

Land off Church Road, Laverstock

NOISE ASSESSMENT

10679 NA01 Rv4

Date 29/06/2026

Hallam Land

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1 Introduction

1.1 Background

1.1.0.1 This Noise Assessment has been prepared by Brookbanks, on behalf of the applicant, Hallam Land (HL) in support of an outline planning application for the residential development on land off Church Road, Laverstock (the Site). The site is located within the administrative area of Wiltshire Council (WC).

1.1.0.2 This report has regard to the noise generated from vehicular traffic adjacent to the Site. This Noise Assessment is to be used to determine what measures, if any, are required to achieve a suitable acoustic environment for future residents.

1.2 Site Location

1.2.0.3 The proposed development is to build a residential development that includes up to 110 dwellings within a 3.15ha area. The Site will include greenspace amenity.

1.2.0.4 The majority of the Site is currently agricultural and is not thought to have been historically subject to any significant built development.

1.2.0.5 The Parameters Plan is shown on Figure 1.1.



2 Planning Policy and Noise Guidance Review

2.1 Local and National Noise Policy Guidance

2.1.0.1 The assessment methodology is also based on the following policy and guidance documents:

- National Planning Policy Framework (NPPF), December 2024
- Noise Policy Statement for England (NPSE)
- ProPG: Professional Practice Guidance on Planning & Noise - New Residential Development Supplementary Document 2 (SD2-I) Good Acoustic Design, May 2017
- World Health Organisation "Guidelines for Community Noise", Berglund et. al., 1999 (WHO Guidelines)
- BS8233:2014: "Guidance on sound insulation and noise reduction for buildings"
- Approved Document Part O to the Building Regulations 2010: England 2021
- Acoustics Ventilation and Overheating (AVO) - Residential Design Guide, Association of Noise Consultants (ANC) & Institute of Acoustics (IOA), Version 1.1, January 2020
- BS4142:2014+A1:2019: "Method for rating and assessing industrial and commercial sound"

2.1.0.2 A review of the relevant planning policy and acoustic guidance documents is provided in Appendix A.

3 Baseline Noise Survey

3.1.1.1 A noise survey of the site was undertaken over the period of 18 to 23 February 2026 to measure ambient sound levels affecting the proposed development site.

3.1.1.2 Measurements were undertaken in accordance with the guidance outlined in BS 7445-1:2003.

3.1.1.3 Measurement positions were free-field, i.e. at least 3.5m from sound reflecting surfaces except the ground.

3.1.1.4 The measurement locations are presented in Figure 3.1, and can be described:

- LT1: On the western boundary of the Site, adjacent to Church Road, where road traffic noise was dominant.
- LT2: On the southern boundary of the Site, adjacent to Enovation Controls, where road traffic was still dominant, however some delivery noise was noted during collection of the survey.

3.1.1.5 Wind shields were fitted to measurement microphones at all times.

3.1.1.6 A summary of the 16-hour daytime (07:00 to 23:00) and 8-hour night time (23:00 to 07:00) equivalent continuous levels ($L_{Aeq,T}$) for all positions are presented in Table 3.1. The $L_{Aeq,T}$ levels presented are the logarithmic average of the measured $L_{Aeq,16hr}$ and $L_{Aeq,8hr}$ values for the period.

Measurement Position LT1			
Wednesday 12:45 18/02/2026 - Thursday 07:00 19/02/2026	Daytime	68dB	$L_{Aeq,16hr}$
	Night-time	57dB	$L_{Aeq,8hr}$
Thursday 07:00 19/02/2026 - Friday 07:00 20/02/2026	Daytime	66dB	$L_{Aeq,16hr}$
	Night-time	67dB	$L_{Aeq,8hr}$
Friday 07:00 20/02/2026 - Saturday 07:00 21/02/2026	Daytime	66dB	$L_{Aeq,16hr}$
	Night-time	52dB	$L_{Aeq,8hr}$
Saturday 07:00 21/02/2026 - Sunday 07:00 22/02/2026	Daytime	66dB	$L_{Aeq,16hr}$
	Night-time	56dB	$L_{Aeq,8hr}$
Sunday 07:00 22/02/2026 - Monday 07:00 23/02/2026	Daytime	64dB	$L_{Aeq,16hr}$
	Night-time	54dB	$L_{Aeq,8hr}$
Monday 07:00 23/02/2026 - Tuesday 12:00 24/02/2026	Daytime	66dB	$L_{Aeq,16hr}$
Measurement Position LT2			
Wednesday 13:00 18/02/2026 - Thursday 07:00 19/02/2026	Daytime	52dB	$L_{Aeq,16hr}$
	Night-time	49dB	$L_{Aeq,8hr}$
Thursday 07:00 19/02/2026 - Friday 07:00 20/02/2026	Daytime	57dB	$L_{Aeq,16hr}$
	Night-time	61dB	$L_{Aeq,8hr}$
Friday 07:00 20/02/2026 - Saturday 07:00 21/02/2026	Daytime	53dB	$L_{Aeq,16hr}$
	Night-time	42dB	$L_{Aeq,8hr}$
Saturday 07:00 21/02/2026 - Sunday 07:00 22/02/2026	Daytime	51dB	$L_{Aeq,16hr}$
	Night-time	43dB	$L_{Aeq,8hr}$
Sunday 07:00 22/02/2026 - Monday 07:00 23/02/2026	Daytime	52dB	$L_{Aeq,16hr}$
	Night-time	49dB	$L_{Aeq,8hr}$
Monday 07:00 23/02/2026 - Tuesday 12:00 24/02/2026	Daytime	55dB	$L_{Aeq,16hr}$

Table 3.1: Summary of L_{Aeq} Measured Noise Levels

3.1.1.7 Table 3.2 presents a summary of maximum sound pressure levels exceeded 10 times during night-time (23:00 to 07:00).

Measurement Position	Highest dB L_{AFmax} exceeded 10 or more times a night
LT1	80
LT2	67

Table 3.2: Summary of L_{Amax} Measured Noise Levels



Figure 3.1: Measurement Positions

4 SoundPLAN model

4.1.1.1 In order to predict the future noise environment across the Site, a 3D noise model has been generated through the SoundPLAN computer software package.

4.1.1.2 The noise map models have been generated based on traffic data provided by Ridge, and on the basis of the survey measurement results.

