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3a Hitchin Street, Baldock, Hertfordshire, SG7 6AQ

Noise Impact Assessment

April 2025



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ii. Document History

Document Ref	Rev	Description	Date	Created By	Authorised By
AC20158AS.01.00	0	Noise Impact Assessment	30/04/2025	JH	DG

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iii. Credentials

Acoustic survey and assessments were undertaken by Ben Groves BSc (Hons) MSc MIOA assisted by Jason Haynes. Ben has been involved with acoustic consultancy for over ten years and has a Masters degree in Environmental Acoustics and is a corporate member of the Institute of Acoustics (MIOA).

The report was authorised by David Gnanaseharam BSc (Hons) MSc MIOA. David has been involved with acoustic consultancy (including sound insulation testing and noise impact assessments) for over fifteen years and has a Masters degree in Acoustics from the University of Surrey and is a corporate member of the Institute of Acoustics (MIOA).

In addition, they are both fully accredited under the Sound Insulation Testing and Measurement Association (SITMA) scheme. SITMA is a professional association for the Acoustic Consultancy industry and operates a registered testers scheme providing 3rd party accreditation to testing companies, ensuring that all companies operate to a high standard.

SITMA also holds UKAS Accreditation to ISO 17024:2012.



1. Introduction

Pickle Planning has appointed Trace to provide acoustic consultancy services to assist in the planning stages of developing a former funeral home at 23a Hitchin Street, Baldock, Hertfordshire, SG7 6AQ (The Property). It is understood that Pickle Planning is working on the overall scheme, which comprises the construction of four dwelling houses.

An assessment is required at The Property to assess environmental noise from the boundary public house and other properties surrounding the proposed development. In this report, external noise levels affecting The Property will be measured and used to assess their impact on prospective residents. These noise levels will determine the need for acoustically rated façade elements and mechanical ventilation, as per national standards, if passive systems cause excessive internal noise.

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. Site Description

3.1. Site Description

The Property is situated at central Baldock, which is in the administrative region of North Hertfordshire. The Property was formerly a funeral home that dates back to the 19th Century, comprising three buildings separated by a courtyard, with a sole roadside entrance and exit through a private driveway that sits alongside the south-western boundary with The White Hart public house, sharing frontage on B656 Hitchin Street.

The area immediately around The Property is predominantly comprised of two-storey detached housing built in the 2000s and a new, incomplete two-storey apartment block. The north-eastern side of the Property shares a north-western boundary line with the rear garden of the public house.

During the observations around the site at midday on 23 April, a low level of noise was experienced. The predominant noise came from passing traffic, separated by the depth of the driveway and public house.

