

ENVIRONMENTAL NOISE ASSESSMENT

On behalf of

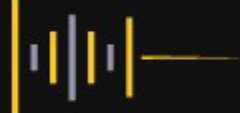
Paul Butler

For the site at:

Land Off Smithy Nook, Calderbrook Road, Littleborough

REPORT DATE: 16th September 2024

REPORT REF: AA/24/09/PB/SN/NIA



CLIENT: Paul Butler

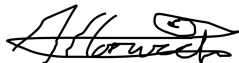
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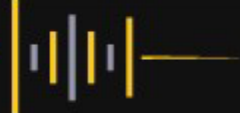
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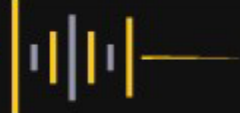
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1. INTRODUCTION

1.1. General

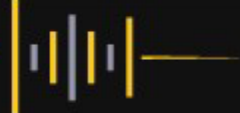
Amber Acoustics has been commissioned by Paul Butler to carry out an Environmental Noise assessment to accompany a Planning application for the extension and conversion of an existing garage to form one bed dwelling with associated parking and garden space at the land Off Smithy Nook, Calderbrook Road, Littleborough.

1.2. Assessment Scope

This report will seek to demonstrate that through adequate mitigation and proactive implementation of an upgrade to the external façade, the effect of external noise in the nearby vicinity to the site will be low impact.

Amber Acoustics have completed this report for the benefit of the individuals referred to in Section 1.1 and any other relevant statutory authority which may require reference in relation to approvals for the proposed development. Other third parties should not use, or rely upon, the contents of this report unless explicit written approval has been gained from Amber Acoustics.

Amber Acoustics accepts no responsibility or liability for the consequences of this documentation being used for any purpose or project other than that for which it was commissioned. It should also be noted herein that the issue of this document to any third party with whom approval for use has not been agreed.



2. SITE DESCRIPTION

This Noise Survey is to accompany a Planning application for the extension and conversion of an existing garage to form one bed dwelling with associated parking and garden space at the land Off Smithy Nook, Calderbrook Road, Littleborough.

The site is currently a garage on Calderbrook Road, set in a mainly remote rural environment with a small residential neighbourhood nearby. A public footpath runs to the side of the proposed development site.

3. ASSESSMENT STANDARDS

This section of the report outlines the context of the proposed development with respect to noise.

In accordance with the ANC Environmental Sound Measurement Guide ("The Green Book"), in regard to preparing an acoustic assessment which states when preparing an acoustic assessment "the expert needs to understand exactly what is meant and may need to contact the environmental health department or planning authority before formulating the scope of work".

Following correspondence with Paul Fletcher, Specialist environmental Health Consultant at Rochdale Borough Council, (16/08/2024) a methodology was agreed that entailed a 24-hour survey to establish the baseline from which the facade could be modelled.

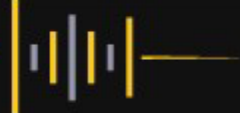
The assessment was undertaken generally in accordance with the guidelines of BS:8233 2014 and in general accordance with BS7445: 2003 'Description and Measurement of Environmental Noise'.

3.1. National Planning Policy Framework and Planning Practice Guidance

The NPPF, published in March 2012, sets out the Government's planning policies for England and how these are to be expected to be applied. The NPPF must be taken into account in the preparation of local and neighbourhood plans and is to be a material consideration in planning decisions.

Paragraph 123 of the NPPF advises that, with respect to noise emissions, planning policies and decisions should aim to:

- Avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development.



- Mitigate and reduce to a minimum, other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions
- Planning Practice Guidance, published in March 2014, advises on how planning can manage potential noise impacts in new development. The guidance states that noise needs to be considered when “...new developments would be sensitive to the prevailing acoustic environment.” Although noise can override other planning concerns, “neither the NPSE1 nor the NPPF expects noise to be considered in isolation from the economic, social and other environmental dimensions of the proposed development. “

When making decisions, local planning authorities should take account of the acoustic environment and in doing so consider:

- Whether or not a significant adverse effect is likely to occur;
- Whether or not an adverse effect is occurring or likely to occur; and
- Whether or not a good standard of amenity can be achieved.