4.1.1.3 The modelling was carried-out on the basis of:

- Ground absorption set to 0.5
- Order of reflection set to 2
- Temperature 10°C and 70% humidity
- Reflection loss from buildings set to 2.5dB, in line with CRTN guidance

4.1.1.4 The daytime and night-time acoustic environments are presented below.

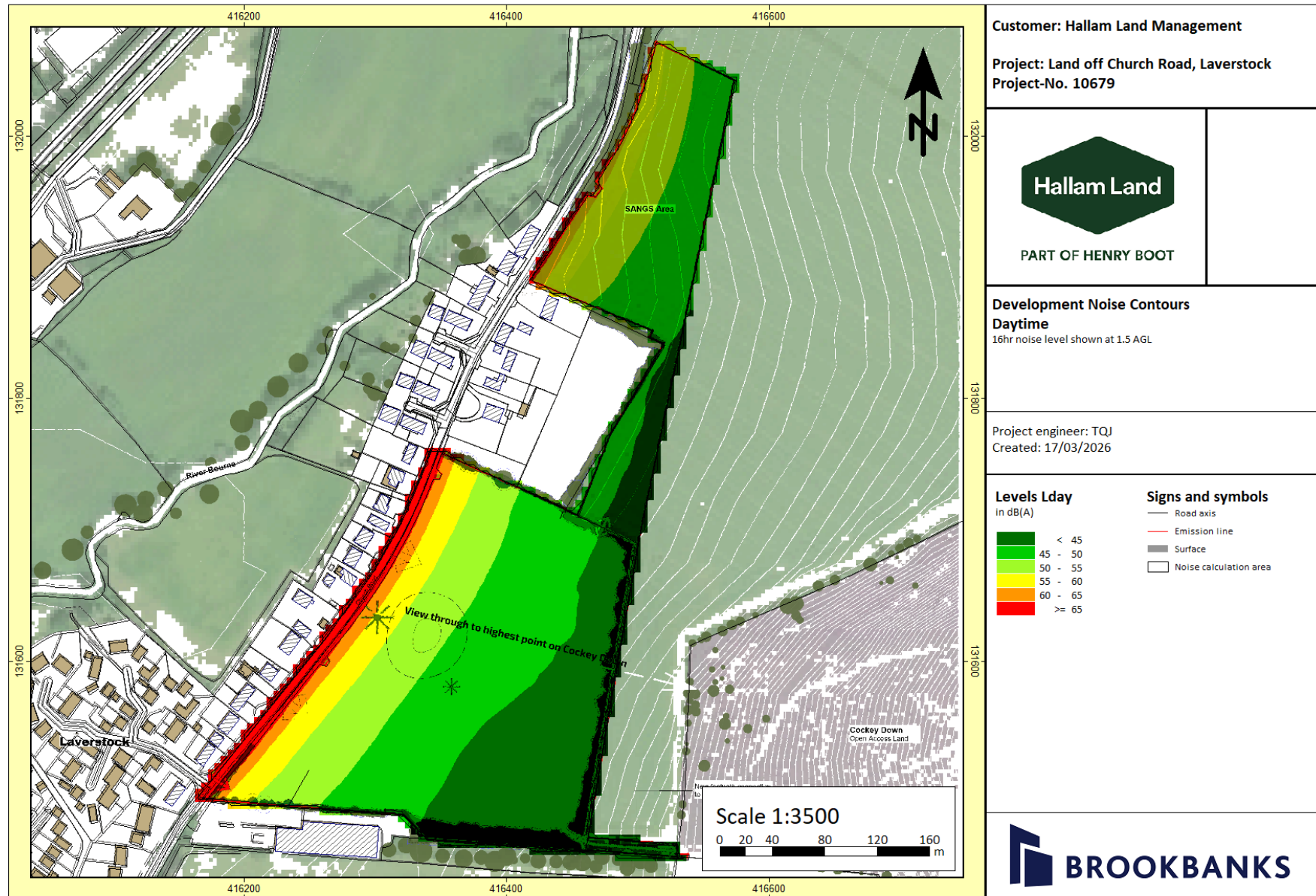


Figure 4.1: Daytime noise contours (dB $L_{Aeq,16hr}$), grid set at 1.5m AGL

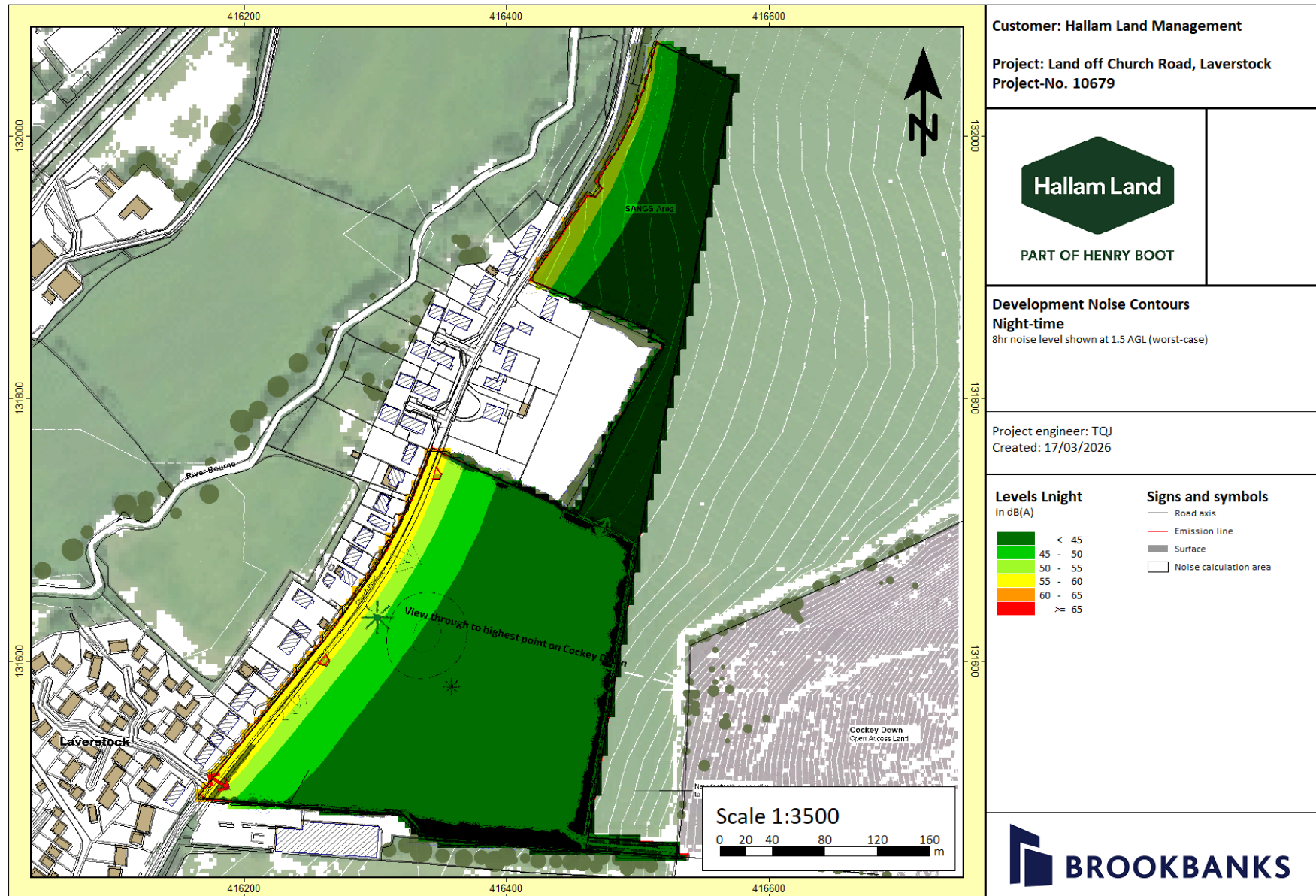


Figure 4.2: Night time noise contours (dB $L_{Aeq,8hr}$), grid set at 1.5m AGL (worst-case)

