

29th April 2025

Mr Adam Wilson
Wilson Architects Limited
Office 12
Think Tank
Brayford Pool
Ruston Way
Lincoln
LN6 7FL



Dear Sir,

**NOISE IMPACT ASSESSMENT FOR A PROPOSED RESIDENTIAL DEVELOPMENT AT
LAND ADJACENT TO HUNTER RISE, BECKERMET, CUMBRIA, CA21 2YP**

1.00 INTRODUCTION

- 1.01 RP Acoustics Limited has been commissioned by Wilson Architects Limited to undertake a noise impact assessment for a proposed residential development at land adjacent to Hunter Rise, Beckermat, Cumbria, CA21 2YP (hereafter referred to as the application site).
- 1.02 The assessment has been prepared to accompany a planning application to be submitted to Copeland Borough Council.
- 1.03 The objectives of the noise impact assessment were to:
- Determine the ambient noise levels at the application site
 - Assess the suitability of the application site for residential development in terms of noise
 - Provide recommendations for mitigation measures to protect residential amenity in accordance with good practice
- 1.04 This report sets out the methodology and findings of the assessment. It has been prepared on behalf of Wilson Architects Limited for the sole purpose described above and no extended duty of care to any third party is implied or offered. Third parties making reference to the report should consult Wilson Architects Limited and RP Acoustics Limited as to the extent to which the findings may be appropriate for their use.
- 1.05 A glossary of acoustic terms is contained in Appendix 1 for reference.

2.00 APPLICATION SITE SETTING AND PROPOSED REDEVELOPMENT

- 2.01 The application site is located in a predominantly residential setting in the village of Beckermat, Cumbria. The application site location plan (aerial image) is reproduced in Appendix 2 for reference.
- 2.02 The proposed residential development consists of provide 9 dwelling houses. The proposed application site layout is re reproduced in Appendix 3 for reference.

3.00 BASELINE NOISE SURVEY

- 3.01 A baseline noise survey was carried out at the application site for a 24 hour period from Tuesday 11th February 2025 through to Wednesday 12th February 2025.
- 3.02 For the purpose of the assessment, the following noise monitoring positions were adopted (see Appendix 4):
- NMP1 was located at the proposed dwelling house at the east of the application site
 - NMP2 was located at the proposed dwelling house at the west of the application site
- 3.03 Baseline noise measurements were undertaken using NTi Audio XL2 Type 1 integrating sound level meters. A 90 mm windshield was fitted for all measurements. The measurement system calibration was verified immediately before and after measurement sessions and no drift in calibration level was noted (calibration certificates reproduced in Appendix 5 for reference). Weather conditions throughout the survey were appropriate for monitoring with a prevailing south westerly wind direction.
- 3.04 Baseline noise measurements consisted of A-weighted broadband parameters (1/3 octave) with a logging interval of 1 second. The following table contains a summary of the data rounded to the nearest decibel.

Table 3.1 – Baseline Noise Measurement Data

NMP	Date	Time	L _{Aeq} (dB)	L _{A90} (dB)	L _{A10} (dB)	L _{A1} (dB)	Comments
1	Wednesday 12/02/25	0700–1430	48	41	52	57	Local traffic daytime; distant traffic and sea at night with local traffic and birdsong from 0500 hours
	Tuesday 11/02/25	1430–2245	44	34	48	52	
	Tuesday 11/02/25	2330–0700	39	25	42	51	
Day Time Ambient Noise Level = 46 dB L_{Aeq} (0700–2300) Night Time Ambient Noise Level = 39 dB L_{Aeq} (2300–0700) 11th Highest Night Time Maxima = 57 dB L_{AFMax} (2300–0700)							
2	Wednesday 12/02/25	1445–1500	42	40	44	48	Distant traffic and sea
	Tuesday 11/02/25	2300–2315	30	28	31	32	
NMP2 lower than NMP1 due to increased distance from occasionally trafficked road through the village							

- 3.05 The ambient and background noise levels are low and are wholly commensurate with the application site being located in a rural setting.

4.00 ACOUSTIC STANDARDS AND GUIDANCE

ProPG: Planning & Noise: Professional Practice Guidance on Planning & Noise 2017

- 4.01 ProPG has been produced to provide practitioners with guidance on the recommended approach to the management of noise within the planning system in England. The Institute of Acoustics, Chartered Institute of Environmental Health and the Association of Noise Consultants have worked together to produce the guidance, which encourages better acoustic design for new residential development and aims protect people from the harmful effects of noise.
- 4.02 ProPG advocates a Stage 1 Initial Site Noise Risk Assessment to provide an indication of the likely risk of adverse effects from noise were no subsequent mitigation to be included as part of the development proposal. It should indicate whether the proposed site is considered to pose a negligible, low, medium or high risk from a noise perspective. Figure 4.1 shows ProPG 'Stage 1 Initial Site Noise Risk Assessment'. The indicative noise levels are intended to provide a sense of the noise challenge at a potential residential development site and should be interpreted flexibly having regard to the locality, the project and the wider context.

