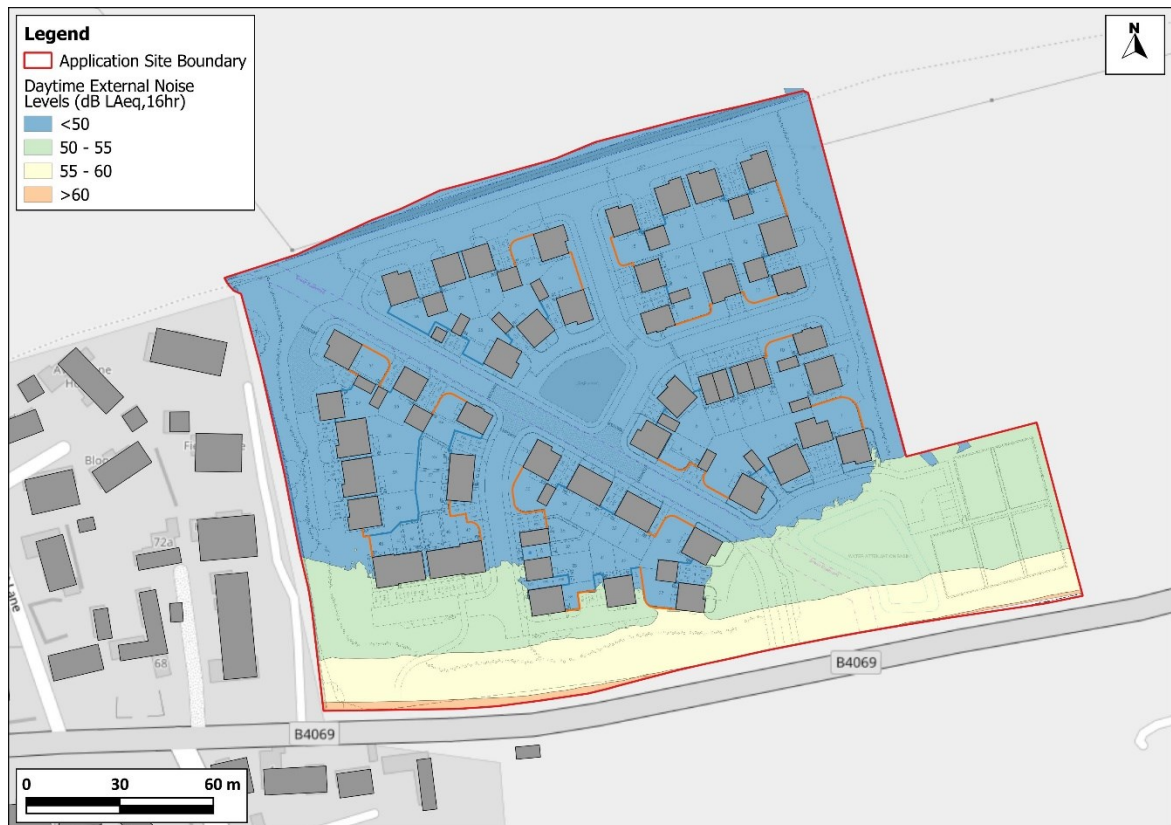
Contains OpenStreetMap data © OpenStreetMap contributors.

Figure 4-3: Night-time L_{AFmax} Road Traffic Noise Contours

4.1.18 **Figure 4-3** indicates that the internal night-time target noise levels would be achieved in the vast majority of bedrooms with windows open, and that enhanced glazing would not be necessary.

External Daytime Noise Levels in Amenity Spaces

4.2 **Figure 4-4** presents the external noise level contours in the context of external noise levels for residential amenity. The results of the modelling indicate that daytime road traffic noise levels in all proposed rear gardens would achieve the target noise level (≤ 50 dB $L_{Aeq,16hr}$) with the proposed garden boundary treatment. Therefore, additional noise mitigation measures are not considered necessary for rear gardens.



Contains OpenStreetMap data © [OpenStreetMap](https://www.openstreetmap.org/) contributors.

Figure 4-4: Daytime External Amenity Noise Levels

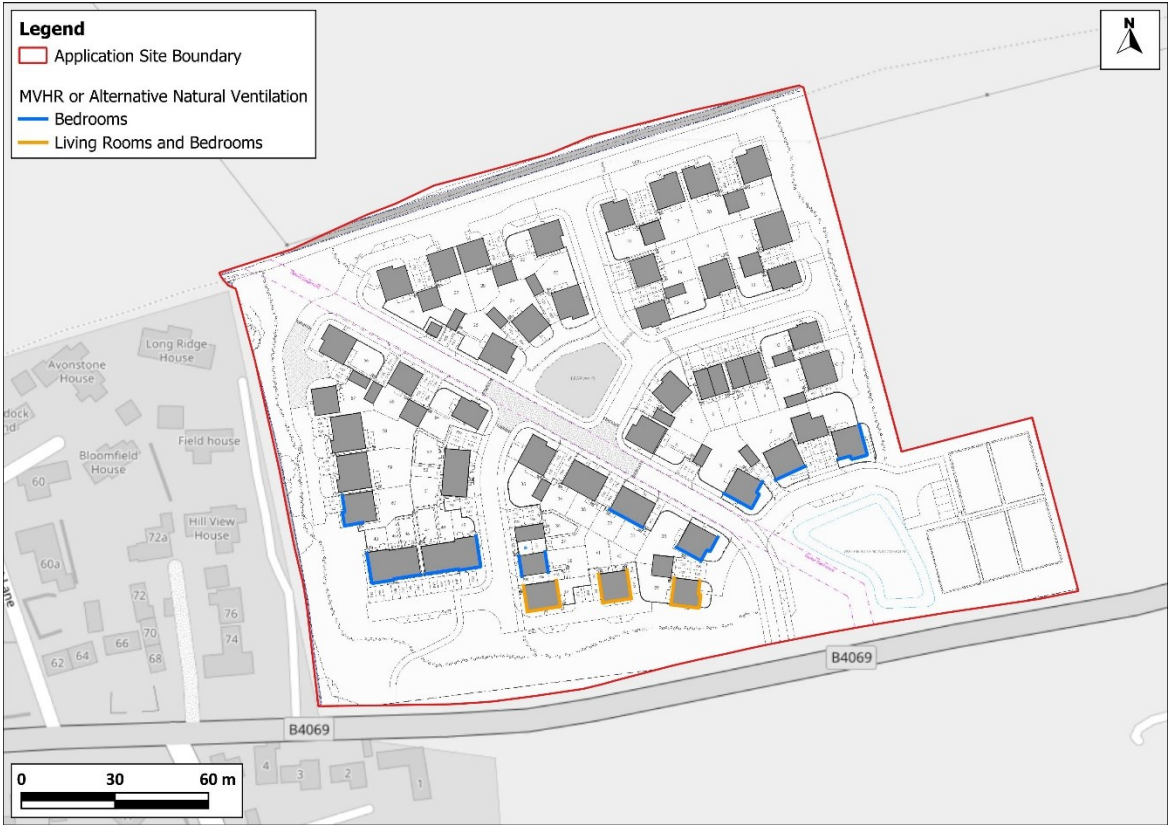
Recommendations

Glazing

- 4.2.1 For elevations on which windows are required to be closed to achieve the target noise levels, noise ingress calculations are undertaken using the rigorous calculation methodology set out in Annex G.2 of BS 8233:2014 (as required by WC's PCGN).
- 4.2.2 The calculations indicate that standard double-glazed windows and non-acoustic background ventilators (where required) would be suitable.

Ventilation

- 4.2.3 WC's PCGN requires dwelling ventilation schemes to provide thermal comfort during summer months, where closed windows are required to achieve the target noise levels, and that a MVHR system with a fully automated summer bypass may be acceptable where an alternative form of natural ventilation is not practicable.
- 4.2.4 Based on the adopted target noise levels, results of the noise survey and modelling, **Figure 4-5** shows dwelling elevations on which alternative ventilation (i.e. MVHR or alternative natural ventilation) is required. It must be acknowledged that issues relating to overheating are addressed through compliance with Building Regulations, specifically Approved Document O.



Contains OpenStreetMap data © [OpenStreetMap](#) contributors.

Figure 4-5: Recommended Alternative Ventilation for Habitable Rooms

5 Conclusion

- 5.1.1 This report describes the potential impact of noise on the proposed residential development (the "Development") on land off High Street in Sutton Benger (the 'Site'). The assessment has been carried out by Noise Consultants (NCL), part of Logika Group.

Existing Site

- 5.1.2 The Site is an open field on the eastern edge of Sutton Benger village, bounded to the north and east by open fields, with the M4 motorway located approximately 730 metres north of the main body of the Site. To the south, the Site is bordered by the B4069 and to the west by existing residential development.

Proposed Development

- 5.1.3 The proposed Development comprises 60 dwellings, centrally located LEAP, water attenuation basin towards the southern boundary, and access from the B4069. The outer boundary of gardens comprises either 1.8 m high close boarded timber fencing or screen wall.