In line with the Explanatory Note of the NPSE this would include identifying whether the overall effect of the noise exposure would be above or below the significant observed adverse effect level. The guidance points to the Explanatory Note for Noise Policy Statement for England 2010 for further information.

3.2. Noise Policy Statement for England 2010

The NPSE sets out the long-term vision of Government noise policy. The Noise Policy Vision is supported by the following Noise Policy Aims:

- Avoid significant impacts on health and quality of life;
- Mitigate and minimise adverse effects on health and quality of life; and
- Where possible, contribute to the improvement of health and quality of life.

The NPSE categorises noise exposure through the concept of observed effect levels:

- No Observed Effect Level (NOEL): The level below which no effect can be detected.

- Lowest Observed Adverse Effect Level (LOAEL): the level above which adverse effects on health and quality of life can be detected.
- Significant Observed Adverse Effect Level (SOAEL): the level of noise exposure above which significant adverse effects on health and quality of life occur.

The second Noise Policy Aim refers to the situation where the noise impact lies between the LOAEL and the SOAEL. It requires that, "...all reasonable steps should be taken to mitigate and minimise effects on health and quality of life... This does not mean that such adverse effects cannot occur."

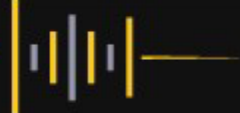
The NPSE does not contain specific noise level limits to define the SOAEL as it is likely to be different for different noise sources and parameters. In the absence of national LOAEL and SOAEL noise level criteria, noise levels have been assessed against criteria contained within BS8233:2014 and WHO Guidelines.

3.3. The World Health Organisation Guidelines

The WHO Guidelines for Community Noise 1999 consolidate scientific knowledge on the health impacts of community noise and provide guidance to protect people from the harmful effects of noise in non-industrial environments.

Although this guidance was updated in 2018, the specific references to noise levels were omitted, and have still, to the best of the authors' knowledge, not been updated or clarified by the WHO. Therefore, the 1999 guidelines are referenced herein as they contain the specific noise level targets which tie in nicely with those listed in other British Standards.

The WHO Guidelines for Community Noise set out health-based guideline values for community noise, including recommended noise level values for the onset of sleep disturbance, annoyance and speech interference for the general population. Guideline values are provided for outdoor living areas, living rooms and bedrooms, for both continuous noise and discrete noise events. These are:



$L_{Aeq,T}$ - the A-weighted equivalent continuous noise energy level over a given period of time T, applied to fluctuating noise levels to give single figure descriptor and sometimes referred to as the 'average'; and

L_{AFmax} - the maximum A-weighted noise instantaneous sound pressure level recorded during a measurement period using a fast time response.

With regard to outdoor living areas, the WHO Guidelines for Community Noise state that, "... in order to protect the majority of people from being seriously annoyed during the daytime, the outdoor soundlevel from steady, continuous noise should not exceed 55dB(A) L_{Aeq} on balconies, terraces, and in outdoor living areas".

Table 1: WHO Guideline Values for Community Noise

Specific Environment	Critical Health Effect (s)	L_{Aeq} dB(A)	Time base (hours)	L_{AFmax} fast dB(A)
Outdoor living area	Serious annoyance, daytime and evening.	55	16	-
	Moderate annoyance, daytime evening	50	16	-
Dwelling indoors	Speech intelligibility and moderate annoyance, daytime and evening	35	16	-
Inside bedroom	Sleep disturbance night-time	30	8	45
Outside bedroom	Sleep disturbance, window open (outdoor values)	45	8	60

Source: World Health Organisation 1999



3.4. BS8233:2014

BS8233:2014 contains suggested criteria for common situations, such as resting and sleeping, and proposes noise levels that normally satisfy those criteria for most people. For dwellings, the main considerations are:

- For bedrooms, the acoustic effect on sleep; and
- For other rooms, the acoustic effect on resting, listening and communicating.

