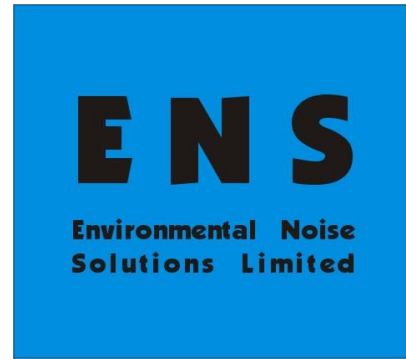




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Land Off Penistone Road, Fenay Bridge, Huddersfield

Noise Impact Assessment

For:
Newett Homes

6th August 2024

Ref: NIA-11597-24-11783-Penistone Road (final) .docx

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1 Introduction

1.1 Overview

Environmental Noise Solutions Ltd (ENS) has been commissioned by Newett Homes to undertake a noise survey and assessment for a proposed new build residential development at land off Penistone Road, Fenay Bridge, Huddersfield (hereafter referred to as ‘the site’).

Planning permission (ref: 2022/62/93154/W) for the development was granted by Kirklees Council in July 2024, subject to conditions. Condition 33 relates to the control of noise as follows:

‘33. Prior to the installation of fenestration glazing, notwithstanding the submitted information, a further/addendum Noise Risk Assessment specifying the measures to be taken to protect the development from noise from all significant noise sources that are likely to affect the proposed development, including road traffic and neighbouring premises, shall be submitted to, and approved in writing by, the Local Planning Authority. The report shall:

a) Determine the existing noise climate.

b) Predict the noise climate in living rooms (daytime), bedrooms (night-time) and other habitable rooms and the gardens of the development.

c) Detail the proposed attenuation/design necessary to protect the amenity of the occupants of the new residences. This shall include, if necessary, identifying which rooms of which plots require a ventilation system. Where ventilation is required, the details shall include the acoustic specification of the proposed ventilation system demonstrating that when operated it will not cause indoor noise target levels to be exceeded. Each dwelling shall not be occupied until all works specified in the approved report have been carried out to the relevant dwelling in full and such works shall be thereafter retained.’

The objectives of the noise impact assessment were to:

- Determine external noise levels at the site
- Assess the potential impact of the external noise climate on the proposed residential development with reference to the pertinent guidance and the requirements of Condition 33 of Planning Permission 2022/62/93154/W
- Provide recommendations for a scheme of sound attenuation works, as necessary, to protect future occupants of the proposed residential development from a loss of amenity due to noise

This report details the methodology and results of the assessment and provides recommendations for the building envelope (fenestration and ventilation) and boundary treatments. It has been prepared to aid in the discharge of condition 33 of planning permission ref: 2022/62/93154/W.

The report has been prepared for Newett Homes for the sole purpose described above and no extended duty of care to any third party is implied or offered. Third parties referring to the report should consult Newett Homes and ENS as to the extent to which the findings may be appropriate for their use.

A glossary of acoustic terms used in the main body of the text is contained in Appendix 1.

1.2 Site Description and Development Proposals

The site is located to the east of Penistone Road in the village of Fenay Bridge to the east of Huddersfield, as shown (highlighted in red) in Figure 1.1.

Figure 1.1: Location of Proposed Development



The site is bound by:

- Penistone Road to the west
- Existing residential dwellings on Whitegates Grove to the north-east and north-west
- Existing residential dwellings on Clough Way to the south-east
- Existing residential dwellings on Woodsome Drive to the south

Planning permission has been granted for 68 no. dwellings with associated access, parking, open space and landscaping.

The ambient noise climate at the site is characterised by road traffic noise on Penistone Road with no other significant noise sources noted.

2 Policy Context and Assessment Guidance

2.1 National Planning Policy Framework

The National Planning Policy Framework (NPPF)¹ was updated in December 2023 and sets out the Government's planning policies for England and how these are expected to be applied.

Where issues of noise impact are concerned the NPPF provides brief guidance in paragraph 180 where it states that planning policies and decisions should contribute to and enhance the natural and local environment by:

'preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of.....noise pollution'.

Paragraph 191 advises that:

'Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should.....mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life'.

