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LONDON ROAD, PURBROOK, WATERLOOVILLE NOISE ASSESSMENT

Technical Report: R10600-2 Rev 0

Date: 5th March 2026

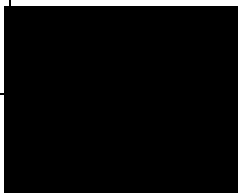
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1.0 INTRODUCTION

- 1.1 Foreman Homes has commissioned 24 Acoustics Ltd to carry out a noise impact assessment at a site off London Road, Purbrook, Waterlooville, which is proposed for residential development.
- 1.2 The site is affected by noise from road traffic using London Road. This noise impact assessment has included:
- Environmental noise monitoring;
 - Consideration of the ambient noise levels affecting the site;
 - Assessment of internal noise levels within the proposed dwellings.
- 1.3 This report presents the results of the assessment, following site visits and an environmental noise survey undertaken between 21st and 28th May 2024.
- 1.4 An explanation of acoustical terms used in this report is provided in Appendix A. All sound pressure levels in this report are given in dB re: 20 μ Pa.

2.0 SITE DESCRIPTION AND PROPOSED DEVELOPMENT

- 2.1 The site is located at London Road, Purbrook, Waterlooville in a residential area and was previously used as a timber merchant, J F Goodwillie Ltd. Residential properties surround the site and London Road bounds the site to the north.
- 2.2 The proposed development is a residential scheme for 120 Units, comprising 1 and 2 bedroom apartments and 2, 3 and 4-bedroom houses.
- 2.3 An aerial view of the site and the measurement location is shown in Figure 1. The proposed site plan is shown in Figure 2.

3.0 CRITERIA

National Planning Policy Framework and Noise Policy Statement for England

- 3.1 The National Planning Policy Framework (NPPF) [Reference 1] states that planning policies and decisions 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.
- 3.2 The NPPF also refers to the Noise Policy Statement for England (NPSE) [Reference 2] which is intended to apply to all forms of noise, including environmental noise, neighbour noise and neighbourhood noise. The NPSE sets out the Government's long-term 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' which is supported by the following aims.
- Avoid significant adverse impacts on health and quality of life;
 - Mitigate and minimise adverse impacts on health and quality of life.
- 3.3 The NPSE defines the concept of a 'significant observed adverse effect level' (SOAEL) as 'the level above which significant adverse effects on health and quality of life occur'. The following guidance is provided within the NPSE:

"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."

- 3.4 The Planning Practice Guidance (PPG) [Reference 3] is written to support the NPPF with more specific planning guidance. The PPG reflects the NPSE and states that noise needs to be considered when new developments may create additional noise and when new developments would be sensitive to the prevailing acoustic environment. It also states that opportunities should be taken, where practicable, to achieve improvements to the acoustic environment. The PPG states that noise can over-ride other planning concerns but should not be considered in isolation from the other economic, social, and environmental dimensions of the proposed development.
- 3.5 The PPG expands upon the concept of SOAEL (together with Lowest Observable Adverse Effect Level, LOAEL and No Observed Effect Level, NOEL) as introduced in the NPSE and provides a table of noise exposure hierarchy for use in noise impact assessments in the planning system.
- 3.6 The NPPF, NPSE and PPG documents do not refer to specific noise criteria. For residential developments 24 Acoustics considers that the spirit of the requirements of the NPPF and NPSE will be complied with if criteria from British Standard 8233: 2014 and guidance from the World Health Organisation are adopted for internal noise levels within dwellings.

Professional Practice Guidance on Planning & Noise (ProPG)

- 3.7 The Professional Practice Guidance on Planning and Noise (ProPG) [Reference 4] was published jointly by the Association of Noise Consultants, Institute of Acoustics and Chartered Institute of Environmental Health in May 2017. The guidance relates to the consideration of existing sources of transportation noise upon proposed new residential development and strives to:
- Advocate full consideration of the acoustic environment from the earliest possible stage of the development control process;
 - Encourage the process of good acoustic design in and around new residential developments;
 - Outline what should be taken into account in deciding planning applications for new noise-sensitive developments;
 - Improve understanding of how to determine the extent of potential noise impact and effect; and
 - Assist the delivery of sustainable development.

