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2087 - 148-152 London Road, Knebworth

Noise Impact Assessment

December 2025

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ii. Document History

Document Ref	Revision	Title	Date	Created By	Authorised By	Comments
AC20186AS.01.00	0	Noise Impact Assessment	19/12/2025	BG	DG	Draft for review

This report presents the acoustic consultancy services undertaken for the client by Trace Surveys Ltd (Trace). This has been based on the defined program of works and relevant terms and conditions agreed upon with the Client. The report has been prepared with all reasonable skill, care, and diligence within the terms of the Contract and the agreed scope of work. Trace accepts no responsibility whatsoever, following the issue of the report, for any matters arising outside the agreed scope of the works.

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1. Introduction

Trace Surveys Ltd (Trace) was instructed by Your Plans UK Ltd (The Client) to carry out a noise impact assessment at 2087 - 148-152 London Road, Knebworth (The Property).

Development has been approved at The Property by North Hertfordshire District Council, comprising a change of use of the first-floor office space to create two flats, a first-floor rear extension, and the conversion of the second floor to create one flat, including a roof extension and alterations to fenestration.

An unattended environmental noise survey was conducted over a 24-hour period to determine the prevailing ambient and background noise levels surrounding the site. The survey data shall form the basis of subsequent assessments.

2. Relevant Standards and Guidance

The primary standards used in the preparation of this document are as follows:

- British Standard (BS) 7445: 2003 *Part 2: Guide to the acquisition of data pertinent to land use*
- British Standard (BS) 8233:2014 *Guidance on sound insulation and noise reduction for buildings*
- Noise Policy Statement for England (NPSE)
- Professional Practice Guidance on Planning & Noise (ProPG)
- North Hertfordshire District Council Decision Notice

Planning Condition 4 (application ref: 25/00255/FP)

"Prior to the commencement of the development hereby approved a noise assessment (to include any mitigation measures such as acoustic glazing and mechanical ventilation) shall be submitted to and approved in writing by the Local Planning Authority. The development shall be carried out in accordance with the approved details.

Reason: To ensure satisfactory living standards for the occupiers of the proposed dwellings given the potential for noise disturbance from the adjacent highway and surrounding commercial uses. In order to comply with Policies D1 and D3 of the North Herts Local Plan."

3. Competency

Noise monitoring was carried out by Ben Groves BSc (Hons) MSc MIOA over the period 27-28 November 2025. Ben has been involved with acoustic consultancy and sound insulation testing for over a decade. Ben has a Master's degree in Acoustics from the University of Salford and is a corporate member of the Institute of Acoustics (IOA).

4. Site Description

Knebworth is a village and civil parish in Hertfordshire, England and is administered by North Hertfordshire District Council.

The Property is located on the southern side of B197 London Road, situated within a mix of commercial and residential properties and separated from the roadway by the depth of the pedestrian pavement.

The Property is of period construction (early 20th century) and currently comprises a ground-floor commercial unit with vacant first- and second-floor space.

Figure 4.1 shows the site location.