The NPPF also refers to the 2010 DEFRA publication, the Noise Policy Statement for England (NPSE) which reinforces and supplements the NPPF.

2.2 Noise Policy Statement for England

The Noise Policy Statement for England² (NPSE) sets out the long-term vision of promoting good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development. This long-term vision is supported by the following aims:

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

The NPSE describes the following levels at which noise impacts may be identified:

- NOEL – No Observed Effect Level. This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise
- LOAEL – Lowest Observed Adverse Effect Level. This is the level above which adverse effects on health and quality of life can be detected
- SOAEL – Significant Observed Adverse Effect Level. This is the level above which significant adverse effects on health and quality of life occur

According to the explanatory notes in the statement, where a noise level falls between the lowest observable adverse effect level (LOAEL) and a level which represents a significant observable adverse effect level (SOAEL):

'....all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life whilst also taking into consideration the guiding principles of sustainable development. This does not mean that such effects cannot occur.'

1 National Planning Policy Framework. Ministry of Housing, Communities and Local Government (2021)

2 Government Department for Environment, Food and Rural Affairs. Noise Policy Statement for England. March 2010.

2.3 Planning Practice Guidance on Noise

Planning Practice Guidance³ (PPG) is an online resource which provides additional guidance and elaboration on the NPPF. It advises that the Local Planning Authority should consider the acoustic environment in relation to:

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

In line with the Explanatory Note of the NPSE, the PPG references the LOAEL and SOAEL in relation to noise impact. It also provides examples of outcomes that could be expected for a given perception level of noise, plus actions that may be required to bring about a desired outcome. However, in line with the NPSE, no objective noise levels are provided for LOAEL or SOAEL.

The PPG also provides general advice on the typical options available for mitigating noise, suggesting that Local Plans may include noise standards applicable to proposed developments within the Local Authority's administrative boundary, although it states that:

'Care should be taken, however, to avoid these being implemented as fixed thresholds as specific circumstances may justify some variation being allowed'.

The subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any particular situation. The following guidance documents provide some meaningful context.

2.4 ProPG Planning and Noise: New Residential Development

ProPG Planning and Noise: New Residential Development (ProPG)⁴ was published in 2017 by the Association of Noise Consultants, Institute of Acoustics and the Chartered Institute of Environmental Health.

Stage 2: Element 2 of ProPG sets indoor ambient noise levels for residential dwellings based on the guidance contained in British Standard 8233:2014 'Guidance on Sound Insulation and Noise Reduction for Buildings'⁵ (BS 8233), see Table 2.1.

Table 2.1: Indoor Ambient Noise Levels in Dwellings

Activity	Location	Good Indoor Ambient Noise Levels	
Resting	Living Room	35 dB L _{Aeq} (0700-2300)	-
Dining	Dining Room/Area	40 dB L _{Aeq} (0700-2300)	-
Sleeping (daytime resting)	Bedroom	35 dB L _{Aeq} (0700-2300)	30 dB L _{Aeq} (2300-0700) 45 dB L _{AFMax} (2300-0700)

3 Planning Practice Guidance on Noise: <http://planningguidance.planningportal.gov.uk/blog/guidance/noise/>

4 'ProPG Planning and Noise: New Residential Development (ProPG)', 2017. Association of Noise Consultants (ANC), Institute of Acoustics (IOA) and the Chartered Institute of Environmental Health (CIEH)

5 British Standards Institution (2014). *British Standard 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings*.

Note 4 to the above table states:

‘A guideline value may be set in terms of SEL or $L_{Amax,F}$, depending on the character and number of events per night. Sporadic noise events could require separate values. In most circumstances in noise sensitive rooms at night (e.g. bedrooms) good acoustic design can be used so that individual noise events do not normally exceed 45dB $L_{Amax,F}$ more than 10 times a night.’

Note 5 to the above table states:

‘Where it is not possible to meet internal target levels with windows open, internal noise levels can be assessed with windows closed, however any façade openings used to provide whole dwelling ventilation (e.g. trickle ventilators) should be assessed in the “open” position and, in this scenario, the internal L_{Aeq} target levels should not normally be exceeded, subject to the further advice in Note 7’.

