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1 John Street, Royston, Hertfordshire, SG8 9BE

Noise Impact Assessment

January 2026

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ii. Document History

Document Ref	Revision	Title	Date	Created By	Authorised By	Comments
AC20182AS.01.00	0	Noise Impact Assessment	28/11/2025	JH	DG	First draft
AC20182AS.01.01	1	Noise Impact Assessment	15/01/2026	JH	DG	First draft

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 Abode Town and Country Properties (The Client) to carry out a noise impact assessment at 1 John Street, Royston, Hertfordshire, SG8 9BE (The Property).

The Client has submitted a building consent proposal for change of use of existing offices (Class E) into 6 bed HMO (Class C4).

Unattended environmental noise surveys were conducted over a two 24-hour periods 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 1 Description and measurement of environmental noise. Guide to quantities and procedures*
- 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)

3. Competency

Noise monitoring was carried out by Ben Groves BSc (Hons) MSc MIOA over the periods 11-13 November 2025 and 5-6 January 2026. 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

The Property is a three-storey brick-built terraced house dating from the early 19th century, administered by North Hertfordshire District Council. The Property is located in the town centre conservation area of Royston, situated within a mix of commercial and residential properties. The Property is Grade II listed.

The Front Façade shares a border with a roadway and pedestrian pavement. While at single vehicle width and designated as a one-way street, it is a main-through road for passing traffic to loop and exit onto the High Street.

The Rear Façade is enclosed, the upper storeys overlooking the roofs of the west and north surrounding premises, with line-of-sight of an air-conditioning unit at approximately 7.5 metres. To the east a kitchen extraction flue can be seen mounted to the façade of the neighbouring Rosia House with three storeys and having a restaurant at ground level. The flue is at approximately 10 metres from the nearest upper window of The Property. Observations at the site determined that out-of-sight additional air-conditioning plant units beyond the flue and façade could be heard from the rear ground level of the restaurant premises.

Figure 4.1 shows the site location.



Figure 4.1: Site location

5. Environmental Noise Survey

Trace conducted two unattended acoustic surveys. The first was from 12:15 on Tuesday, 11 November to 14:15 on Thursday, 13 November 2025 at the front façade, on John Street. The microphone was positioned on the front façade at the third-floor level, pointing outward through a slightly open corner sash window. Observations indicated that local noise was predominantly influenced local road traffic. The survey weather conditions were mixed, with a daytime maximum temperature of 13 °C and an overnight minimum of 6 °C.

The second survey ran from 15:15 Monday 5 January to 15:15 6 January 2026 at the rear facade. The microphone was positioned on the rear façade at the third-floor level, pointing outward through a slightly open window. Observations indicated that local noise was predominantly influenced by plant noise from the rear of the neighbouring restaurant premises. The survey weather conditions were generally bright and dry but cold, with a daytime maximum temperature of 2 °C and an overnight minimum of -5 °C.

Weather conditions during each survey are not expected to have adversely affected the acquisition of acoustical data.

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.

5.1. Instrumentation

The instrumentation used during the both surveys 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 was compliant with the Class 1 standard as defined by BS EN 61672-1:2013.

Description	Name	Serial Number	Calibration Due
Sound Level Meter	Svantek 971A	154221	02/01/2027
Microphone	Aco Pacific 7152	92702	02/01/2027
Preamplifier	Svantek SV18A	155384	02/01/2027
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 surveys are presented together in figures 7.1 and 7.2. 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 $L_{A90,1hr}$ period 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) Front Façade	Measured sound levels (dB)			
	$L_{Aeq,T}$	$L_{Amax,T}$	$L_{A10,T}$	$L_{A90,T}$
Front Façade 07:00 - 23:00	54	77	54	44
Front Façade 23:00 - 07:00	43	66	41	35

Table 5.2: Time-averaged free field sound levels at the Front Façade (John St)

Table 5.2 shows that the daytime and night-time average sound levels at the Front Façade during the monitoring period were 54 dB and 43 dB $L_{Aeq,T}$, respectively. Night-time typical maximum sound levels were 66 dB $L_{Amax,15min}$. A -3db façade correction has been applied.