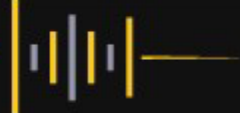
Suggested noise levels reflect those contained within the WHO Guidelines. BS8233:2014 advises that the time period T, should be appropriate for the activity involved, in this case the daytime $L_{Aeq,16hr}$ (07:00-23:00) and night-time $L_{Aeq,8hr}$ (23:00-07:00).

Table 2 below details guideline values for dwellings as recommended within BS8233:2014.

Criterion	Typical situations	Time		
		Daytime 07:00 to 23:00 (L_{Aeq})	Night-time 23:00 to 07:00 (L_{Aeq})	Night-time 23:00 to 07:00 (L_{Amax})
Resting	Living room	35	-	-
Sleeping (daytime resting)	Bedroom	35	30	45

Table 2: BS8233:2014 Recommended Noise Levels

With regard to external noise levels in amenity spaces such as gardens, the guidance advises that "...it is desirable that the external noise level does not exceed 50dB $L_{Aeq,T}$, with an upper guideline value of 55dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognised that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces but should not be prohibited."



4. SURVEY MEASUREMENTS

The Environmental Noise Assessment (referred to as MP1 in this report) took place over a 24-hour period commencing at 23:00 on Tuesday 3rd September 2024 and concluding at 23:00 on Wednesday 4th September 2024.

The Noise survey was carried out in accordance with BS7445: 2003 'Description and Measurement of Environmental Noise'.

4.1. Measurement Locations

The Measurement location was as follows:

MP1 – A meter was positioned at the front façade of the proposed dwelling

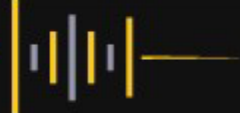
4.2. Meteorological Conditions

No excessive precipitation was noted during the survey, and the general wind speed in all directions was less than 5m/s, which is suitable for a noise survey. Detailed weather conditions are given in **Appendix C**.

4.3. Measurement Equipment

$L_{Aeq,T}$ and L_{AFmax} sound levels were recorded using a Type 1 Svantek SV307 Sound Analyser (serial number 100907). Measurements were A-weighted and recorded using a fast time response.

The sound level meter was calibrated using a Svantek SV36 Sound Calibrator (serial number 83149) at the start and finish of the monitoring period. No significant calibration drifts were observed. A detailed equipment list is given in **Appendix B** with calibration information in **Appendix D**.



4.4. Observations

Road traffic noise was the general dominant noise from Calderbrook Road and the surrounding residential neighbourhood in the immediate vicinity of the site. Pedestrians passing the front and side of the property provided a minor contribution to the overall levels recorded.

As a result of this, the assessment will only consider the resultant internal noise level due to road traffic noise, in accordance with BS8233:2014 – *Guidance on sound insulation and noise reduction for buildings*.

5. RESULTS

To assess the environmental noise climate, noise measurements were undertaken over a 24-hour period. The testing took place over Tuesday 3rd – Wednesday 4th September 2024. The results of the measurements are tabulated below.

Date	L _{Aeq} 16hr (dB)	L _{Aeq} 8hr (dB)	L _{Amax} (dB)
3 rd – 4 th September 2024	44.7	39.8	53.0

Table 1: Measurement Summary of Noise Survey 1 (MP1) Results.

As the measurements were taken within 1.5 metres of the façade, a 3.0 dB adjustment must be made to the results, in accordance with the guidance contained in BS8233:2014 Section 3.1.10. These adjusted results can be seen in Table 2 below.

Date	L _{Aeq} 16hr (dB)	L _{Aeq} 8hr (dB)	L _{Amax} (dB)
3 rd – 4 th September 2024	41.7	36.8	50.0

Table 2: Measurement Summary of Noise Survey Results with Façade correction.

The worst-case results are highlighted in red and all mitigation measures will be factored against those results as the baseline.

6. ASSESSMENT

6.1. Existing Noise Climate

Sound levels across the site were mainly determined by road traffic from the surrounding roads with a minor contribution from the noise from the pedestrians utilising the nearby pavements.

The majority of noise from road traffic is attributable to tyre 'roar', which has a characteristic mid frequency tonal peak. It is considered that road traffic also determines the background noise levels for the site, for both daytime and night-time, given the lack of other significant noise sources in the area.

