

Report

Land off Henthorn Road, Clitheroe

Noise Assessment

For Gladman Developments Ltd

8 May 2026

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Executive Summary

This report describes the potential impact of noise on an outline proposed residential development (the "Development") on land off Henthorn Road, Clitheroe (the 'Site'), which falls within the administrative boundary of Ribble Valley Borough Council.

The report describes the existing acoustic environment across the Site based on baseline noise monitoring, observations and a road traffic noise modelling exercise.

Operational noise from nearby non-residential land uses, including a solar array and Clitheroe wastewater treatment works (WwTW) and landfill gas to energy (LFE) plant site and Clitheroe Household Waste Recycling Centre (CHWRC) located to the south, is inaudible or not a material constraint to noise-sensitive development on the Site.

The noise survey and road traffic modelling show that during the daytime period, road traffic noise on Henthorn Road is the dominant source of noise in some areas of the Site, and is assessed as low risk in accordance with ProPG: Planning & Noise – New Residential Development. During the night-time these areas of the Site are of negligible risk. All other areas of the Site are at negligible risk in both the daytime and night-time periods.

The assessment indicates that the need for site-wide or localised noise mitigation measures is minimal. Good acoustic design measures have been recommended for consideration in the development of the layout in the northern parcel to help ensure acceptable internal and external noise levels are capable of being achieved across the proposed Development.

On the basis of this assessment, the Development is a negligible to low risk Site. Subject to the implementation of good acoustic design measures for the northern parcel, as set out in this document, noise is not considered a material constraint to the proposed Development.

Therefore, the Development is not considered to give rise to a significant adverse impact on health and quality of life in relation to noise, in accordance with paragraphs 187 and 198, paragraph 200 ('agent of change principle') of the NPPF, or Policy DMG1 of the Ribble Valley Core Strategy. The need to ensure that appropriate noise mitigation measures are incorporated into the design of the development can be secured by an appropriately worded planning condition, if necessary.

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1 Introduction

1.1 Scope and Background

- 1.1.1 This report describes the potential impact of noise on an outline proposed residential development (the "Development") on land off Henthorn Road, Clitheroe (the 'Site').
- 1.1.2 The assessment has been carried out by Noise Consultants (NCL), part of Logika Group, and has been prepared in accordance with National and local policy and guidance and by reference to relevant acoustics standards and guidance. A glossary of acoustic terminology is provided in **Appendix A1**.
- 1.1.3 An outline application¹ for residential development comprising up to 160 dwellings with all matters reserved except for access was submitted to Ribble Valley Borough Council (RVBC) in 2019. The application was supported by a noise screening report (NSR)² and its findings were deemed acceptable by RVBC's Environmental Health Officer. The application was not refused on noise grounds.
- 1.1.4 A new outline application for up to 115 dwellings on the Site, with all matters reserved except for access, has recently been submitted to RVBC³. An NSR⁴ has also been submitted in support of this proposal. This noise assessment has been prepared to further support the application, as RVBC now requires a "full noise assessment" to be undertaken, contrary to the previously agreed approach, requiring a baseline noise survey to enable a thorough assessment of potential noise impacts on the Development.

1.2 Existing Site

- 1.1.1 The existing Site comprises two parcels of land; the northern parcel used for grazing, and the southern parcel comprising open fields used for grazing, public footpaths, and a watercourse towards its northern edge.
- 1.2.1 Henthorn Road (20mph) runs between the northern and southern parcels and provides access to a small number of dwellings to the south of the Site. Residential dwellings are located to the immediate north of the Site. The Site is bounded by open fields to the west, with the Ribble Valley (railway) Line (RVL) located on an embankment at least 180m from the Site's eastern edge.
- 1.2.2 The Site is bounded to the south by Pendleton Brook. A further 120 m south is a solar array (SA) and Clitheroe wastewater treatment works (WwTW).
- 1.2.3 At the western edge of the WwTW lies a landfill gas to energy (LFE) plant site, benefiting from planning consent⁵ since approximately 2008. The plant operates continuously throughout the day and night. Planning documents for the LFE site are limited to a delegated report to Lancashire County Council stating RVBC had no objection to the LFE development as the plant will be in an acoustic enclosure and that based on the supporting planning documents, noise from the LFE plant "will have dissipated by the time it reaches the nearby properties over 200 m away."
- 1.2.4 Clitheroe Household Waste Recycling Centre (CHWRC) is located approximately 300m to the south-west of the Site, and operates between 09:00 and 17:00 from Friday to Tuesday.

¹ Ribble Valley Borough Council application ref. 3/2019/0999, refused 24/09/2021

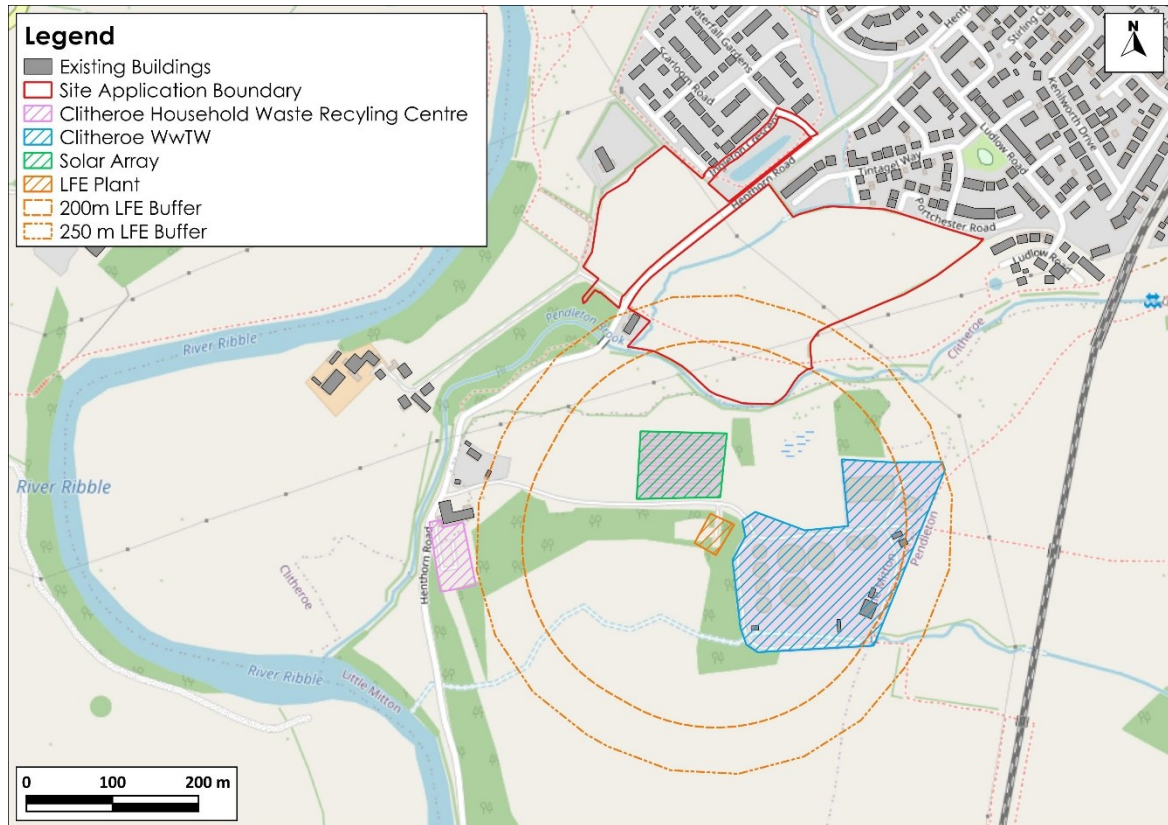
² Wardell Armstrong report ref. CMD/TD/GM10325/001, dated 23 October 2019

³ Ribble Valley Borough Council application ref. 3/2025/0997 submitted

⁴ Wardell Armstrong report ref. CG/PB/GM13551/0003, dated 21 November 2025

⁵ Ribble Valley Borough Council application re. 3/2008/0942/P,

- 1.2.5 The WwTW and LFE are accessed by Henthorn Road, which passes between the two parcels of the proposed Development Site and terminates at a farm further south of CHWRC. Consequently, the majority of daytime road traffic on Henthorn Road is associated with the CHWRC, when operating.
- 1.2.6 For reference, **Figure 1-1** shows both the 200m separation distance cited in the LFE planning documentation and the 250m standoff between the LFE and the nearest existing residential receptors.