This is consistent with the guidance contained within the PPG, which states that:

‘... consideration should also be given to whether adverse internal effects can be completely removed by closing windows and, in the case of new residential development, if the proposed mitigation relies on windows being kept closed most of the time. In both cases a suitable alternative means of ventilation is likely to be necessary. Further information on ventilation can be found in the Building Regulations’.

On the basis of the above, the following criteria (with windows closed and an alternative means of ventilation provided) are considered appropriate for the proposed residential development and considered to represent good resting and sleeping conditions:

- ≤ 35 dB L_{Aeq} (0700-2300) during the daytime
- ≤ 30 dB L_{Aeq} (2300-0700) and 45 dB L_{AFMax} not regularly exceeded during the night-time

With regard to external amenity, BS 8233 states:

‘For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments.’

However, it is also recognized 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.’

3 Noise Survey

3.1 Overview

In order to determine the level of external noise affecting the proposed development, noise monitoring was carried out on Thursday 18th July 2024 through to Friday 19th July 2024.

The adopted noise monitoring positions (shown in Appendix 2) were as follows:

- MP1 was located at circa 10 metres (13.5 metres from the road centre) back from the near side kerb of Penistone Road at 4 metres above ground level (AGL).
- MP1A was located at the same position as MP1 at 1.5 metres AGL.
- MP2 was located at circa 27 metres from the centre of Penistone Road at 4 metres AGL.
- MP2A was located at the same position as MP2 at 1.5 metres AGL.
- MP3 was located at circa 54 metres from the centre of Penistone Road at 4 metres AGL.

Noise measurements were undertaken using a Bruel & Kjaer 2250 Type 1 integrating sound level meter. The meter was connected to a windshield covered microphone positioned at the locations detailed above. The measurement system calibration was verified immediately before and after the survey period using a Bruel & Kjaer Type 4231 calibrator. No drift in calibration levels greater than 0.5 dB was noted.

Measurements consisted of A-weighted broadband parameters including L_{Aeq} , L_{A10} , L_{A90} , and L_{AFMax} together with linear octave and 1/3rd octave band data.

The noted weather conditions during the survey were dry with wind speeds < 5 m/s. Weather conditions were therefore considered appropriate for noise monitoring.

3.2 Summary

Table 3.1 presents a summary of the noise data for each measurement session, at each measurement position, rounded to the nearest decibel.

Table 3.1: Summary of Noise Measurement Data

Position	Date	Time	L_{Aeq} (dB)	L_{A90} (dB)	L_{A10} (dB)	Comment
MP1	18/07/24	1016-1116	69	60	73	Dominated by road traffic on Penistone Road
		1228-1328	69	60	72	
		1421-1521	70	62	73	
	18-19/07/24	2353-0053	59	31	60	Dominated by road traffic on Penistone Road Maximum noise levels measured at up to 83 dB L_{AFMax}
		0053-0153	56	29	53	
MP1A	18/07/24	1000-1015	66	54	70	Dominated by road traffic on Penistone Road
		1213-1228	67	59	70	
MP2	18/07/24	1139-1154	65	58	67	Dominated by distant road traffic on Penistone Road
		1346-1402	65	59	68	
		1522-1537	66	61	68	
MP2A	18/07/24	1121-1138	64	58	66	Dominated by distant road traffic on Penistone Road
		1330-1345	63	55	66	
MP3	18/07/24	1155-1210	63	58	67	Dominated by distant road traffic on Penistone Road
		1404-1420	62	56	64	
		1538-1553	62	58	64	

3.3 Analysis

The ambient noise climate at the site is characterised (dominated) by road traffic on Penistone Road with no other significant noise sources noted.

For the prediction of daytime road traffic noise, the Department of Transport's Memorandum on the Calculation of Road Traffic Noise (CRTN) explains that the following shortened measurement procedure may be used. Measurements of L_{A10} are made over any three consecutive hours between 10:00 and 17:00 hours. Using $L_{A10(3 \text{ hour})}$ as the arithmetic mean of the three consecutive values of hourly L_{A10} , the $L_{A10(18 \text{ hour})}$ can be calculated from the equation:

$$L_{A10(18 \text{ hour})} = L_{A10(3 \text{ hour})} - 1 \text{ dB}$$

A study prepared by TRL Limited on behalf of the Department for Environment, Food and Rural Affairs (DEFRA) entitled 'Converting the UK Traffic Noise Index $L_{A10(18 \text{ hour})}$ to EU Noise Indices for Noise Mapping' presents a methodology for calculating daytime $L_{Aeq(0700-2300)}$ and night time $L_{Aeq(2300-0700)}$ ambient noise levels based on the $L_{A10(18 \text{ hour})}$ noise levels, as follows:

$$L_{Aeq(0700-2300)} = \frac{10 * \log([(10^{((0.95 * L_{A10(18 \text{ hour})} + 1.44)/10)^{12}}] + [10^{((0.97 * L_{A10(18 \text{ hour})} - 2.87)/10)^{4}}])}{16}$$

$$L_{Aeq(2300-0700)} = 0.90 * L_{A10, 18 \text{ hour}} - 3.77$$

Based on the above formulae, the daytime and night-time ambient noise levels at MP1 have been measured / calculated at **69 dB $L_{Aeq(0700-2300)}$** and **61 dB $L_{Aeq(2300-0700)}$** . Maximum noise levels were measured at up to **83 dB L_{AFMax}** during the night-time period.

Noise levels at MP2 were circa 4 dB lower than MP1. Noise levels at MP2 are therefore calculated at **65 dB $L_{Aeq(0700-2300)}$** , **57 dB $L_{Aeq(2300-0700)}$** and **79 dB L_{AFMax}** during the night-time period.

Noise levels at MP3 were circa 7 dB lower than MP1. Noise levels at MP3 are therefore calculated at **62 dB $L_{Aeq(0700-2300)}$** , **54 dB $L_{Aeq(2300-0700)}$** and **76 dB L_{AFMax}** during the night-time period.

4 Noise Assessment

4.1 Design Noise Levels

Design noise levels for the dwellings up to 27 metres from the centre of Penistone Road have been measured /calculated as follows:

- $\leq 69 \text{ dB } L_{Aeq} (0700-2300)$ during the daytime
- $\leq 61 \text{ dB } L_{Aeq} (2300-0700)$ during the night-time
- $\leq 83 \text{ dB } L_{AFMax}$ during the night-time

Design noise levels for the dwellings between 27 and 54 metres from the centre of Penistone Road have been measured /calculated as follows:

- $\leq 65 \text{ dB } L_{Aeq} (0700-2300)$ during the daytime
- $\leq 57 \text{ dB } L_{Aeq} (2300-0700)$ during the night-time
- $\leq 79 \text{ dB } L_{AFMax}$ during the night-time

Design noise levels for the dwellings located 54 metres and beyond from Penistone Road centre have been measured / calculated as follows:

- $\leq 62 \text{ dB } L_{Aeq} (0700-2300)$ during the daytime
- $\leq 54 \text{ dB } L_{Aeq} (2300-0700)$ during the night-time
- $\leq 76 \text{ dB } L_{AFMax}$ during the night-time

4.2 Ventilation

Due to the elevated noise levels at the site, it is recommended that the development is provided with a system of decentralised mechanical extract ventilation (dMEV) using continuously-running kitchen and bathroom extracts on a 'trickle' rate.

Approved Document F 'Ventilation' (ADF) states that where dMEV is used, background ventilators of at least 4000 mm² EA must be provided to each habitable room, with 1 no. ventilator required per bedroom and 2 no. ventilators required in living rooms.

4.3 Scheme of Sound Attenuation

In order to calculate the sound insulation requirements for habitable rooms the Building Research Establishment (BRE) building envelope insulation calculation spreadsheet was used. This spreadsheet is based on the calculation methodology advocated in BS 8233. The spreadsheet allows input of external noise levels, typical room dimensions and reverberation time together with parameters for the various elements of the building envelope and calculates the internal noise level in terms of the external noise level metric (L_{Aeq} and L_{AFMax} in this case).

A glazing and ventilation mark-up is provided in Appendix 3.

Bedrooms and living rooms up to 27 metres from and facing towards Penistone Road (including side elevations) should be provided with enhanced glazing rated at least **34 dB $R_w + C_{tr}$** (such as 6 mm glass / 6-20 / 8.8 Pilkington Optiphon) combined with acoustic wall vent rated at **57 dB $D_{n,e,w} + C_{tr}$** (such as the Dba Products DB-61AWV wall vent).