4.2 Developed Site

4.2.0.5 A description of the impact of predicted façade noise levels is provided in Table 4-1 with reference to Figures 4.1 and 4.2 and the following guidance:

- BS8233:2014;
- World Health Organisation (WHO) Guidelines for Community Noise, 1999;
- Professional Practice Guidance – Planning and Noise (ProPG), ANC, IOA and CIEH, May 2017;
- Acoustics, Ventilation and Overheating – Residential Design Guide ANC, IOA, Jan 2020.

Magnitude of Impact	Daytime External Noise Level, dB L_{Aeq} 16 hour (07:00 - 23:00)	Night-time External Noise Level, dB L_{Aeq} 8 hour (23:00-07:00)	External Amenity (Gardens) Without Design Mitigation	Description of Effect Without Design Mitigation
High	> 70	> 60	Gardens are unlikely to be suitable for casual communication and relaxation. Consider: enclosed winter gardens, enclosed courtyards, reorientation	Unacceptable Impact based on advice from ProPG. Significant impact on sleep quality is likely when windows are open and changes in behaviour due to noise are common. High performance acoustic laminated windows may be required (depending on the type of noise sources). Trickle vents may not be an option resulting in a requirement to use Mechanical Ventilation with Heat Recovery (MVHR). The need to open windows to cool overheating rooms should be minimised or avoided at night. This may result in a requirement for mechanical cooling.
Medium	56 - 70	51 - 60	Garden noise levels are above the level recommended by BS8233:2014. Consider: reorientation of buildings to shield gardens, road noise barriers or large close boarded garden fences.	Sleeping with windows open may impact sleep quality and daytime noise in external areas and inside with windows open will impact amenity. Particularly at the upper end of the range, windows and vents with an enhanced acoustic performance may be required. The ventilation system and building design should aim to minimise the need to open windows to control internal temperatures.
Low	< 56	< 51	External areas won't require mitigation.	Good internal acoustic conditions will be achieved with windows closed and ventilation provided by a trickle vent. When windows are open slightly, conditions will normally still be reasonable, as defined in BS8233:2014. Windows can normally be opened to cool an overheating room without exceeding reasonable noise limits internally.

Table 4.1: Significance Criteria for Road Traffic and other Anonymous Noise affecting Dwellings

5 BS4142:2014:A1:2019 Noise Impact Assessment

- 5.1.1.1** It was observed during attended periods of the survey that Position LT2 survey results include delivery noise emanating from Enovation Controls. Given the advertised working hours of 8am-5pm on weekdays, deliveries are not expected to occur during highly sensitive periods.
- 5.1.1.2** The observed 1hr period related to a Enovation Controls delivery between 11:00am and 12:00pm on Monday 23/02/2023. The specific noise level impinging southern boundary of the site is indicated to be 56dB $L_{Aeq,1hr}$. The maximum noise level value for the period under assessment was 85dB $L_{AFmax,2min}$, this was from the opening/shutting of the roller shutter on the rear of the delivery vehicle during the delivery.
- 5.1.1.3** There were minor movements of an electrically powered fork-lift during the observed period, however this was not observed to have significantly affected measurement noise levels.
- 5.1.1.4** No external plant installations or terminals were noted during the survey, with no plant noise audible at measurement position LT2.
- 5.1.1.5** Figure 5.1 below shows the fork-lift and delivery truck in relation to measurement position LT2.



Figure 5.1: Enovation Controls Delivery

- 5.1.1.6** The table in Appendix C summarises the BS4142:2014+A1:2019 assessment for this delivery. The numerical assessment results indicate a “low impact, depending on context” in line with BS4142. It is important to consider the following context:

- The assessment period represents a single 1-hr period during the week-long survey.
- Delivery noise is common during daytime hours and potential future residents of the houses are likely to accept (or indeed, expect) the presence of occasional elevated noise levels.
- Residents can reasonably expect not to suffer disturbed sleep due to delivery noise.

5.1.1.7 Therefore, in consideration of the context, Enovation Controls' deliveries should not be considered a significant adverse impact.

6 Outline Noise Mitigation Strategy

6.1.1.1 Based on the results of the SoundPLAN model, sound insulation calculations for habitable rooms at the proposed development have been prepared to determine façade constructions sufficient to control noise intrusion in-line with the internal noise limits recommended in BS8233:2014.

6.1.1.2 Assessment assumptions:

- Noise intrusion is calculated to a bedroom with dimensions of 4m (w) x 3m (l) x 2.5m (h), an exposed façade area of 10m² (l x h), and an exposed glazing area of 2m²
- The external wall construction is assumed to be a brick or blockwork construction, capable of achieving a minimum sound insulation performance of 50 dB R_w.
- The roof construction is assumed to be roofing tiles on timber joists with a plasterboard ceiling, capable of achieving a minimum sound insulation performance of 50 dB R_w.
- A passive ventilation strategy is assumed, therefore trickle ventilators have been included within the sound insulation calculations.

6.1.1.3 Alternative façade constructions may be suitable including constructions providing a lower sound insulation rating, subject to detailed design to confirm acoustic performance equivalency.

6.2 External Glazing Specification

6.2.0.4 Based on the results of the sound insulation calculations, the façade glazing specifications set out in Table 6.1 are required to ensure that internal noise levels comply with the BS 8233 criteria.

Example Glazing Specification based on Magnitude of Impact	Minimum Sound Reduction Index dB ('R') (BS EN ISO 10140-2:2010) at Octave Band Centre Frequency (Hz)							dB R _w + C _{tr}
	63	125	250	500	1k	2k	4k	
Low (up to 56dB L _{Aeq,16hr} , 51dB L _{Aeq,8hr} night-time) 4/12/4 double glazing	16	22	19	25	36	42	36	27
Medium (up to 60dB L _{Aeq,16hr} , 55dB L _{Aeq,8hr} night-time) 6/12/6 double glazing	14	20	19	29	38	36	45	30

Table 6.1: Glazing Specification

- 6.2.0.5** As the design progresses, specialist advice should be obtained to confirm the acoustic suitability of the proposed glazing systems, and manufacturers should provide evidence of relevant laboratory performance data.
- 6.2.0.6** The use of openable windows for rapid purge ventilation (e.g., to clear paint fumes or cooking odours in accordance with Approved Document F) is considered acceptable on all façades. This is on the basis that such windows are used only for short durations and may be closed at the occupant's discretion once odours have been removed.