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Figure 1-1: Site Location Plan and Wider Site Context

1.3 Proposed Development

- 1.3.1 The proposed development comprises up to 115 dwellings with associated infrastructure, with all matters reserved except for access.
- 1.3.2 The proposed Development Framework Plan (DFP) and wider site context are presented in **Figure 1-2**. Residential developable areas are positioned 50m closer to the LFE than existing dwellings, but just outside the 200m separation distance previously deemed an acceptable distance at which operational noise from the LFE would be acceptable.



Figure 1-2: Proposed Development

1.4 Noise Sources

Existing baseline

- 1.4.1 On-site observations of the WwTW were undertaken, which found that the operational noise of the WwTW is characterised as the sound of running water, with some mechanical plant audible. In areas of the Site closest to the WwTW, operational noise of the WwTW is indiscernible above the sound of running water in Pendleton Brook.
- 1.4.2 On-site observations of the SA were also undertaken, and it was noted to be silent at all times, at all locations on and around the Site.
- 1.4.3 Observations of the LFE were also undertaken, which found it was operating continuously throughout the day and night-time periods. The predominant source of noise at the boundary of the LFE was characterised as engine noise, typical of that associated with a gas-powered generator. LFE plant noise was indistinguishable from the underlying residual noise climate at all locations on-site throughout the survey period.
- 1.4.4 Operational noise from the CHWRC at 300m is expected to remain within acceptable levels, since existing dwellings are located significantly closer to the source, the Site is not anticipated to experience any change to its baseline noise climate. Furthermore, the introduction of the proposed residential development will not incur any additional restrictions on the operation of the CHWRC.
- 1.4.5 During daytime CHWRC operating hours, road traffic is the dominant source of noise on land closest to Henthorn Road. Further away from the road and throughout the night-time, faint and distant road

traffic or birdsong are the main sources of environmental noise. Trains on the RVL to the east are briefly, yet faintly audible on the Site in the quietest parts of the evening and night when the underlying noise climate is at its lowest.

- 1.4.6 Based on the above and results of the baseline noise survey detailed in this report, operational noise from the WwTW, SA and LFE, CHWRC and RVL is not considered a constraint on noise-sensitive development on the Site.

Future baseline

- 1.4.7 Road traffic and railway volumes are not expected to increase significantly in future. Therefore, future noise levels on the Site attributable to existing sources of transport noise are not expected to be materially different from existing.

1.5 Local Authority

Local Policy and Guidance

Ribble Valley Local Development Framework (LDF) and Core Strategy 2008 to 2028.

- 1.5.1 RVBC's Local Development Framework (LDF) provides the basis for planning decisions in the Ribble Valley and sets the pattern for development and investment over the coming years, and includes the Core Strategy that forms the central document of the LDF, and collectively establishes the vision and strategic planning policy framework to guide development. Policy DMG1 (General Considerations, Pg 86) sets out *amenity* requirements for new developments.
- 1.5.2 NCL contacted the application Case Officer by email on 17 March 2026, setting out the proposed survey and assessment methodology for agreement prior to any assessment works taking place. A formal response was received on 30 March 2026 agreeing in principle to the proposed assessment methodology.

2 Assessment Approach

2.1 Future Baseline Conditions

- 2.1.1 Representative future baseline conditions have been determined by way of combination of a baseline noise measurement survey and road traffic modelling.

Baseline Noise Survey

- 2.1.2 To quantify the current noise climate relevant to the Site, a baseline noise survey was conducted between 14:18 on Wednesday 08 April 2026 and 19:46 on Thursday 09 April 2026. The noise survey was designed to capture ambient and background sound levels during the daytime (07:00 – 23:00) and night-time (23:00 – 07:00) periods over a weekday at five unattended locations.
- 2.1.3 The baseline noise survey was undertaken outside of the CHWRC operational hours, due to programme constraints, including the application having already been submitted and a limited window of suitable meteorological conditions for environmental noise monitoring. Under these meteorological conditions, daytime operational noise from the WwTW, SA, and LFE would be more prominent, increasing the likelihood of adverse impacts relative to the prevailing background noise environment. Therefore, these baseline conditions allow a reasonably robust assessment of the operational noise from surrounding land uses.
- 2.1.4 The baseline noise conditions are described in **Section 3.1** with full details of the baseline noise measurement survey provided in **Appendix A2**.

Noise Modelling

- 2.1.5 AS the baseline noise survey was undertaken during a period when the CHWRC was not operating, daytime road traffic noise has been modelled using traffic data provided by the project Transport Consultant. The noise model has been prepared using the Lima-Predictor noise modelling software which implements the Department of Transport (1988) Calculation of Road Traffic Noise (CRTN)⁶ calculation methodology. Noise modelling assumptions are provided in **Appendix A3**.

Non-modelled sources

- 2.1.6 For some sources of noise, modelling is not necessarily required, nor is it readily accommodated in a modelling environment. For this assessment, the following sources have not been modelled and have been assessed separately:
- Night-time $L_{A_{\text{max}}}$ noise levels from anthropogenic noise sources, which have been assessed using the baseline noise measurement data and standard acoustic formulae where necessary.

2.2 Assessment Criteria – Noise

- 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, 2024).
- 2.2.2 A good acoustic design process should achieve optimal acoustic conditions, both internally and within external amenity spaces, but should avoid “unreasonable” acoustic conditions. Good acoustic design should prevent “unacceptable” acoustic conditions and embrace integrated solutions to

⁶ Department of Transport (1988) Calculation of Road Traffic Noise. Available: <https://www.noisemap.ltd.uk/wp-content/uploads/2020/06/CRTN.pdf>

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 selected in accordance with the relevant local and national policies and guidance (**Section 1.5** and **Appendix A4**, respectively) and by reference to the appropriate acoustics standards (see **Appendix A5**).

ProPG Stage 1: Site Suitability Assessment

- 2.2.4 The ProPG⁷ site noise risk classification presented in **Table A5-1** of **Appendix A5** is a sliding scale that does not define precise noise exposure limits to site risk classification. The criteria are intended to characterise risk for both external amenity spaces during the day and internal habitable rooms during the day and night. Importantly, the ProPG site risk assessment is normally carried out for an empty site before the Site development and any mitigation measures are applied.
- 2.2.5 For the purposes of this project, the noise thresholds that have been adopted in order to classify Site risk are defined in **Table 2-1** for the daytime and night-time period. These thresholds represent the lowest observed adverse effect level (LOAEL), significant observed adverse effect level (SOAEL) and unacceptable adverse effect level (UAE) as defined in the national noise policy and guidance in **Appendix A4**.

