NOISE IMPACT ASSESSMENT

Site:	Castle Lane, Barnsley
References:	52-057-R1
Date:	20 April 2026
Client:	Halsall Lloyds Partnership

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QUALITY ASSURANCE

Report references	52-057-R1

REV REF	DESCRIPTION	DATE
01	First issue	20th April 2026

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EXECUTIVE SUMMARY

Site Address	Castle Lane, Castle Green, Penistone, Sheffield, South Yorkshire, S36 6 AH.
Grid Reference	E 425206, N 402689
Proposed Development	Full planning application for the erection of residential dwellings with public open space, landscaping and vehicular access.
Surveys Completed	E3P has conducted an attended road traffic count for Castle Lane to ascertain the requirement for a full road noise assessment. An attended road noise measurement was undertaken for Green Road during a typical daytime period. Additionally, an unattended ambient background sound survey was conducted in a position representative of proposed dwellings. Attended measurements were also taken of surrounding commercial properties to ascertain their impact upon the site.
Assessments Completed	A 3D noise model has been constructed to assess road traffic and commercial sound across the site and incident upon facades. Road traffic is assessed in accordance with the criterion, for day and night, given in BS 8233:2014+A1:2019. Commercial noise associated with surrounding units is assessed in accordance with BS 4142:2014+A1:2019.
Mitigation Recommended	The assessment has found that standard specification glazing is sufficient to control road noise levels internally. Openable windows are sufficient to mitigate against overheating. Acoustic barriers are required at certain garden edges to protect amenity spaces from road noise.
Conclusions and Discussions	With mitigation measures in place, this assessment has shown that no adverse impact is predicted day or night at the receptors due to commercial sound or road traffic sound.

CONTENTS

1. INTRODUCTION

1.1. BACKGROUND

E3P were commissioned by Halsall Lloyd Partnership Limited to undertake a Noise Impact Assessment for a proposed residential development at a site at Castle Lane, Barnsley, to be referred to hereafter as 'the Site'.

This assessment looks to determine the key noise sources in the immediate vicinity of the Site and to assess their impact, if any, upon proposed residential receptors and to specify mitigation measures, where required.

1.2. REPORT OBJECTIVES

The objectives of this report are as follows:

- Establish and measure the existing sound levels across the site, day and night.
- Consider the potential sources of sound impacting the site and to measure source sound levels of all applicable sources.
- Assess internal and external noise levels associated with road traffic in accordance with criteria given in BS 8233.
- Assess the impact of commercial sound upon the proposed development in accordance with BS 4142.
- Provide advice on mitigation measures, where required.

1.3. PROPOSED DEVELOPMENT

The client proposes to construct residential dwellings with associated access roads, parking and landscaping.

The site layout is indicated in Figure 1.

Figure 1 **Snapshot of the Proposed Development**

2. ASSESSMENT METHODOLOGY

2.1. NATIONAL PLANNING POLICY FRAMEWORK (2024)

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 impact resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life.
- identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

2.2. NATIONAL PLANNING PRACTICE GUIDANCE

Noise needs to be considered when new developments may create additional noise and when new developments would be sensitive to the prevailing acoustic environment. When preparing local or neighbourhood plans, or taking decisions about new development, there may also be opportunities to consider improvements to the acoustic environment.

Local planning authorities' plan-making and decision-making should take account of the acoustic environment and in doing so consider:

- Whether or not a significant adverse effect is occurring or is likely to occur.
- Whether or not an adverse effect is occurring or is likely to occur.
- 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 (including the impact during the construction phase, where applicable) is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation.

The "observed effect levels" are as follows:

- Significant observed adverse effect level: This is the level of noise exposure above which significant adverse effects on health and quality of life occur.
- Lowest observed adverse effect level: This is the level of noise exposure above which adverse effects on health and quality of life can be detected.
- No observed effect level: This is the level of noise exposure below which no effect at all on health or quality of life can be detected.

Table 2.1 summarises the noise exposure hierarchy, based on the likely average response.

Table 2.1 Noise Exposure Hierarchy

PERCEPTION	EXAMPLES OF OUTCOMES	INCREASING EFFECT LEVEL	ACTION
Not Applicable	No effect	No observed effect	No specific measures required.
Noticeable and Not Intrusive	Noise can be heard but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No observed adverse effect	No specific measures required
Lowest Observed Adverse Effect			
Noticeable and Intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television, speaking more loudly, or having to close windows for some of the time because of the noise where there is no alternative ventilation. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed adverse effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Noticeable and Disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion, having to keep windows closed most of the time because of the noise where there is no alternative ventilation. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant observed effect	Avoid
Noticeable and Very Disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening, loss of appetite, significant/medically definable harm (auditory and non-auditory).	Unacceptable adverse effect	Prevent

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 situation. These factors include the following:

- The source and absolute level of the noise together with the time of day it occurs. Some types and level of noise will cause a greater adverse effect at night than if they occurred during the day. The adverse effect can also be greater simply because there is less background noise at night.
- For non-continuous sources of noise, the number of noise events, and the frequency and pattern of occurrence of the noise can be important.
- The spectral content of the noise and the general character of the noise. The local topology and topography should also be considered along with the existing and, where appropriate, the planned character of the area.