6.3 Trickle Ventilator Specification

- 6.3.0.7** Should a passive ventilation strategy using trickle ventilators be adopted, the trickle ventilator specification provided within Table 6.2 is indicated necessary to limit noise intrusion to the BS8233 internal noise level criteria. It is assumed that a maximum of 1no. trickle ventilator would be included within bedrooms.

Example Trickle Ventilator Specification based on Magnitude of Impact	Minimum Sound Reduction Index dB ('R') (BS EN ISO 10140-2:2010) at Octave Band Centre Frequency (Hz)						
	63	125	250	500	1k	2k	4k
Low & Medium (up to up to 60dB L_{Aeq,16hr}, 55dB L_{Aeq,8hr} night-time) Greenwood 1600DN	33	33	39	43	38	33	31

Table 6.2: Trickle Ventilator Specification

6.4 Preliminary Overheating Assessment

- 6.4.0.8** It is recommended that the proportion of the year that windows need to be opened to cool overheating rooms is reduced to a minimum through careful consideration of the thermal design, particularly at high noise exposure facades.
- 6.4.0.9** Options for this include:
- Alternative high-rate ventilation options such as boost fans and/or large acoustically attenuated passive vent louvres;
 - Smaller windows, particularly on higher noise exposure facades (to reduce thermal gain and noise ingress via windows);
 - Solar shading or solar reflective windows;
 - Exposed thermal mass and enhanced building fabric thermal performance;
 - Mechanical cooling – although this should be considered a 'last resort' for mitigating overheating condition.
- 6.4.0.10** Based on the set-back distance from Church Road shown in the Parameter Plans (Figure 1.1) and overheating condition guidance in the AVO Guide (refer to Appendix A), a 'Level 1 Site Risk Assessment' shows free-field critical bedroom facades up to 57 dB L_{Aeq,8hr} and 70 dB L_{Amax,F} are at a 'Medium Risk' of adverse effect in periods of overheating at night.

- 6.4.0.11** At a 'Medium Risk' of adverse effect, the AVO Guide outlines a more detailed (Level 2) assessment is 'optional'.
- 6.4.0.12** For design guidance, it is advised that the "geometric open area" of bedroom windows on critical facades should not exceed 0.79% of the floor area at night. (Please note this not the "equivalent area", as typically referred to in background ventilation terms).
- 6.4.0.13** The maximum geometric open area outlined above would provide approximately 17 dB sound reduction.
- 6.4.0.14** This is required in order to meet target internal night-time AVO Guide values of 40 dB $L_{Aeq,8hr}$ and 55 dB $L_{Amax,F}$.
- 6.4.0.15** The above measures should be confirmed acceptable by a suitably qualified thermal modelling engineer. If it is not sufficient, an alternative means of controlling overheating is likely to be required.
- 6.4.0.16** Any detailed overheating assessment should be carried out to all plots within the development site.
- 6.4.0.17** Note: This initial assessment has been carried out to bedrooms on the most critical façades within the proposed development site, located closest to the noisiest road. It is likely that apartments with lower external ambient noise levels are at a reduced noise risk. This can be reviewed at a later stage, as part of a more detailed overheating assessment, if required.

6.5 BS8233:2014 Assessment of External Noise Levels.

- 6.5.0.18** BS8233 indicates that for traditional external areas that are used for amenity space, such as gardens and patios, an upper guideline value of 55 dB $L_{Aeq,T}$ is acceptable during the daytime. However, BS8233 also recognises that the guideline values are not achievable in all circumstances, such as city centres or urban areas adjoining the strategic transport network.
- 6.5.0.19** BS8233 identifies that in such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but external noise should not be prohibitive on development delivery.
- 6.5.0.20** The external acoustic environment is indicated below, with the 55 dB threshold indicated by the 'red' zone.
- 6.5.0.21** This demonstrates that the external noise levels in the majority of amenity areas associated with the proposed new homes does not exceed the 55 dB threshold.
- 6.5.0.22** It is anticipated that noise levels within external amenity areas will be further reduced through a combination of screening provided by the new buildings, the positioning of gardens on the sheltered, rear-facing sides of the properties, and the presence of standard garden boundary fencing.
- 6.5.0.23** This assessment of the acoustic environment is based on the Parameters Plan, with the final site layout to be determined through a future reserved matters application. It is therefore recommended that the proposed mitigation measures are reviewed and, where necessary, refined at the detailed design stage.