Measurement period (T) Rear Façade	Measured sound levels (dB)			
	$L_{Aeq,T}$	$L_{Amax,T}$	$L_{A10,T}$	$L_{A90,T}$
Rear Façade 07:00 - 23:00	56	68	56	54
Rear Façade 23:00 - 07:00	45	56	46	39

Table 5.3: Time-averaged free field sound levels at the Rear Façade

Table 5.2 shows that the daytime and night-time average sound levels at the Rear Façade during the separate monitoring period were 56 dB and 45 dB $L_{Aeq,T}$, respectively. Night-time typical maximum sound levels were 56 dB $L_{Amax,15min}$. A -3db façade correction has been applied.

Measurement period (T) Front Façade	Range of sound levels (dB)			
	$L_{Aeq,T}$	$L_{Amax,T}$	$L_{A10,T}$	$L_{A90,T}$
Front Façade 07:00 - 23:00	41 - 69	57 - 93	43 - 66	37 - 56
Front Façade 23:00 - 07:00	33 - 56	44 - 79	36 - 55	28 - 51

Table 5.4: Time-averaged range of sound level ranges at the Front Façade

Table 5.4 shows a summary of the range of sound levels at the Front Façade during the monitoring period. Daytime and night-time $L_{Aeq,15min}$ sound level ranges were 41 - 69 dB and 33 - 56 dB, respectively.

Measurement period (T) Rear Façade	Range of sound levels (dB)			
	$L_{Aeq,T}$	$L_{Amax,T}$	$L_{A10,T}$	$L_{A90,T}$
Rear Façade 07:00 - 23:00	51 - 65	55 - 85	52 - 66	48 - 64
Rear Façade 23:00 - 07:00	41 - 56	51 - 67	43 - 57	36 - 54

Table 5.5: Time-averaged range of sound level ranges at the Rear Façade

Table 5.4 shows a summary of the range of sound levels at the Rear Façade during the monitoring period. Daytime and night-time $L_{Aeq,15min}$ sound level ranges were 51 - 65 dB and 41 - 56 dB, respectively.

The Rear Façade is enclosed, overlooking roofs of the surrounding properties, with general line-of-sight of an air-conditioning unit and an extraction flue from neighbouring restaurants.

The measured daytime noise climate at the rear façade is characterised by a relatively small difference between the L_{Aeq} and L_{A90} indices, indicating a largely steady sound environment dominated by fixed plant rather than intermittent or fluctuating sources. This suggests that the prevailing noise environment is driven primarily by mechanical services noise from the adjacent plant and flue, rather than passing road traffic. The implications of this source dominance, including its relevance to façade design and the suitability of ventilation strategies that do not rely on regular window opening, are considered further in Section 7.2.

6. 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} .

7. External Façade Assessments

7.1.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 7.1.

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		40dB	
		The use of openable windows as primary means for mitigating overheating is not likely to cause	Not required

Figure 7.1 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 at the proposed development impinging on the Front Façade present a negligible to low risk of noise, while noise levels impinging on the Rear Façade present a low to medium risk of noise resulting in an adverse effect.

7.2.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 7.1 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	HMO Roomw	
	Sound Insulation Performance, dB R _w	Example Constructions
External wall Fabric	50	Brick and block external wall (BS8233 - 2014)
Front Façade Glazing (John St)	29	4/6/4 Pilkington Glazing
Rear Façade Glazing	29 ^[1]	4/6/4 Pilkington Glazing
These values have been based on: Ventilation strategy - "hit and miss" trickle (4000 mm²) [1] due to plant noise at the rear of the property ventilation in this area should be provided by mechanical ventilation Living room – 100 m³ room volume with 15 m² external façade and a 3m² window. Calculations were carried out using a reverberation time (RT60) of 0.5 seconds across all frequency bands.		

Table 7.1 Building envelope proposed construction

As discussed in Section 5, the external noise environment at the rear façade is dominated by steady mechanical plant noise, as evidenced by the close correlation between the measured L_{Aeq} and L_{A90} levels. In such environments, the regular opening of windows for background or purge ventilation would be likely to result in a persistent and perceptible ingress of plant noise into habitable rooms, with limited opportunity for occupants to control their internal acoustic environment. As the dominant noise source is fixed and continuous in nature, rather than transient or anonymous transport noise, reliance on openable windows as part of the primary ventilation strategy is therefore not considered appropriate for this façade.

