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Proposed Residential Conversion
The United Church Marsden, Warehouse Hill Road, Marsden, HD7 6AB

Noise Impact Assessment

For:
Joe & Co. Architects

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Ref: NIA-12454-26-12732-v2 The United Church Marsden
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1 Introduction

1.1 Overview

Environmental Noise Solutions (ENS) has been commissioned by Joe & Co. Architects to carry out a noise impact assessment for the proposed conversion of The United Church Marsden, Warehouse Hill Road, Marsden (hereafter referred to as 'the site').

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 relevant guidelines
- Provide recommendations for a scheme of sound attenuation works, as necessary, to provide residential amenity for future occupants

This report details the methodology and results of the assessment and provides recommendations for the building envelope (fenestration and ventilation). It has been prepared to accompany a planning application to be submitted to Kirklees Council.

The report has been prepared for Joe & Co. Architects 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 Joe & Co Architects 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 Proposed Development

The site is located in a predominantly residential area, sitting to the north of Warehouse Hill in Marsden, as shown (highlighted in red) in Figure 1.1.

Figure 1.1: Location of Development

The site is bound by Warehouse Hill Road to the south with the River Colne beyond

The noise environment of the site is characterised by road traffic on Warehouse Hill Road and constant underlying noise associated with the River Colne.

Development proposals are for the conversion of former church to form 8 no. residential dwellings including 5 no. maisonettes, 2 no. apartments and a maisonette.

It is understood that the existing glazing is to be replaced, with the exception of the road-fronting elevation which serves only entrance and circulation spaces.

2 Assessment Guidance

2.1 National Planning Policy Framework

The National Planning Policy Framework (NPPF)[1] was updated in February 2025 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 187 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 198 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 England[2] (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 (2023)
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 Guidance[3] (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 $L_{Aeq\ (0700\text{-}2300)}$	-
Dining	Dining Room/Area	40 dB $L_{Aeq\ (0700\text{-}2300)}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq\ (0700\text{-}2300)}$	30 dB $L_{Aeq\ (2300\text{-}0700)}$ 45 dB $L_{AMax,F\ (2300\text{-}0700)}$

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.'

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 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 development and considered to represent good resting and sleeping conditions:

- ≤ 35 dB $L_{Aeq\ (0700\text{-}2300)}$ in habitable rooms during the daytime
- ≤ 30 dB $L_{Aeq\ (2300\text{-}0700)}$ in bedrooms during the night-time
- 45 dB L_{AFMax} not regularly exceeded during the night-time

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 Friday 12th December 2025 through to Saturday 13th December 2025.

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

- MP1 was located at the southern elevation of the existing building
- MP2 was located at the northern elevation of the existing building

Noise measurements were undertaken in free field conditions at 4 metres above ground level using Bruel & Kjaer 2250 Type 1 integrating sound level meters. Each 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 level was noted.

Measurements consisted of A–weighted broadband parameters including L_{Aeq}, L_{A10} L_{A90}, and L_{AFMax} together with linear 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)	L_{AFMax} (dB)	Comment
MP1	12/12/25	1150-1550	58	56	58	-	Road traffic on Warehouse Hill Road and underlying river noise
	12/12/25	2213-2300	55	54	56	-	
	12-13/12/25	2300-0032	55	54	56	68	
MP2	12/12/25	1152-1557	46	42	48	-	Distant road traffic and distant river noise
	12-13/12/25	2300-0028	43	40	44	58	

3.3 Analysis

The noise environment at the site was due to road traffic on Warehouse Hill Road, with constant underlying noise from the River Colne.

Daytime and night-time ambient noise levels at MP1 were measured at circa **58 dB $L_{Aeq,\,T}$** and **55 dB $L_{Aeq,\,T}$** respectively, with maximum noise levels of up to **68 dB L_{AFMax}** during the night-time.

Noise levels at MP2 were circa 10 dB lower due to increased distance/screening from the road and river.

4 Noise Assessment

4.1 Overview

Design noise levels for apartments in the vicinity of the road are as follows:

- **≤ 58 dB $L_{Aeq\ (0700\text{-}2300)}$** during the daytime
- **≤ 55 dB $L_{Aeq\ (2300\text{-}0700)}$** during the night-time
- **≤ 68 dB L_{AFMax}** during the night-time

Design noise levels for apartments towards the rear of the site are as follows:

- **≤ 48 dB $L_{Aeq\ (0700\text{-}2300)}$** during the daytime
- **≤ 45 dB $L_{Aeq\ (2300\text{-}0700)}$** during the night-time
- **≤ 58 dB L_{AFMax}** during the night-time