Noise Sources

- 5.1.4 The dominant contributor to noise on this Site is road traffic noise from the B4069 and M4 to the north. The future noise climate attributable to road traffic is not expected to be materially different from current conditions. The proposed electrical substation serving the proposed Development is not expected to generate any potentially significant adverse levels of noise outside the proposed dwellings.

Baseline Survey and Noise Modelling

- 5.1.5 To quantify current levels of ambient noise on the Site, an part-attended baseline noise survey was conducted over a period of 5 days, supplemented by a short-term attended noise measurement.
- 5.1.6 The results of the noise measurement survey have been used to calibrate a road traffic noise model of the Site.

Noise Assessment

- 5.1.7 The target internal noise levels are achievable in the vast majority of dwellings with open windows. Where windows of these dwellings need to be closed to achieve the target noise criteria, the provision of an alternative form of natural ventilation or Mechanical Ventilation Heat Recovery (MVHR) system (with fully automated summer bypass) or alternative natural ventilation is required, which, given the wording of WC's PCGN, and the minimal number of habitable rooms requiring windows to be closed, should be acceptable given WC's noise mitigation hierarchy has been followed. Potential issues relating to overheating are addressed through compliance with Building Regulations, specifically Approved Document O.
- 5.1.8 With reference to the assessment of external noise levels in amenity spaces, no additional noise mitigation for rear gardens is required.

Conclusions

- 5.1.9 Overall, the Development design has followed good acoustic design principles to ensure that the optimum acoustic outcome for the Site has been achieved, having regard to the constraints of the DFP submitted with the outline application, and other additional design constraints. The Development is capable of achieving acceptable internal and external target noise levels, as set out in PCGN.
- 5.1.10 If necessary and appropriate, the need to ensure any mitigation measures are incorporated into the Development can be secured by a suitably worded planning condition.

6 Appendices

A1 Glossary

Term	Definition
dB	Decibel. The logarithmically scaled measurement unit of sound.
A-weighting	Frequency weighting applied to measured sound in order to account for the relative loudness perceived by the human ear.
Ambient Sound Level, $L_{Aeq,T}$	A-weighted equivalent continuous sound level over a given time period. It is the sound level of a steady sound that has the same energy as a fluctuating sound over the same time period. Daytime is typically 07:00 – 23:00 and night-time is typically 23:00 – 07:00.
Background Sound Level $L_{A90,T}$	The A-weighted sound level exceeded for 90% of the measurement period. Often referred to as the background sound level.
$D_{n,e,w}$	Standardised (normalized to a reference reverberation time of 0.5 s), weighted (single-number quantity representing a spectra of values), sound level difference between an external location and a receiving room.
Free-field Sound Level	A sound level which is measured or calculated in the open without any reflections from nearby surfaces except the ground. Measurements are typically carried out at 1.2 m to 1.5 m above ground level and at least 3.5 m from other reflective surfaces such as buildings which is in accordance with British Standard 7445-2: 1991 <i>Description and measurement of environmental noise - Part 2: Guide to the acquisition of data pertinent to land use</i> .
L_{Amax}	The A-weighted maximum recorded noise level during a measurement period. L_{AFmax} noise levels are measured using a fast (F) measurement weighting (125 ms) and L_{ASmax} noise levels are measured using a slow (S) measurement weighting (1 s).
R_w	The weighted Sound Reduction Index which characterises the airborne sound insulation of a building element over a range of frequencies with a single number quantity.
Sound Reduction Index Spectrum Adaptation Terms, C and C_{tr}	Spectrum adaptation terms that use a standard reference curve to determine the weighted value of airborne sound insulation. C and C_{tr} take into account different source spectra, where C considers the A-weighted pink noise spectrum and C_{tr} considers the A-weighted urban traffic noise spectrum.

A2 Baseline Survey Details

A2.1 Overview

A2.1.1 All noise measurements were conducted, where possible, in accordance with BS 7445-1:2003 'Description and measurement of environmental noise. Guide to quantities and procedures' (BS 7445, 2003).

A2.2 Photographs of Noise Measurement Locations



Figure A2-1: Noise Monitoring Location LT1 (Facing South)



Figure A2-2: Noise Monitoring Location LT2 (Facing South)



**Figure A2-3: Noise Monitoring Location LT3
(Facing East)**



**Figure A2-4: Noise Monitoring Location ST1
(Facing West)**



**Figure A2-5: Weather Monitoring Location WML
(Facing South)**

A2.3 Survey Conditions

- A2.3.1 A weather station was located away from any existing buildings or wooded areas. **Figure A2-6** presents the weather conditions during the noise survey period.
- A2.3.2 The weather conditions from 19 September to 23 September were generally dry with temperatures between 0°C and 24°C. Noise levels measured during periods of unfavourable weather conditions (rain on the afternoon of 20 September, and where wind speeds exceeded 5 ms⁻¹ in the evening of 20 September 2025) have been excluded from the assessment.

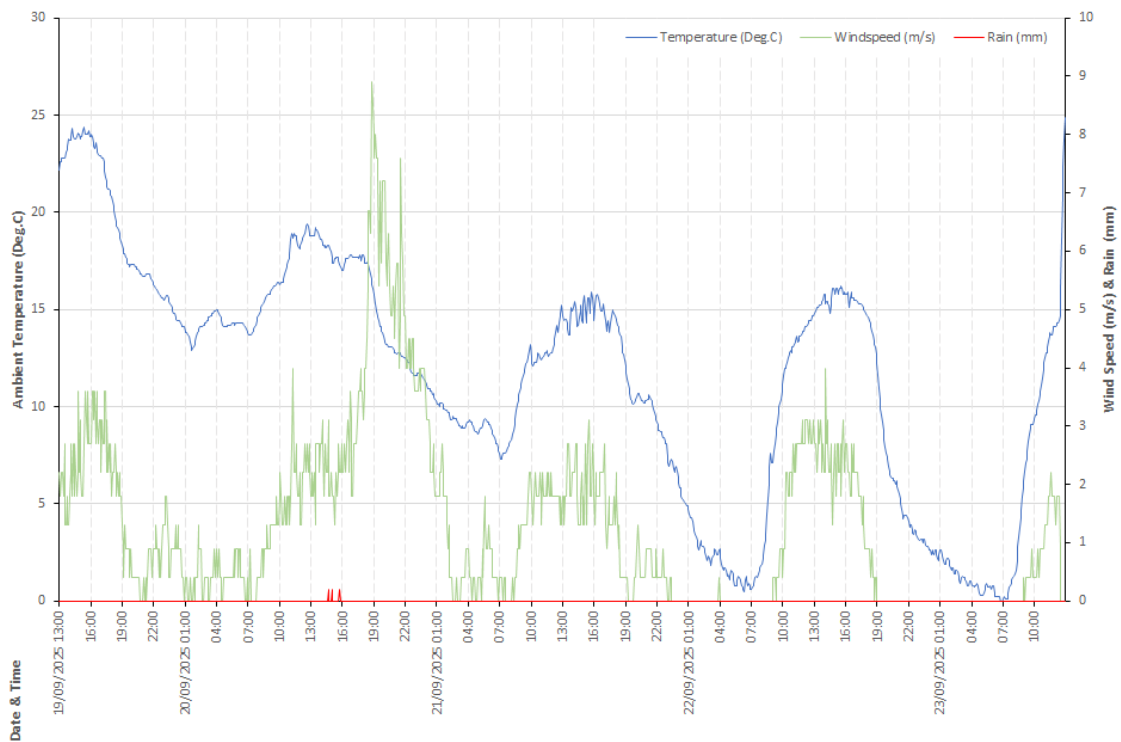


Figure A2-6: Weather Conditions During Noise Measurement Survey

- A2.3.3 There were no known atypical conditions on local roads (e.g. road works, temporary traffic lighting and traffic management) during the survey.

A2.4 Noise Monitoring Equipment

- A2.4.1 Details of the equipment used during the survey can be found in **Table A2-1**.

Table A2-1: Measurement Equipment

Equipment	Make and Model	Serial Number	Date of Last Laboratory Calibration
Sound Level Meter	Svan 971A	131620	04/11/2024
Sound Level Meter	Rion NL-52	01176453	16/07/2025
Sound Level Meter	Svan 971A	131670	18/11/2024
Calibrator	Rion NC-75	34212937	19/12/2024
Calibrator	Svan SV33B	112652	19/12/2024

Equipment	Make and Model	Serial Number	Date of Last Laboratory Calibration
Weather Station	Davis Vantage Vue	MQ171107088	-

A2.5 Level-History Charts

A2.5.1 Level-history charts are provided in the following figures for each unattended noise measurement location.