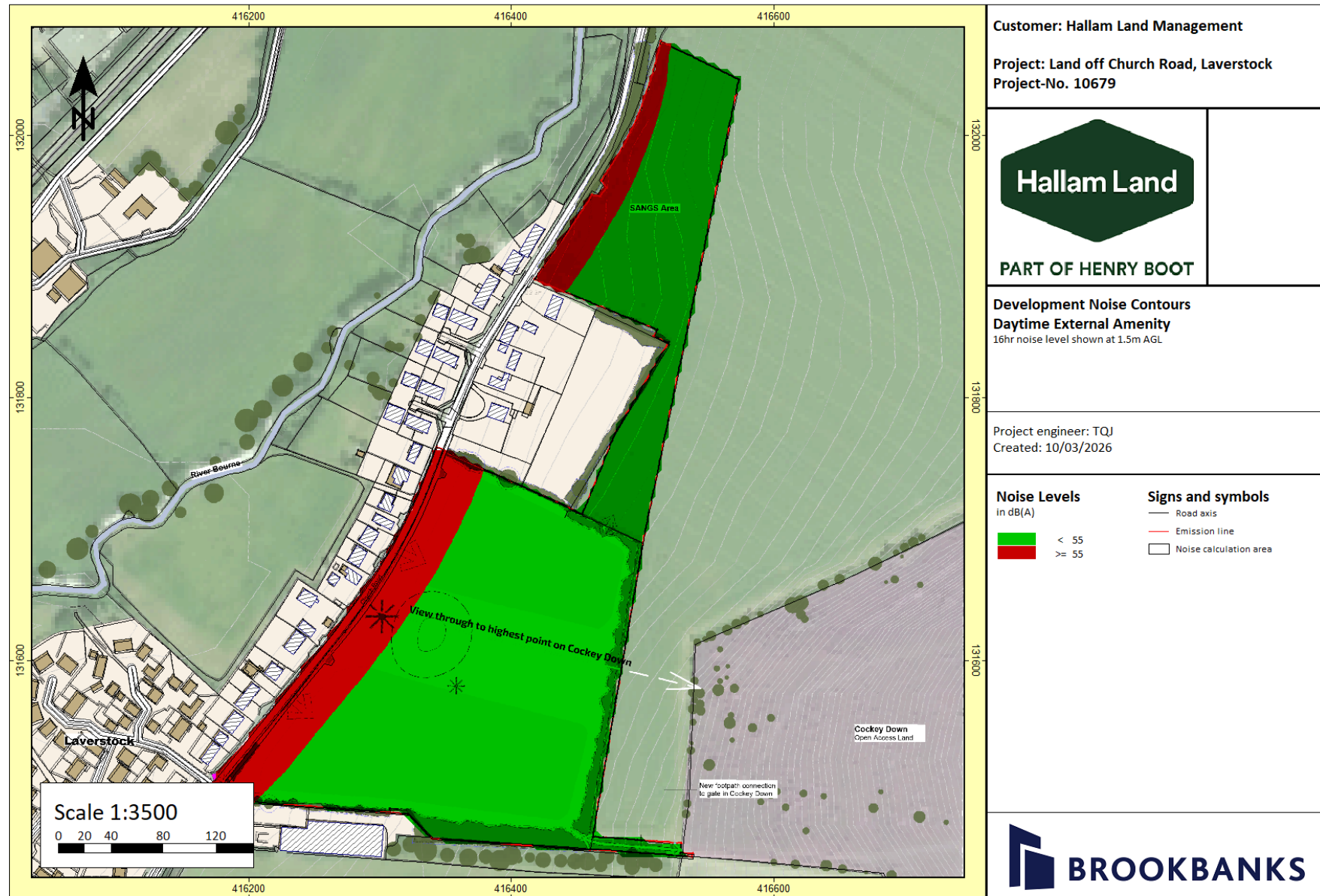


Figure 6.1: External 55 dB noise contours (excess over 55dB shown in red)

7 Conclusions and Recommendations

7.1 Conclusions

- 7.1.0.1** The objective of the study is to demonstrate the Land off Church Road, Laverstock, proposals are acceptable from an acoustic viewpoint.
- 7.1.0.2** The Noise Assessment considers the site layout as indicated by the Illustrative Masterplan and provides a review of the future acoustic environment against the criteria identified within BS8233:2014 and other relevant guidance.
- 7.1.0.3** A model of the developed site shows a majority of proposed dwellings across the site are in a 'low' noise exposure category, in line with ProPG guidance. Houses closest to Church Road are deemed to be at a 'medium' noise exposure.
- 7.1.0.4** Initial recommendations for the external building fabric sound insulation measures on 'Medium' noise exposure facades have been outlined in order to achieve 'desirable' internal ambient noise level conditions in habitable rooms, in line with BS 8233:2014 and ProPG guidance. Standard double-glazing and trickle ventilation is deemed sufficient to achieve internal acoustic criteria on dwellings in a 'Low' noise exposure category.
- 7.1.0.5** Based on overheating condition guidance in the AVO Guide a 'Level 1 Site Risk Assessment' shows remaining bedroom facades (excluding the houses with high noise exposure along Church Road) are at a 'Medium Risk' of adverse effect in periods of overheating at night. Further assessment of noise intrusion during overheating condition is therefore deemed 'optional'.
- 7.1.0.6** Daytime road traffic noise levels in private gardens are deemed likely to fall below the 55dB $L_{Aeq,16hr}$ BS8233:2014 upper guideline limit. No further noise mitigation measures are deemed necessary.

7.2 Recommendations

- 7.2.0.7** The mitigation strategy is identified below.
- Glazing specification to achieve attenuation of 27-30dB $R_w + C_{tr}$.
 - Trickle vents within the window frames of habitable rooms and intermittent fans in kitchens and bathrooms for properties that overlook surrounding roads.
 - Maximum permissible geometric open areas to windows to control noise ingress during overheating.
- 7.2.0.8** The assessment of the acoustic environment has been based on the Illustrative Masterplan. The identified mitigation will be confirmed following the submission of final site layout. This Noise Assessment demonstrates that external and internal noise levels are in line with national standards and the delivery of the Site is not restricted from an acoustic standpoint.

8 Disclaimer

- 8.1.1.1** The conclusions and recommendations contained herein are limited to those given the general availability of background information and the planned usage of the site.
- 8.1.1.2** Third party information has been used in the preparation of this report, which Brookbanks, by necessity assumes is correct at the time of writing. While all reasonable checks have been made on data sources and the accuracy of data, Brookbanks accepts no liability for same.
- 8.1.1.3** The benefits of this report are provided solely to Hallam Land for Land off Church Road, Laverstock Noise Assessment only.
- 8.1.1.4** Brookbanks excludes third party rights for the information contained in the report.

Appendix A: Guidance Documents

National Planning Policy Framework (NPPF)

The national Planning Policy Framework (NPPF), published in December 2024, states the following in relation to noise;

“180. Planning policies and decisions should contribute to and enhance the natural and local environment by....

(e) 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;....”

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

(a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;

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

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

Noise Policy Statement for England (NPSE)

The Noise Policy Statement for England (NPSE) was developed to provide clarity regarding current policies and practices.

The Explanatory Note to the NPSE provides three definitions of noise impact as follows:

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.*

SOAEL - Significant Observed Adverse Effect Level; *This is the level above which significant adverse effects on health and quality of life occur.*

The NPSE does not provide a numerical value for SOAEL and states;

“2.22 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.”

Based on the above standards and guidance, the following LOAEL and SOAEL values are proposed for residential properties;

- If levels are below LOAEL no action is required.
- If levels fall between LOAEL & SOAEL, mitigation measures required to minimise impact.

Noise Source	Assessment Location	LOAEL	SOAEL	Times
General environmental noise, road traffic, rail traffic	Outdoor living space	50 dB $L_{Aeq,16hr}$	55 dB $L_{Aeq,16hr}$	Day 0700-2300
	Façade	50 dB $L_{Aeq,16hr}$	72 dB $L_{Aeq,16hr}$	Day 0700-2300
	Façade	45 dB $L_{Aeq,8hr}$	66 dB $L_{Aeq,8hr}$	Night 2300-0700
	Habitable room	35 dB $L_{Aeq,16hr}$	40 dB $L_{Aeq,16hr}$	Day 0700-2300
	Habitable room	30 dB $L_{Aeq,8hr}$	35 dB $L_{Aeq,8hr}$	Night 2300-0700

Note: Industrial noise impact is assessed under BS 4142:2014.

