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**2 BEDFORD ROAD
READING
NOISE ASSESSMENT**

Technical Report: R11502-1 Rev 0

Date: 6th February 2026

For: The KEEN Partnership
The Courtyard
Edinburgh Road
Reading
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24 Acoustics Document Control Sheet**Project Title:** 2 Bedford Road, Reading – Noise Assessment**Report Ref:** R11502-1 Rev 0**Date:** 6th February 2026

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Document Status and Approval Schedule

Revision	Description	Prepared By	Reviewed & Approved By
0	Approved for issue	Miles Hodge	Stephen Gosling

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1.0 INTRODUCTION

- 1.1 The KEEN Partnership has appointed 24 Acoustics Ltd to undertake a noise assessment in relation to the proposed development at 2 Bedford Road, Reading. This site has had previous planning permission for development which expired.
- 1.2 This report assesses noise from existing sources in the vicinity, including road traffic using Bedford and Oxford Road. This assessment has included:
- Ambient noise monitoring at the proposed site;
 - Assessment of internal noise levels within habitable rooms.
- 1.3 The report presents the results of the assessment, following site visits and an environmental noise survey undertaken between 21st and 27th January 2026.
- 1.4 All noise levels in this report are presented in dB relative to 20µPa.

2.0 SITE DESCRIPTION AND PROPOSED DEVELOPMENT

- 2.1 The site is located in Reading, and currently comprises a 3-storey derelict public house. Existing residential properties are located to the north of the site with a retail unit to the east. The building is bounded by Bedford Road to the west and Oxford Road to the south.
- 2.2 The proposed development comprises the construction of a five-storey building providing 6 residential units with a retail unit on the ground floor.
- 2.3 The existing aerial view of the site is shown in Figure 1 with the proposed site layout shown in Figure 2.

3.0 STANDARDS AND GUIDANCE

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 aim to:
- 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 National Planning Practice Guidance (NPPG) [Reference 3] is written to support the NPPF with more specific planning guidance. The NPPG 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 NPPG 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 NPPG 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 NPPG 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.
- 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 an upper guideline value of 55 dB $L_{Aeq,16hr}$ for noise levels in external amenity spaces such as gardens. This is considered an aspirational limit and BS 8233 recognises that the desirable noise levels for external amenity areas are not always achievable in certain locations. BS 8233 also states that development should not be prohibited on the basis of noise levels within external amenity areas.

BS 4142:2014+A1:2019 - Methods for Rating Industrial and Commercial Sound

- 3.13 BS 4142:2014+A1:2019 [Reference 7] provides a method for rating the effects of industrial and commercial sound on residential areas.
- 3.14 The standard advocates a comparison between the representative measured L_{A90} background noise level and L_{Aeq} noise level from the source being considered. For rating purposes if the noise source is tonal, intermittent or otherwise distinctive in character, a rating correction should be applied.
- 3.15 The standard states that a difference between the rating level and the background level of around +10 dBA is an indication of a significant adverse impact, depending on the context and a difference of around +5 dBA is likely to be an indication of an adverse impact, also depending on the context. Where the rating level does not exceed the background noise level, this is an indication of the specific sound source having a low impact (depending upon the context).

Local Authority Guidance

- 3.16 Reading Borough Council's Local Plan (November 2019) [Reference 8] seeks to control noise from new plant at existing noise sensitive dwellings and refers to p policy EN17 which states:

"Where noise generating equipment is proposed, the noise source specific level (plant noise level) should be at least 10 dBA below the existing background level as measured at the nearest noise sensitive receptor"

Summary

3.17 The impact of noise upon the proposed development has been assessed in accordance with the following methodology:

- (i) BS 8233: 2014 and the WHO Guidelines for the following maximum noise levels inside the proposed dwellings:
 - daytime level 35 dB $L_{Aeq, 16 \text{ hour}}$ in bedrooms and living rooms;
 - night-time level of 30 dB $L_{Aeq, 8 \text{ hour}}$ in bedrooms;
 - night-time internal level of 45 dB $L_{Amax, fast}$ in bedrooms for regular events.
- (ii) Noise from new fixed plant associated with the development will be assessed using the guidance of BS 4142: 2014 to achieve RBC's criteria

4.0 NOISE MEASUREMENTS

Instrumentation and Procedure

4.1 Noise measurements were undertaken on the site from 21st to 27th January 2026 using the following equipment:

- Rion (Class 1) precision sound level meters Type NL52;
- Brüel and Kjær acoustic calibrator Type 4231.