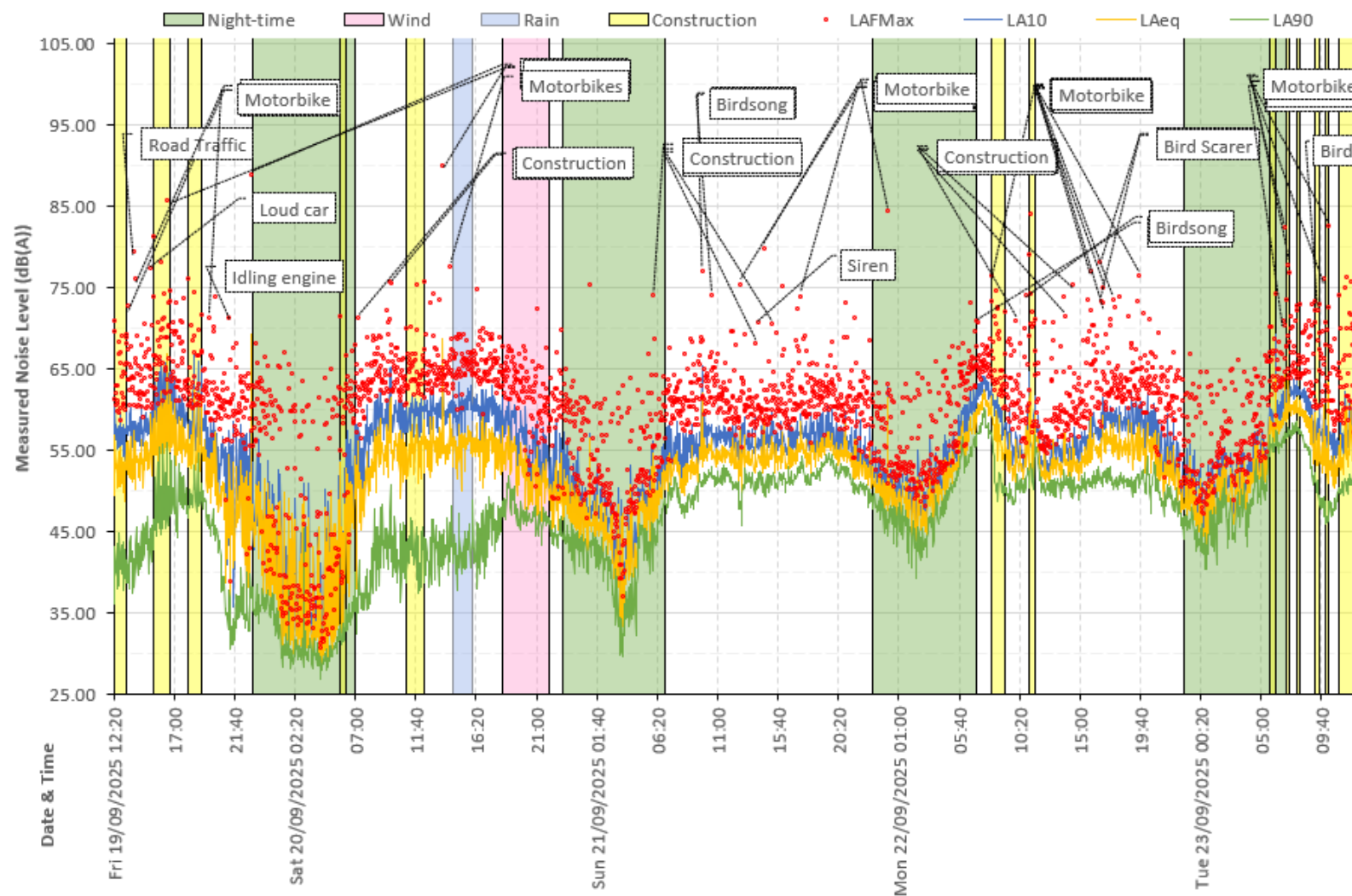


Figure A2-7: Level-history Chart for Noise Monitoring Location LT1

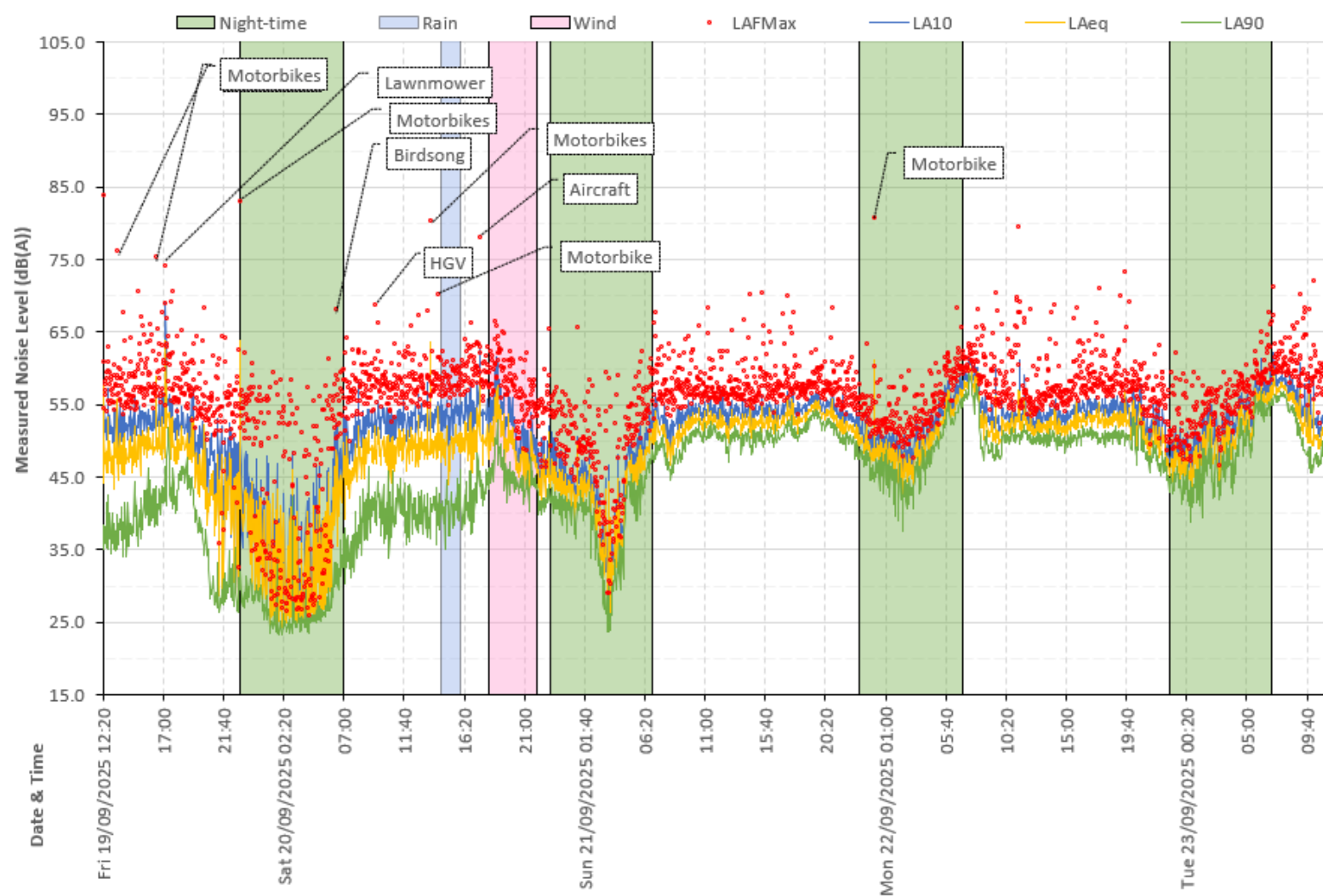


Figure A2-8: Level-history Chart for Noise Monitoring Location LT2

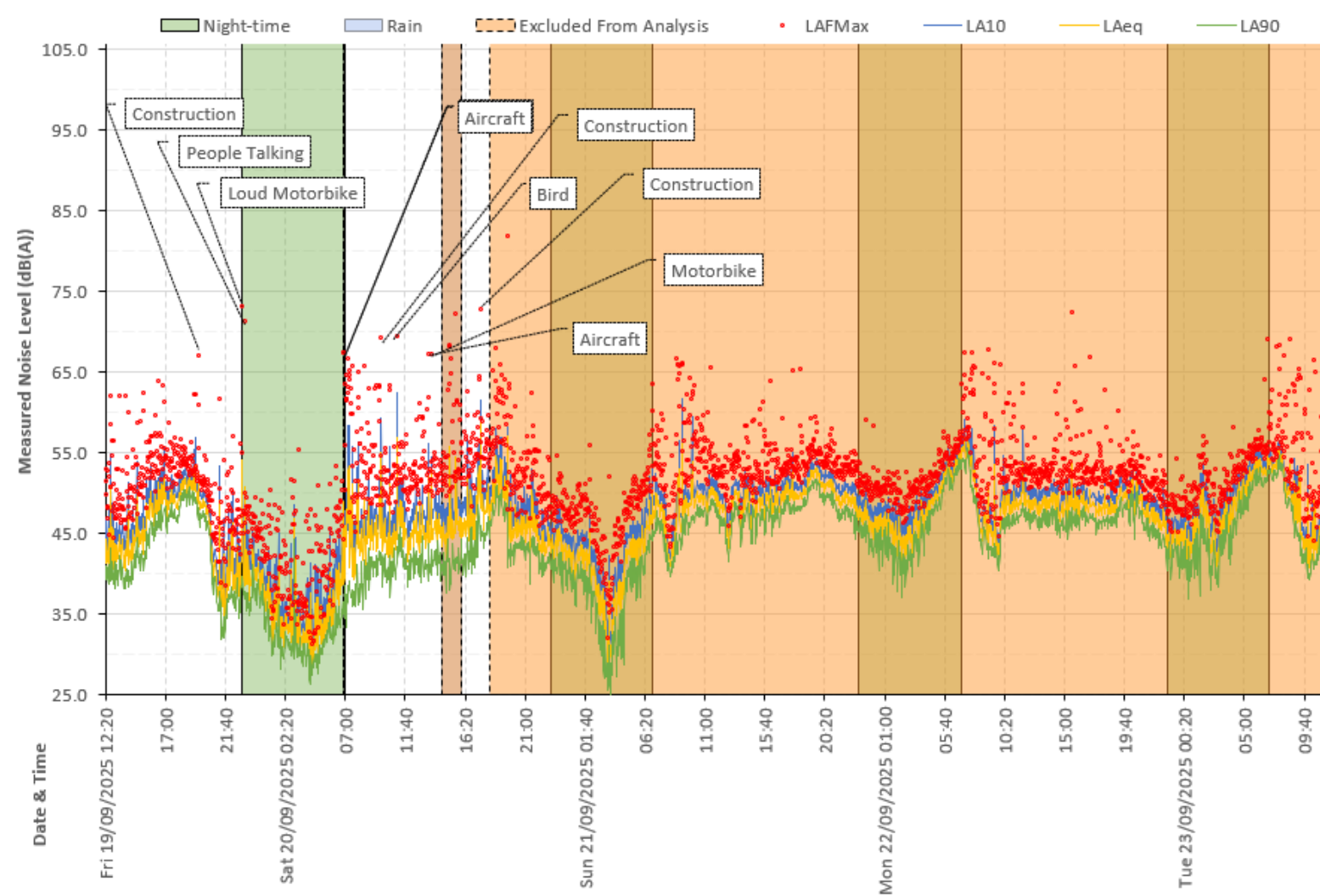


Figure A2-9: Level-history Chart for Noise Monitoring Location LT3

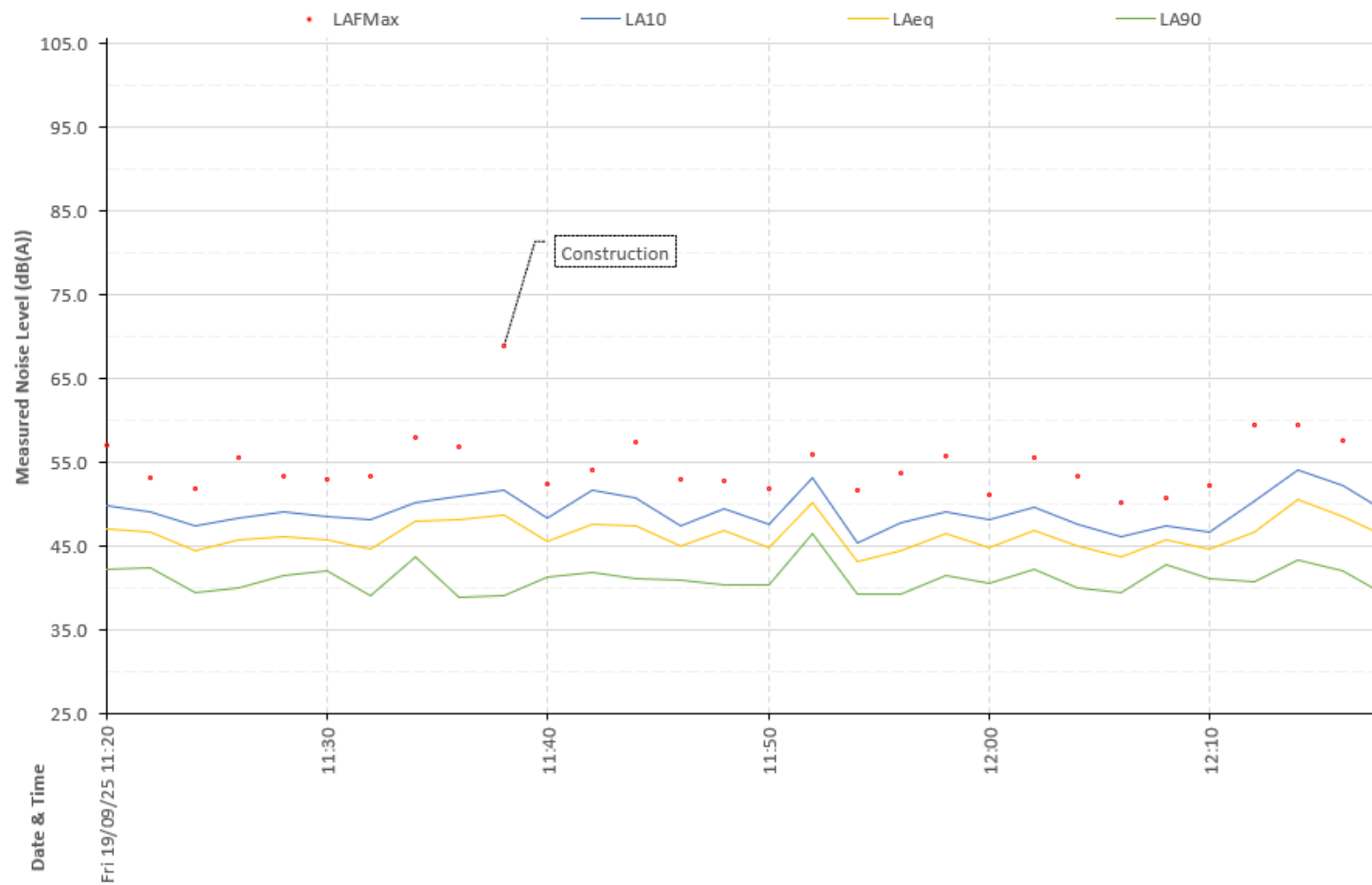


Figure A2-10: Level-history Chart for Noise Monitoring Location ST1

A3 Modelling Assumptions

Table A3-1: Noise Model Calculation Parameters and Input Data

Modelling Parameter	Input Parameter
Calculation methodology	ISO 9613-2:2024 Acoustics — Attenuation of sound during propagation outdoors Part 2: Engineering method for the prediction of sound pressure levels outdoors (used in modelling L_{Aeq} levels) and ISO 9613-1:1993 Acoustics — Attenuation of sound during propagation outdoors Part 1: Calculation of the absorption of sound by the atmosphere (ISO 9613-1) and ISO 9613-2:1996 Acoustics — Attenuation of sound during propagation outdoors — Part 2: General method of calculation (ISO 9613-2) used in modelling L_{AFmax} levels)
Topography	Digital Terrain Map (DTM) Obtained from Environment Agency's National LIDAR Programme¹¹ published on the Defra Data Services Platform and available under Open Government Licence v3.0 • 1.0m vertical intervals
Mapping	Geospatial data for the model was informed by publicly available mapping data, as well as the layout plans and drawings provided by the Client. OpenStreetMap data © OpenStreetMap contributors.
Order of reflections	1
Ground absorption, G	0.5
Temperature / Humidity	10 °C / 70%
Adverse weather conditions	No
Heights of existing and proposed buildings	Proposed dwellings and garages – based on architectural drawings provided by the client. Existing buildings – based on digital building height model calculated from DTM and Digital Surface Model (DSM)¹¹, and on Site observations