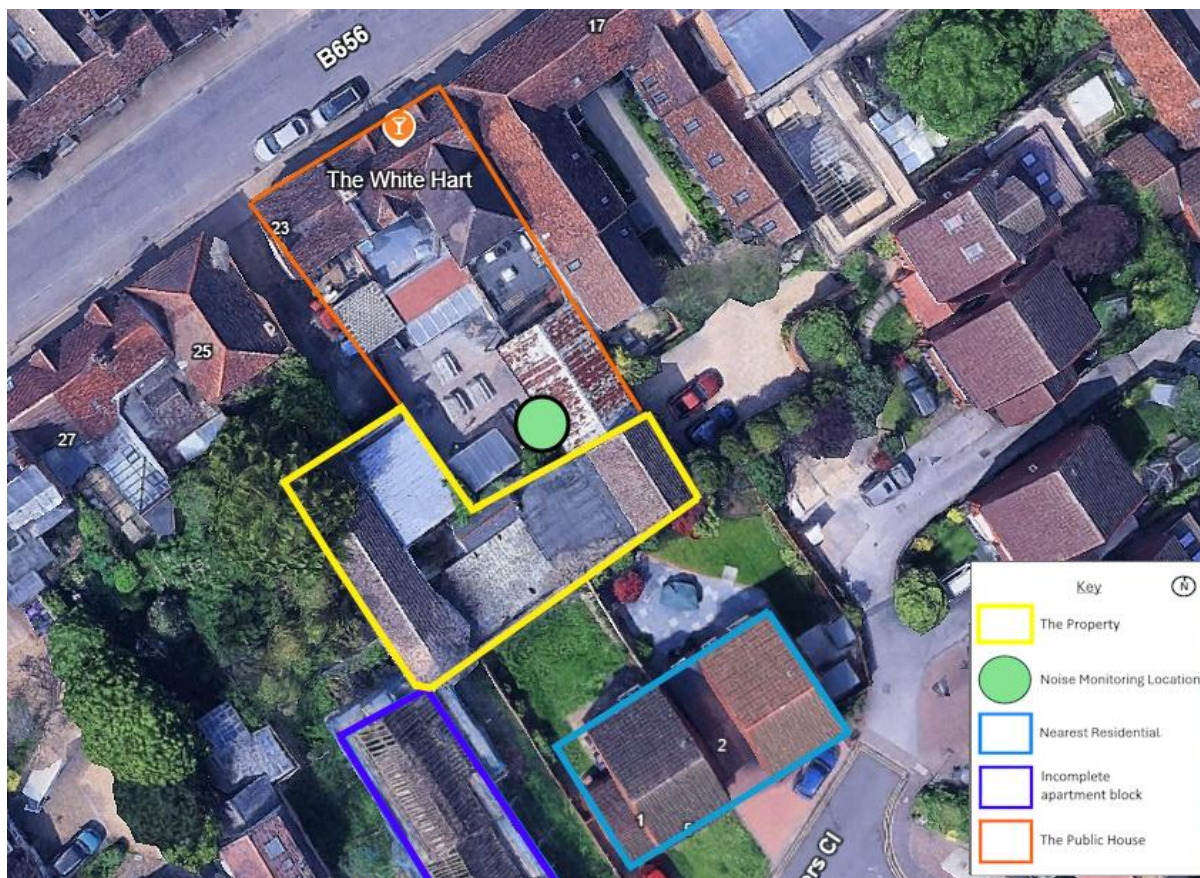


Figure 3.1: Site location showing The Property and monitoring location

4. Environmental Noise Survey

4.1. Survey Details

An unattended acoustic survey was carried out by Trace between 12:00 on Wednesday, 23 April and 14:00 on Thursday, 24 April 2025. The microphone was positioned at the first-floor level out of an open window into the courtyard behind the public house premises. It was pointing south-westerly. This location is expected to be representative of the most impacted façade.

The survey aimed to establish the prevailing noise levels surrounding the site. In particular, noise levels representative of the worst effect façade of The Property will be used to verify the required acoustic performance of façade building elements.

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 with 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'.



The Façade levels have been corrected to be representative of free field conditions and are expected to be representative of the worst affected façades.

Weather conditions during the daytime 23 April were bright at 13 degrees Celsius. Weather is not expected to have had a detrimental effect on the collection of acoustical data.

The sound level meter had calibration checks before and after the measurement surveys to generate a calibration level of 94 dB at 1 kHz. The equipment calibration was verified before and after the survey and no significant calibration drift was observed (<0.5dB). The sound level meter used during the survey was compliant with the Class 1 standard as required by BS EN 61672-1:2013 *Electroacoustics. Sound level meters. Specifications*. This is the most scientifically accurate form of sound level meter that is available.

The equipment used is shown in Table 4.1.

Description	Name	Serial Number	Calibration Due
Sound Level Meter	Svantek 971	154221	02/01/2027
Microphone	Aco Pacific 7152	92702	15/07/2026
Preamplifier	Svantek Sv18a with Svantek Sa271a Outdoor Kit	155314	15/07/2026
Calibrator	Rion Nc-75	34935217	20/11/2025

Table 4.1 – 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.



4.2. Survey Results

The results of the unattended survey are presented in Table 4.2 below. The L_{A90} background sound level has been established using the most commonly occurring $L_{A90,15min}$ sound level during nighttime, 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. $L_{Aeq,15minute}$ sound levels have been logarithmically averaged to provide full daytime (16 hour) and nighttime (8 hour) sound levels.

Measured Noise Levels (dB re 2.0×10^{-5} Pa)

Measurement period	L_{Aeq}	L_{Amax}	L_{A10}	L_{A90}
Daytime (07:00 - 23:00)	51	75	52	41
Night-time (23:00 - 07:00)	46	64	43	33

Table 4.2 Summary of measurement results

As shown above, the prevailing daytime $L_{Aeq,16hour}$ sound level has been measured to be 48 dB. The nighttime sound level impacting the Property was measured to be 46 dB $L_{Aeq,8hr}$ while nighttime typical maximum sound levels were 67 dB $L_{Amax,15min}$

4.3. Façade Noise Levels

Based on the measurements and calculations above, the following octave band sound levels will be used to specify façade building elements. The levels below are expected to be representative of the worst affected façades.

Measurement period	Octave Band Centre Frequency (Hz)								dB	
	63	125	250	500	1k	2k	4k	8k	L_{Aeq}	L_{Amax}
Daytime $L_{Aeq, 16hrs}$ (07:00-23:00)	54	52	50	45	46	47	39	28	51	N/A
Night-time $L_{Aeq, 8hrs}$ (23:00-07:00)	46	52	53	41	34	28	18	16	45	64

Table 4.3 Noise data to be used in façade sound insulation assessments rear façade



5. Project criteria

5.1. 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 accommodations. The document states that *“in general, for steady external noise sources, the internal ambient noise level shouldn't exceed the guideline values...”* recommendations from BS8233 are reproduced in Table 5.1 below.