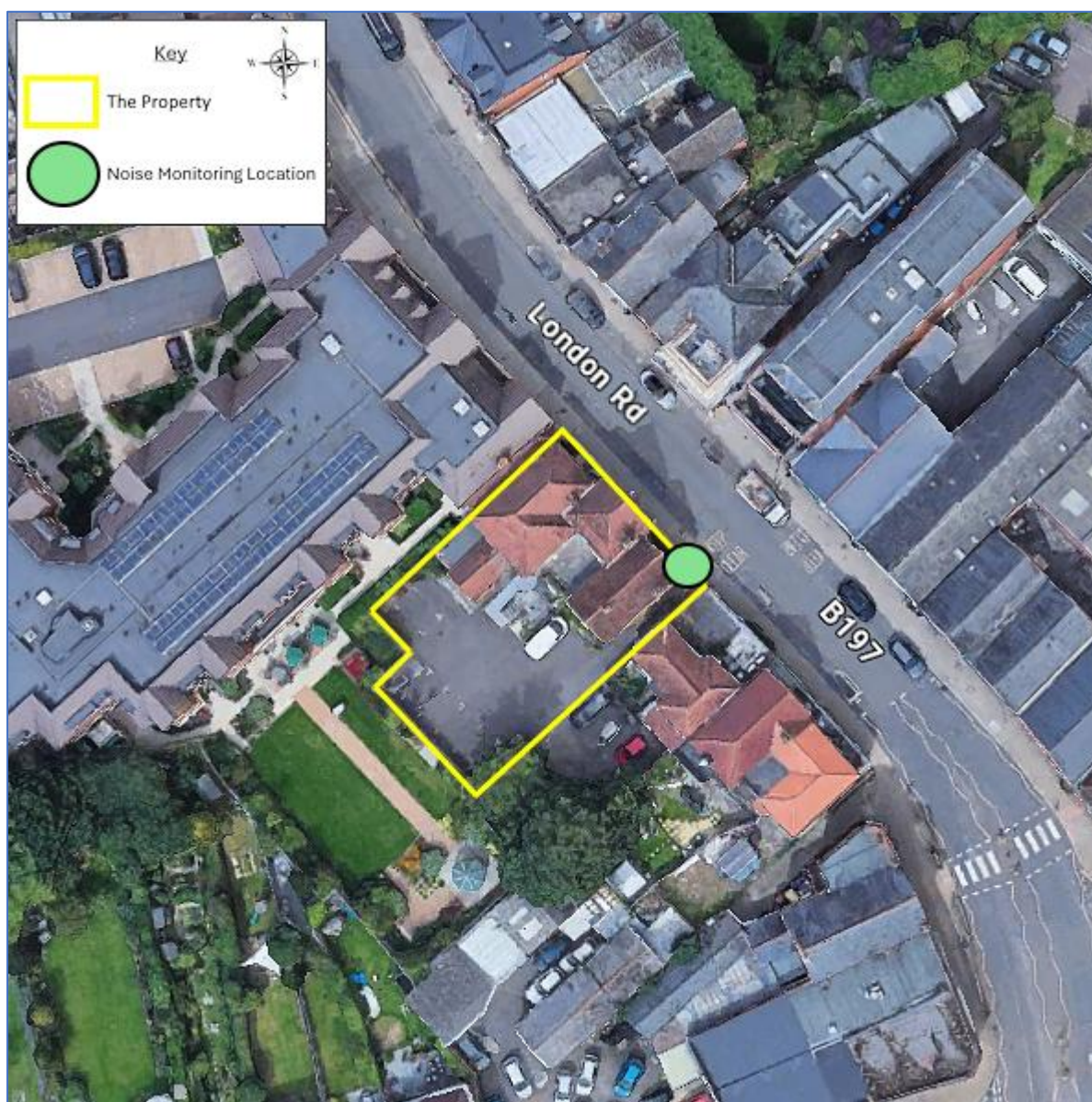


Figure 4.1: Site location, showing the noise measuring position

5. Environmental Noise Survey

Trace conducted an unattended acoustic survey from 12:15 on Thursday, 27 November to 12:00 on Friday, 28 November 2025. The microphone was positioned in a free field, at the front façade on a first-floor level. Site observations indicated that local noise was predominantly influenced by local road traffic.

The sound level meter was set to log and store consecutive 15-minute L_{Aeq} , L_{Amax} , and L_{A90} sound levels. During the noise survey, the microphone was protected by a weather-protected windshield. Measurements were undertaken in general accordance with BS 7445-2:2003 '*Description and measurement of environmental noise – Part 2: Guide to the acquisition of data pertinent to land use*'. Levels were measured in a free field.

The survey weather conditions were dry, with a daytime maximum temperature of 14 °C and an overnight minimum of 8 °C. These conditions are not expected to have adversely affected the acquisition of acoustical data.