ProPG: Planning & Noise - Professional Guidance on Planning & Noise - New Residential Development

The Professional Practice Guidance on Planning and Noise (May 2017) provides guidance on transportation noise affecting new residential developments. The guidance was prepared by a working group formed from members of the Institute of Acoustics (IoA), the Association of Noise Consultants (ANC) and the Chartered Institute of Environmental Health (CIEH). It is specifically for assessing noise from predominantly transportation sources. The guidance promotes a two stage assessment approach:

- Stage 1 – Initial Site Noise Risk Assessment; and,
- Stage 2 – Full assessment and systematic appraisal of four key elements.

The Stage 1 initial risk assessment provides an indication of the likely risk of adverse effects from noise assuming in the first instance that no mitigation were included within the proposals. The risk assessment is based on measured or predicted noise levels during a “typical worst case” 24-hour period. Figure 1 of the document presents the Stage 1 assessment and indicates that higher noise levels result in increased noise risk without mitigation. This is summarised in Figure A1 below. Figure A1 (Figure 1 of ProPG) does not directly relate noise levels to specific risk categories although a negligible noise risk broadly correlates to noise levels not exceeding 50dB $L_{Aeq,16hr}$ (daytime) and 40 dB $L_{Aeq,8hr}$ (night).

Day $L_{Aeq, 16 Hr}$	50 dB	55 dB	60 dB	65 dB	70 dB
	Negligible				Low
			Medium	High	
Night $L_{Aeq, 8 Hr}$	40 dB	45 dB	50 dB	55 dB	60 dB

Figure A1: ProPG Stage 1 Noise Risk Assessment (adapted from ProPG Figure 1)

Where the initial noise assessment indicates a higher risk of adverse noise effects, a Stage 2 assessment is required. The Stage 2 assessment is more involved than the Stage 1 and requires systematic consideration of four elements:

Element 1 – Good Acoustic Design Process

The acoustic design of a building and any mitigation should be considered at an early stage of the design process. Following a good acoustic design process is considered a part of achieving a good design as required by the NPSE and NPPF. Guidance on the requirements for providing an Acoustic Design Statement (ADS) is given in Figure 3 of ProPG.

Element 2 – Internal Noise Level Guidelines

The guideline criteria for internal ambient noise levels are consistent with BS8233:2014:

- 35 dB $L_{Aeq,16hr}$ in living rooms during daytime;
- 30 dB $L_{Aeq,8hr}$ in bedrooms during night time; and
- 45 dB L_{AFmax} should not normally be exceeded 10-15 times a night in bedrooms.

Element 3 – External Amenity Area Noise Assessment

The guidance of the ProPG reflects and extends on the advice of BS8233 and PPG Noise. The guidance in the ProPG presents five points for consideration, the first being “If the external amenity spaces are an intrinsic part of the overall design, the acoustic environment of those spaces should be considered so that they can be enjoyed as intended”.

Element 4 – Assessment of Other Relevant Issues

“Other relevant issues” within the context of the ProPG include relevant national and local policy which may have a bearing on the development.

Approved Document O: England 2021

Approved Document O: England 2021 provides the following text with regard to noise during night-time hours (23:00 – 07:00):

3.2) In locations where external noise may be an issue (for example, where the local planning authority considered external noise to be an issue at the planning stage), the overheating mitigation strategy should take account of the likelihood that windows will be closed during sleeping hours (11pm to 7am).

3.3) Windows are likely to be closed during sleeping hours if noise within bedrooms exceeds the following limits.

a. 40dB $L_{Aeq,T}$, averaged over 8 hours (between 11pm and 7am).

b. 55dB L_{AFmax} , more than 10 times a night (between 11pm and 7am).

3.4) Where in-situ noise measurements are used as evidence that these limits are not exceeded, measurements should be taken in accordance with the Association of Noise Consultants’ Measurement of Sound Levels in Buildings with the overheating mitigation strategy in use.

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

British Standard BS 8233:2014

Appropriate noise limits for internal noise levels within residential premises are recommended in BS 8233:2014. Limits are in terms of the equivalent continuous level (L_{Aeq}).

The table below provides the BS 8233:2014 guidance criteria for indoor ambient noise levels in habitable rooms when they are unoccupied.

BS 8233 Internal Noise Limits - Residential

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

The indoor ambient noise level guidance of BS 8233:2014 is qualified by various notes, of which applicable ones are given in the table below.

BS 8233 Qualifying Notes

Qualifying Note	Description
Note 2	The levels shown in the table above are based on the existing guidelines issued by the WHO and assume normal diurnal fluctuations in external noise. In cases where local conditions do not follow a typical diurnal pattern, for example on a road serving a port with high levels of traffic at certain times of the night, an appropriate alternative period, e.g. 1 hour, may be used, but the level should be selected to ensure consistency with the levels recommended in the table above.
Note 3	These levels are based on annual average data and do not have to be achieved in all circumstances. For example, it is normal to exclude occasional events, such as fireworks night or New Year's Eve.
Note 4	Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,F}$ depending on the character and number of events per night. Sporadic noise events could require separate values.
Note 5	If relying on closed windows to meet the guide values, there needs to be appropriate alternative ventilation that does not compromise the façade insulation or the resulting noise level.
Note 7	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 conditions still achieved.

BS 8233:2014 also provides guidance on external noise levels for protection of private amenity spaces for residential demises. A level of 50 dB $L_{Aeq,T}$ is said to be desirable but 55 dB $L_{Aeq,T}$ should be regarded as the upper guideline value.

Acoustics, Ventilation and Overheating – Residential Design Guide 2020

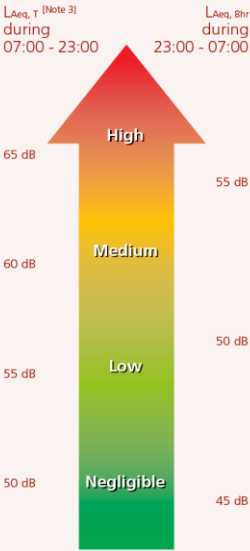
The Acoustics, Ventilation and Overheating – Residential Design Guide (AVO Guide) 2020 aims to assist designers to adopt an integrated approach to the acoustic design of residential dwellings within the context of ventilation and thermal comfort requirements.

The guidance outlines a two-level risk assessment procedure for estimating the potential adverse impact on occupants in overheating conditions.

The Level 1 site risk assessment is based on external free-field noise levels and the assumed scenario where a partially open window is used to mitigate overheating. The Level 1 assessment is sufficient for developments on 'Negligible' risk sites (as defined by Table 12 below).

The Level 2 assessment is recommended for 'High' risk sites. For 'Low' and 'Medium' risk sites, a Level 2 assessment can optionally be undertaken to give more confidence regarding the suitability of internal noise conditions. This may be particularly appropriate for sites in the 'Medium' risk category.