Road traffic source	Single carriage way: line source, 0.5m above carriageway centre Calibrated to the baseline noise measurement data

¹¹ Available at <https://environment.data.gov.uk/survey> (Accessed November 2025).

A4 National Policy and Guidance

A4.1 Noise Policy Statement for England (NPSE, 2010)

A4.1.1 The Noise Policy Statement for England (NPSE, 2010) sets out the Government's Noise Policy Vision to:

"Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development".

A4.1.2 The aims of the policy are "Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- Avoid significant adverse impacts on health and quality of life
- Mitigate and minimise adverse impacts on health and quality of life
- Where possible, contribute to the improvement of health and quality of life."

A4.1.3 With respect to 'significant adverse' and 'adverse' impacts in line with the three aims of NPSE, the policy statement notes that "there are two established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organization. They are:

- NOEL – No Observed Effect Level: This is the level 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
- LOAEL – Lowest Observed Adverse Effect Level: This is the level above which adverse effects on health and quality of life can be detected.
- Extending these concepts for the purpose of this NPSE leads to the concept of a significant observed negative effect level.
- SOAEL – Significant Observed Adverse Effect Level. This is the level above which significant adverse effects on health and quality of life occur."

A4.1.4 In respect of observed effect levels, the policy recognises 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. 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. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available".