- 3.8 It is important to note that the guidance in ProPG does not constitute an official government code of practice and neither replaces nor provides an authoritative interpretation of the law or government policy.

BS 8233:2014 and WHO Guidelines

- 3.9 BS 8233:2014 [Reference 5] provides design guidance for dwelling houses, flats and rooms in residential use and recommends that internal noise levels in dwellings do not exceed 35 dB $L_{Aeq,16hr}$ in living rooms and bedrooms during the day, 40 dB $L_{Aeq,16hr}$ in dining rooms during the day and 30 dB $L_{Aeq,8hr}$ in bedrooms at night.
- 3.10 BS 8233:2014 also notes that *“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.”*
- 3.11 Although the guidelines have no formal standing, the World Health Organisation (WHO) provides guidance on desirable internal noise levels to minimise the risk of sleep disturbance. The WHO 2000 guidelines [Reference 6] suggest internal night-time noise levels not exceeding 30 dB $L_{Aeq,8hr}$ or regularly (10 – 15 times per night) exceeding 45 dB $L_{Amax,f}$ for ‘a good night’s sleep’.
- 3.12 BS 8233:2014 suggests aspirational limits for noise levels in external amenity spaces such as gardens and the standard recognises that the desirable noise levels for external amenity areas are not always achievable in certain locations.

LPA Consultation

- 3.13 Pre-application feedback from the Environmental Health Pollution Control Team at Havant Borough Council has confirmed a requirement for an acoustic assessment identifying necessary noise mitigation measures to allow acceptable internal noise levels to be achieved in accordance with BS 8233:2014.
- 3.14 It also notes that where windows need to remain closed an overheating assessment in accordance with the Acoustics, Ventilation and Overheating Residential Design Guide would be required. It is considered that this document has been superseded by the requirements of the more recent Approved Document O of the Building Regulations [Reference 7] and the updates to Approved Document F [Reference 8].

Approved Document O

- 3.15 Approved Document O (ADO) requires all new dwellings to provide mitigation to control overheating. Section 3 of the approved document provides thresholds for night-time noise levels within bedrooms. The document states:

"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)."*

Summary

- 3.16 The impact of noise upon the proposed development has been assessed using the following recommended maximum noise levels, due to road traffic:
- 35 dB $L_{Aeq,16hr}$ daytime noise level for bedrooms and living rooms;
 - 30 dB $L_{Aeq,8hr}$ night-time noise level for bedrooms;
 - 45 dB $L_{Amax,f}$ night-time noise levels in bedrooms for regular events.

4.0 NOISE MEASUREMENT PROCEDURE AND RESULTS

Instrumentation

- 4.1 An ambient noise survey was undertaken on site between 21st and 28th May 2024. The following instrumentation was used during the surveys:
- Rion precision sound level meter Type NL-52;
 - Rion precision sound level meter Type NL-32;
 - Bruel and Kjaer acoustic calibrator Type 4231.

Noise Measurement Procedure

- 4.2 Long-term noise measurements were undertaken at two locations to establish noise levels from existing noise sources across the wider site.