On this basis, it is proposed that ventilation is provided via a System 4 mechanical extract ventilation with heat recovery (MVHR) system. This approach allows internal noise criteria to be achieved with windows closed, while maintaining adequate ventilation rates in accordance with Building Regulations and good practice guidance. By avoiding the need for regular window opening on the noise-affected elevation, an MVHR system is expected to offer the lowest potential for adverse noise impact on prospective residents, while also providing improved occupant control, thermal efficiency, and overall acoustic amenity.

As shown in Table 7.1, to meet the requirements of BS8233:2014, a glazing system achieving a rating of at least 29 dB R_w is required at the Front Façade. A uprated glazing system achieving a rating of at least 32 dB R_w is required at the Rear Façade.

Along with the use of a "hit and miss" trickle (4000 mm²) ventilation strategy compliant with Approved Document F, internal noise levels can be controlled to meet national standards for residential comfort. Based on this, the proposed development is expected to achieve noise levels within the recommended limits set out in BS 8233:2014.

8. Conclusion

Trace Surveys Ltd (Trace) has been appointed by Abode Town and Country Properties (the Client) to provide acoustic consultancy services in support of the proposed residential development at 1 John Street, Royston, Hertfordshire, SG8 9BE (the Property).

The noise impact assessment has evaluated the environmental noise conditions affecting the site, including road traffic noise at the front façade and plant-dominated noise at the rear. The assessment demonstrates that, with the implementation of appropriate façade treatments—namely glazing to the front façade with a minimum R_w of 29 dB at both front and rear facades, internal noise levels can be suitably controlled to meet recognised standards for residential amenity.

Owing to the steady and dominant nature of plant noise at the rear façade, reliance on openable windows for background ventilation is not considered appropriate. Accordingly, a whole-dwelling mechanical ventilation with heat recovery (MVHR) system is proposed to allow internal noise criteria to be achieved with windows closed, while maintaining adequate ventilation in accordance with Approved Document F.

Based on the above, the assessment concludes that the proposed development is suitable for residential use, provided that the recommended acoustic mitigation measures, including the proposed MVHR ventilation strategy, are incorporated into the final design. This approach is expected to ensure that internal noise levels remain within the guideline limits set out in BS 8233:2014 and that an acceptable standard of acoustic comfort is achieved for future occupants.