A4.1.5 The document advises that "the first aim of the NPSE states that significant adverse effects on health and quality of life should be avoided while also taking into account the guiding principles of sustainable development". Whilst not explicitly stated in NPSE, this is taken to align with noise exposure above SOAEL.

A4.1.6 The policy also states:

"The second aim of the NPSE refers to the situation where the impact lies somewhere between LOAEL and SOAEL. It requires that all reasonable steps should be taken to mitigate and minimise negative effects on health and quality of life while also taking into account the guiding principles of sustainable development (paragraph 1.8). This does not mean that such negative effects cannot occur."

- A4.1.7 And finally, the third aim “seeks, where possible, to positively improve health and quality of life through the pro-active management of noise while also taking into account the guiding principles of sustainable development, recognising that there will be opportunities for such measures to be taken and that they will deliver potential benefits to society. The protection of quiet places and quiet times as well as the enhancement of the acoustic environment will assist with delivering this aim”.

A4.2 National Planning Policy Framework (NPPF, 2025)

- A4.2.1 The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how these should be applied. The Planning Practice Guidance (PPG) provides further context to the NPPF, and it is intended that the two documents should be read in conjunction. Planning Practice Guidance – Noise (PPG-N, 2019) is discussed in detail in **Section A4.3**.

- A4.2.2 NPPF provides policies to promote sustainable development and sets out that the purpose of the planning system is to contribute to the achievement of sustainable development. Sustainable development includes three dimensions: economic, social, and environmental, and thus, when planning decisions are made to increase capacity, the process requires weighing the relative balance of these three factors.

- A4.2.3 The NPPF provides a framework within which locally prepared plans for housing and other development can be produced. Planning law requires that applications for planning permission must be determined in accordance with the development plan, unless material considerations indicate otherwise. Planning policies and decisions must reflect and where appropriate promote relevant obligations and statutory requirements.

- A4.2.4 In relation to noise, it states:

“187. Planning policies and decisions should contribute to and enhance the natural 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 or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and...”

- A4.2.5 The NPPF includes policy which makes reference to “significant adverse impacts on health and quality of life”, as per the NPSE. NPPF policy states:

“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:

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

- A4.2.6 NPPF has also recently introduced the agent of change principle as follows:

“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."

A4.3 Planning Practice Guidance – Noise (PPG-N, 2019)

A4.3.1 The National Planning Practice Guidance (PPG), which supplements the NPPF, incorporates Planning Practice Guidance – Noise (PPG-N). PPG-N, most recently updated in 2019, advises how the planning system can manage potential noise impacts in new development and draws upon the principles advocated in the NPSE.

A4.3.2 The document advises how the effects of noise can be described in terms of perception and outcomes aligned to increasing effect levels. In addition, the PPG-N introduces a fourth unacceptable adverse effect levels (UAEL), which is described as a level at which:

"noise exposure would cause extensive and sustained adverse changes in behaviour and / or health without an ability to mitigate the effect of the noise. The impacts on health and quality of life are such that regardless of the benefits of the activity causing the noise, this situation should be avoided."

A4.3.3 **Table A4-1** presents the noise exposure hierarchy described in PPG-N.

A4.3.4 The Guidance advises that due to the subjective nature of noise, *"that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any situation"*.

Table A4-1: Planning Practice Guidance – Noise Exposure Hierarchy

Perception	Examples of Outcomes	Increasing Effect Level	Action
No Observed Effect Level			
Not present	No Effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level			
Present and not intrusive	Noise can be heard but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Present and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, 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 perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Present and disruptive	The noise causes a material change in behaviour and/or attitude, 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 and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

A4.3.5 PPG-N also provides guidance in terms of what factors may influence whether noise could become a concern. To mitigate conflicts between new developments and existing businesses or facilities, the agent of change (typically the developer) is responsible for assessing and addressing potential

nuisances that could affect future residents or users. These nuisances may include noise, dust, odours, vibration, and other environmental pollutants generated by existing businesses, community facilities, or industrial operations. The assessment should consider not only current activities but also those permitted under existing planning consents, even if they are not actively taking place at the time of the application.

- A4.3.6 The agent of change must propose and implement appropriate mitigation measures, which could include enhanced acoustic insulation, mechanical ventilation systems to allow windows to remain closed, reconfiguration of site layouts to create buffer zones, or other design interventions aimed at minimising exposure to potential nuisances.
- A4.3.7 While such measures cannot entirely prevent complaints from new occupants, they can help ensure that the development achieves an acceptable standard of amenity in line with planning policy and reduces the risk of statutory nuisance claims.
- A4.3.8 Taking a proactive approach in identifying, mitigating, and communicating these risks will not only help secure planning approval but also foster long-term compatibility between new developments and established businesses or facilities.
- A4.3.9 PPG-N also provides guidance on how the adverse effects of noise can be mitigated. Examples of mitigation provided include:
- *“engineering: reducing the noise generated at source and/or containing the noise generated;*
 - *layout: where possible, optimising the distance between the source and noise-sensitive receptors and/or incorporating good design to minimise noise transmission through the use of screening by natural or purpose-built barriers, or other buildings;*
 - *using planning conditions/obligations to restrict activities allowed on the site at certain times and/or specifying permissible noise levels differentiating as appropriate between different times of day, such as evenings and late at night, and;*
 - *mitigating the impact on areas likely to be affected by noise including through noise insulation when the impact is on a building”.*
- A4.3.10 In the case of new residential development, PPG-N also states that the impact of noise can be “partially off-set” if occupants have access to:
- *“a relatively quiet façade (containing windows to habitable rooms) as part of their dwelling, and/or;*
 - *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 with increasing noise exposure and could be such that significant adverse effects occur, and/or;*
 - *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 publicly accessible amenity space (e.g. a public park or a local green space designated because of its tranquillity) that is nearby (e.g. within 5 minutes walking distance)”.*

A5 Assessment Guidance

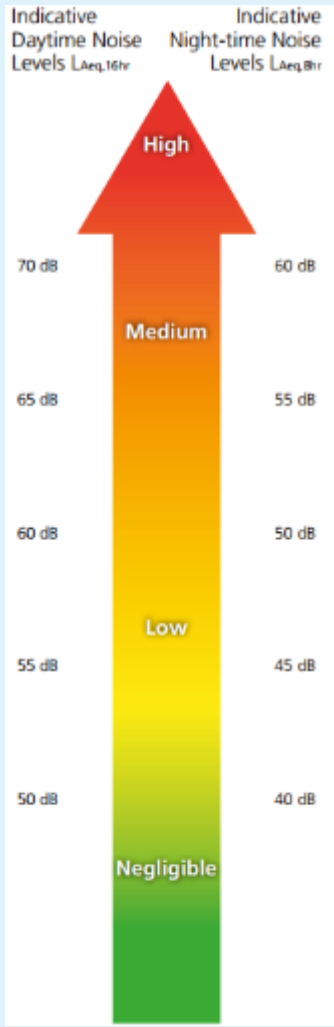
A5.1 Professional Practice Guidance (ProPG, 2017) on Planning & Noise – ‘New Residential Development’

- A5.1.1 ProPG is a joint publication by the Chartered Institute of Environmental Health (CIEH), the Association of Noise Consultants (ANC) and the Institute of Acoustics (IoA).
- A5.1.2 The primary goal of ProPG is “to assist the delivery of sustainable development by promoting good health and wellbeing through the effective management of noise”.
- A5.1.3 The guidance has been produced to assist practitioners in matters relating to noise and new residential development. It focuses on existing transportation noise sources and has been developed to consider the Government’s overarching noise policy, planning policy and policy guidance. It has also been developed to take into account other authoritative sources of guidance such as British Standard 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings (BS 8233:2014).
- A5.1.4 The guidance provides advice for Local Planning Authorities (LPAs) and developers, and practitioners. ProPG aims to:
- Advocate the full consideration of the acoustic environment from the earliest possible stage of the development control process;
 - Promote and encourage the process of good acoustic design in and around new residential developments;
 - Set out the considerations which should be taken into account in deciding planning applications for new noise-sensitive developments;
 - Promoting the use of appropriate noise exposure standards and policies in assessment; and
 - Provide assistance in the delivery of sustainable development.
- A5.1.5 ProPG advocates a two-stage assessment approach:
- **Stage 1** – an initial noise risk assessment of the proposed development site; and
 - **Stage 2** – a systematic assessment considering four key elements.
- A5.1.6 ProPG is underpinned by the preparation and delivery of an Acoustic Design Statement (ADS).

Stage 1 – Initial Risk Assessment

- A5.1.7 Stage 1 of ProPG provides guidance to practitioners as to whether the site poses a risk in terms of noise for any future site occupants. To identify this, ProPG sets out a number of considerations for inclusion within an ‘initial risk assessment’. **Table A5-1** reproduces Figure 1 from ProPG, which describes the initial site risk assessment.