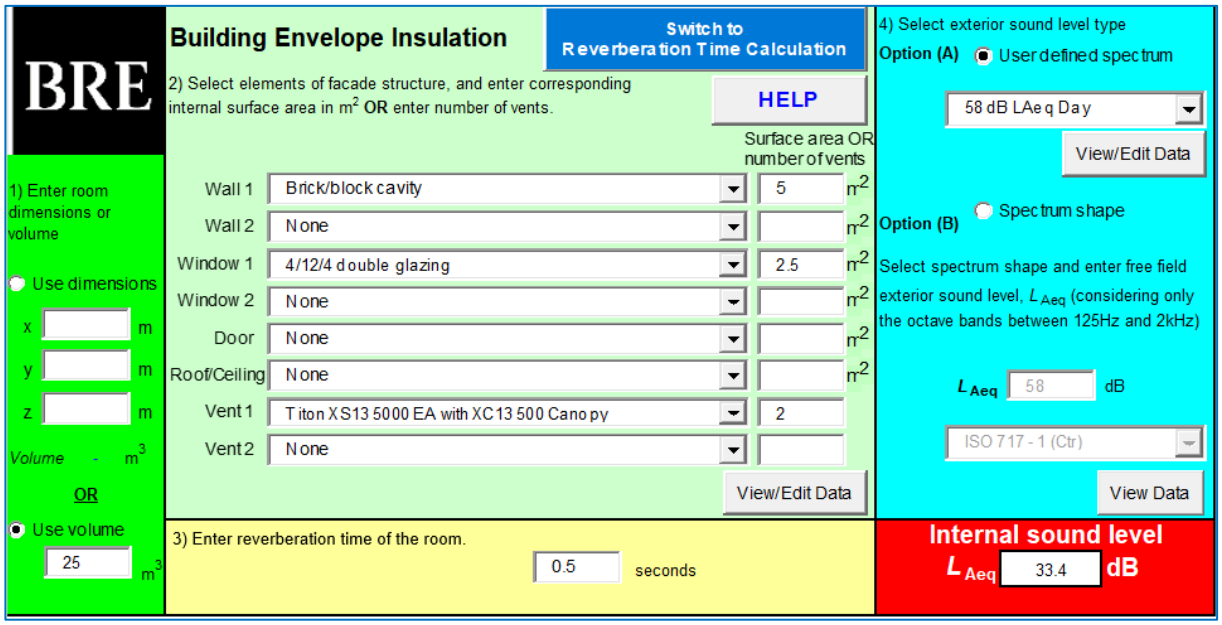
It is understood that many of the existing historic windows and frames (particularly those near to the road) will have to be retained, whereas it may be possible to install new glazing/frames in units towards the rear of the site. In addition, a number of new rooflights are proposed.

4.2 Scheme of Sound Attenuation

Approved Document F 'Ventilation' (ADF) states that where natural ventilation is used, background ventilation of at least 10'000 mm² EA must be provided to each habitable room in apartments, and at least 8'000 mm² EA must be provided to each habitable room in maisonettes. A total of at least 4 no. ventilators is required in a 1-bedroom dwelling and at least 5 no. ventilators in a 2-bedroom dwelling.

As evidenced in the calculation sheet below, a double-glazed window rated at least **25 dB R_w+C_{tr}** (such as 4 mm glass / 6-20 cavity / 4 mm glass) in conjunction with trickle vents rated at least **32 dB $D_{n,e,w}$** per 5000 mm² EA (vent open) such as the Titon Trimvent Select Xtra S13 with XC13 canopy, will provide circa 25 dB(A) sound insulation from external to internal at the site.

Figure 4.1: BRE Calculation Spreadsheet (replacement glazing)



4.3 Summary

The resultant internal noise levels are set out in the table below.

Table 4.1: External Noise Levels and Resultant Internal Noise Levels

Location	External Noise Level	Reduction	Resultant Internal Level
Units adjacent to Warehouse Hill Road	≤ 58 dB $L_{Aeq\ (0700\text{-}2300)}$ ≤ 55 dB $L_{Aeq\ (2300\text{-}0700)}$ ≤ 68 dB L_{AFMax}	–25 dB (Replacement standard glazing, trickle vents)	≤ 33 dB $L_{Aeq\ (0700\text{-}2300)}$ ≤ 30 dB $L_{Aeq\ (2300\text{-}0700)}$ ≤ 43 dB L_{AFMax}
Units at the rear of the site	≤ 48 dB $L_{Aeq\ (0700\text{-}2300)}$ ≤ 45 dB $L_{Aeq\ (2300\text{-}0700)}$ ≤ 58 dB L_{AFMax}	–25 dB (Replacement standard glazing, trickle vents)	≤ 23 dB $L_{Aeq\ (0700\text{-}2300)}$ ≤ 20 dB $L_{Aeq\ (2300\text{-}0700)}$ ≤ 33 dB L_{AFMax}

As shown in Table 4.1, target internal noise levels should be met throughout the site with the provision of glazing and ventilation as specified.

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.
- The opening and free area of the ventilation units should be checked by a mechanical service engineer before designs are finalised. Should the equivalent open area be insufficient to meet the minimum requirements of ADF, it may be necessary to increase the number of units per habitable room. Where this applies, the required sound reduction of the ventilation units may need to be increased accordingly.

5 Summary and Conclusions

A noise impact assessment has been undertaken for the proposed residential conversion of The United Church Marsden, Warehouse Hill Road, Marsden, HD7 6AB.

The noise environment across the site is characterised by road traffic on Warehouse Hill Road and noise from the River Colne.

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 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:

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

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

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 – Measurement Positions