Table 3-2 Guidance for Level 1 site risk assessment of noise from transport noise sources ^[Note 1] relating to overheating condition

Risk category for Level 1 assessment ^[Note 5]	Potential Effect without Mitigation	Recommendation for Level 2 assessment
 LAeq, T (Note 3) during 07:00 - 23:00 LAeq, 8hr during 23:00 - 07:00 65 dB 60 dB 55 dB 50 dB High Medium Low Negligible 55 dB 50 dB 45 dB	Increasing risk of adverse effect	Recommended Optional Not required

Note 1 The noise levels suggested assume a steady road traffic noise source but may be adapted for other types of transport. All levels are external free-field noise levels.

Note 2 The values presented in this table should not be regarded as fixed thresholds and reference can also be made to relevant dose-response relationships, ^[15, 17].

Note 3 A decision must be made regarding the appropriate averaging period to use. The averaging period should reflect the nature of the noise source, the occupancy profile and times at which overheating might be likely to occur. Further guidance can be found within the 2014 IEMA Guidelines ^[23].

Note 4 Refer also to references ^[1, 17, 18, 22] for further guidance regarding individual noise events. Where 78dB LAFmax is normally exceeded during the night-time period (23:00-07:00), a Level 2 assessment is recommended.

Note 5 The risk of an adverse effect occurring will also depend on how frequently and for what duration the overheating condition occurs. Refer to Figure 3-2.

Note 6 To evaluate the risk category for a dwelling, all three aspects of external noise exposure (i.e. daytime, night-time and individual noise events) should be evaluated. The highest risk category for any of the three aspects applies.

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Calculation of Road Traffic Noise (CRTN), WG 1988

The Calculation of Road Traffic Noise (CRTN) is a technical memorandum published by the Department of Transport and the Welsh Office in 1988. It provides a standardised method for predicting road traffic noise levels, primarily for assessing eligibility under the Noise Insulation Regulations, but also widely used in environmental assessments and planning.

The method predicts LA10,18hr noise levels at 1.2 m above ground and 10 m from the nearside carriageway edge, based on traffic flow, vehicle composition, speed, road gradient, and surface type. It includes corrections for distance, ground absorption, barriers, reflections, and screening effects.

CRTN remains a key reference for assessing the noise impact of road schemes and is often used in conjunction with the Design Manual for Roads and Bridges (DMRB) LA 111 for highway projects.

BS4142:2014+A1:2019 Method for rating and assessing industrial and commercial sound

The standard method for assessing noise from commercial and industrial premises is British Standard BS 4142:2014+A1 2019 "Method for rating and assessing industrial and commercial sound". The standard is applicable for assessing noise affecting "dwellings or premises used for residential purposes".

A BS 4142 assessment is made by determining the difference between the specific noise under consideration and the background sound level, as represented by the L_{A90} parameter, determined in the absence of the commercial sound. The L_{A90} parameter is defined as the level exceeded for 90% of the measurement time. This parameter therefore excludes short duration noise events, such as individual vehicle movements, and represents the underlying continuous noise.

The commercial or industrial sound is assessed in terms of the equivalent continuous noise level, L_{Aeq} . The equivalent continuous noise level (L_{Aeq}) of the commercial or industrial sound, over the applicable assessment period, is known as the specific sound level.

A character correction penalty can be applied to the specific sound level where the commercial noise exhibits distinguishable tones, impulsiveness, intermittency or other characteristics which "are otherwise readily distinctive against the residual acoustic environment".

The specific noise level with the character correction (if necessary) is known as rating level (L_{Ar}) and the difference between the background noise and the rating level is determined to make the BS 4142 assessment. The following is then considered.

- "a) Typically, the greater this difference, the greater the magnitude of the impact.
- b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.
- d) The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context."

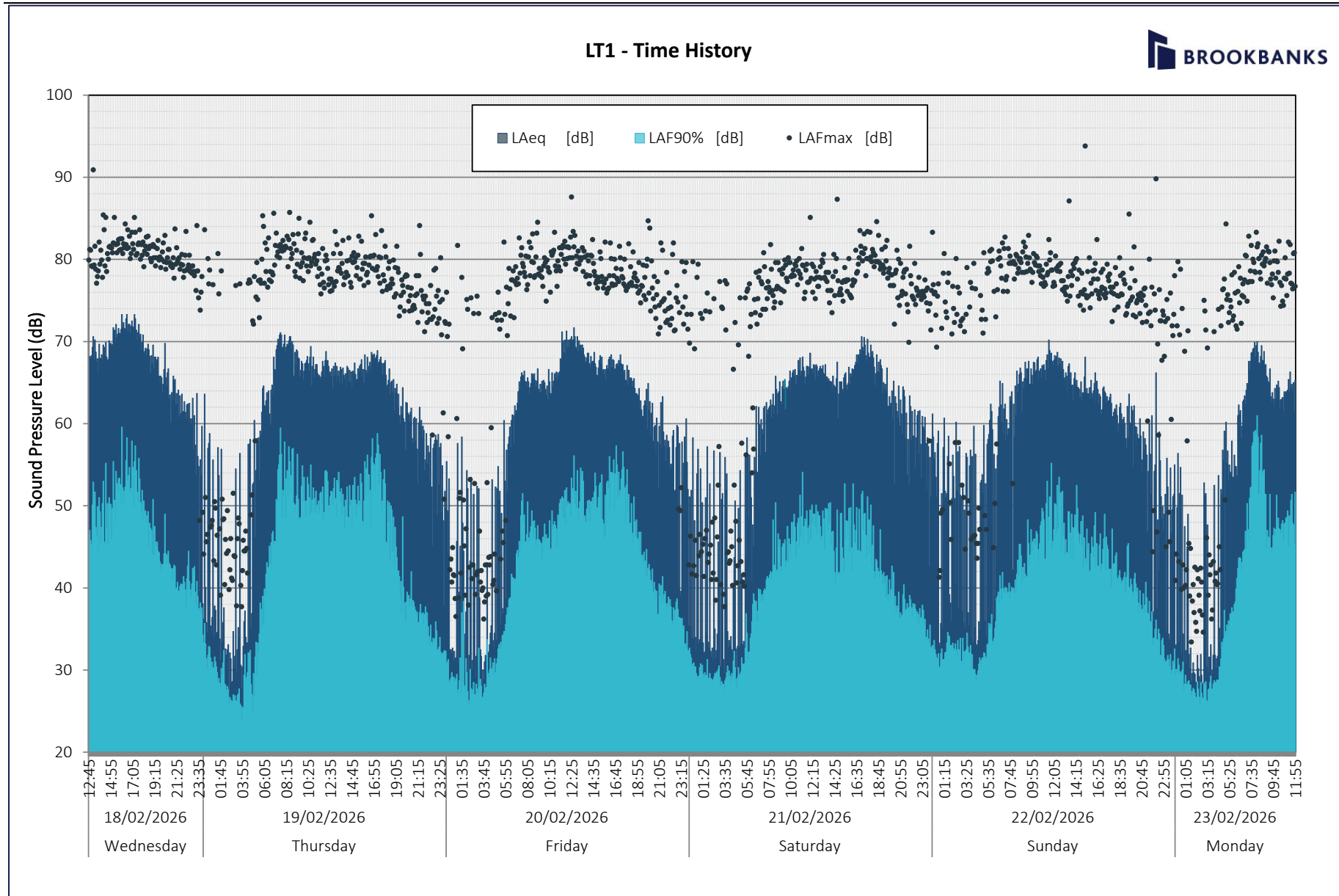
The standard highlights the importance of considering the context in which a sound occurs. Factors including the absolute sound level, the character of the sound, the sensitivity of the receptor and the existing acoustic character of the area should be considered when assessing the noise impact. The use of the proposed premises for short term holiday rentals is also pertinent to the consideration of context.