Table A5-1: ProPG Stage 1 Initial Site Risk Assessment

Noise Risk Assessment	Potential Effect Without Noise Mitigation	Pre-Planning Application Advice
	Increasing risk of adverse effect	High noise levels indicate that there is an increased risk that development may be refused on noise grounds. This risk may be reduced by following a good acoustic design process that is demonstrated in a detailed ADS. Applicants are strongly advised to seek expert advice. As noise levels increase, the site is likely to be less suitable from a noise perspective and any subsequent application may be refused unless a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised, and which clearly demonstrate that a significant adverse noise impact will be avoided in the finished development. At low noise levels, 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 ADS which confirms how the adverse impacts of noise will be mitigated and minimised in the finished development.
	No adverse effect	These noise levels indicate that the development site is likely to be acceptable from a noise perspective, and the application need not normally be delayed on noise grounds.
Notes: 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 07:00 – 23:00, $L_{Aeq,8hr}$ is for night-time 23:00 – 07:00. d. An indication that there may be more than 10 noise events at night (23:00 – 07:00) with $L_{Amax,F} > 60$ dB means the site should not be regarded as a negligible risk.		

A5.1.8 ProPG is clear that an Acoustic Design Statement should be included as part of a planning application where the risk is anything above 'negligible'.

Stage 2 – Full Assessment

A5.1.9 Stage 2 of ProPG describes four elements required for a full assessment. These are:

- **Element 1** – demonstrating a "Good Acoustic Design Process"
- **Element 2** – observing internal "Noise Level Guidelines"

- **Element 3** – undertaking an “External Amenity Area Noise Assessment”; and
- **Element 4** – the consideration of “Other Relevant Issues”.

A5.1.10 A summary of the considerations required in each of the four elements is provided in **Table A5-2**.

Table A5-2: ProPG Stage 2 – Summary of Four Key Elements

Element	Potential Effect Without Noise Mitigation
Element 1 Good Acoustic Design Process	Considerations include: • Good acoustic design is not just compliance with recommended internal and external noise exposure standards. Good acoustic design should provide an integrated solution whereby the optimum acoustic outcome is achieved, without design compromises that will adversely affect living conditions and the quality of life of the inhabitants or other sustainable design objectives and requirements. • Using fixed, unopenable glazing for sound insulation purposes is generally unsatisfactory and should be avoided. Any reliance upon building envelope insulation with closed windows should be justified in supporting documents. The Planning Application MUST: • Check the feasibility of relocating or reducing noise levels from relevant sources. • Consider options for planning the site or building layout. • Consider the orientation of proposed building(s). • Select construction types and methods for meeting building performance requirements. • Examine the effects of noise control measures on ventilation, fire regulation, health and safety, cost, CDM (construction, design and management) etc. • Assess the viability of alternative solutions. • Assess external amenity area noise.
Element 2 Internal Noise Level Guidelines	Considerations include: • Reference to BS 8233:2014 ‘Guidance on Sound Insulation and Noise Reduction for Buildings’ for internal noise level guidelines. • Most residents value the ability to open windows at will, for a variety of reasons, and LPAs should therefore normally request that designers principally aim, through the use of good acoustic design, to achieve the internal noise level guidelines in noise-sensitive rooms with windows open. Where internal noise levels are assessed with windows closed, the justification for this should be included in the ADS. In the case of sites exposed to industrial and/or commercial noise: • Where industrial and/or commercial noise is present on the site and is considered to be ‘dominant’ (i.e. where the impact would be rated as adverse or greater (subject to context)) then this is outside the scope of this ProPG and regard should be had to the guidance in BS 4142:2014. • In the special case where industrial and/or commercial noise is present on the site but is ‘not dominant’ (i.e. where the impact would be rated as lower than adverse (subject to context) if a BS 4142:2014 assessment was to be carried out), its contribution may be included in the noise level used to establish the degree of risk in Stage 1 and may also be included in the consideration of Stage 2 Element 2 Internal Noise Level Guidelines (and if included, this should be clearly stated).

Element	Potential Effect Without Noise Mitigation
Element 3 External Amenity Area Noise Assessment	The assessment must provide and demonstrate: • Full details of the external amenity area noise assessment should be included in an Acoustic Design Statement. • The term 'assessment' is deliberately used because this element concerns more than just the level of noise outside. • ProPG external amenity area noise assessment reflects and extends the advice contained in BS 8233:2014 and the current Government guidance in PPG-N. In the case of sites exposed to industrial and/or commercial noise: • Where external amenity areas are exposed to 'dominant' industrial and/or commercial noise, the impact of the noise should be assessed in accordance with BS 4142:2014 over the time period that the amenity area is likely to be used. In the special case where industrial and/or commercial noise is present on the site but is "not dominant", its contribution may be included in the noise level used to establish the degree of risk in Stage 1 and may also be included in the consideration of Stage 2 Element 3 External Amenity Area Noise Assessment (and if included, this should be clearly stated).
Element 4 Assessment of Other Relevant Issues	Consideration should be given to: • Compliance with relevant national and local policy: i.e., NPSE, PPG-N and The Environmental Noise Regulations. • Magnitude and extent of compliance with ProPG. • Likely occupants of the development. • Acoustic design vs unintended adverse consequences: Examples include sealed up balconies that result in a lack of connection with the external environment, roadside barriers that remove views or prevent crossing roads, sealed facades that affect personal control over the internal environment etc. Wherever possible, such unintended adverse consequences should be obviated by good acoustic design. • Acoustic design vs wider planning objectives.

- A5.1.11 Additionally, ProPG states that "once internal L_{Aeq} noise 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". This principle has helped inform the derivation of UAEL values.

Acoustic Design Statement (ADS)

- A5.1.12 ProPG requires that the Acoustic Design Statement (ADS) provide sufficient evidence that the ProPG Stage 1 and Stage 2 Elements 1 – 4 have been followed. It also advises that the ADS should be proportionate to the scale of the development and the degree of noise risk at the proposed development site. In this context, ProPG states that the level of detail to be provided within the ADS should increase with the increasing level of risk.

Supporting Decision-Makers

- A5.1.13 ProPG also provides advice and support to decision-makers when taking into account noise and new residential development. These recommendations are aligned to the outcomes of Stage 1 and Stage 2 of the assessment along with the considerations made within the Acoustic Design Statement. Section 3 of ProPG details the recommendations to decision-makers.

Sites Exposed to Industrial and/or Commercial Noise

- A5.1.14 In the case of sites exposed to industrial and/or commercial noise, ProPG states that if the industrial and/or commercial noise is present but not dominant, then its contribution may be included in the noise level used to establish the degree of risk.

A5.1.15 If the industrial and/or commercial noise is considered to be dominant, then the risk assessment should not be applied to the industrial or commercial noise and instead the assessment should follow the methodology and guidance provided in BS 4142.

A5.1.16 ProPG states that “[t]he judgement on whether or not to undertake a BS 4142:2014 assessment to determine dominance should be proportionate to the level of risk. In low-risk cases a subjective judgement of dominance, based on audibility, would normally be sufficient.”

A5.2 British Standard 8233:2014 ‘Guidance on Sound Insulation and Noise Reduction for Buildings’

A5.2.1 BS 8233:2014 provides guidance for the control of noise in and around buildings. It applies to the design of new buildings or refurbished buildings undergoing a change of use.

A5.2.2 BS 8233:2014 provides noise guidance for buildings of different uses, however, in respect to dwellings and habitable residential spaces, Table 4 of BS 8233:2014 provides guideline values that it is desirable not to exceed during daytime and night-time periods. These guideline values are reproduced in **Table A5-3** and:

- Apply to noise “without character” that excludes features such as “a distinguishable, discrete and continuous tone...irregular enough to attract attention, or has strong low-frequency content, in which case lower noise limits might be appropriate”;
- Apply to overall noise levels (i.e. the sum of all noise);
- Include normal diurnal fluctuations in external noise (shorter time periods may otherwise be used);
- Do not have to be achieved in all circumstances (such as seasonal / occasional events); and,
- Excludes noise from new mechanical ventilation equipment.

Table A5-3: Indoor Ambient Noise Levels for Residential Dwellings

Activity	Location	Daytime Guideline (07:00 – 23:00)	Night-time Guideline (23:00 – 07:00)
Resting	Living Room	35 dB LAeq,16hr	-
Dining	Dining Room / Area	40 dB LAeq,16hr	-
Sleeping (Daytime Resting)	Bedroom	35 dB LAeq,16hr	30 dB LAeq,8hr

Internal Noise

A5.2.3 The internal noise requirements are not intended to be met with open windows, although BS 8223:2014 states that the internal noise levels should take account of the proposed ventilation strategy.

A5.2.4 BS 8233:2014 also notes that: “where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved”. This sentence refers to the World Health Organization ‘Guidelines for Community Noise’ (WHO GCN, 1999). This statement is also reiterated in ProPG.

A5.2.5 BS 8233:2014 does not provide specific guidance on noise levels for regular individual noise events, such as passing trains, which can cause sleep disturbance. Guidance on suitable noise levels for individual events is provided in ProPG, which states:

"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 45 dB $L_{Amax,F}$ 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 source, number, distribution, predictability and regularity of noise events."