Bedrooms and living rooms between 27 and 54 metres from and facing towards Penistone Road (including side elevations) should be provided with enhanced glazing rated at least **34 dB $R_w + C_{tr}$** (such as 6 mm glass / 6-20 / 8.8 Pilkington Optiphon) combined with acoustic wall vents rated at least **42 dB $D_{n,e,w} + C_{tr}$** (such as the Ryton AAC125HPCWL).

Bedrooms and living rooms beyond 54 metre and facing towards Penistone Road (including side elevations) should be provided with enhanced glazing rated at least **28 dB $R_w + C_{tr}$** (such as 6 mm glass / 6-20 / 4 mm glass) combined with acoustic wall vents rated at least **42 dB $D_{n,e,w} + C_{tr}$** (such as the Ryton AAC125HPCWL).

All rear facades (screened from Penistone Road) across the site should be provided with standard glazing rated at least **28 dB $R_w + C_{tr}$** (such as 6 mm glass / 6-20 / 4 mm glass) combined with standard trickle vents rated at least **33 dB $D_{n,e,w} + C_{tr}$** (such as the Greenwood 5000EA).

Points to Note

The glazing and ventilation strategy has been produced on the assumption that 4000 mm² EA background ventilation is required per habitable room, with 1 no. ventilator required per bedroom and 2 no. ventilators required in living rooms.

If this is not sufficient to meet the minimum requirements of Approved Document F 'Ventilation' (ADF), then it may be necessary to increase the number of units per habitable room. Where this applies, ENS should be advised as the required sound reduction of the ventilation units may need to be increased accordingly.

The following points should be noted.

- The glazing recommendations apply to the window within a sealed unit. It is the responsibility of the window supplier to ensure that the window frame does not compromise the performance of the glazing.
- Internal noise levels due to mechanical ventilation plant should not exceed 26 dB(A) in bedrooms and 30 dB(A) in living rooms
- When selecting a glazing system to satisfy the requirements outlined above, it is important to ensure that the $R_w + C_{tr}$ value is achieved (rather than simply the R_w value). Published R_w values tend to be higher than corresponding $R_w + C_{tr}$ values; therefore, incorrect selection could result in an overestimation of sound reduction performance which in turn could result in higher internal noise levels

4.4 External Amenity

Daytime noise levels were measured / calculated at **66 dB L_{Aeq}** at MP1A on the western site boundary.

Indicative plans (Planning Layout_Z078-002_E_27/06/22) show that the majority of the dwellings on the western boundary have gardens situated to the rear and are therefore screened from the road by the dwellings themselves. However, where gardens are not situated to the rear or are exposed to Penistone Road (Plots 1, 3, 17, 24, 27, 36-38 & 41-42), it is recommended that they are screened from Penistone Road with 2-metre-high solid timber fences or brick walls.

The acoustic fence should be built from close-boarded timber fencing or brick (mass per unit area $\geq 10\text{kg/m}^2$). The fence should have no gaps or holes and should be fully sealed at the ground (i.e. include a gravel board).

The location of the boundary treatments is provided within Appendix 3.

5 Summary and Conclusions

A noise impact assessment has been undertaken for the proposed residential development at Land off Penistone Road, Fenay Bridge, Huddersfield.

The ambient noise climate at the site is characterised by road traffic noise on Penistone Road with no other significant noise sources noted.

A scheme of sound insulation works has been developed to protect the proposed residential development from the ambient noise climate.

Appendix 1 – Abbreviations and Definitions

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 μ Pa 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 μ Pa).

A-weighting

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.

Single Event Level / Sound Exposure Level (SEL or L_{AE})

The energy produced by a discrete noise event averaged over one second, regardless of the event duration. This allows for comparison between different noise events which occur over different lengths of time.

Weighted Sound Reduction Index (R_w)

Single number quantity which characterises the airborne sound insulation properties of a material or building element over a defined range of frequencies (R_w is used to characterise the insulation of a material or product that has been measured in a laboratory).

Appendix 2 – Noise Measurement Positions



Appendix 3 – Glazing and Ventilation Mark-up