Activity	Location	Day-time 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 5.1 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 normally exceed 45 dB L_{AFmax}.

6. External Façade Assessments

6.1. External Noise Levels – Level 1 Assessment

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 relating to 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
Day-Time $L_{Aeq,16hr}$ (07:00-23:00)		Night-time $L_{Aeq,8hr}$ (23:00-07:00)	 Increasing risk of adverse effect	Recommended
65dB		55dB		Optional
60dB		50dB		
55dB		The use of openable windows as primary means for mitigating overheating is not likely to cause		Not required
50dB				
		45dB		

Figure 6.1 Guidance for level 1 site risk assessment



Based on the measured sound levels presented in Section 3 a level 1 risk assessment can be completed. It can be seen that noise levels impinging on the façade of the proposed development present a negligible to low risk of noise resulting in an adverse effect.

6.2. Façade (and Glazing) specification

Using the façade noise levels, presented in Table 4.3, calculations have been completed to allow the selection of both glazing and ventilation for the whole development. 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 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.

Hitchin Street courtyard Façade

Table 6.1 presents the sound insulation performance specifications recommended for elements of the external building fabric system for all room types on The Property courtyard façade. It appears from the plans that only the first-floor bedrooms will have windows, so typical constructions that achieve the internal ambient noise criteria in BS 8233:2014 are provided for this area of The Property.

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	32	6/6/4 Pilkington Glazing

These values have been based on:

Ventilation – "hit and miss" trickle (4000mm²)

Bedroom - 35m³ room volume with 9m² external façade and a 3m² window.

Calculations were carried out using a reverberation time (RT60) of 0.5 seconds across all frequency bands.

Table 6.1 Building envelope proposed construction – The Property courtyard Façade (Living spaces during daytime)

As can be seen from Table 6.1, to meet the requirements of BS8233:2014, a glazing system achieving a rating of not less than R_w 32 dB will be required to the bedrooms of The Property.

The ventilation requirements of Approved Document F may be satisfied by the use of "hit and miss" trickle (4000mm²) trickle ventilators.



7. Conclusions

Trace has been appointed by Pickle Planning to provide acoustic consultancy services to assist in developing residential Property at 23a Hitchin Street, Baldock, Hertfordshire, SG7 6AQ (The Property).

An assessment was required at The Property to establish the suitability of the land for residential development. In particular, in this report, external noise levels impinging upon the Property have been measured and used to assess the impact on prospective residents. These noise levels have been used to establish the need for acoustically-rated façade elements.

An unattended acoustic survey was carried out by Trace between 12:00 on Wednesday, 23 April, and 14:00 on Thursday, 24 April 2025. The prevailing daytime $L_{Aeq,16hr}$ sound level has been measured to be 51 dB. The nighttime sound level impacting the Property was measured to be 46 dB $L_{Aeq,8hr}$ while nighttime typical maximum sound levels were 64 dB $L_{Amax,15min}$.

As can be seen from Table 6.1, to meet the requirements of BS 8233:2014 within properties overlooking The Property, a glazing system achieving a rating of not less than R_w 32 dB will be required. An example of this would be a 6/6/4 Pilkington Glazing system.