Figure 4.1 – ProPG Stage 1 Initial Site Noise Risk Assessment
(Blue Box = Application Site)

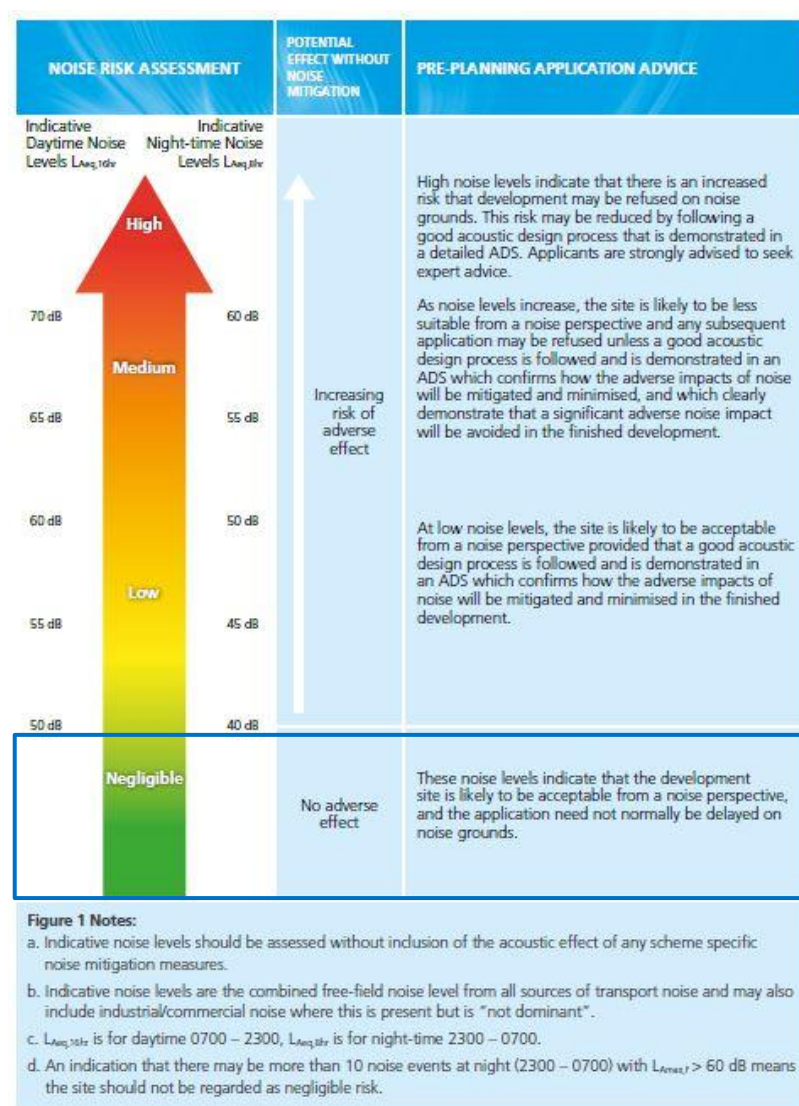


Figure 1. Stage 1 – Initial Site Noise Risk Assessment

- 4.03 With reference to Figure 4.1, the application site is categorised as being '**negligible risk**' from noise. No mitigation is required.

Acoustics, Ventilation and Overheating (AVO) Residential Design Guide 2020

- 4.04 The AVO Guide has been produced by the Association of Noise Consultants and the Institute of Acoustics and is intended to be used by acoustics practitioners as well as all those involved in the planning, development, design and commissioning of new dwellings. It recommends an approach to acoustic assessments for new residential development that take due regard of the interdependence of provisions for acoustics, ventilation, and overheating. Application of the AVO Guide is intended to demonstrate good acoustic design as described in ProPG.
- 4.05 AVO guidance makes a clear distinction between provisions for fresh air to achieve whole dwelling ventilation rates (ADF ventilation condition), and provisions for ventilative cooling to mitigate overheating (overheating condition). In terms of noise effect, the important distinction between these two situations is that the ADF ventilation condition applies for the entire time whereas the overheating condition applies only for part of the time.
- 4.06 AVO states *'The guidance makes a clear distinction between provisions for fresh air to achieve whole dwelling ventilation rates (ADF ventilation condition) and provisions for ventilative cooling to mitigate overheating (overheating condition). In terms of noise effect, the important distinction between these two situations is that the ADF ventilation condition applies for the entire time whereas the overheating condition applies only for part of the time ... It is suggested here that the desirable internal noise standards within Table 4 of BS 8233:2014 should be achieved when providing adequate ventilation as defined by ADF whole dwelling ventilation. However, it is considered reasonable to allow higher levels of internal ambient noise from transport sources when higher rates of ventilation are required in relation to the overheating condition.'*
- 4.07 The AVO Guide addresses:
- a) the ventilation strategy impacts on the acoustic conditions; and
 - b) the strategy for mitigating overheating impacts on the acoustic conditions, and whether a more detailed overheating assessment is required to inform this
- 4.08 In the case of environmental noise ingress, a two-level assessment procedure is described for the overheating condition. The first level is a site risk assessment based on external noise levels and the assumption that opening windows are the primary means of mitigating overheating. The second level assessment considers the potential for adverse effect on occupants based on internal ambient noise level.
- 4.09 Figure 4.2 shows AVO Table 3.2, which provides guidance for a Level 1 site risk assessment of noise relating to overheating condition.
- 4.10 With reference to Figure 4.2, the application site is categorised as being '**negligible risk**' from overheating. No mitigation is required.