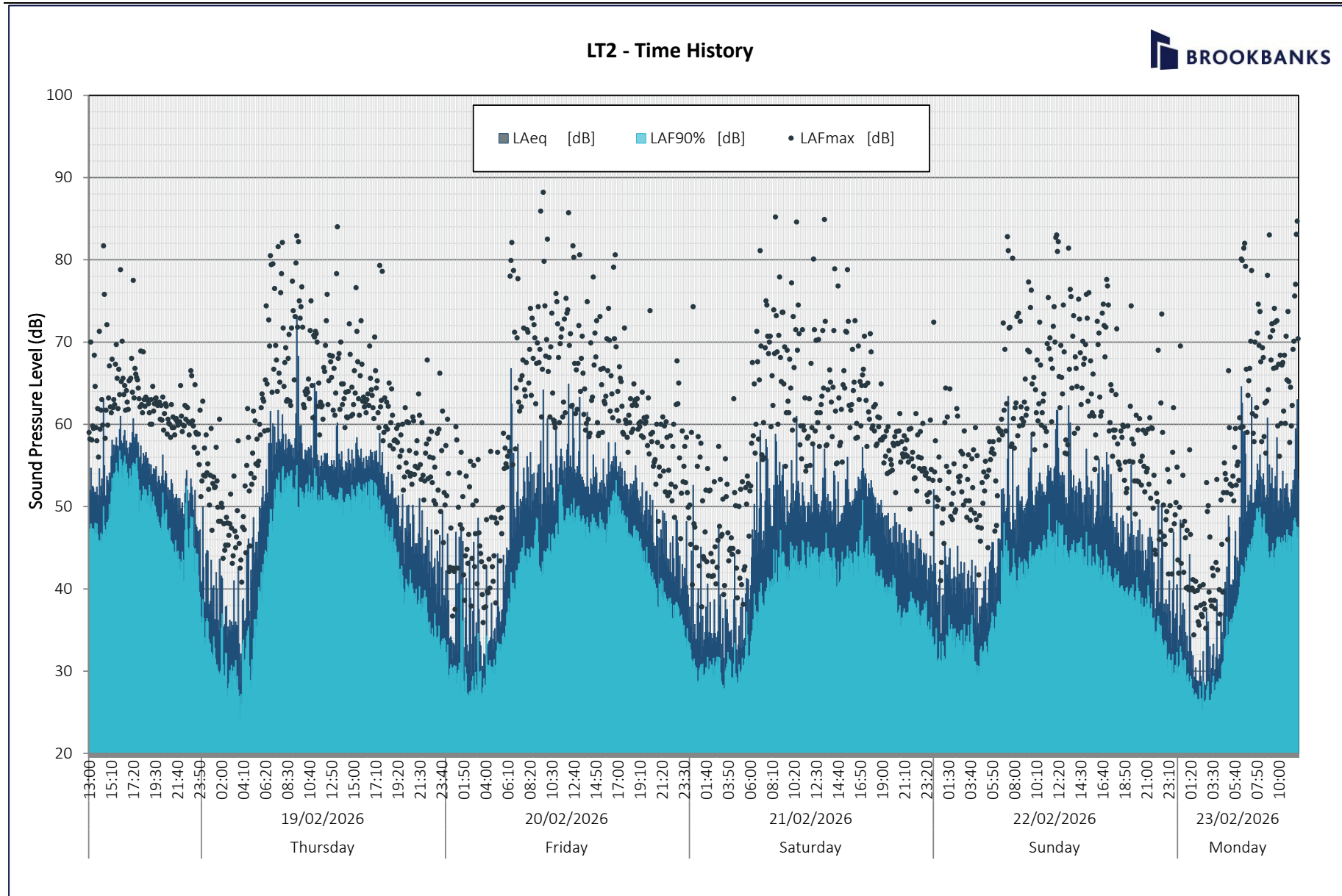
The standard notes the need to consider absolute sound levels where background sound levels are low:

"For a given difference between the rating level and the background sound level, the magnitude of the overall impact might be greater for an acoustic environment where the residual sound level is high than for an acoustic environment where the residual sound level is low.

Where the background sound levels and rating level are low, absolute levels might be as, or more, relevant than margin by which the rating level exceeds the background. This is especially true at night."

Appendix B: Time-History Graphs





Appendix C: BS 4142:2014+A1:2019 Table

Results			Relevant Clause	Commentary
Measured Level of Daytime Commercial Activity at Position LT2	$L_{Aeq} =$	56.3	7.3.2	Enovation Controls delivery activity, measured at LT2
Residual sound level	$L_{Aeq} =$	51.7	7.3.3	Residual in absence of delivery activities
Background sound level (daytime)	$L_{A90,1hr} =$	45.6	8.1.1 8.1.3 8.3	Background sound level measured at Position LT2 for 1hr period preceding delivery activities commencing.
Assessment made during the daytime so the reference time is 1 hour.			7.2	
Specific sound level calculated by correcting the ambient sound level to remove the contribution of the residual level.	$L_{Aeq,1hr} =$	54.5	7.3.4	
Specific sound level corrected to account for distance attenuation from site boundary to nearest residential position.	$L_{Aeq,1hr} =$	44.5	7.3.4	Nearest residential premises at 10m from southern site boundary according to Parameters Plan.
Acoustic feature correction		0dB	9.2	No acoustic feature corrections have been applied, as these are not expected to be significant at residential premises due to the excess of the residual ambient noise level over the specific noise level.
Background sound level (daytime)	$L_{A90,1hr} =$	45.6	8.3	
Excess of rating over background sound level	$(44.5-45.6) \text{ dB} =$	-0.9	11	
Assessment outcome			11	At 0.9dB below background, BS4142:2014+A1:2019 advises "this is an indication of the specific sound source having a low impact, depending on the context".
Uncertainty of assessment			10	Uncertainty in background noise measurements is considered low.