Table 2-1: Site Risk Noise Exposure Thresholds

ProPG Site Risk Category	Noise Exposure Threshold			ProPG Based Pre-Planning Application Advice
	dB LAeq,16hr	dB LAeq,8hr	dB LAfmax	
Negligible (Below LOAEL)	<50	<40	10 th highest <55	Indicates development site is likely to be acceptable from a noise perspective
Low (LOAEL- SOAEL)	50 – 63	40 – 53	10 th highest 55 – 68	Indicates development site is likely to be acceptable from a noise perspective provided that a good acoustic design process is followed and demonstrated
Medium (Above SOAEL)	63 – 70	53 – 66	10 th highest 68 – 81	Indicated site is less suitable from a noise perspective. A subsequent application may be refused unless a good acoustic design process is followed and demonstrated
High (UAE)	>70	>66	10 th highest >81	Indicates an increased risk that the development would be refused on noise grounds.

ProPG Stage 2: Full Assessment

- 2.2.6 Where the ProPG Stage 1 assessment indicates that the site is at low, medium or high risk of adverse noise effects, a ProPG Stage 2 assessment should be carried out. The following sections outline the relevant internal and external noise guidelines considered in the assessment.

⁷ Professional Practice Guidance on Planning and Noise: New Residential Development (2017). Institute of Acoustics, Association of Noise Consultants, and Chartered Institute of Environmental Health.

Target Noise Levels

- 2.2.7 Target internal noise levels relate to habitable rooms (bedrooms and living rooms) under whole dwelling ventilation conditions⁸ and are based on the internal noise guidelines set out in BS 8233:2014⁹.
- 2.2.8 There is no requirement, with reference to BS 8233:2014 and the Building Regulations Approved Document F – Ventilation (ADF), or any local policy or guidance, for the target internal noise levels to be achieved with open windows.
- 2.2.9 The initial assumptions on the sound insulation performance of the building envelope constructions are provided in **Appendix A6**. For generic 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). 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.
- 2.2.10 Target external noise levels relate to private amenity spaces (i.e. gardens, balconies and roof terraces) or communal amenity spaces for the sole use of residents of the proposed Development and are based on the guidance set out in BS 8233:2014.
- 2.2.11 The target noise levels are presented in **Table 2-2**.

Table 2-2: 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 LAeq,16hr	-
Dining Room	Dining	≤ 40 dB LAeq,16hr	-
Bedroom	Sleeping (daytime resting)	≤ 35 dB LAeq,16hr	≤ 30 dB LAeq,8hr ≤ 45 dB LA _{Fmax} (normally less than 10 times per night)
External Amenity Areas	Resting	≤ 50-55 dB LAeq,16hr	-

⁸ As required by The Building Regulations Approved Document F - Ventilation.

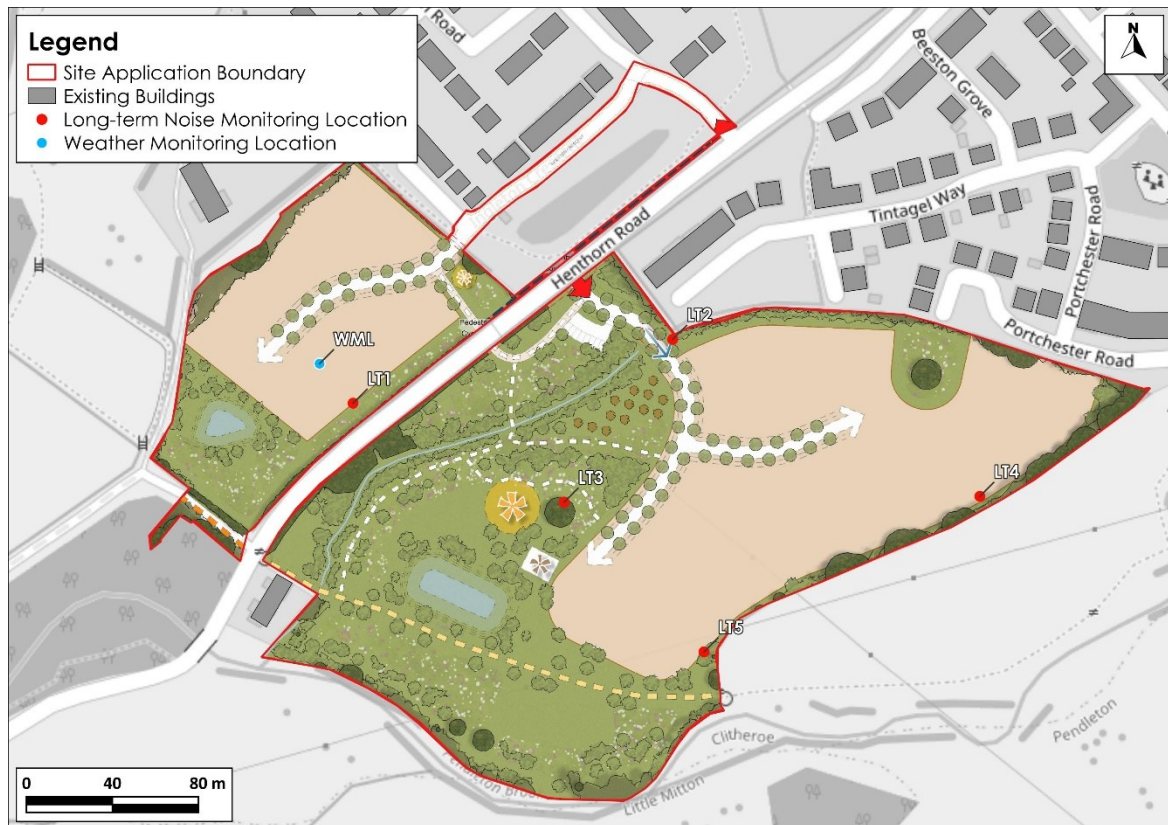
⁹ British Standard 8233:2014 Guidance on sound insulation and noise reduction for buildings.

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 a good understanding of the noise conditions across the site. Photographs of the noise monitoring locations are provided in **Appendix A2.2**.



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Figure 3-1: Baseline Noise Survey Monitoring Locations

Table 3-1: Summary of Noise Survey Locations

Location	Description	Observations
LT1	Unattended free-field monitoring location, 1.4 m above ground. 9m from the Site boundary with Henthorn Road. Location chosen to measure road traffic noise on Henthorn Road, and noise from other nearby non-residential land uses, at a location representative of proposed residential developable areas closest to Henthorn Road.	Birdsong was dominant throughout the survey. Occasional road traffic. No noise from WwTW, SA, or LFE.
LT2	Unattended free-field monitoring location, 1.4 m above ground. 1m from the Site boundary. Location chosen to measure road traffic noise on Henthorn Road, and noise from other nearby non-residential land uses, at a location representative of proposed residential developable areas set well back from Henthorn Road.	Birdsong was dominant throughout the survey. Occasional road traffic on Henthorn Road just audible. Distant trains on the RVL faintly audible in the evening/night. No noise from WwTW, SA, or LFE.
LT3	Unattended free-field monitoring location, 1.4 m above ground towards the centre of the southern parcel. Location chosen to measure road traffic noise on Henthorn Road, and noise from other nearby non-residential land uses, at a location representative of proposed residential developable areas set well back from Henthorn Road.	Birdsong was dominant throughout the survey. Occasional road traffic on Henthorn Road just audible. Distant trains on the RVL faintly audible in the evening/night. Faint sound of running water in Pendleton Brook. No noise from WwTW, SA, or LFE.
LT4	Unattended free-field monitoring location, 1.4 m above ground towards the eastern boundary. Location chosen to measure road traffic noise on Henthorn Road, noise from passing trains on the RVL, and noise from other nearby non-residential land uses, at a location representative of proposed residential developable areas closest to the RVL.	Birdsong was dominant throughout the survey. Occasional road traffic on Henthorn Road just audible. Distant trains on the RVL faintly audible in the evening/night. Sound of running water in Pendleton Brook. No noise from WwTW, SA, or LFE.
LT5	Unattended free-field monitoring location, 1.4 m above ground towards the southern boundary. Location chosen to measure road traffic noise on Henthorn Road, noise from passing trains on the RVL, and noise from other nearby non-residential land uses, at a location representative of proposed residential developable areas closest to the WwTW, SA and LFE.	Birdsong was dominant throughout the survey. Distant road traffic just audible. Distant trains on the RVL faintly audible in the evening/night. Sound of running water in Pendleton Brook. No noise from WwTW, SA, LFE or CHWRC.