5.1. Instrumentation

The instrumentation used during the testing is shown in Table 5.1:. The sound level meter underwent calibration checks before and after the measurement survey, and no significant calibration drift was observed (< 0.5 dB). The sound level meter used during the survey complied with the Class 1 standard defined by BS EN 61672-1:2013.

Description	Name	Serial Number	Calibration Due
Sound Level Meter	Svantek 971A	154226	03/12/2026
Microphone	Aco Pacific 7152	92800	03/12/2026
Preamplifier	Svantek SV18A	155314	03/12/2026
Calibrator	Rion Nc-75	34935217	11/09/2026

Table 5.1: Equipment Details

All noise equipment has been calibrated to traceable standards within the preceding two years and the acoustic calibrator within the preceding 12 months. Calibration certificates for all equipment used in the survey are available upon request.

5.2. Survey Results

The results of the unattended survey are presented in 5.2 and 5.3. The L_{A90} background sound level has been established using the most commonly occurring $L_{A90,15min}$ sound level during night-time and the most commonly occurring $L_{A90,1hr}$ sound level during the daytime. The L_{Amax} level is the 90th percentile of the measured $L_{Amax,15min}$ sound levels over the full monitoring period. $L_{Aeq,15min}$ sound levels have been logarithmically averaged to provide full daytime (16 hour) and night-time (8 hour) sound levels.

Measurement period (T)	Measured sound levels (dB)			
	$L_{Aeq,T}$	$L_{Amax,T}$	$L_{A10,T}$	$L_{A90,T}$
07:00 - 23:00	67	92	68	58
23:00 - 07:00	61	79	58	42

Table 5.2: Time-averaged free-field sound levels

Table 5.2 shows that the daytime and night-time average sound levels during the monitoring period were 67 dB and 61 dB $L_{Aeq,T}$, respectively. Night-time typical maximum sound levels were 79 dB $L_{Amax,15min}$.

Measurement period (T)	Range of sound levels (dB)			
	$L_{Aeq,T}$	$L_{Amax,T}$	$L_{A10,T}$	$L_{A90,T}$
07:00 - 23:00	63 - 75	72 - 98	66 - 74	46 - 66
23:00 - 07:00	47 - 68	70 - 90	45 - 72	37 - 56

Table 5.3: Time-averaged range of sound level ranges

Table 5.3 shows a summary of the range of sound levels during the monitoring period. Daytime and night-time $L_{Aeq,15min}$ sound level ranges were 63 - 75 dB and 47 - 68 dB, respectively.

6. External Façade Assessments

6.1.External Façade Requirements

British Standard 8233:2014 *Guidance on sound insulation and noise reduction for buildings* (BS8233:2014) provides guidance on the acceptable levels of noise within buildings of different types, these levels are based on World Health Organisation (WHO) guidelines.

In the case of residential developments, BS 8233:2014 recommends ambient noise levels in living accommodation. These recommendations are reproduced in Table 6.1 below.

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

Table 6.1 Indoor ambient noise levels for dwellings

A specific maximum L_{AFmax} value is not given by BS 8233:2014. Based on commonly applied criteria, we propose that for bedrooms at night, individual noise events should not usually exceed 45 dB L_{AFmax} .

6.2.External Noise Levels

This section provides an assessment of the suitability of the site for residential use with respect to noise. The Association of Noise Consultants and the Institute of Acoustics have produced a residential design guide on acoustics, ventilation, and overheating. To complete an initial site risk assessment, externally measured free-field sound levels can be assessed using Figure 6.1.

Risk Category for level 1 assessment		Potential effect without mitigation	Recommendations for further assessments
Daytime $L_{Aeq,16hr}$ (07:00-23:00)		Night-time $L_{Aeq,8hr}$ (23:00-07:00)	Recommended
65dB		55dB	
60dB		50dB	
55dB		45dB	Optional
50dB		The use of openable windows as primary means for mitigating overheating is not likely to cause	Not required

Figure 6.1 Guidance for level 1 site risk assessment

Based on the measured sound levels presented in Section 5, a level 1 risk assessment can be completed. Noise levels impinging on the façade of the proposed development present a medium to high risk of noise resulting in an adverse effect.