4.2 The instrumentation was set up at the location as described below and shown in Figure 1:

- First floor level, facing Oxford Road.

4.3 In order to assess typical ambient noise levels, the instrumentation was configured to continuously monitor in one-minute sample periods. The meters were set up to measure and store overall A-weighted statistical parameters including the L_{Amax} and L_{Aeq} parameters (measured on fast response). 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].

4.4 The instrumentation was powered by external batteries and stored in a weatherproof case. An outdoor microphone windshield was used. There were periods of unfavourable weather which have been omitted from analysis.

- 4.5 Calibration of instrumentation was checked before and on completion of the measurements and no drift was found. The calibration of 24 Acoustics' instrumentation is traceable to National Standards.

Measurement Results

- 4.6 The noise survey results are shown graphically in Appendix B and are summarised in Table 1 below.

Date	Measured Ambient Noise Level		
	Daytime (07:00 - 23:00) dB LAeq, 16 hour	Night-Time (23:00 - 07:00) dB LAeq, 8 hour	Night-Time (23:00 - 07:00) Typical dB LAmax, f
Wednesday 21/1/2026	66	59	76
Thursday 22/1/2026	66	58	76
Friday 23/1/2026	65	57	76
Saturday 24/1/2026	65	59	76
Sunday 25/1/2026	63	56	75
Monday 26/1/2026	65	59	77
Tuesday 27/1/2026	66	-	-
Design Level	65	58	76

Table 1: Ambient Noise Levels at Monitoring Location

- 4.7 24 Acoustics considers the typical max event to be the 10th highest noise level during the night-time period.
- 4.8 The measured typical background noise levels were in the order of 56 dB LA90,1hr during the daytime (07:00 – 23:00) and 46 dB LA90,15min at night (23:00 to 07:00).

5.0 CALCULATIONS AND ASSESSMENT

External Noise Break-in

- 5.1 Calculations have been undertaken, using the noise measurement results, to determine the window and ventilation requirements for the development, which will ensure that the noise levels inside the properties achieve BS 8233 and WHO guidelines.

- 5.2 The proposed room dimensions and window areas have been obtained from Robin Ashley Architects LLP dated May 2018. If there are any future changes to the layouts, the calculations should be reviewed accordingly.
- 5.3 The calculations have assumed that external wall construction will comprise a cavity masonry construction, which will be specified to achieve a minimum sound insulation performance of 51 dB R_w .
- 5.4 The minimum acoustic requirements for glazing and ventilation applies to all new habitable rooms and all floors. The site has been split into zones which are described in Figure 2. The specifications for each zone are described below in Table 2.

	Room	Glazing Type	Ventilator Type
Zone 1	Bedrooms	Type G1	MVHR
	Living Rooms		Type V1
Zone 2	Bedrooms		
	Living Rooms		

Table 2: Acoustic requirements

- 5.5 The acoustic performance requirements for the window types are stated below in Table 3.

Window	Minimum SRI (dB) per Octave Band Centre Frequency (Hz)					
	125	250	500	1k	2k	4k
Type G1	24	22	29	40	44	46

Table 3: Minimum Required Window Performances

- 5.6 In making a comparison with the values in Table 3, it is important that the glazing figures used 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 window 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.
- 5.7 The following window configurations, if installed properly, would be capable of achieving the required sound reduction performance:
- Window Type G1: 4 mm glass: 12 mm cavity (minimum): 6.4 mm Stadip Silence (or equivalent) (minimum 34 dB R_w).