- 3.1.2 A weather station was installed at WML, which is in the centre of the northern parcel, away from any existing buildings or wooded areas. No rainfall was recorded and temperatures were between 6°C and 18°C. Windspeeds measured with an anemometer whilst on site were below 3m/s at all times. Therefore, all noise data have been used in the data analysis and assessment. Full details of the weather monitoring are provided in **Appendix A2.3**.
- 3.1.3 As the wind was from the south throughout the survey, operational noise from non-residential land uses to the south were observed and measured under more favourable down-wind conditions.

- 3.1.4 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.
- 3.1.5 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 mixed octave bands and A-weighted broadband levels in 2-minute integration periods, at a 100 ms sample rate.
- 3.1.6 The results of the unattended noise measurement survey are summarised in **Table 3-2**, rounded to the nearest decibel. The full noise measurement survey results are presented in **Appendix A2**.

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

Location	Period	$L_{Aeq,T}$ (dB)	L_{AFmax} (10 th Highest) (dB) ¹¹	$L_{A90,5min}$ (mean) (dB)	$L_{A90,5min}$ (mode) (dB)
LT1	Daytime (07:00 – 23:00)	48	-	39	38
	Night-time (23:00 – 07:00)	37	54	39	38
LT2	Daytime (07:00 – 23:00)	47	-	39	39
	Night-time (23:00 – 07:00)	35	<47	39	39
LT3	Daytime (07:00 – 23:00)	44	-	40	39
	Night-time (23:00 – 07:00)	36	<48	40	39
LT4	Daytime (07:00 – 23:00)	47	-	41	41
	Night-time (23:00 – 07:00)	37	<48	41	41
LT5	Daytime (07:00 – 23:00)	46	-	40	42
	Night-time (23:00 – 07:00)	39	< 49	40	42

¹¹ Survey Data processed to excludes majority of birdsong and extraneous noise to obtain appropriate data for the assessment.

4 Noise Assessment

4.1 Initial Site Noise Risk Assessment (ProPG Stage 1)

- 4.1.1 An initial site noise risk assessment has been undertaken to provide an indication of the likely risk of adverse effects and the suitability of the Site for residential development, excluding any subsequent mitigation measures which may be included as part of the development proposals.
- 4.1.2 Operational noise from the WwTW, SA, LFE, and CHWRC is not expected to be at a level that would preclude noise-sensitive development on the Site and therefore are not considered further in this assessment.
- 4.1.3 The measured daytime external noise levels presented in **Table 3-2** have first been compared against the noise modelled road traffic noise levels based on traffic flow data provided by the project's transport consultant, and are summarised in **Table 4-1**. The comparison indicates that during the daytime period on days when the CHWRC is operational, road traffic is likely the dominant source of anthropogenic environmental noise on close to Henthorn Road (55 dB $L_{Aeq,16hr}$). At LT2 to LT5, road traffic noise is expected to be significantly lower (at or below 44 dB $L_{Aeq,16hr}$), and may only be dominant on land in the vicinity of LT2 and LT3.

Table 4-1: Determination of Expected Baseline Noise Levels

Location	Measured Baseline (Wed-Thu)		Predicted Daytime Road Traffic $L_{Aeq,16hr}$ (dB)	Difference ¹²	Expected Baseline (Fri-Mon, CHWRC operational)
	Sound Source	Measured Daytime $L_{Aeq,16hr}$ (dB)			
LT1	Road traffic	48	55	+6	Road traffic is likely dominant Friday-Tuesday
LT2	Birdsong	47	44	-3	Road traffic is likely faintly audible Friday-Tuesday
LT3	Birdsong	44	43	-1	
LT4	Birdsong	47	34	-13	Birdsong is likely dominant at all times
LT5	Birdsong	46	36	-10	

- 4.1.4 **Table 4-2** presents the initial site noise risk assessment for the Site. For the daytime assessment, the highest noise levels presented in **Table 4-1** have been used that include typical road traffic noise from Henthorn Road. For the night-time period, the baseline noise survey results have been adopted as they provide a representative characterisation of the typical night-time acoustic climate across the Site.

¹² To one decimal place

Table 4-2: Initial Site Noise Risk Assessment

Location	Dominant source	Daytime L _{Aeq,16hr} (dB)	Night-time L _{Aeq,8hr} (dB)	Night-time 10 th Highest L _{AFmax} (dB)	ProPG Stage 1 Outcome
LT1	Road traffic	55	37	54	Likely low risk
LT2	Road traffic	47	35	47	Likely negligible risk
LT3	Birdsong	44	36	48	Likely negligible risk
LT4	Birdsong	47	37	48	Likely negligible risk
LT5	Birdsong	46	39	49	Likely negligible risk

Summary

- 4.1.5 For the daytime period, **Table 4-2** indicates areas of the Site within approximately 25 m of Henthorn Road are generally at low risk during the daytime. All other areas of the Site are at negligible risk in the daytime. During the night-time period, all parts of the Site are at negligible risk.

4.2 Assessment of Noise Impacts (ProPG Stage 2)

Good Acoustic Design

- 4.2.1 The ProPG Stage 2 assessment has been prepared to an outline level of detail informed by the DFP (**Figure 1-2**). The following measures can be identified:
- A set-back of 10 m between the development area in the northern parcel and Henthorn Road.
 - A set-back of at least 60 m between the development area in the southern parcel and Henthorn Road.

Internal Noise Levels

- 4.2.2 **Table 4-3** sets out the calculated internal noise levels based on the external noise levels summarised in **Table 4-2**, assuming the initial sound level difference from outside to inside of 23 dB(A) through closed standard double-glazed windows and non-acoustic background ventilators.

Table 4-3: Calculated Internal Noise Levels – Standard Double-Glazed Windows and Non-Acoustic Background Ventilators

Location	Living Areas and Bedrooms	Bedrooms	
	L _{Aeq,16hr} (dB)	L _{Aeq,8hr} (dB)	L _{Amax} (night) (dB)
LT1	32	14	31
LT2	24	12	24
LT3	21	13	25
LT4	24	14	25
LT5	23	16	26

4.2.3 The target internal noise levels are likely achievable for all dwellings within the proposed developable areas based on the standard double glazing and non-acoustic background ventilator specifications assumed in **Appendix A6**.

4.2.4 With open windows, the internal target noise levels can be expected to be achieved in the majority of habitable rooms of dwellings in the northern parcel, and all of dwellings in the southern parcel.

External Daytime Noise Levels in Amenity Spaces

4.2.5 **Table 4-4** summarises the daytime $L_{Aeq,16hr}$ noise levels at the measurement locations shown in **Figure 3-1**.

Table 4-4: External Noise Levels

Location	External Amenity Areas
	$L_{Aeq,16hr}$
LT1	55
LT2	47
LT3	44
LT4	47
LT5	46

4.2.6 Daytime external noise levels are likely to exceed the upper guideline level of 55 dB $L_{Aeq,16h}$ on land within approximately 10m of the kerb of Henthorn Road. However, the target noise level range in all other proposed residential developable areas of the Development will be met without any specific noise mitigation measures.