- 4.3 Calibration of all instrumentation was checked before and on completion of the measurements and no drift in calibration level was observed. The calibration of all equipment is traceable to National Standards.
- 4.4 The weather throughout the survey period was generally dry with wind speeds less than 5 m/s. Some data for periods of inclement weather have been removed prior to analysis.
- 4.5 The noise monitors were fitted with environmental wind shields. The meters were configured to monitor in 1 minute sample periods and were set up to measure and store overall A-weighted statistical parameters including the L_{Aeq} , L_{A10} , L_{A90} , and $L_{Amax,f}$ sound pressure levels. Noise measurements were made in accordance with BS 7445: 1991 'Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use' [Reference 9].
- 4.6 The measurement locations are described below and can be seen in Figure 1.
- Location 1 – Towards the north boundary of the site overlooking London Road at a height of approximately 1.5m above ground level and at the same distance from London Road as the proposed closest dwelling façade.
 - Location 2 – On the east boundary of the site near the existing residential properties at a height of approximately 1.5m above ground level.
- 4.7 The measured noise levels at Locations 1 and 2 (expressed as L_{Aeq} , L_{A90} and L_{Amax}) are shown graphically in Appendix B. The measured average (L_{eq}) data values have been combined to generate the overall 16 hour daytime and 8 hour night-time free field levels; these are shown in Tables 1 and 2 below. 24 Acoustics takes the typical L_{Amax} value to be the 10th highest value.

Date and Time	Daytime SPL	Night-time SPL	
	dB LAeq, 16 hour	dB LAeq, 8 hour	dB LAmax,f
Tuesday 21/5/2024	69	62	80
Wednesday 22/5/2024	70	62	80
Thursday 23/5/2024	70	62	80
Friday 24/5/2024	70	61	79
Saturday 25/5/2024	69	62	79
Sunday 26/5/2024	68	60	79
Monday 27/5/2024	68	62	80
Tuesday 28/5/2024	71	--	--
Representative	69	61	80

Table 1: Noise Survey Results, Location 1

* partial measurement

Date and Time	Daytime SPL	Night-time SPL	
	dB LAeq, 16 hour	dB LAeq, 8 hour	dB LAmax,f
Tuesday 21/5/2024	44	38	55
Wednesday 22/5/2024	48	40	58
Thursday 23/5/2024	44	39	58
Friday 24/5/2024	46	38	56
Saturday 25/5/2024	45	45	59
Sunday 26/5/2024	47	38	55
Monday 27/5/2024	48	39	56
Tuesday 28/5/2024	49	--	--
Representative	46	39	57

Table 2: Noise Survey Results, Location 2

* partial measurement

- 4.8 It was observed during the noise surveys that the dominant source of noise in the area is road traffic using London Road.

5.0 NOISE ASSESSMENT

Internal Noise Levels

- 5.1 Calculations have been undertaken to determine glazing and ventilation requirements for residential rooms, which will ensure that noise levels inside the rooms do not exceed 35 dB $L_{Aeq, 16 \text{ hour}}$ during the day and 30 dB $L_{Aeq, 8 \text{ hour}}$ at night (and also not regularly exceed 45 dB $L_{Amax,f}$ at night) from road traffic noise sources. The calculations are based on room layouts and glazed areas for proposed house types.
- 5.2 The external wall construction to all dwellings should be designed and specified to achieve a minimum sound insulation performance of 52 dB R_w . This performance is readily achieved from cavity masonry constructions. If lightweight constructions are to be used, the sound insulation performance should be verified by the manufacturer to ensure a value of 52 dB R_w is achieved. For Plot 1 a layer of 100 mm of mineral wool (30 kg/m³) in the loft space above bedrooms is required.
- 5.3 The ventilation strategy must also achieve other relevant requirements as per Building Regulations Approved Document F, to be confirmed by others.
- 5.4 Calculations have been based on layout plans and elevations provided in February 2026 and should be updated if room sizes and elevations are altered.
- 5.5 Sound insulation performances for glazed elements for all habitable rooms at the proposed site are described in Table 3.

Location	Minimum SRI (dB) per Octave Band Centre Frequency (Hz)					
	125	250	500	1k	2k	4k
G1: Plots 1 & 2 bedrooms	29	36	42	44	47	59
G2: Plots 1 & 2 living rooms, Plots 3 & 4 bedrooms	26	28	35	44	48	54
G3: Plots 5 – 11 bedrooms	22	21	28	38	40	47
G4: All other habitable rooms	21	17	25	35	37	31

Table 3: Minimum Glazing Performance

- 5.6 In making a comparison with the values in Table 3, it is important that suppliers provide glazing figures that are the result of tests in accordance with ISO 10140, Part 2: 2010 and

that the quoted minimum sound reduction specifications are met by the entire glazing system as a whole, including frames, seals, any insulated panels and not just the glass. The requirements also apply to any external glazed doors to habitable rooms (e.g. from balcony areas).