6.3. Façade (and Glazing) specification

Using the façade noise levels presented in Section 5, calculations have been completed to support the selection of glazing and ventilation for building areas exposed to local transportation noise sources. The calculations consider the free-field equivalent sound level, the sound reduction index of the glazing and ventilation elements, the sound reduction of the façade, and the internal acoustics of a typical domestic room. Based on these calculations, presented for reference in Appendix B of this report, façade elements and ventilation can be specified.

It is assumed that the non-glazed areas of any façade systems may incorporate sufficient acoustic treatment such that the glazing remains the weakest path for external noise intrusion. As such, the acoustic performance of the glazing will be the most critical element in determining the overall sound insulation performance of the external façade.

Table 6.2 presents the sound insulation performance specifications recommended for elements of the building fabric system. Typical constructions that achieve the internal ambient noise criteria in BS8233:2014 are also provided.

Façade Element	Living Rooms and Bedrooms	
	Sound Insulation Performance, dB R _w	Example Constructions
External wall Fabric	50	Brick and block external wall (BS8233 - 2014)
Glazing (Living Room)	32	6/6/4 Pilkington Glazing
Glazing (Bedrooms)	35	10/6/4 Pilkington Glazing P
These values have been based on: Ventilation – System 4 Mechanical Ventilation with Heat Recovery Living room – 100 m ³ room volume with 15 m ² external façade and a 3 m ² window. Calculations were carried out using a reverberation time (RT60) of 0.5 seconds across all frequency bands.		

Table 6.2 Building envelope proposed construction

As shown in Table 6.2, to meet the requirements of BS8233:2014, a glazing system achieving a rating of at least 32 dB R_w for Living Rooms and 35 dB R_w for Bedrooms is recommended.

It is also proposed that the ventilation requirements of Approved Document F be met via a mechanical system, i.e. Approved Document F System 4 Mechanical Ventilation with Heat Recovery (MVHR).

7. Conclusion

Trace Surveys Ltd (Trace) was appointed by Your Plans UK Ltd (the Client) to undertake a Noise Impact Assessment in support of the proposed residential development at 148–152 London Road, Knebworth.

An unattended environmental noise survey was conducted to establish the prevailing ambient and background noise climate affecting the site. The results indicate that the property is subject to elevated external noise levels, primarily due to road traffic on London Road, which presents a medium to high risk of adverse noise impact for residential use in the absence of mitigation.

The assessment has demonstrated that, through the incorporation of appropriate acoustic mitigation measures, satisfactory internal noise conditions can be achieved. Specifically, the use of enhanced acoustic glazing achieving a minimum sound insulation performance of 32 dB Rw for living rooms and 35 dB Rw for bedrooms, together with a whole-dwelling mechanical ventilation system compliant with Approved Document F (System 4 MVHR), is predicted to control internal ambient and maximum noise levels in accordance with the recommendations of BS 8233:2014.

Subject to the implementation of the mitigation measures set out in this report, the proposed development is considered suitable for residential occupation from an acoustic perspective and capable of providing acceptable living conditions for future occupants.