5 Acoustic Design Statement

5.1 Good Acoustic Design

- 5.1.1 This Acoustic Design Statement is based upon the proposed Development as shown in **Figure 1-2**. Should any layout be brought forward for the Development with noise-sensitive buildings or receptors located closer to the assessed noise sources, new advice may be required.
- 5.1.2 Building on the good acoustic design measures identified in **Section 4.2**, as the design of the Development progresses, opportunities for the following good acoustic design measures should be explored for the northern parcel:
- Maximising the distance between dwellings and Henthorn Road;
 - Placing uses which have a lower sensitivity (e.g. internal roads, public footpaths), to noise between dwellings and Henthorn Road;
 - Using the building massing (i.e. dwellings and garages) to shield external amenity spaces and other dwellings from road traffic noise;
 - Orienting non-habitable rooms towards, and habitable rooms of dwellings in the southernmost exposed parts of the northern parcel away from Henthorn Road.

5.2 Internal Noise Levels

- 5.2.1 Based on the assessment in **Section 4.2**, residential dwellings in proposed residential developable areas of the Site achieve the target internal noise levels with standard double-glazed windows and non-acoustic background ventilators as described in **Appendix A6**.
- 5.2.2 The precise building envelope sound insulation specifications will be dependent on the final layout of buildings on the Site, along with the efficacy of other good acoustic design measures.

5.3 External Noise Levels

- 5.3.1 With reference to the assessment of external noise levels in amenity spaces (**Section 4.2**), specific noise mitigation is unlikely to be required.
- 5.3.2 The Development should be designed such that the layout of buildings along the southern edges of residential developable areas in the northern parcel provide self-screening to their rear gardens. This would result in relatively few garden areas remaining exposed to the road traffic noise source, and significantly reduce the need for localised garden boundary treatment (for example acoustic fencing or brick walls) to reduce the external noise levels in these spaces. Where necessary, the required boundary treatment should:
- Be imperforate (have no gaps or holes)¹³;
 - Incorporate suitable gravel boards to seal any gaps at the base of the fence;
 - Achieve a surface mass of at least 12 kg/m² and be at least 12 mm thick.

¹³ Note that feather edge boards are not suitable

6 Conclusions

- 6.1.1 This report describes the potential impact of noise on an outline proposed residential development (the "Development") on land off Henthorn Road, Clitheroe (the 'Site'). The assessment has been carried out by Noise Consultants (NCL), part of Logika Group.

Existing Site

- 1.1.2 The existing Site comprises two parcels of land; the northern parcel used for grazing, and the southern parcel, itself comprising open fields used for grazing, public footpaths, a watercourse towards the northern edge of the parcel. A wastewater treatment works, solar array, landfill gas to electricity generator, and Clitheroe household waste recycling centre are located to the south of the site.

Proposed Development

- 6.1.2 The Development will comprise up to 115 dwellings, with all matters reserved except for access.

Noise Sources

- 6.1.3 In the daytime, road traffic on Henthorn Road is the dominant source of noise on land closest to Henthorn Road. On land further away from Henthorn Road, birdsong is the dominant source of noise. During the night-time, very few trains pass the Site to the south in the Ribble Valley Line, and the CHWRC is not operational, and consequently, birdsong is the main source of noise.

Baseline Survey and Noise Modelling

- 6.1.4 To quantify current levels of ambient noise on the Site, an unattended noise survey was conducted over a period of 29 hours on a weekday. Future daytime road traffic noise levels on days which the CHWRC is operational have been predicted based on traffic volume data provided by the project transport consultant.

Initial Site Noise Risk Assessment

- 6.1.5 The ProPG Stage 1 Site Suitability Assessment indicates that land closest to Henthorn Road is at low risk of adverse noise effects during the daytime. All other areas of the Site are at negligible risk in the daytime. All areas of the Site were found to be at negligible risk during the night-time.

Noise Assessment

- 6.1.6 Internal noise levels are likely to be achievable using standard glazing and non-acoustic background ventilator specifications across the Site during the daytime and night-time periods. External noise levels are within the target noise level range in all proposed residential developable areas of the proposed Development.

Good Acoustic Design Considerations and Mitigation

- 6.1.7 The Development Framework Plan includes a set-back provision from Henthorn Road in the northern parcel, and at least 60m in the southern parcel.
- 6.1.8 Good acoustic design measures have been recommended for consideration in the development of the layout in the northern parcel. The need for site-wide or localised noise mitigation measures is minimal. Subject to the final site layout plan, acceptable internal noise conditions can be achieved with a standard building envelope design. Some garden areas in the southernmost areas of the proposed residential developable areas in the northern parcel may require localised acoustic garden boundary treatment, subject to other factors and good acoustic design.

Conclusions

- 6.1.9 On the basis of this assessment, the Development is a negligible to low risk Site. Subject to the implementation of good acoustic design as set out in this document, noise is not considered a material constraint to the proposed Development.
- 6.1.10 Therefore, the Development is not considered to give rise to a significant adverse impact on health and quality of life in relation to noise, in accordance with paragraphs 187 and 198, paragraph 200 ('agent of change principle') of the NPPF, or Policy DMG1 of the Ribble Valley Core Strategy 2008 to 2028.

7 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 adaption 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 Baseline Noise Survey Measurement Locations



Figure A2-1: Noise Monitoring Location LT1, Facing South



Figure A2-2: Noise Monitoring Location LT2, Facing North



Figure A2-3: Noise Monitoring Location LT3, Facing North



Figure A2-4: Noise Monitoring Location LT4, Facing South



Figure A2-5: Noise Monitoring Location LT5, Facing South-East



Figure A2-6: Weather Monitoring Location WML, Facing South towards LT1

A2.3 Survey Conditions

- A2.3.1 A weather station was located close to noise monitoring location LT1 in the northern parcel. **Figure A2-7** presents the weather conditions during the noise survey period. The prevailing weather conditions were generally dry and mild with limited cloud cover. Average wind speeds measured on Site with a handheld anemometer were below 3 ms^{-1} at all times, from the south,

