Suite 24
Doncaster Business Innovation Centre
Ten Pound Walk
Doncaster
DN4 5HX

Proposed Residential Development Land between the Dearne Valley Parkway and Wood Walk, Hoyland, Barnsley

Noise Impact Assessment

For:
Bellway Homes Limited (Yorkshire)

29th August 2025

Ref: NIA-11210-25-12495-v1 Wood Walk, Hoyland
Author: T. Crabb BSc(hons), MIOA

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1 Introduction

1.1 Overview

Environmental Noise Solutions Ltd (ENS) has been commissioned by Bellway Homes Limited (Yorkshire) to undertake a noise survey and assessment for a proposed residential development on land between the Dearne Valley Parkway and Wood Walk, Hoyland, Barnsley (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 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 accompany a planning application to be submitted to Barnsley Metropolitan Borough Council (BMBC).

The report has been prepared for Bellway Homes Limited (Yorkshire) 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 Bellway Homes Limited (Yorkshire) 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 comprises an area of empty land to the west of the Wombwell Wood Roundabout, between Dearne Valley Parkway and Wood Walk, as shown (highlighted in red) in Figure 1.1.

Figure 1.1: Location of Development

The site is bound by:

- The A6195 Dearne Valley Parkway to the north
- The B6096 Wood Walk to the south
- Wombwell Wood Roundabout to the east
- Residential estate and Miners Welfare Recreation Ground to the west

The ambient noise climate at the site is characterised by road traffic noise on the A6195 Dearne Valley Parkway and Wood Walk.

Development proposals are for 83 no. residential dwellings with associated landscaping and access roads. Layout plans indicate that the residential footprint is set back circa 25 metres from the A6195 Dearne Valley Parkway and circa 10 metres from Wood Walk.

2 Policy Context and Assessment Guidance

2.1 National Planning Policy Framework

The National Planning Policy Framework (NPPF)[1] was updated in December 2024 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

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.

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.'

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.

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)

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 $L_{AFMax\ (2300\text{-}0700)}$

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.'

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

With regard to external amenity, ProPG reflects the advice given in BS 8233 as follows:

'The acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50–55 dB $L_{Aeq,16hr}$.'

'These guideline values may not be achievable in all circumstances where development might be desirable. In such a situation, development should be designed to achieve the lowest practicable noise levels in these external amenity spaces.'

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

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 Monday 20th through to Tuesday 21st November 2023.

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

- MP1 was positioned at 10 metres from Wood Walk on the southern boundary of the site, at heights of 1.5 and 4 metres
- MP2 was positioned at 10 metres distance from the north-east boundary of site at a height of 4 metres in proximity to Dearne Valley Parkway and the roundabout
- MP3 was located at 4 metres height to the west of the site at a distance of 70 metres from Dearne Valley Parkway and 85 metres from Wood Walk
- MP4 was located on the northern boundary at 1.5 metres height and circa 25 metres from Dearne Valley Parkway

Noise measurements were undertaken in free field conditions 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 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	Height	Time (hh:mm)	Length (hh:mm)	$L_{Aeq,T}$ (dB)	$L_{Amax,F}$ (dB)	L_{A90} (dB)	L_{A10} (dB)	Comment
MP1	20/11/2023	4m	11:25	03:00	63	82	58	66	Road traffic noise controlling levels, noise levels remain high over early morning rush hour period
		1.5m	11:25	00:30	61	79	56	63	
			14:05	00:15	61	76	58	63	
	21/11/2023	4m	05:08	02:00	60	74	53	63	
MP2	20/11/2023	4m	10:40	04:00	70	79	66	73	
	21/11/2023		05:00	02:00	68	77	60	72	
MP3	20/11/2023	1.5m	10:21	00:30	61	71	56	64	Levels reduced on-site with increased distance from roads
			12:58	00:30	60	70	56	62	
MP4			12:27	00:30	64	75	61	66	Road noise reduced with distance from roundabout
			13:31	00:30	63	73	60	66	

3.3 Analysis

The noise environment at the site was controlled by road traffic noise on the A6195 Dearne Valley Parkway and Wood Walk, with noise levels reducing with increasing distance to the road.

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 $L_{A10\,(3\,hour)}$ as the arithmetic mean of the three consecutive values of hourly L_{A10}, the $L_{A10\,(18\,hour)}$ can be calculated from the equation:

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

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 $L_{A10\,(18\,hour)}$ to EU Noise Indices for Noise Mapping' presents a methodology for calculating daytime $L_{Aeq\,(0700\text{-}2300)}$ and night-time $L_{Aeq\,(2300\text{-}0700)}$ ambient noise levels based on the $L_{A10\,(18\,hour)}$ noise levels.