Appendix A Figures

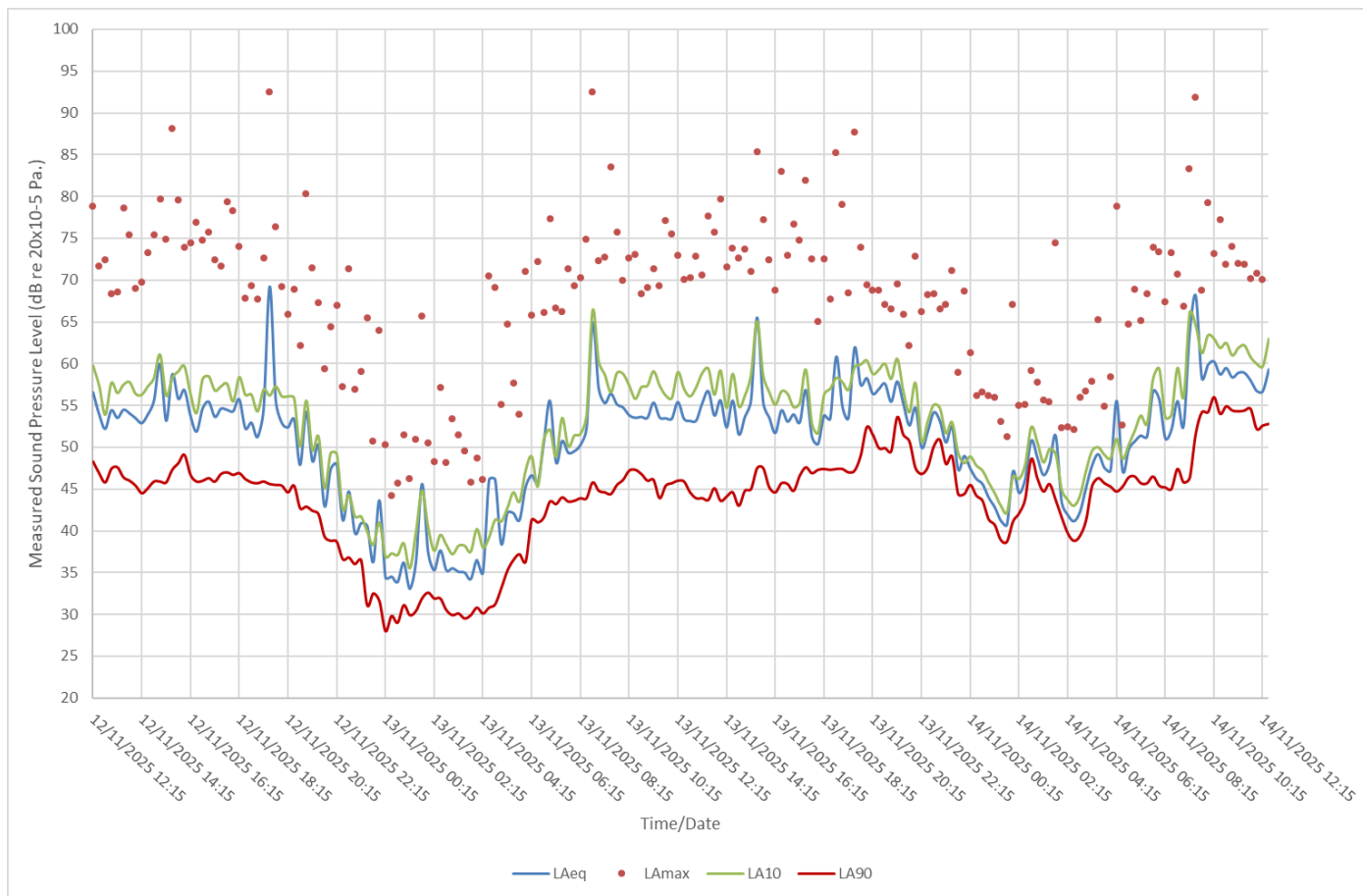


Figure A.1 - Survey 1 (Front Façade) results for the 24-hour measurement period

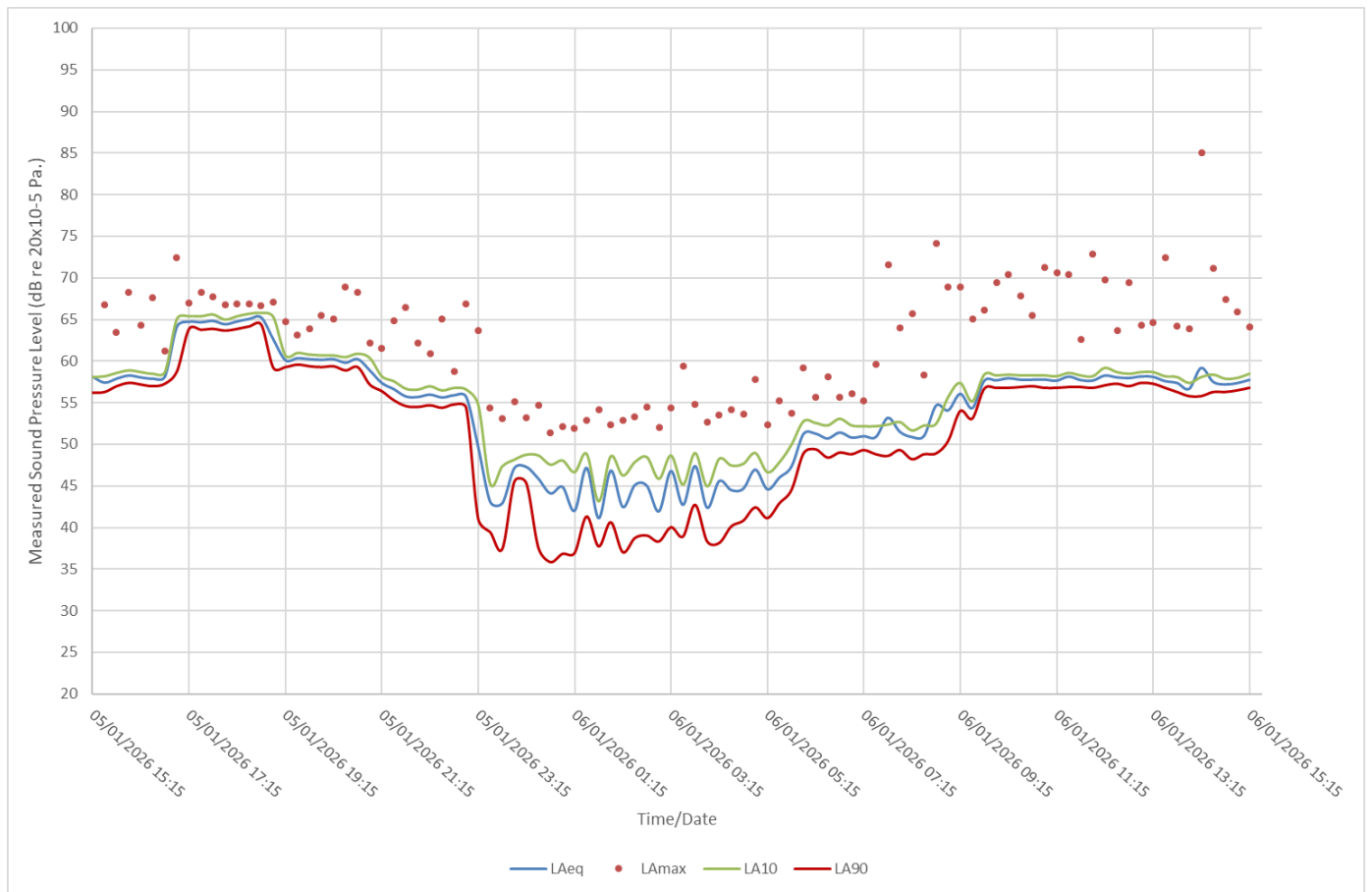


Figure A.2 - Survey 2 (Rear Façade) results for the 24-hour measurement period

Appendix B Tables

Project	AC20182AS 1 John Street, Royston, Hertfordshire, SG8 9BE				Date		14/01/2026	
Façade	Front				By		JH	
Room	Night-time Bedroom Max				Checked		BG	

Table B.1 Daytime internal ambient sound levels at the Front Façade

Project	AC20182AS 1 John Street, Royston, Hertfordshire, SG8 9BE				Date	14/01/2026			
Façade	Front				By	JH			
Room	Night-time Bedroom				Checked	BG			

Table B.2 Night-time internal ambient sound levels at the Front Façade

Project	AC20182AS 1 John Street, Royston, Hertfordshire, SG8 9BE				Date	14/01/2026			
Façade	Front				By	JH			
Room	Night-time Bedroom Max				Checked	BG			

Table B.3 Night-time internal L_{Amax} levels at the Front Façade

Project	AC20182AS 1 John Street, Royston, Hertfordshire, SG8 9BE				Date	15/01/2026			
Façade	Rear				By	JH			
Room	Living Room				Checked	BG			
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Table B.4 Daytime internal ambient sound levels at the Rear Façade

Project	AC20182AS 1 John Street, Royston, Hertfordshire, SG8 9BE				Date	15/01/2026			
Façade	Rear				By	JH			
Room	Night-time Bedroom				Checked	BG			

Table B.5 Night-time interna L_{Amax} levels at the Rear Façade

Project	AC20182AS 1 John Street, Royston, Hertfordshire, SG8 9BE				Date	15/01/2026			
Façade	Rear				By	JH			
Room	Night-time Bedroom Max				Checked	BG			

Table B.6 Night-time internal ambient sound levels at the Rear Façade

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