- A5.2.6 On this basis, it is considered appropriate to adopt the 10th highest $L_{Amax,F}$ noise event occurring in the night-time period for the purposes of the assessment.

External Amenity

- A5.2.7 With respect to external amenity spaces, BS 8233:2014 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"*.
- A5.2.8 BS 8233:2014 also states that it will not always be possible to achieve these guideline values for all circumstances where development may be desirable, and that development in higher noise areas, such as urban areas adjoining the strategic transport network or city centres, may warrant a compromise between elevated noise levels and other factors (for example the convenience of living in these locations). In these situations, BS 8233:2014 states that *"development should be designed to achieve the lowest practicable levels in these external amenity spaces but should not be prohibited"*. This approach is also advocated in PPG-N.

A5.3 Building Regulations Approved Document F – Ventilation

- A5.3.1 The Building Regulations Approved Document F – Ventilation (ADF) sets out requirements for adequate means of ventilation in buildings to maintain indoor air quality. Ventilation for dwellings (ADF Requirement F1: Means of Ventilation) can be separated into three categories:
- Extract Ventilation – the extraction of water vapour and indoor air pollutants from areas where they are produced in significant quantities (e.g. kitchens, utility rooms and bathrooms)
 - Whole Dwelling Ventilation – the provision of a minimum level of outdoor air for occupants' health
 - Purge Ventilation – for the rapid dilution of indoor air pollutants and dispersal of water vapour, when necessary, in habitable rooms (bedrooms and living rooms).

A5.4 Wiltshire Council Planning Consultation Guidance Note – Noise and Vibration

- A5.4.1 Wiltshire Council have produced a technical guidance document detailing their interpretation of how the noise guidance and standards interact with national planning policy.

General Assessment Guidance

- A5.4.2 Section 3 of the Note sets out WC's assessment methodology requirements, which are reproduced in the tables below.

Table A5-4: WC Assessment Methodology Guidance

Requirement	Guidance
Information on noise sources	It is important to know what noise sources exist in the locality of a Proposed Development and the extent of their impacts (e.g. operating hours and activities of source premises). Consideration should also be given to presenting the impact of each source on the development and including details of any remedial measures proposed to reduce the impact.

Requirement	Guidance
Assessing impact of existing noise sources	It is expected that noise levels are measured at both the source and potential receptor location, rather than predicted values based purely on calculation. Consideration of distance, noise barriers and orientation where appropriate is acceptable. Noise from road traffic or railways should be based on measured data.
Noise Sources not in full operation at time of assessment	The noise impact assessment must reflect the impacts based on current conditions but also consider potential impacts if the premises were to operate in full use of the existing planning consent. The worst case scenario must be considered in these circumstances. This includes consideration of the planning use class. Planning use classes are defined by the Town and Country Planning (Use Classes) Order 1987 (as amended). For example, B2 use covers most industrial processes and activities that may be carried out under this use class may have significant noise breakout and emissions to air.
Background and ambient noise Levels	Worst case scenarios must be considered. - averaged values for L_{AFmax}, $L_{Aeq,T}$ or $L_{A90,T}$ will not normally be accepted; - background noise measurement times must be representative of quieter periods when noise generating activities are expected to occur; - background and ambient noise levels shall be presentative of the existing noise levels at the most sensitive time during the proposed period(s) of operation. The choice of representative background sound level is not a simple matter of identifying a minimum or modal value over a particular period, but recognising that several periods of measurement may be necessary and that a more thorough analysis of the data is normally required. Measurement time periods for noise indices must be appropriate to the location and situation. Where this guidance stipulates time periods, these should be used unless there are specific circumstances why they are not appropriate, which should be stated and justified.
Unattended measurements	These are not appropriate for assessing the impact of commercial, industrial or entertainment noise as the measured data cannot be correlated with specific activities at the premises being assessed. Where unattended measurements are used for railway or road traffic noise, unless individual noise events can be clearly attributed to a source (such as from sound recording or railway timetables) we will not accept assumptions of the source of noise particularly where it is intended to discount a discrete event.
Assessment of L_{AFmax}	It is normally appropriate to discount the highest values (based on the comments in WHO Guidelines for community noise). In order to discount data, the noise survey must cover the entire night time period and consist of measurements over suitable averaging periods to permit effective statistical assessment.

Requirement	Guidance
Extrapolation of percentile levels (i.e. L_{A90})	Percentile levels determined over a certain time interval cannot accurately be extrapolated to other time intervals. The mean average of a series of measured background sound levels is not numerically equal to the overall period background sound level that would otherwise be obtained by a single measurement spanning individual measurement periods. Therefore ECP will not normally accept values of $L_{A90,1hr}$ or $L_{A90,15min}$ derived from shorter measurement periods. Section 8 of BS 4142:2014+A1:2019 provides additional guidance on the measurement of background noise levels.
Deviation from guidance	Any deviation from guidance or British Standards needs to be detailed in the report along with the reason for these deviations.

Table A5-5: WC Survey Methodology Guidance

Development Type	Noise Source	Noise Survey Requirements
Residential	Major road / motorway ¹²	24-hour noise survey – however the assessment may need to be extended to reflect possible variations between weekday/night and weekend/night.
	Railway	Noise survey - based on timetable to include freight where applicable. The L_{Aeq} (16hr day and 8hr night), should be measured. In addition, suitable shorter term L_{Aeq}, L_{A90}, L_{A10} and L_{AFmax} would be expected in order to give a clearer picture of the existing noise environment. Vibration Survey - A ground-borne vibration assessment in accordance with BS 6472 by a competent person will be required if the development within 30m of a railway line.
	Commercial and Industrial Noise	Attended survey to determine worst and typical cases – BS4142 Assessment of impact both daytime and night-time where noise may occur at times throughout the 24-hour period.
	No significant transportation or other noise sources in proximity	Survey not normally required; however, consideration should be given to other sources that impact on the noise environment such as major construction.

Design Hierarchy

- A5.4.3 The guidance note requires the good acoustic design principles to be followed for new residential development, with mitigation of noise impacts needing to follow the hierarchy of principles set out in Figure 1 of the note, which are ordered as follows:

¹² A major road should be regarded as any classified A or B road, bus routes and roads subject to significant freight movements

Hierarchy Level 1: Control of noise at source to enable noise sensitive development.

- A5.4.4 Where there is an existing noise source such as from a separate industrial, commercial or entertainment premises, the first option for consideration is to reduce the noise from that source. The noise assessment should detail the options that have been considered, which may include operational controls to minimise the source noise (such as hours of use), insulation or attenuation at source, enclosure of outdoor sources or provision of a noise barrier. The applicant will need to agree an approach with the responsible party. ECP will, in turn, evaluate the technical merits of the proposed solution. In these circumstances, these source-control measures must be in place prior to the occupation or operation of the new development. Where such options exist, there may be an economic benefit to the applicant to assist in reducing noise at source rather than to meet increased insulation requirements, and this will also provide for greater protection for external amenity areas or minimise the impacts on the new receptors.
- A5.4.5 In the case of a residential development, this requires the 'agent of change', i.e. the applicant/developer, to identify the noise from existing businesses that have an adverse effect on new residents or users. The agent of change will need to consider not only the current activities, but also those activities that businesses or other facilities are permitted to carry out, even if they are not occurring at the time of the application being made. The applicant will need to explore mitigation options and, if possible, agree on a detailed mitigation scheme with the responsible third party to control the noise at source. ECP will, in turn, evaluate the technical merits of the proposed solution. In these circumstances, these source-control measures between the agent of change and any third party must be clearly set out in a unilateral legal agreement which clearly details the following:
- the scope of mitigation works
 - who is responsible for carrying out the work and by when
 - confirmation that the mitigation will be in place prior to the occupation or operation of the new development

Hierarchy Level 2: Site Layout and Design

- A5.4.6 The checklist summarised in the table below should be considered as early as possible in the design of a residential scheme.

Table A5-6: Hierarchy Level 2: Site Layout and Design Checklist

Measure	Detail
Distance Attenuation	Maximising the distance between noise sources and receptors.
Topography and existing screening	Topography or existing screening, that will be present for the lifetime of the development, may be used to screen the proposed receptors from the noise source.
Noise barriers	Noise barriers such as bunds and barrier blocks, may be included in the scheme to provide screening.
Layout	The layout of a scheme may be used to reduce noise propagation across the site.

Hierarchy Level 3: Dwelling Layout and Orientation

- A5.4.7 The checklist summarised in the table below should be considered as early as possible in the design of a residential scheme.

Table A5-7: Hierarchy Level 3: Dwelling Layout and Orientation Checklist

Measure	Detail
External dwelling layout	Locate non-sensitive uses such as bin stores and garages on the side facing the noise source. Protect gardens with the building structure.
Internal dwelling layout	Avoid windows to habitable rooms such as bedrooms and living rooms facing towards the noise source.
Building height	Consider low-rise dwellings that may be better shielded/protected by the topography or screening, or consider the location and orientation of taller buildings that may provide screening for other parts of the site.
Innovative design strategies	Consider innovative design strategies, including but not limited to, courtyards, acoustic balconies, and single aspect dwellings to protect sensitive areas.