For noise levels at MP1 (Wood Walk), the formulae for main roads are adopted as follows:

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

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

Based on the above formulae, the daytime and night-time ambient noise levels at MP1 are calculated at **63 dB $L_{Aeq\,(0700–2300)}$** and **56 dB $L_{Aeq\,(2300–0700)}$** respectively. Maximum noise levels were measured at up to **74 dB L_{AFMax}** during the night-time.

For noise levels at MP2 (the A6195 Dearne Valley Parkway), the formulae for motorways are robustly adopted as follows:

$$L_{Aeq\,(0700\text{-}2300)} = 10 * \log\left(\frac{[(10\text{^}((0.98 * L_{A10\,(18\,hour)} + 0.09)/10)*12] + [10\text{^}((0.89 * L_{A10\,(18\,hour)} + 5.08)/10)*4]}{16}\right)$$

$$L_{Aeq\,(2300\text{-}0700)} = 0.87 * L_{A10,\,18\,hour} + 4.24$$

Based on the above formulae, the daytime and night-time ambient noise levels at MP2 are calculated at **70 dB $L_{Aeq\,(0700–2300)}$** and **67 dB $L_{Aeq\,(2300–0700)}$** respectively. Maximum noise levels were measured at up to **77 dB L_{AFMax}** during the night-time.

4 Noise Assessment

4.1 Design Noise Levels

Design noise levels at the south-eastern (Wood Walk) boundary of the site are as follows:

- **≤ 63 dB $L_{Aeq\ (0700\text{-}2300)}$** during the daytime
- **≤ 56 dB $L_{Aeq\ (2300\text{-}0700)}$** during the night-time
- **≤ 77 dB L_{AFMax}** during the night-time

Measurements at MP2 were undertaken at 10 metres from A6195 Dearne Valley Parkway, whereas site layout plans show that the dwellings along the northern boundary are set back at least 25 metres. Robustly assuming line-source propagation, the distance correction from 10 metres to 25 metres is 4 dB.

Therefore, the design noise levels for the dwellings fronting towards the A6195 Dearne Valley Parkway are as follows:

- **≤ 66 dB $L_{Aeq\ (0700\text{-}2300)}$** during the daytime.
- **≤ 63 dB $L_{Aeq\ (2300\text{-}0700)}$** during the night-time
- **≤ 73 dB L_{AFMax}** during the night-time

Noise levels throughout the remainder of the site reduce with increasing distance from the surrounding roads and will reduce further once the development is built out due to screening afforded by the dwellings themselves.

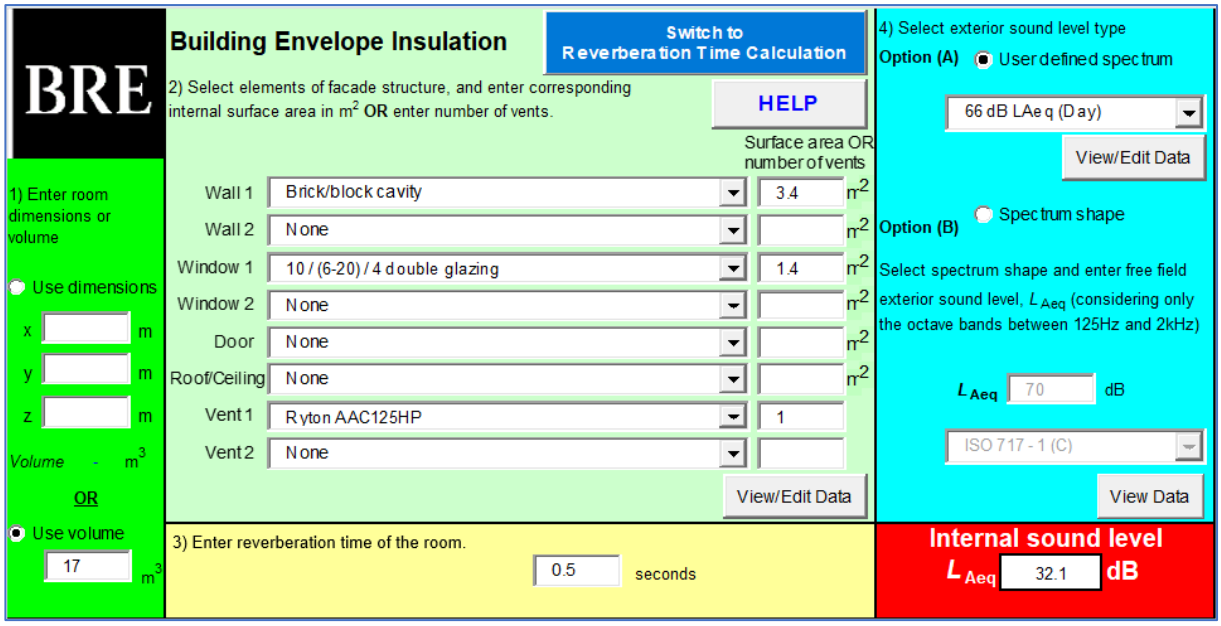
4.2 Scheme of Sound Attenuation

In order to calculate the sound insulation requirements of the building envelope for habitable rooms throughout the development, 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).