Appendix A Figures

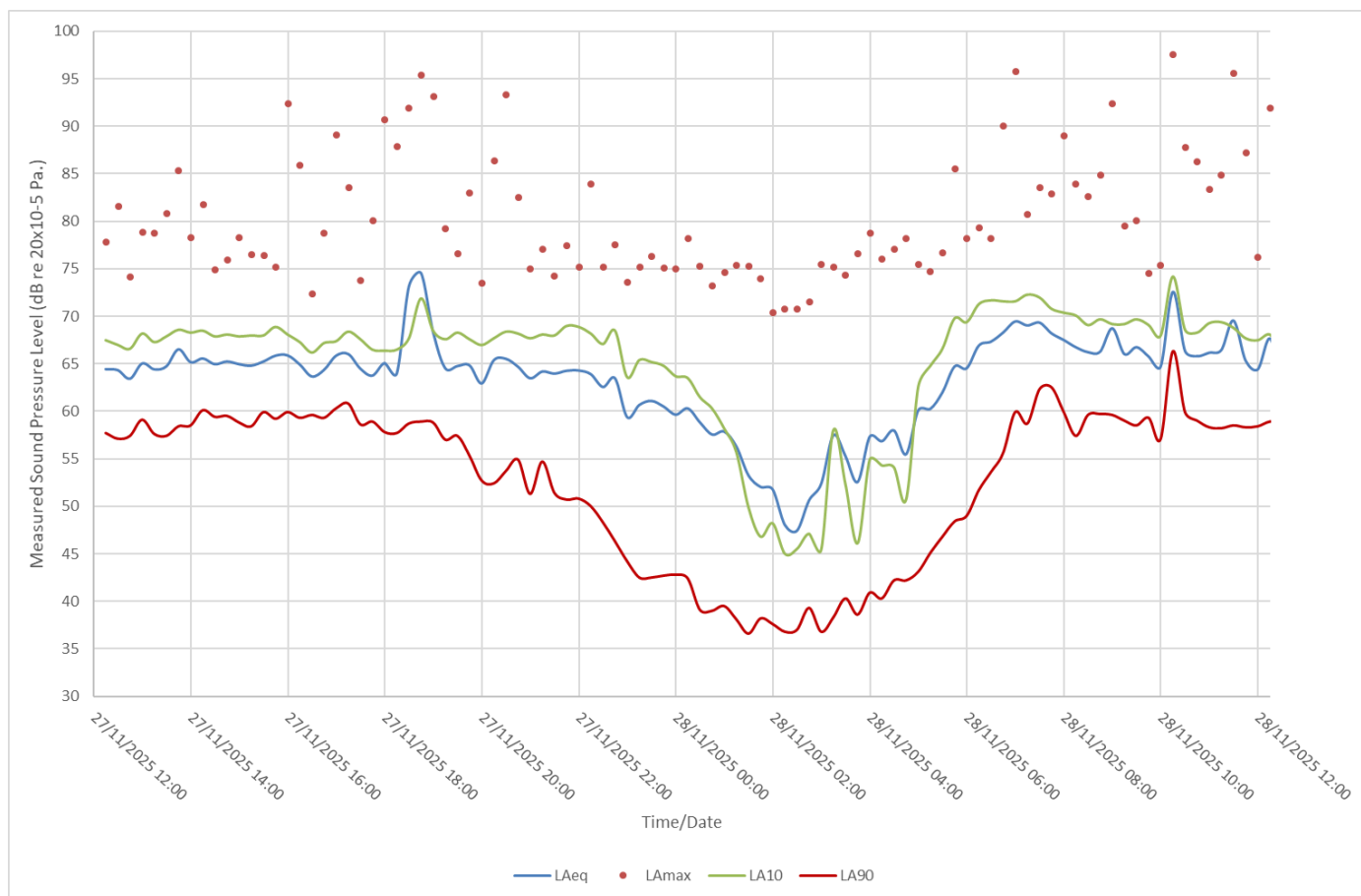


Figure A.1 Survey Results



Figure A.2: Monitoring location

Appendix B Tables

Project	AC20186AS. 2087 - 148-152 London Road, Knebworth				Date		19/12/2025	
Façade	All				By		JH	
Room	Living Room				Checked		BG	
						</		

Table B.1 Daytime internal ambient sound levels

Project	AC20186AS. 2087 - 148-152 London Road, Knebworth				Date	19/12/2025			
Façade	All				By	JH			
Room	Nighttime Bedroom				Checked	BG			

Table B.2 Night-time internal ambient sound levels

Project	AC20186AS. 2087 - 148-152 London Road, Knebworth				Date	19/12/2025			
Façade	All				By	JH			
Room	Nighttime Bedroom Max				Checked	BG			
						</			

Table B.3 Night-time internal L_{Amax} Levels

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