More specific factors to consider when relevant:

- Where applicable, the cumulative impacts of more than one source should be considered along with the extent to which the source of noise is intermittent and of limited duration.
- 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.
- If external amenity spaces are an intrinsic part of the overall design, then the acoustic environment of those spaces should be considered so that they can be enjoyed as intended.

2.3. BUILDING REGULATION: APPROVED DOCUMENT F – VOLUME 1: DWELLINGS (JUNE 2022)

Approved document F Volume 1: Dwellings (ADF) provides guidance set by the Department for Levelling Up, Housing and Communities, that relates to means of ventilation within dwellings. The ventilation strategy specified within the ADF are as follows.

> *1.9 The ventilation strategy in this approved document relies on a combination of all of the following.*
>
> *a. Extract ventilation from rooms where water vapour or pollutants are likely to be released (e.g. bathrooms and kitchens), to minimise their spread to the rest of the building. Ventilation fans may be either intermittent operation or continuous operation.*
>
> *b. Whole dwelling ventilation to provide fresh air to the building and to dilute, disperse and remove water vapour and pollutants not removed by extract ventilation.*
>
> *c. Purge ventilation to remove high concentrations of pollutants and water vapour. Purge ventilation is used intermittently and required only for pollutants produced by occasional activities (e.g. fumes from painting).*
>
> *1.10 Ventilation may be delivered through natural ventilation, mechanical ventilation or a combination of both.*
>
> *1.11 The ventilation systems in this approved document are examples of systems that comply with Part F of the Building Regulations. Other ventilation systems may be acceptable if they can be shown to meet an equal level of performance.*

Within the ADF there are three system specific ventilation systems that can be utilised to provide sufficient ventilation. These methods are as follow.

1.Natural ventilation with background ventilators and intermittent extract fans (guidance suitable only for less airtight dwellings) - Ventilation provided by thermal, wind or diffusion effects through doors, windows or other intentional openings without the use of mechanically driven equipment. For the purposes of this approved document, natural ventilation refers to a ventilation strategy using background ventilators and intermittent extract ventilation.

2.Continuous mechanical extract ventilation - Mechanically driven ventilation that continuously extracts indoor air and discharges it to the outside.

3. Mechanical ventilation with heat recovery - A mechanically driven ventilation system that both continuously supplies outdoor air to the inside of the dwelling and continuously extracts indoor air and discharges it to the outside. For the purposes of this approved document, the guidance for mechanical ventilation with heat recovery applies to centralised or decentralised supply and extract systems, with or without heat recovery.

2.4. BUILDING REGULATIONS: APPROVED DOCUMENT O – OVERHEATING (JUNE 2022)

Approved document O - Overheating (ADO) provides guidance set by the Department for Levelling Up, Housing and Communities, that relates to the mitigation of overheating. In relation to noise the ADO provides the following guidance.

3.2 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 (11pm to 7am).

3.3 Windows are likely to be closed during sleeping hours if noise within bedrooms exceeds the following limits.

a. 40dB $L_{Aeq,T,}$ averaged over 8 hours (between 11pm and 7am).

b. 55dB L_{AFmax}, more than 10 times a night (between 11pm and 7am).

3.4 Where in-situ noise measurements are used as evidence that these limits are not exceeded, measurements should be taken in accordance with the Association of Noise Consultants'

Measurement of Sound Levels in Buildings with the overheating mitigation strategy in use.

NOTE: Guidance on reducing the passage of external noise into buildings can be found in the National Model Design Code: Part 2 – Guidance Notes (MHCLG, 2021) and the Association of Noise Consultants' Acoustics, Ventilation and Overheating: Residential Design Guide (2020)

2.5. APPROVED DOCUMENT O NOISE GUIDE (2024)

This guide sets out a method to demonstrate compliance to the Building Control Body of the noise constraints in AD-O. This guide aims to provide clarity for practitioners and regulators so that assessments can be carried out consistently, and the outcome is repeatable and reliable.