Habitable rooms adjacent to the surrounding road network and with line-of-sight to the roads should be fitted with enhanced glazing rated at least **33 dB R_w+C** (such as 10 mm glass / 12 mm cavity / 4 mm glass) in conjunction with acoustic wall vents rated at least **41 dB $D_{n,e,w}$+C_{tr}** per 8000 mm² EA (vent open), such as the Ryton AAC125HP or equivalent.

As evidenced in Figure 4.1 overleaf, this configuration will provide circa 34 dB(A) sound insulation from external to internal at the site.

Figure 4.1: Example BRE Calculation Spreadsheet



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
Habitable rooms fronting towards Wood Walk	≤ 63 dB $L_{Aeq\ (0700\text{-}2300)}$ ≤ 56 dB $L_{Aeq\ (2300\text{-}0700)}$ ≤ 77 dB L_{AFMax}	–34 dB	≤ 29 dB $L_{Aeq\ (0700\text{-}2300)}$ ≤ 22 dB $L_{Aeq\ (2300\text{-}0700)}$ ≤ 43 dB L_{AFMax}
Habitable rooms fronting towards the A6195 Dearne Valley Parkway	≤ 66 dB $L_{Aeq\ (0700\text{-}2300)}$ ≤ 63 dB $L_{Aeq\ (2300\text{-}0700)}$ ≤ 73 dB L_{AFMax}	–34 dB	≤ 32 dB $L_{Aeq\ (0700\text{-}2300)}$ ≤ 29 dB $L_{Aeq\ (2300\text{-}0700)}$ ≤ 39 dB L_{AFMax}

Habitable rooms set back from but still exposed to the surrounding road network and with line-of-sight to the roads should be fitted with glazing rated at least **30 dB R_w+C** (such as 6 mm glass / 12 mm cavity / 4 mm glass) in conjunction with acoustic wall vents rated at least **41 dB $D_{n,e,w}$+C_{tr}** per 8000 mm² EA (vent open).

Habitable rooms on the rears of road-fronting plots and remaining habitable rooms throughout the site may be fitted with double glazing rated at least **30 dB R_w+C** in conjunction with standard trickle vents or wall vents rated at least **32 dB $D_{n,e,w}$** per 8000 mm² EA (vent open).

General Points

Appendix 3 contains an annotated glazing/ventilation markup plan. For brevity, plots requiring standard glazing/ventilation throughout are not marked.

The ceilings (and side cheeks to the dormer windows) in any room-in-roof bedrooms requiring enhanced glazing should be double boarded, with 100 mm (minimum) mineral wool insulation above. The glazing requirements are also applicable to 'Velux' windows.

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.
- 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.
- 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
- Internal noise levels due to mechanical ventilation plant should not exceed 26 dB(A) in bedrooms and 30 dB(A) in living rooms

4.3 External Amenity

Daytime ambient noise levels at the northern and southern boundaries of the site are circa **66 dB $L_{Aeq\ (0700–2300)}$** and circa **63 dB $L_{Aeq\ (0700–2300)}$** respectively.

In order to reduce garden levels as far as practicable, it is recommended that gardens backing onto the surrounding road network are provided with circa 2.4-metre-high solid timber fences or brick walls.

At gardens set back from Wood Walk but still exposed to the road, the barrier height may be reduced to 1.8 metres.

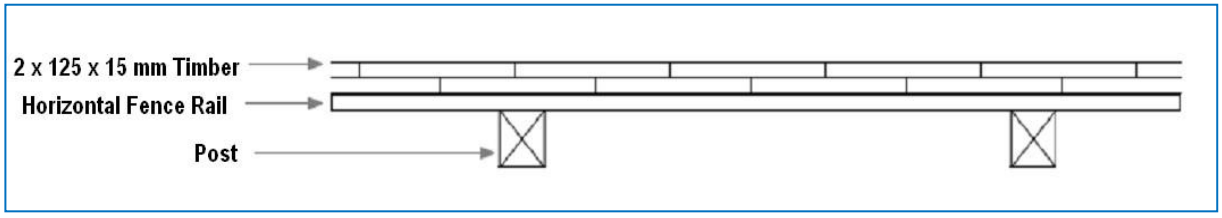
See Appendix 3 for barrier locations.

A brick wall of any construction is appropriate, providing there are no gaps in the construction.