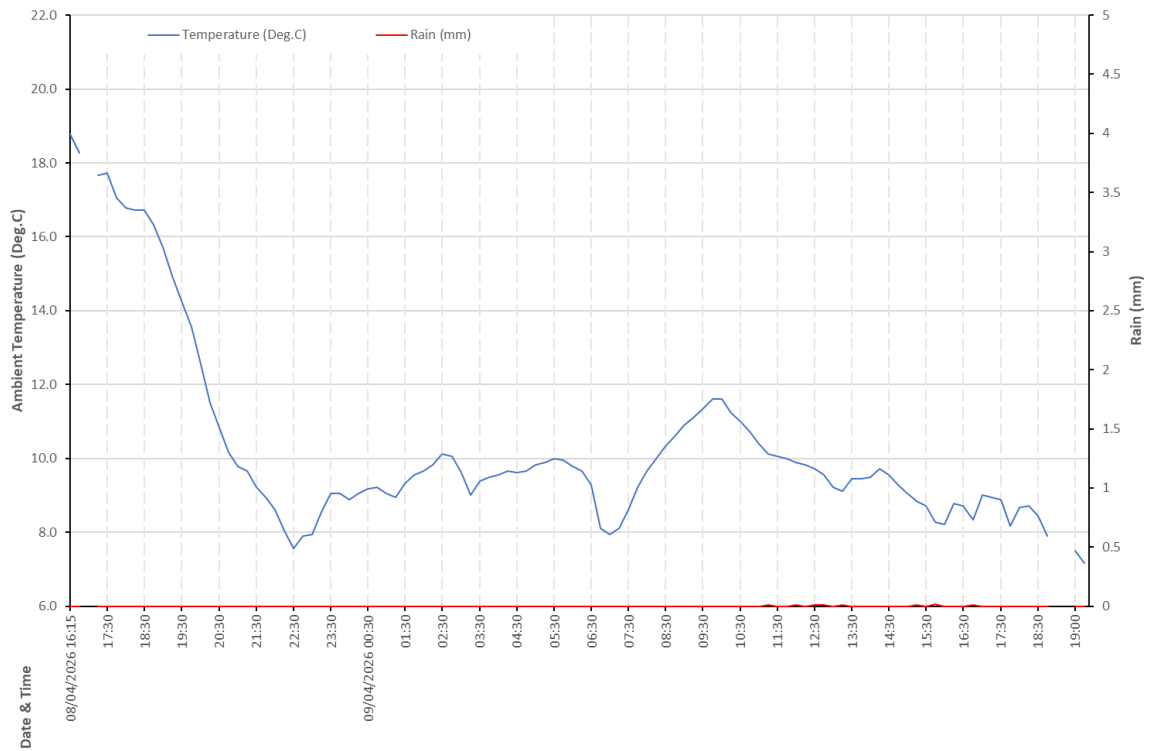


Figure A2-7: Weather Conditions During Noise Measurement Survey

A2.4 Baseline Noise Monitoring Equipment

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

Table A2-1: Baseline Noise Survey Equipment

Equipment	Make and Model	Serial Number	Date of Last Laboratory Calibration
Sound Level Meter	Svan 971A	121090	27/06/2024
Sound Level Meter	Svan 971A	131625	04/11/2024
Sound Level Meter	Svan 971A	131620	04/11/2024
Sound Level Meter	Svan 971A	131661	18/11/2024
Sound Level Meter	Svan 971A	131670	18/11/2024
Acoustic Calibrator	Svan 33B	125633	09/01/2026
Weather Station	Davis Vantage Vue	MT210407033	n/a