6.2. BS8233: 2014 and WHO Guidelines Assessment

A summary of external and internal sound levels to be achieved at the proposed development is provided below:

Living rooms (daytime) $L_{Aeq,T}$ 35dB(A);

Bedrooms(daytime) $L_{Aeq,T}$ 35dB(A)

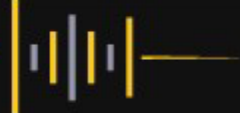
Bedrooms(night-time) $L_{Aeq,T}$ 30dB(A);

Bedrooms (night-time) L_{AFmax} 45dB(A); and

Gardens $L_{Aeq,T}$ 50-55dB(A).

With regard to internal sound levels, from the site measurement data, it may be extrapolated that, in order to achieve BS8233: 2014 and WHO criteria, the building fabric of the façade will need to provide a minimum sound reduction of up to 7 dB(A) during both the daytime, and during the night-time.

With regard to L_{AFmax} sound levels in bedrooms during the night-time, the building fabric of the façade will need to provide a minimum sound reduction of up to 5.0 dB(A).



7. MITIGATION

It has been identified that the environmental noise climate on site is dominated by road traffic noise with a minor contribution from the noise from passing pedestrians.

A façade specification (glazing and ventilation) has been identified with the overall aim of reducing the incident external to internal noise ingress to within desirable criteria, as given in *BS8233:2014 – Guidance on sound insulation and noise reduction for buildings*.

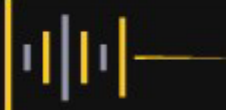
As windows are typically the acoustically weakest point in a façade, requisite sound reduction to be provided by glazing and ventilation systems to achieve the guideline values has been considered.

Assessment indicates that a sound reduction of up to 7.0 dB sound reduction (R_w) will be required overall to meet the requirements of BS8233:2014.

Thermal double glazing, of the following specification (4/(6 to 16)/4) is generally capable of providing a typical sound reduction of approximately 25 dB $R_w + C_{tr}$. (BS EN 12758:2019)

Background ventilation must be provided in accordance with the Building Regulations Approved Document F. To achieve this, window mounted trickle vents or through-wall ventilators that are acoustically attenuated to provide equivalent sound reduction to the glazing should be installed.

The sound reduction performance of acoustic ventilators is usually specified as a $D_{n,e,w}$ rating. In order to provide a sound reduction equivalent to that of the specified glazing, the $D_{n,e,w}$ value of the vent (when open) should be at least 7dB higher than the specified performance of the glazing.



8. SUMMARY AND CONCLUSIONS

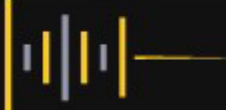
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The Environmental Noise Assessment has sought to establish existing daytime and night-time sound levels at the site, and then determine specific mitigation requirements based on the external and internal sound level criteria as set out within BS8233:2014 'Guidance on sound insulation and noise reduction for buildings' and World Health Organisation 'Guidelines for Community Noise'.

Noise survey results and assessment indicate that low level mitigation of local sound sources (roads) will be required in order to achieve the requisite internal sound level criteria in all areas of the proposed development.

The proposed mitigation strategy for the development comprises the installation of new thermal double glazing, with a typical minimum sound reduction of 25 dB $R_w + C_{tr}$ and suitable acoustically attenuated passive ventilation.

It is considered that, with implementation of the specified mitigation strategy, sound levels will be attenuated to achieve recommended internal sound level criteria for new dwellings.



APPENDICES

APPENDIX A - Measurement Details

Measurement	Kit	Start Date	Start Time	End Date	End Time
MP1	AA1	3 rd September 2024	23:00	4 th September 2024	23:00

APPENDIX B - Equipment Details

Kit	Equipment	Make	Model	Class	Serial Number
AA4	Sound Meter	Svantek	SV307	1	100907
AA2	Calibrator	Svantek	SV36	1	83149