Figure 4.2 – AVO Level 1 Site Risk Assessment Relating to Overheating Condition
(Blue Box = Application Site)

Risk category for Level 1 assessment ^[Note 5]		Potential Effect without Mitigation	Recommendation for Level 2 assessment
$L_{Aeq,T}$ (Note 3) during 07:00 - 23:00 65 dB 60 dB 55 dB 50 dB $L_{Aeq,8hr}$ during 23:00 - 07:00 55 dB 50 dB 45 dB High Medium Low Negligible		Increasing risk of adverse effect	Recommended Optional
50 dB Negligible		Use of opening windows as primary means of mitigating overheating is not likely to result in adverse effect	Not required

- Note 1** The noise levels suggested assume a steady road traffic noise source but may be adapted for other types of transport. All levels are external free-field noise levels.
- Note 2** The values presented in this table should not be regarded as fixed thresholds and reference can also be made to relevant dose-response relationships, ^[15, 17].
- Note 3** A decision must be made regarding the appropriate averaging period to use. The averaging period should reflect the nature of the noise source, the occupancy profile and times at which overheating might be likely to occur. Further guidance can be found within the 2014 IEMA Guidelines ^[23].
- Note 4** Refer also to references ^[1, 17, 18, 22] for further guidance regarding individual noise events. Where 78dB LAFmax is normally exceeded during the night-time period (23:00-07:00), a Level 2 assessment is recommended.
- Note 5** The risk of an adverse effect occurring will also depend on how frequently and for what duration the overheating condition occurs. Refer to Figure 3-2.
- Note 6** To evaluate the risk category for a dwelling, all three aspects of external noise exposure (i.e. daytime, night-time and individual noise events) should be evaluated. The highest risk category for any of the three aspects applies.

Building Regulations Approved Document O 'Overheating'

- 4.11 Building Regulations Approved Document O 'Overheating' (BRADO) states '*In locations where external noise may be an issue (for example, where the Local Planning Authority considered external noise to be an issue at the planning stage), the overheating mitigation strategy should take account of the likelihood that windows will be closed during sleeping hours (11 pm to 7 am). Windows are likely to be closed during sleeping hours if noise within bedrooms exceeds the following limits: a) 40 dB $L_{Aeq,T}$ averaged over 8 hours (between 11 pm and 7 am); and b) 55 dB L_{AFmax} more than 10 times a night (between 11 pm and 7 am).*'
- 4.12 BRADO objectively defines when relying on opening windows to remove excess heat does not comply with the requirement to take account of noise at night. Where an open window for the removal of excess heat will result in the above noise levels being exceeded, the overheating mitigation strategy must adopt an alternative means.
- 4.13 In accordance with BRADO, it therefore follows that, based on 15 dB attenuation for a partially open window, where external noise levels are not above 55 dB L_{Aeq} (2300–0700) and 70 dB L_{AFmax} (2300–0700) (11th highest), an alternative means of ventilation (over and above than the provision of trickle vents) is not required. This is the case at the application site.

5.00 CONCLUSION

- 5.01 A noise impact assessment has been undertaken a proposed residential development at land adjacent to Hunter Rise, Beckermest, Cumbria, CA21 2YP (the application site). The application site is located in a predominantly residential use locale in a rural setting site.
- 5.02 The ambient noise climate at the application site is due to local traffic in the daytime and distant traffic and the sea at night time, albeit at very low levels.
- 5.03 In accordance with Planning & Noise: Professional Practice Guidance on Planning & Noise (2017) and Acoustics, Ventilation and Overheating Residential Design Guide (2020), the application site is at negligible risk from both noise and overheating. As a consequence, no mitigation measures are required.
- 5.04 In conclusion, noise does not represent a material constraint to the granting of planning permission.