5.7 The following glazing configuration, if installed properly, would be capable of achieving the required sound reduction performances:

- G1: Double glazed system, minimum 44 dB R_w , comprising 10 mm glass: 16 mm cavity: 16.8 mm Stadip Silence;
- G2: Double glazed system, minimum 40 dB R_w , comprising 8 mm glass: 12 mm cavity: 8.8 mm Stadip Silence;
- G3: Double glazed system, minimum 33 dB R_w , comprising 8 mm glass: 12 mm cavity: 4 mm glass;
- G4: All other habitable rooms: Double glazed system (Minimum 31 dB R_w), comprising 4 mm glass: 12 mm cavity (minimum): 4 mm glass (or equivalent).

5.8 Ventilation systems should allow for adequate ventilation to meet ventilation requirements as per Part F of the Building Regulations [Reference 13] to be confirmed by others. Plots 1 and 2 will require whole house ventilation such as MVHR with no trickle vents. Minimum acoustic performances for ventilators in other areas are provided in Table 4 assuming two ventilators per habitable room.

Location	Minimum Acoustic Performance, $D_{n,e}$ (dB) per Octave Band Centre Frequency (Hz)					
	125	250	500	1k	2k	4k
V1: Plots 3 & 4 bedrooms	37	37	36	47	49	55
V2: Plots 5 – 11 bedrooms & Plots 12 – 25 north-facing bedrooms	40	36	34	35	44	40
V3: All other habitable rooms	23	26	29	30	33	33

Table 4: Minimum Ventilator Acoustic Performance

5.9 In making a comparison with the specifications in Table 4, it is important that the figures used are the result of laboratory tests with the ventilator in the 'open' position. Note that the stated minimum performance value is assumed based on the provision of two ventilators per habitable room.

- 5.10 For guidance, the required values stated in Table 4 can be achieved with the following trickle ventilators:

V1: Sound attenuated trickle vent minimum 44 dB $D_{n,e,w}$ in the open position;

V2: Sound attenuated trickle vent minimum 38 dB $D_{n,e,w}$ in the open position;

V3: Standard trickle vent minimum 31 dB $D_{n,e,w}$ in the open position.

- 5.11 Zones for mitigation are summarised in Table 5 and are shown in Figure 3.

Zone	Glazing	Ventilator
A – Plots 1 & 2	G1 bedrooms G2 living rooms	MVHR
B – Plots 3 & 4	G2 bedrooms G4 living rooms	V1 bedrooms V3 living rooms
C – Plots 5 - 11	G3 bedrooms G4 living rooms	V2 bedrooms V3 living rooms
D – Plots 12 - 25	G4 bedrooms G4 living rooms	V2 bedrooms V3 living rooms

Table 5: Zones for Noise Mitigation

External Noise Levels

- 5.12 Noise levels in external amenity areas during the day are predicted to be no greater than 50 dB $L_{Aeq, 16hr}$ for the majority of the site. Noise levels in gardens of Plots 1 – 11 will be minimised through provision of 2 m high close board fencing (minimum surface density 12 kg/m²) to garden boundaries and this will ensure noise levels are generally no greater than 55 dB $L_{Aeq, 16hr}$.

Building Regulations Approved Document O- Control of Overheating

- 5.13 Compliance with Approved Document O is not relevant for planning but compliance will be ensured as part of the Building Regulations at the appropriate stage of the development.