A2.5 Time-Level History Charts

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

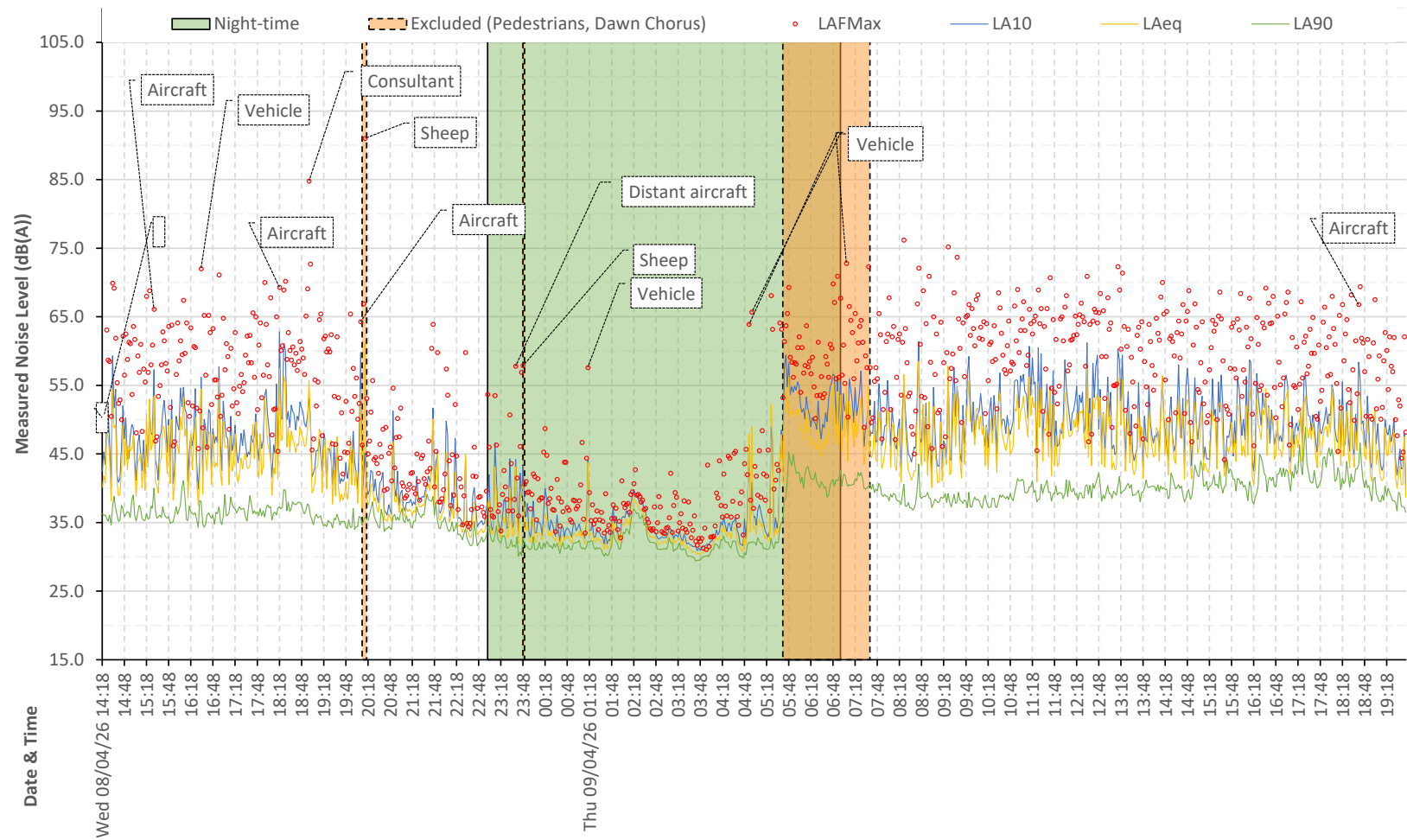


Figure A2-8: Time History Chart for Noise Monitoring Location LT1



Figure A2-9: Time History Chart for Noise Monitoring Location LT2

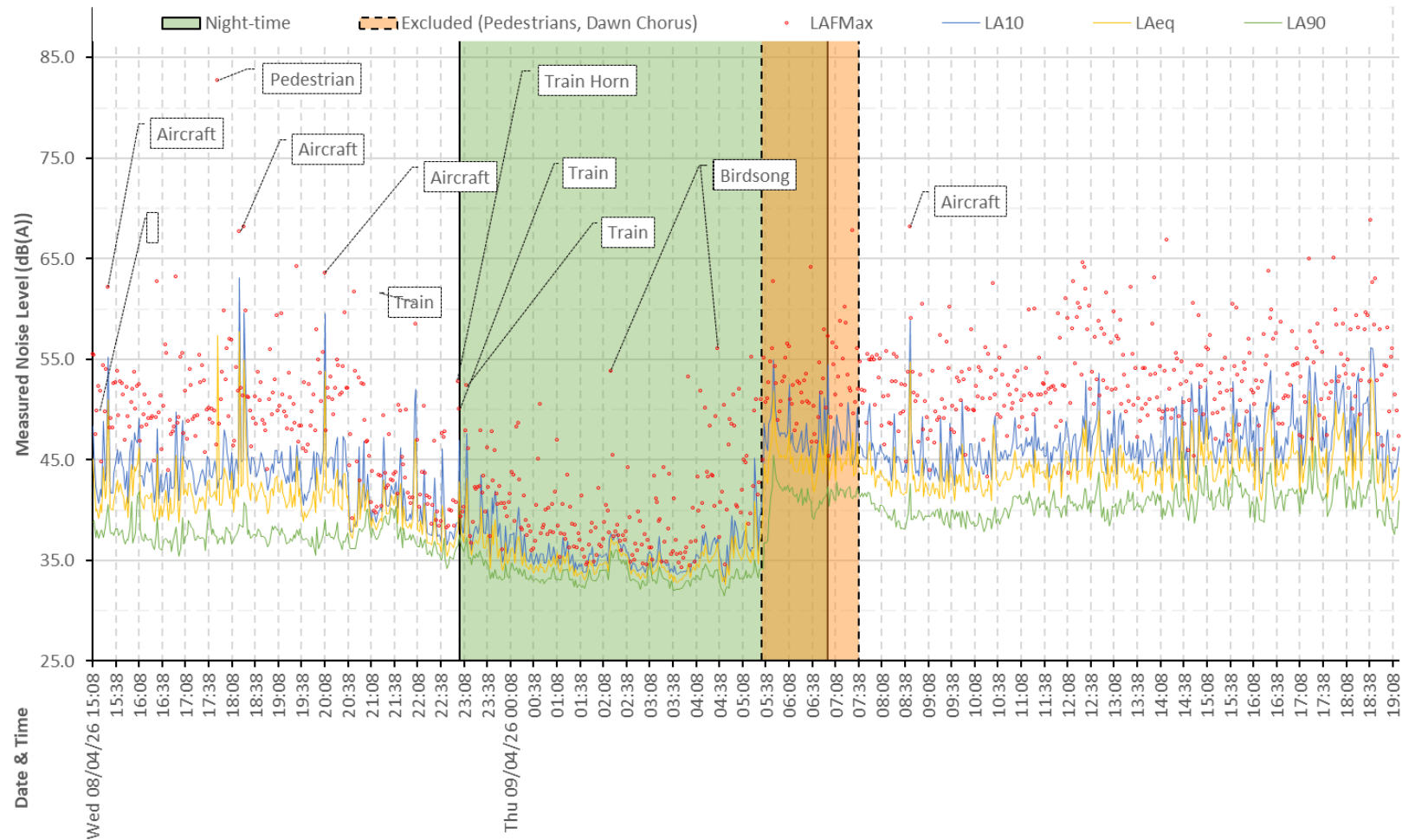


Figure A2-10: Time History Chart for Noise Monitoring Location LT3

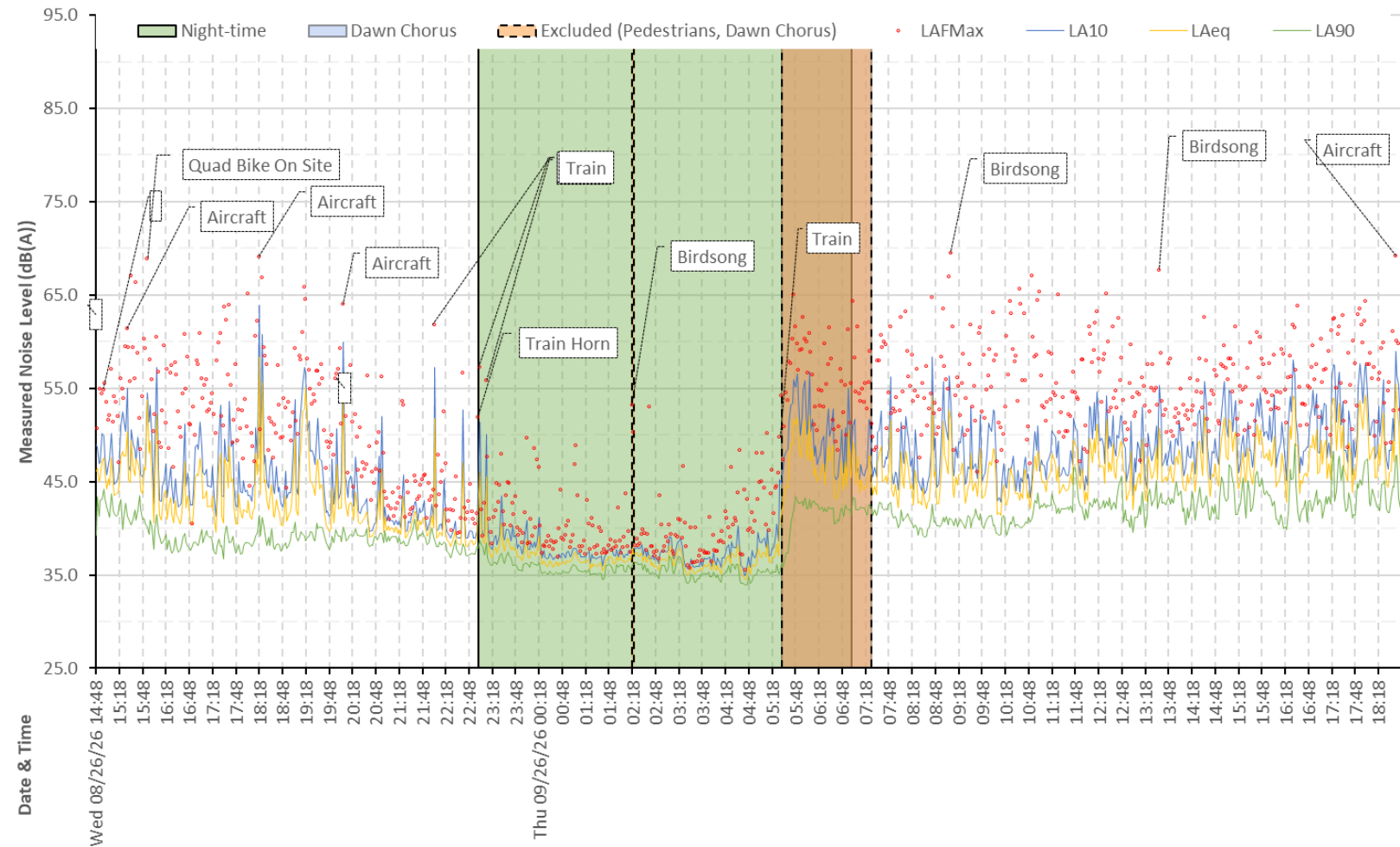


Figure A2-11: Time History Chart for Noise Monitoring Location LT4

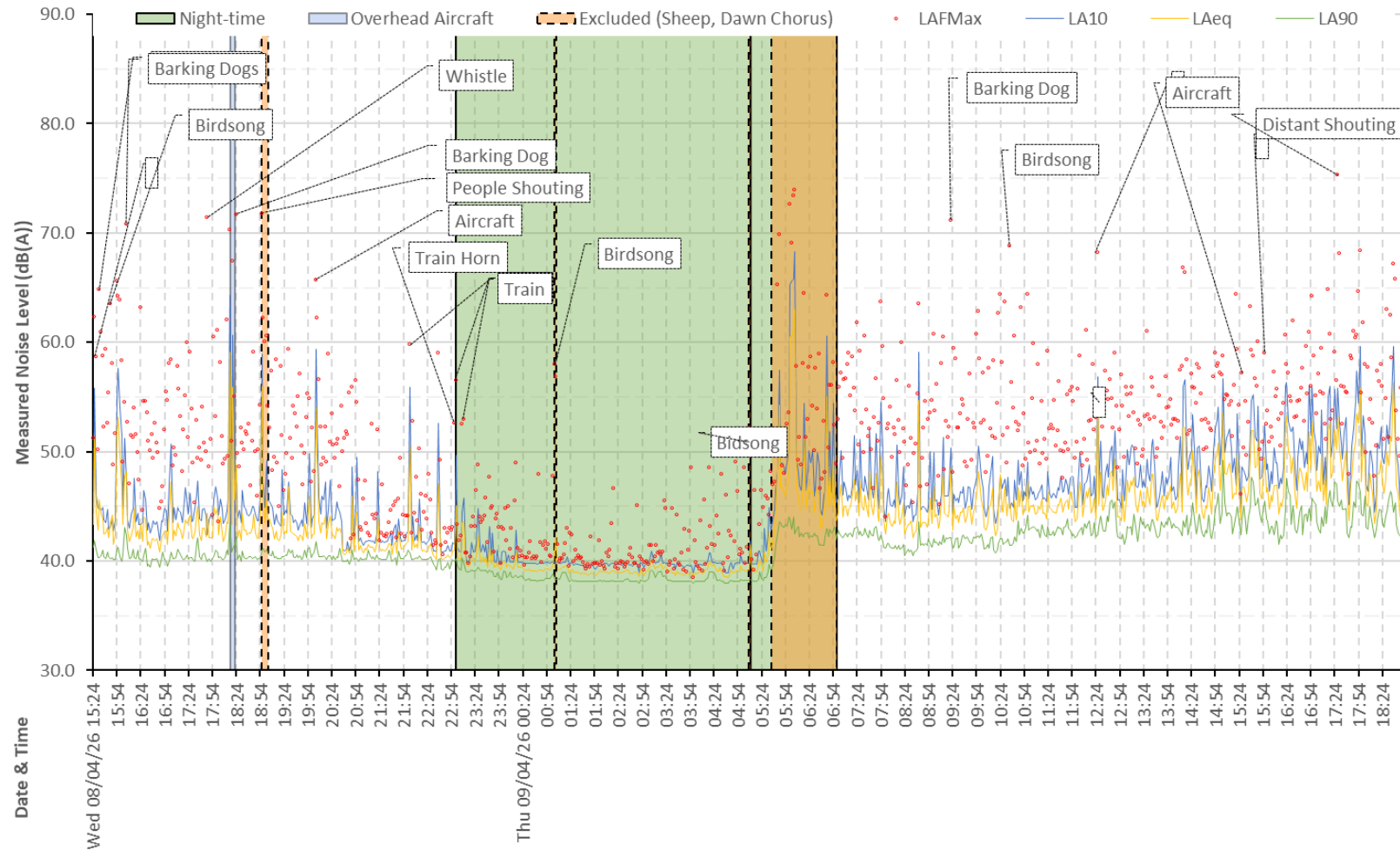


Figure A2-12: Time History Chart for Noise Monitoring Location LT5

A3 Modelling Assumptions

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

Modelling Parameter	Input Parameter
Calculation methodology	Department of Transport (1988) Calculation of Road Traffic Noise.
Topography	Digital Terrain Map (DTM) Obtained from Environment Agency's National LIDAR Programme ¹⁴ 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.
Adverse weather conditions	Noise model default settings – downwind propagation to all receivers
Heights of existing and proposed buildings	Existing buildings – based on digital building height model calculated from DTM and Digital Surface Model (DSM) ¹⁴ and on Site observations
Road traffic Data	18hr AAWT = 761 HGV = 130 (15%) Average measured speed: ~30 mph (48 kmh) Derived from 7-day ATC data provided by the project's Transport Consultant

¹⁴ Available at <https://environment.data.gov.uk/survey> (Accessed April 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, 2024)

- 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

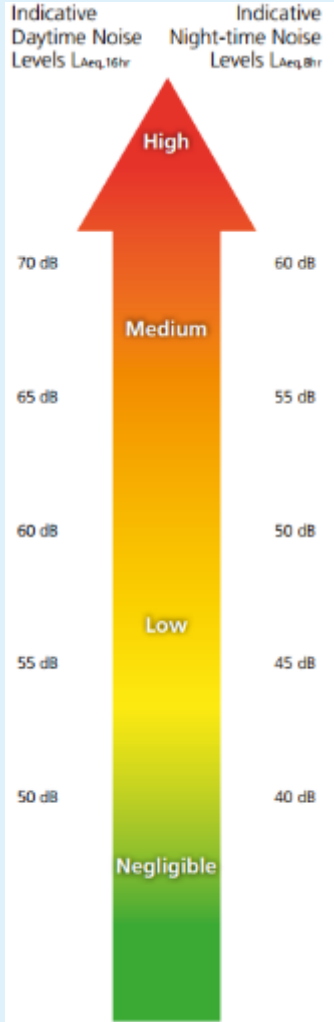
- A4.3.5 PPG-N also provides guidance in terms of what factors may influence whether noise could become a concern. To mitigate conflicts between new developments and existing businesses or facilities, the agent of change (typically the developer) is responsible for assessing and addressing potential 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 minimizing 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 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).
- #### A5.1.7 Stage 1 – Initial Risk Assessment
- A5.1.8 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 negligible risk.		

A5.1.9 ProPG is clear that an Acoustic Design Statement should be included as part of a planning application where the risk is anything above 'negligible'.

A5.1.10 Stage 2 – Full Assessment

A5.1.11 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*”.

A5.1.12 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 ‘<i>Guidance on Sound Insulation and Noise Reduction for Buildings</i>’ 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

Element	Potential Effect Without Noise Mitigation
	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 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.

A5.1.13 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.

A5.1.14 Acoustic Design Statement (ADS)

A5.1.15 ProPG requires that the Acoustic Design Statement (ADS) provides 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.