If a solid timber fence is installed, then it should be ensured that it has a mass per unit area of ≥ 10 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).

An indicative acoustic fence detail is illustrated in Figure 4.1 below. The double-thickness solid timber construction is considered robust and appropriate.

Figure 4.1: Indicative Acoustic Fence Detail



5 Summary and Conclusions

A noise impact assessment has been undertaken for the proposed residential development on land between the Dearne Valley Parkway and Wood Walk, Hoyland, Barnsley.

The noise environment at the site is predominantly due to road traffic noise on the A6195 Dearne Valley Parkway and Wood Walk, 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 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.

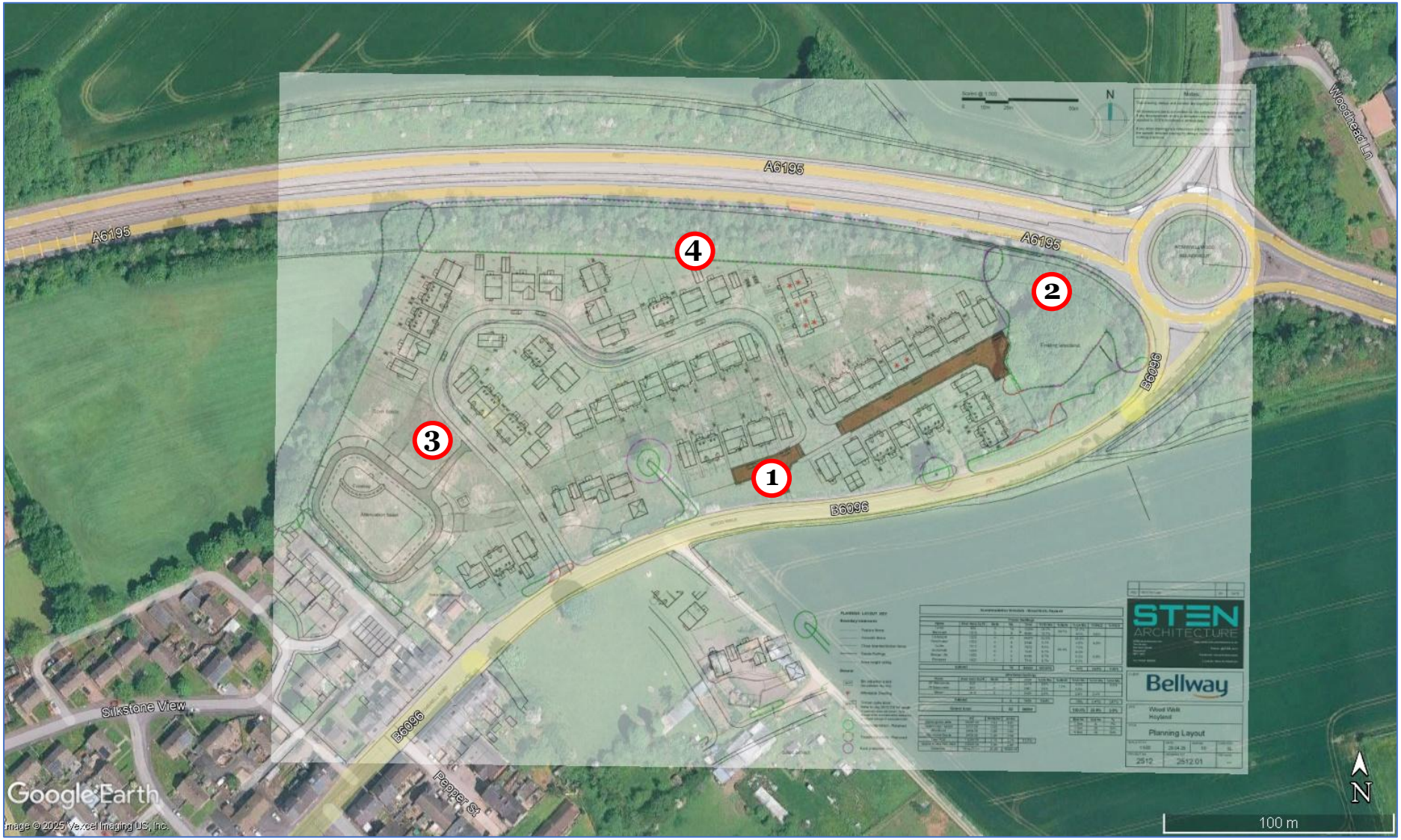
$L_{A90, T}$
The A-weighted sound pressure level of the residual noise in decibels exceeded 90% of a given time interval, T. L_{A90} is typically taken as representative of background noise.

$L_{AF\ max}$
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 – Noise Measurement Positions



Appendix 3 – Scheme of Sound Attenuation