6.0 CONCLUSIONS

- 6.1 Foreman Homes has commissioned 24 Acoustics Ltd to carry out a noise impact assessment at London Road, Purbrook, Waterlooville, which is proposed for residential development.
- 6.2 Ambient noise surveys have been undertaken on site to establish the existing road traffic noise levels during daytime and night-time periods.
- 6.3 For internal noise, recommendations in terms of glazing and alternative means of ventilation have been provided to ensure that noise within habitable rooms, due to road traffic would comply with maximum internal levels of 35 dB L_{Aeq} during the daytime and 30 dB L_{Aeq} and 45 dB $L_{Amax, f}$ at night.
- 6.4 With the recommendations specified herein it is considered an appropriate acoustic environment can be provided at the proposed residential properties.

REFERENCES

1. Department for Levelling Up, Housing & Communities. National Planning Policy Framework, Revised Dec 2023.
2. DEFRA. Noise Policy Statement for England, 2010.
3. Department for Levelling Up, Housing & Communities. National Planning Practice Guidance, Dec 2023.
4. Association of Noise Consultants, Institute of Acoustics, Chartered Institute of Environmental Health. Professional Practice Guidance on Planning and Noise, May 2017.
5. British Standards Institution. British Standard 8233:2014 Guidance on sound insulation and noise reduction for buildings, 2014.
6. World Health Organisation. Guidelines for Community Noise, 2000.
7. Building Regulations. Approved Document O - Overheating, 2021.
8. Building Regulations. Approved Document F - Ventilation, 2022.
9. British Standards Institution. British Standard 7445:1991 Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use, 1991.







Zone A: G1 bedrooms, G2 living rooms, MVHR ———

Zone B: G2 & V1 bedrooms, G4 & V3 living rooms ———

Zone C: G3 & V2 bedrooms, G4 & V3 living rooms ———

Zone D: G4 & V2 bedrooms, G4 & V3 living rooms ———

All other areas: G4 & V3 bedrooms, G4 & V3 living rooms

Project: London Road, Purbrook, Waterlooville	Title: Proposed Noise Mitigation Zones - North of Site		 24Acoustics
DWG No. Figure 3	Scale: N.T.S	Rev: -	
Date: March 2026	Drawn By: AR	Job No: 10600	

APPENDIX A: ACOUSTIC TERMINOLOGY

Noise is defined as unwanted sound. The range of audible sound is from 0 to 140 dB. The frequency response of the ear is usually taken to be around 18 Hz (number of oscillations per second) to 18000 Hz. The ear does not respond equally to different frequencies at the same level. It is more sensitive in the mid-frequency range than the lower and higher frequencies and because of this, the low and high frequency components of a sound are reduced in importance by applying a weighting (filtering) circuit to the noise measuring instrument. The weighting which is most widely used and which correlates best with subjective response to noise is the dB(A) weighting. This is an internationally accepted standard for noise measurements.

For variable sources, such as traffic, a difference of 3 dB(A) is just distinguishable. In addition, a doubling of traffic flow will increase the overall noise by 3 dB(A). The 'loudness' of a noise is a purely subjective parameter, but it is generally accepted that an increase/ decrease of 10 dB(A) corresponds to a doubling/ halving in perceived loudness.

External noise levels are rarely steady, but rise and fall according to activities within an area. In attempt to produce a figure that relates this variable noise level to subjective response, a number of noise indices have been developed. These include:

- i) The L_{Amax} noise level

This is the maximum noise level recorded over the measurement period.

- ii) The L_{Aeq} noise level

This is "equivalent continuous A-weighted sound pressure level, in decibels" and is defined in British Standard BS 7445 as the "value of the A-weighted sound pressure level of a continuous, steady sound that, within a specified time interval, T , has the same mean square sound pressure as a sound under consideration whose level varies with time".

It is a unit commonly used to describe construction noise and noise from industrial premises and is the most suitable unit for the description of other forms of environmental noise. In more straightforward terms, it is a measure of energy within the varying noise.

APPENDIX B: NOISE SURVEY RESULTS