Appendix A Figures

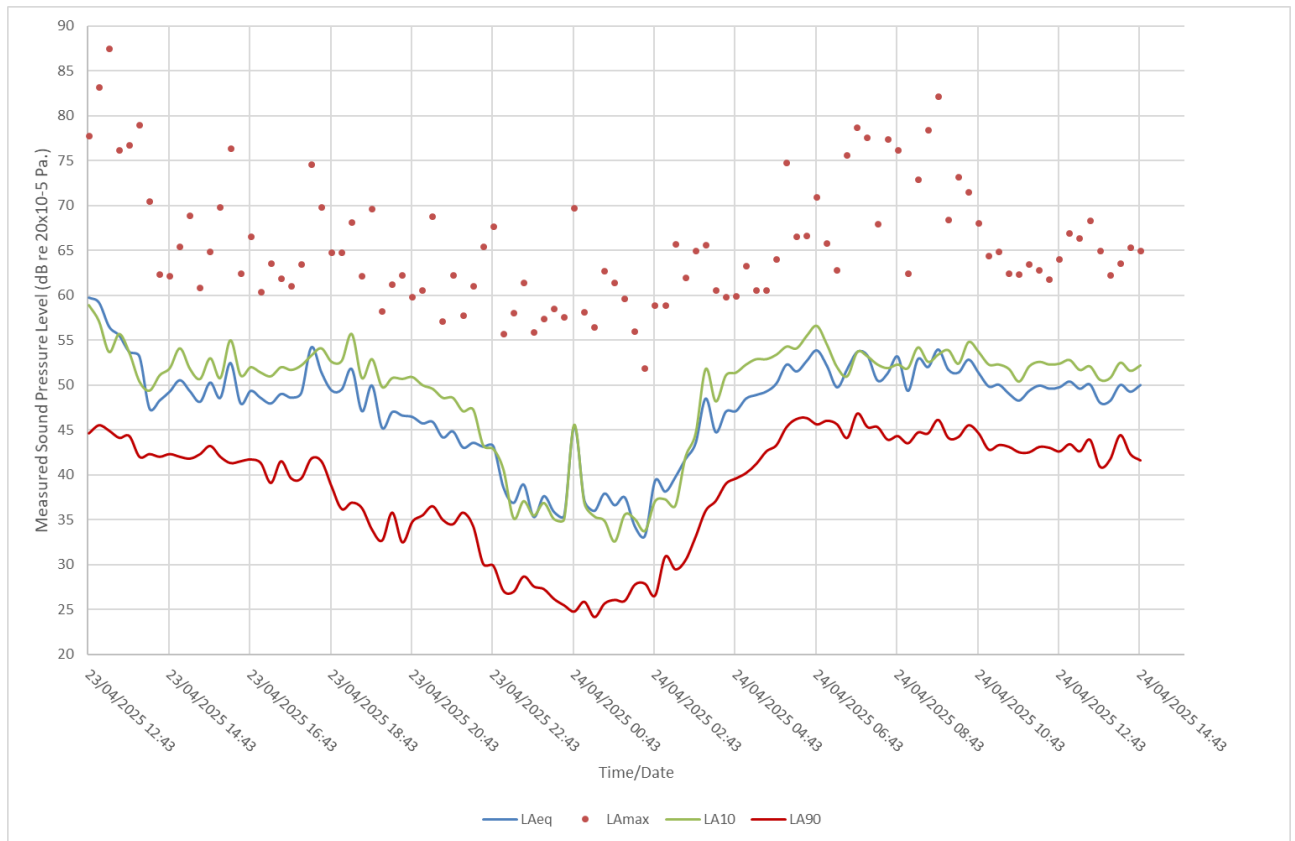


Figure A.1 Survey Results

Appendix B Tables

Project	AC20158AS 23a Hitchin Street, Baldock, Hertfordshire, SG7 6AQ				Date	31/05/2025			
Façade	Front Façade				By	JH BG			
Room	Nighttime Bedroom				Checked	DG			

Table B.1 Bedroom internal ambient sound levels



Project	AC20158AS 23a Hitchin Street, Baldock, Hertfordshire, SG7 6AQ				Date	31/05/2025			
Façade	Front Façade				By	JH BG			
Room	Nighttime Bedroom Max				Checked	DG			
Symbol	Description	Ref	Units	Single Figure Rating					
S _f	Total façade area of room		m ²	9.0					
S _{wi}	Area of windows in façade		m ²	3.0					
S _{ew}	Area of external wall in façade		m ²	6.0					
S _{tr}	Area of ceiling exposed to external noise		m ²	0.0					
S	Total area of elements through which sound enters room		m ²	9.0					
A ₀	Reference absorption area given in BS EN 20140-10		m ²	10.0					
	A-weighted free-field equivalent sound pressure level at measurement position		dB						
	Total propagation and angle of view correction from measurement to façade		dB	0.0	Octave Band Centre Frequency, Hz				
L _{Aq,ff}	A-weighted free-field equivalent sound pressure level outside façade		dB	46.0	125	250	500	1000	2000
L _{TRAFFIC}	Normalised road traffic noise spectrum derived from BS1793-3		dB						
L _{eq,ff}	Linear free-field equivalent sound pressure level outside façade		dB	74.3	70	72	59	52	47
D _{n,e}	Vent: "hit and miss" trickle (4000mm2)	80	dB		34	27	37	35	34
R _{wi}	Sound reduction index of windows - 6/6/4 Glazing Pilkington	111	dB		21	20	26	38	37
R _{ew}	Sound reduction index of the external wall - Brick and block external wall	9	dB		40	44	45	51	56
R _{tr}	Sound reduction index of the roof/ceiling	94	dB		28	34	40	45	49
α	Room average alpha co-efficients (acoustically hard room)		-						
S _{room}	Room surface area		m ²						
A	Equivalent absorption area of room		m ²		9	9	9	9	9
L _{eq,2}	Linear Internal reverberant sound pressure level in room		dB	53.7	48	52	33	21	17
	A-weighting Network				-16	-9	-3	0	1
L _{eq,3}	A-weighted internal reverberant sound pressure level in room		dB(A)	43.8	32.1	43.3	29.5	21.3	18.1
	Internal Criteria		dB(A)	45.0					
	Excess over criteria		dB(A)						

Table B.3 Nighttime internal L_{Amax} Levels

REPORT ENDS