Hierarchy Level 4: Planning Restrictions

- A5.4.8 Planning conditions may be used to control the source of the noise if it is part of the planning application. This may include restrictions on hours of use (e.g. to avoid noise-sensitive times such as late evening, night-time and early mornings), restrictions on power levels of equipment, restrictions on music or equipment, sound levels or a requirement for a noise management plan or quiet delivery plan implementation. If noise levels are dependent on restrictions of this nature, the application must suggest appropriate restrictions that may be included in conditions.
- A5.4.9 These conditions must meet the planning 6 tests as set out in the NPPF¹³.

Hierarchy Level 5: Building Envelope

- A5.4.10 Reliance on the building envelope must be the last consideration once all other reasonable measures have been utilised. The noise exposure hierarchy table in the PPG Noise identifies having to close windows, where there is no alternative ventilation, to reduce noise levels as an adverse impact. The severity of the impact depends upon how often it is necessary to close the windows. An option that is sometimes considered to achieve a satisfactory internal noise environment is sealing of the building envelope (i.e. through the provision of non-openable windows). However, this is considered a poor acoustic solution and as such, should only be considered where this is necessary for air quality reasons. Where reliance on closed windows for part of a dwelling is deemed appropriate, it will be necessary to avoid overheating and to provide sufficient ventilation to provide comfort cooling. In such circumstances, trickle vents are not considered appropriate. The provision of an alternative form of natural ventilation will be required to aid thermal comfort. If this is impractical, then a Mechanical Ventilation Heat Recovery (MVHR) system with fully automated summer bypass may be acceptable. A separate overheating assessment for the development may also be necessary in such circumstances.
- A5.4.11 For noise from transportation sources, ProPG (which provides guidance on new residential development) concurs with the PPG(Noise) when it comes to the need to close windows in order to achieve a satisfactory noise climate within habitable rooms. The ProPG includes the following statements with regard to opening windows and indoor noise levels:

“Using fixed unopenable glazing for sound insulation purposes is generally unsatisfactory and should be avoided; occupants generally prefer the ability to have control over the internal environment using openable windows, even if the acoustic conditions would be considered unsatisfactory when open. Solely relying on sound insulation of the building envelope to achieve acceptable acoustic

¹³ NPPF, Paragraphs 55-57

conditions in new residential development, when other methods could reduce the need for this approach, is not regarded as good acoustic design. Any reliance upon building envelope insulation with closed windows should be justified in supporting documents."

And

"It should be noted that the acoustic performance of the building envelope will be reduced in the event windows are opened for ventilation or cooling purposes, typically reducing the insulation to no more than 10 to 15 dB(A). Most residents value the ability to open windows at will, for a variety of reasons, and LPAs should therefore normally request that designers principally aim, through the use of good acoustic design, to achieve the internal noise level guidelines in noise-sensitive rooms with windows open. Where internal noise levels are assessed with windows closed the justification for this should be included in the Acoustic Design Statement".

Ventilation

- A5.4.12 Where enhanced glazing or other mitigation to the building envelope is necessary to ensure the indoor noise climate is acceptable, it will be necessary to provide a scheme of ventilation to remove the need to open windows other than for purge ventilation. The ventilation scheme will be expected to provide thermal comfort during summer months; acoustic trickle vents will not be sufficient in such circumstances.
- A5.4.13 Overheating is regulated through Building Regulations Approved Document O.
- A5.4.14 Any requirement for ventilation shall be met either via acoustic vents, a scheme of mechanical ventilation, or another method of ventilation which is comparable to the above. In any case, the ventilation proposed must not compromise the acoustic integrity of the building envelope. Trickle vents are only suitable where the overall noise mitigation of the building envelope meets acceptable internal criteria with windows open. Where overheating is a factor, Approved Document O is relevant.
- A5.4.15 Where some form of mechanical ventilation is proposed, resultant noise levels due to the operation of the ventilation system at maximum rate should not exceed NR25. However, the combined impact of noise break-through from the building envelope and noise generated by any mechanical ventilation at maximum rate shall at all times meet the requirements of this section and the internal noise criteria provided in Section 7.7 of BS 8233:2014.

Outline Speculative and Mixed-Use Applications

- A5.4.16 An outline application submitted should provide enough information to allow Wiltshire Council to determine whether the nature of a development is suitable for residential development. However, where there is a likelihood of an adverse or significant adverse impact from noise, sufficient evidence must be provided at the outline stage and noise assessments that are submitted with outline applications must demonstrate suitable noise levels are achievable across the site and incorporate, where relevant, the principles of good acoustic design.

Residential Developments

- A5.4.17 The impact of any proposal will be based upon the noise hierarchy in the Planning Practice Guidance (PPG) Noise. When building residential developments, the following steps should be taken:
- Consider the impact from rail and road transportation.
 - Consider the impact from commercial and industrial noise sources.
 - Give regard to any entertainment premises in the vicinity.
 - If the application site may be subject to vibration, the application may need carry out an assessment in line with the guidance in Section 7 of the PCGN.

Noise from Road and Rail Transport Impacting New Residential Development

- A5.4.18 The Council has adopted the following noise limits for residential properties impacted by transport noise.

Table A5-8: Wiltshire Council's Transportation Noise Limits for New Residential Development

Period	Space / Room	Criteria
Daytime (07:00-23:00)	Living Rooms	35 dB LAeq,16h
	Gardens and Terraces	50 dB LAeq,16h
Night-time (23:00-07:00)	Bedrooms	30 dB LAeq,8h and not normally exceeding 45 dB LA _{Fmax} more than 10 times per night

- A5.4.19 Internal noise levels should be calculated using the methods provided in BS 8233:2014 and/or BS EN 12354:3. In accordance with the ProPG and the hierarchy of noise mitigation above, the acoustic design scheme shall aim to achieve the internal noise levels with windows open. Where openable windows are provided, ECP will not accept a strategy that relies on the occupier of the noise-sensitive premises having to close the window during noisy activities other than for noise without character, such as transportation noise. Closed windows to mitigate transport noise will only be considered if all other reasonable measures in the hierarchy have been utilised and only for an absolute minimum of rooms. Designs that result in whole dwellings needing windows close to mitigate transport noise will not be accepted.

A6 Assessment Assumptions

A6.1 Standard Building Envelope Sound Insulation Specifications

Walls, Roofs and Windows

- A6.1.1 It is assumed that the external walls are of a standard brick and block cavity wall construction, and the roof comprises a pitched roof with tiles on felt, 100 mm mineral wool on a 12.5 mm plasterboard ceiling. Sound reduction indices for these constructions have been obtained from BS 8233:2014.
- A6.1.2 Standard thermal double glazing is assumed based on a generic product specification of 6 mm glass / 12 mm air gap / 6 mm glass.
- A6.1.3 **Table A6-1** summarises the assumed sound insulation performance for external walls, roofs and windows.

Table A6-1: Standard Building Envelope Sound Insulation Performance – Walls, Roofs and Windows

Element	Sound Reduction Index (SRI) at Octave Centre Band Frequency (Hz)								R _w (C; C _{tr})
	63	125	250	500	1k	2k	4k	8k	
Brick and Block External Wall	34	40	44	45	51	56	56	59	51 (-1; -4)
Standard Cold Roof ¹⁴	25	28	34	40	45	49	49	52	43 (-2; -5)
Double Glazing (6/12/6) ¹⁵	18	20	19	29	38	36	44	44	32 (-2; -5)

Background Ventilation

- A6.1.4 For the purposes of this noise assessment, it has been assumed that whole dwelling ventilation provision in habitable rooms (living rooms and bedrooms) will be provided by non-acoustic background ventilators (such as in/over-frame trickle vents), achieving an equivalent area of 8,000 mm² per habitable room.
- A6.1.5 The sound insulation performance specification used is provided in **Table A6-2**. The specification is based on test data for a non-acoustic trickle vent in the open position, which has been corrected to an equivalent area of 8,000 mm². Most trickle vent products will have an equivalent area of less than 8,000 mm², necessitating more than one trickle vent to meet the minimum ADF requirements. Therefore, it is important to note that two trickle vents will reduce the published D_{n,e,w} by 3 dB.

Table A6-2: Standard Building Envelope Sound Insulation Performance – Small Elements

Element	Level Difference (D _{n,e}) at Octave Band Centre Frequency (Hz)								D _{n,e,w} (C; C _{tr})
	63	125	250	500	1k	2k	4k	8k	
Standard In/over-frame Trickle Vent ¹⁶	30	32	31	28	27	29	33	33	29 (0; -1)

¹⁴ Pitched, tiled roof with 100 mm mineral wool above 12.5 mm plasterboard ceiling.

¹⁵ Based on Pilkington Insulight 6/12/6.

¹⁶ Based on Greenwood 8000HD Trickle Ventilator. D_{n,e,w} normalised to 8000mm².



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