5.8 The acoustic performance requirements for ventilation types are shown in Table 4.

Ventilation	Minimum $D_{n,e,w}$ (dB) per Octave Band Centre Frequency (Hz)					
	125	250	500	1k	2k	4k
Type V1	40	36	35	33	37	37

Table 4: Ventilator Performance

5.9 The ventilation acoustic specifications in Table 4 relate to the following minimum sound insulation performance ratings, assuming two ventilators per habitable room:

- Ventilator Type V1: 36 dB $D_{n,e,w}$, acoustically attenuated trickle ventilator in open position

5.10 In making a comparison with the above ventilator specifications, it is important that the figures used are the result of laboratory tests with the vent in the open position. Note that the stated minimum performance value assumes two ventilators per habitable room. The specific ventilation requirements (e.g. equivalent free area etc.) should be confirmed by others.

5.11 The MVHR systems shall be designed to not exceed internal noise levels of NR 30 in living rooms and NR 25 in bedrooms.

5.12 The ventilation systems shall allow for adequate ventilation to meet background ventilation requirements as per Part F of the Building Regulations [Reference 10].

New Plant Noise Criteria

5.13 It is anticipated that the new retail unit will include a requirement for external plant. Full details of proposed plant are not yet known. It is recommended that the cumulative noise level from all new plant associated with the development should have a maximum rating noise level of 10 dBA below the existing background noise levels when assessed at the nearest existing property in accordance with BS 4142:2014 and Reading Borough Council's EN17 policy.

5.14 Limiting daytime and night-time plant noise criteria, are shown in Table 5 below.

Period	Maximum Rating Noise Level (dB)
Daytime (07:00 to 23:00)	46 dB L_{Aeq} , 1 hour
Night-time (23:00 to 07:00)	36 dB L_{Aeq} , 15 min

Table 5: Limiting Plant Criteria

- 5.15 The plant noise level criteria shown in Table 5 are to be achieved at the nearest noise sensitive properties to the site, namely the residential properties to the north. The noise levels in Table 5 apply to the cumulative noise level from all new plant associated with the development. Plant noise levels shall be assessed in accordance with BS 4142: 2014.

6.0 CONCLUSIONS

- 6.1 24 Acoustics Ltd has been appointed by The Keen Partnership to undertake a noise assessment for a residential development at 2 Bedford Road, Reading. It is proposed to redevelop the site to provide 6 residential units and a retail unit at ground floor level.
- 6.2 Environmental noise measurements have been carried out at the site to determine the prevailing noise levels.
- 6.3 Recommendations have been provided for the acoustic performance of glazing and ventilation to habitable rooms. It is concluded that with the recommended measures given, noise within habitable rooms would comply be controlled to below levels of 35 dB $L_{Aeq, 16 \text{ hour}}$ during the daytime, 30 dB $L_{Aeq, 8 \text{ hour}}$ at night and 45 dB $L_{Amax, f}$ at night for regular events.

REFERENCES

1. Department for Communities and Local Government. National Planning Policy Framework.
2. DEFRA. Noise Policy Statement for England, 2010.
3. Department of Communities and Local Government. Planning Practice Guidance.
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. British Standards Institution. British Standard 4142:2014+A1:2019. Method for rating and assessing industrial and commercial sound, 2019.
8. Reading Borough Council Reading Borough Local Plan, November 2019
9. British Standards Institution. British Standard 7445: 1991 'Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use'
10. Building Regulations. Approved Document F - Ventilation, 2021.



Measurement Location

Project: 2 Bedford Road, Reading	Title: Aerial view of site and measurement location		 24Acoustics
DWG No: Figure 1	Scale: N.T.S.	Rev: 0	
Date: February 2026	Drawn By: MH	Job No: 11502	



Mitigation Zones

Zone 1: 

Zone 2: 

Project: 2 Bedford Road, Reading	Title: Typical floor plan & mitigation zones		 24Acoustics
DWG No: Figure 2	Scale: N.T.S.	Rev: 0	
Date: February 2026	Drawn By: MH	Job No: 11502	

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 dBA weighting. This is an internationally accepted standard for noise measurements.

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

iii) The L_{A10} noise level

This is the noise level that is exceeded for 10% of the measurement period and gives an indication of the noisier levels. It is a unit that has been used over many years for the measurement and assessment of road traffic noise.

iv) The L_{A90} noise level

This is the noise level that is exceeded for 90% of the measurement period and gives an indication of the noise level during the quieter periods. It is often referred to as the background noise level and is used in the assessment of disturbance from industrial noise.

APPENDIX B: NOISE MEASUREMENT RESULTS