APPENDIX C - Meteorology Details

Measurement	Temp C (Average)	Wind Speed m/s	Humidity %
MP1	18.2	1.3	68

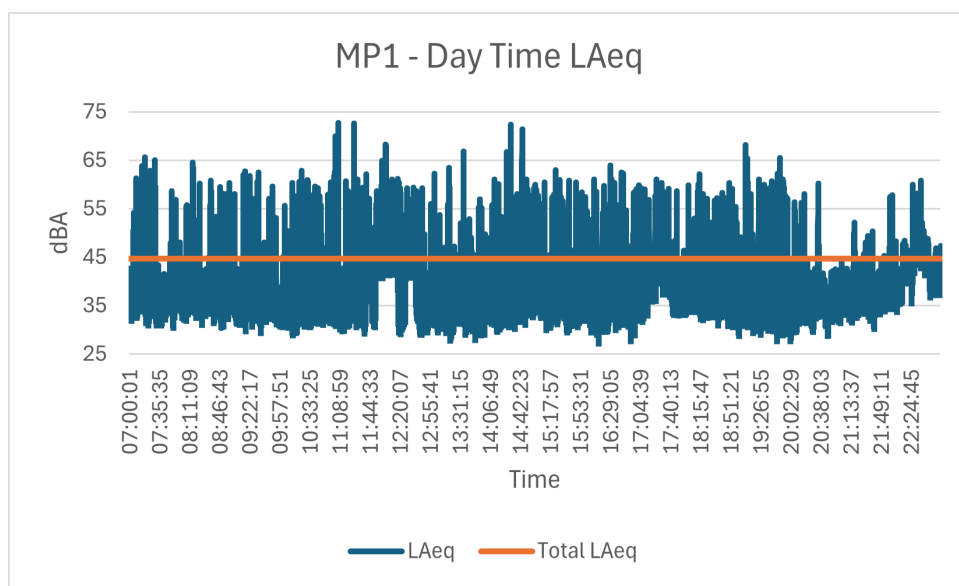
APPENDIX D - Calibration Details

Measurement	Calibrator Ref Level (dB)	Level Before (dB)	Deviation Before (dB)	Level After (dB)	Deviation After (dB)
MP1	114	114.06	-0.06	114.1	-0.1

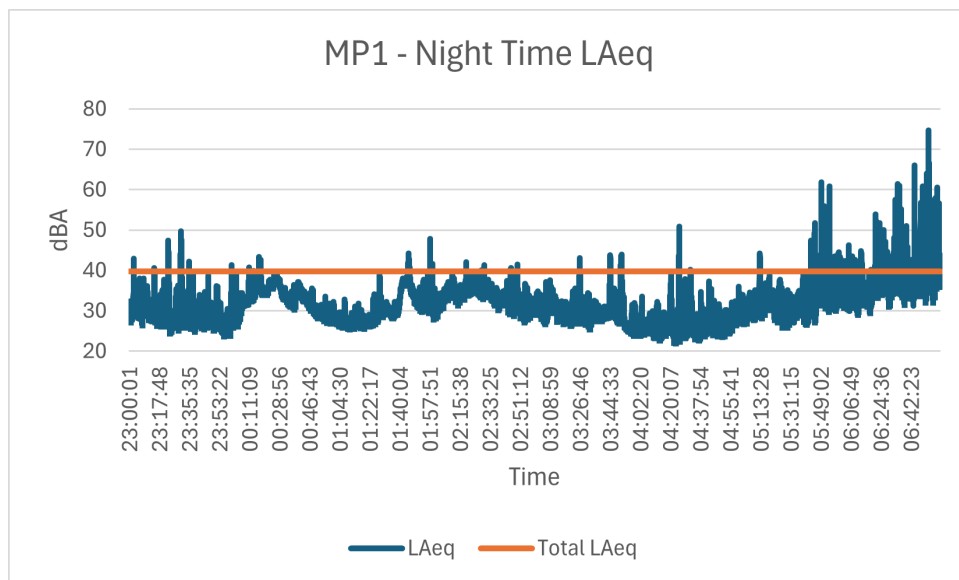


APPENDIX E – Survey Data

Daytime L_{Aeq} Noise Survey Data



Night time L_{Aeq} Noise Survey Data



Night time L_{Max} (F) Noise Survey Data