A5.1.16 Supporting Decision-Makers

A5.1.17 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.

A5.1.18 Sites Exposed to Industrial and/or Commercial Noise

- A5.1.19 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.
- A5.1.20 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.
- A5.1.21 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 is applicable 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

A5.2.3 Internal Noise

- A5.2.4 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.
- A5.2.5 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.

- A5.2.6 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."

- A5.2.7 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.

A5.2.8 External Amenity

- A5.2.9 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"*.

- A5.2.10 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).

A6 Assessment Assumptions

A6.1 Internal Spaces

A6.1.1 For the purposes of the outline noise assessment, internal habitable rooms are assumed to have the following dimensions and glazed areas:

- Living Rooms: floor area 12m², ceiling height 2.4 m, glazed area 3.8 m²
- Bedrooms: floor and ceiling area 9m², ceiling height 2.4 m, glazed area 1.5 m²

A6.2 Standard Building Envelope Sound Insulation Specifications

A6.2.1 Walls, Roofs and Windows

A6.2.2 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 example constructions have been obtained from BS 8233:2014.

A6.2.3 Standard thermal double glazing is assumed based on a generic product specification of 6 mm glass / 12 mm air gap / 6 mm glass.

A6.2.4 **Table A6-1** summarises the sound insulation performance specifications 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 ¹⁵	34	40	44	45	51	56	56	59	51 (-1; -4)
Standard Cold Roof ¹⁶	25	28	34	40	45	49	49	52	43 (-2; -5)
Double Glazing (6/12/6) ¹⁷	18	20	19	29	38	36	44	44	32 (-2; -5)

A6.2.5 Background Ventilation

A6.2.6 For the purposes of an outline noise assessment based on a standard building envelope sound insulation specification, it has been assumed that whole dwelling ventilation provision in habitable rooms (living rooms and bedrooms) would achieve the sound insulation performance specification advised in **Table A6-2** for a background ventilator. This performance is broadly commensurate with an equivalent area of 8,000 mm².

A6.2.7 The acoustic performance of most background ventilation products will be specified in terms of a single ventilator. Where a room requires more than one ventilator, this will need to be compensated for by adopting a commensurately higher performance for individual units. For example, if a room

¹⁵ BS 8233:2014 Annex G More Rigorous Calculation.

¹⁶ Pitched, tiled roof with 100 mm mineral wool above 12.5 mm plasterboard ceiling.

¹⁷ Based on Pilkington Insulight 6/12/6.

required two or three ventilators, this would require an improvement in performance of 3 or 5dB respectively per unit.

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 8,000 mm ² non-acoustic background ventilator	31	31	31	31	31	31	31	31	32 (-1; -1)



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