We trust the foregoing is to your satisfaction. Should you have any queries, please do not hesitate to contact us.

Yours sincerely

Jonathan Rigg
Associate Member of the Institute of Acoustics
For and on behalf of RP Acoustics Ltd

APPENDIX 1 GLOSSARY OF ACOUSTIC TERMS

Sound Pressure Level (L_p)

The basic unit of sound measurement is the sound pressure level. As the pressures to which the human ear responds can range from 20 μPa to 200 Pa, a linear measurement of sound levels would involve many orders of magnitude. Consequently, the pressures are converted to a logarithmic scale and expressed in decibels (dB) as follows:

$$L_p = 20 \log_{10}(p/p_0)$$

Where L_p = sound pressure level in dB; p = rms sound pressure in Pa; and p_0 = reference sound pressure (20 μPa).

A-weighting Network

A frequency filtering system in a sound level meter, which approximates under defined conditions the frequency response of the human ear. The A-weighted sound pressure level, expressed in dB(A), has been shown to correlate well with subjective response to noise.

Equivalent continuous A-weighted sound pressure level, $L_{Aeq, T}$

The value of the A-weighted sound pressure level in decibels of continuous steady sound that within a specified time interval, T , has the same mean-square sound pressure as a sound that varies with time. $L_{Aeq, 16h}$ (07:00 to 23:00 hours) and $L_{Aeq, 8h}$ (23:00 to 07:00 hours) are used to qualify daytime and night time noise levels.

$L_{A10, T}$

The A-weighted sound pressure level in decibels exceeded for 10% of the measurement period, T . $L_{A10, 18h}$ is the arithmetic mean of the 18 hourly values from 06:00 to 24:00 hours.

$L_{A90, T}$

The A-weighted sound pressure level of the residual noise in decibels exceeded 90% of a given time interval, T . L_{A90} is typically taken as representative of background noise.

$L_{AF \max}$

The maximum A-weighted noise level recorded during the measurement period. The subscript 'F' denotes fast time weighting, slow time weighting 'S' is also used.

Sound Exposure Level (SEL or L_{AE})

The energy produced by a discrete noise event averaged over one second, no matter how long the event actually took. This allows for comparison between different noise events that occur over different lengths of time.

APPENDIX 2
APPLICATION SITE LOCATION PLAN (AERIAL IMAGE)



APPENDIX 3
PROPOSED APPLICATION SITE LAYOUT



APPENDIX 4
NOISE MONITORING POSITIONS



APPENDIX 5

CALIBRATION CERTIFICATE FOR SOUND LEVEL METER (CALIBRATION EVERY 2 YEARS)

Laboratory Location

Campbell Associates Ltd

5b Chelmsford Road Industrial Estate

GREAT DUNMOW, Essex, GB-CM6 1HD

Phone 01371 871030



Certificate of Calibration and Conformance

Certificate number: **U46717**

Test Object: Sound Level Meter, BS EN IEC 61672-1:2013 Class 1
Associated Frequency Analyser to BS EN IEC 61260:1996 Class 1

Producer: NTi Audio

Type: XL2-TA

Serial number: A2A-17283-E0

Customer: RP Acoustics Ltd

Address: 1 Dobcroft Close,
Sheffield. S11 9LL.

Contact Person: Richard Pennell

Order No: RPA/24/CAL/01

Introduction:

Calibration has been performed as set out in CA Technical Procedures which are based on the procedures for periodic verification of sound level meters as per the **Test Object** listed above. Results and conformance statement are overleaf and detailed results, where appropriate, are provided in the attached Measurement Report.

Tested:	Producer	Type	Serial No	Certificate No
Microphone	NTi Audio	MC230A	A23655	46716
Calibrator*	Larson Davis	CAL200	17115	U46700
Preamplifier	NTi Audio	MA220	11174	Included

* The calibrator was complete with any required coupler for the microphone specified.

Additional items that have also been submitted for verification:

Wind shield N/A

Attenuator N/A

Extension cable N/A

These items have been taken into account wherever appropriate.

Instruction Manual: NTi-Audio XL2 Operating Manual v3.11.02 August 2016 Firmware Version: V4.71 The test object is a single channel instrument.

Conditions	Pressure kPa	Temperature °C	Humidity %RH
Reference conditions	101.325	23	50
Measurement conditions	97.15 ±0.02	22.30 ±0.4	43.48 ±0.65

Calibration Dates:

Received date:	23/01/2024	Reviewed date:	09/02/2024
Calibration date:	09/02/2024	Issued date:	09/02/2024

Technicians: (Electronic certificate)

Calibrated by: *Palanivel Marappan B.Eng (Hons), M.Sc*

Reviewed by: *Darren Batten*

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Doc ref: Sim-Cert-Master-V3-07