Any assessment of overheating, in relation to noise, follows this guidance. Importantly, the guide, based on research and typical assumptions, provides the resulting outside-to-inside level difference for window openings necessary to satisfy the simplified method of AD-O which are expected to be:

- 5 dB for 'high risk' locations; and
- 10 dB for 'medium risk' locations.

With reference to paragraph 3.3 of AD-O, this implies the following limiting external free-field levels above which external noise precludes the use of the simplified method, and dynamic thermal modelling should be used to demonstrate compliance.

The guide also recommends that $L_{Amax,fast}$ measurement and assessment should be based on a sampling period of 2 minutes.

2.6. BRITISH STANDARD BS 4142:2014+A1: 2019 – METHODS FOR RATING AND ASSESSING INDUSTRIAL AND COMMERCIAL SOUND

This standard describes methods for rating and assessing sound of an industrial or commercial nature which includes:

- Sound from industrial and manufacturing processes.
- Sound from fixed installations which comprise mechanical and electrical plant and equipment.
- Sound from the loading and unloading of goods and materials at industrial and / or commercial premises; and
- Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from processes or premises, such as that from forklift trucks, or that from train or ship movements on or around an industrial or commercial Site.

The procedure detailed in the standard compares the measured or predicted specific noise level from any of the above with the background sound level at a residential dwelling. The measured background sound level at a receptor should be reliable and should not necessarily ascertain a lowest measured background sound level, but rather to quantify what is typical.

The specific noise level also acknowledges the reference time intervals depending upon whether the noise source operates during daytime (1-hour) or night-time (15-minute) periods.

There are several 'penalties' which can be attributed to the specific sound level depending upon the 'acoustic features' of the sound level under investigation as follows:

TONALITY

- +2 dB: where the tonality is just perceptible.
- +4 dB: where the tonality is clearly perceptible; and
- +6 dB: where the tonality is highly perceptible.

IMPULSIVITY

- +3 dB: where the impulsivity is just perceptible.
- +6 dB: where the impulsivity is clearly perceptible; and
- +9 dB: where the impulsivity is highly perceptible.

INTERMITTENCY

- +3dB: where the intermittency is readily distinctive against the acoustic environment.

In addition to the above, there is a penalty for 'other sound characteristics' of +3 dB where a sound exhibits characteristics that are neither tonal nor impulsive, though are readily distinctive against the acoustic environment. BS 4142 goes on to state that the rating level is equal to the specific sound level if there are no such features present or expected to be present.

Assessment of the rating level relative to the background sound level can yield the following commentary:

- Typically, the greater this difference (between the rating level and the background sound level), the greater the magnitude of impact.
- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context; and
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact.

2.7. BRITISH STANDARD BS 8233:2014+A1:2019 – GUIDANCE OF SOUND INSULATION AND NOISE REDUCTION FOR BUILDINGS

The scope of this standard is the provision of recommendations for the control of noise in and around buildings including residential dwellings. It suggests appropriate criteria and limits for different situations, which are primarily intended to guide the design of new buildings or refurbished buildings undergoing a change of use, rather than to assess the effect of changes in the external noise climate.

The standard suggests suitable internal noise levels within different types of buildings, including residential dwellings, as shown in Table 2.2.

Table 2.2 BS 8233:2014 Recommended Internal Noise Level

CRITERION	TYPICAL SITUATION	DESIGN CRITERION $L_{Aeq,T}$ (dB)
Suitable resting and sleeping conditions	Living Room	35
	Bedroom	30

BS 8233 goes on to recommend noise levels for gardens:

> *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 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 might be warranted.*

BS 8233 goes on to say:

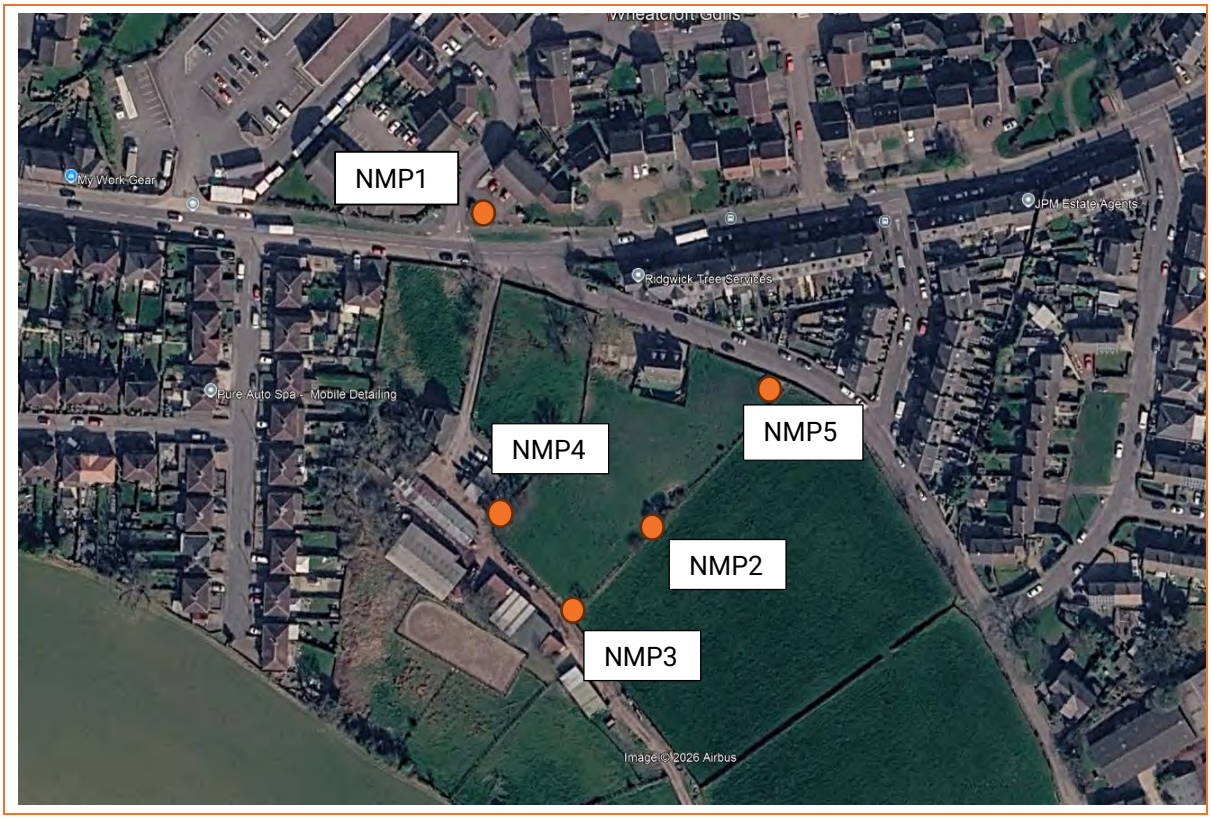
> *In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces but should not be prohibited.*

3. SURVEY RESULTS

E3P has undertaken an attended road noise measurement (Noise Measurement Position 1(NMP1)) to capture noise along Green Road. Attended commercial sound surveys (NMP3-5) were completed to capture noise associated with surrounding commercial premises. An unattended background sound survey (NMP2) was completed to quantify ambient sound levels at a position representative of proposed residential dwellings.

The NMPs are shown in Figure 2:

Figure 2 Noise Measurement Positions



3.1. ROAD TRAFFIC COUNT – CASTLE LANE

E3P has conducted a Road Traffic Noise Count to determine if traffic flows are high enough for a full noise measurement. The survey was carried out over the following time period:

- 10:00 –11:00 Wednesday 1st April 2026.

The road traffic noise count found there to be 37 car pass bys in the hour, which is significantly lower than the 50 required to warrant a full road noise measurement. Therefore, it is deemed that any impact from Castle Lane upon the site is negligible and will not require assessment.

3.2. ROAD TRAFFIC NOISE MEASUREMENT – GREEN ROAD

E3P has conducted an attended Road Traffic Noise Survey to measure the level of noise along Green Road to the north of the site. The survey was carried out over the following time periods in accordance with shortened measurement procedure given in Calculation of Road Traffic Noise (CRTN):

- 11:00-14:00 Wednesday 1st April 2026.

The following noise measurement position was chosen for the Road Traffic Noise Survey:

- Noise Measurement Position 1 (NMP 1): Located approximately 4 m from the nearside kerbstone of Green Road. The microphone was located at a height of 1.5 m above ground level and in free-field conditions. The sound climate was dominated by road traffic noise.

A summary of the measured sound pressure levels from the Road Traffic Noise Survey are presented in Table 3.1.

Table 3.1 Road Traffic Noise Measurement – Green Road

MEASUREMENT START TIME	MEASURED SOUND PRESSURE LEVEL (dB)		
	$L_{Aeq,T}$	10TH HIGHEST $L_{Amax, fast}$	$L_{A10, T}$
01/04/2026 11:00	61.1	74.6	66.1
01/04/2026 12:00	61.3		66.1
01/04/2026 13:00	61.8		65.9
Derived Daytime Noise Level $L_{Aeq,16hr}$			**63.0**
Derived Night-time Noise Level $L_{Aeq,8hr}$			**54.8**

3.3. UNATTENDED BACKGROUND SOUND SURVEY

E3P have undertaken an unattended background and ambient sound survey in a position considered representative of the proposed receptors. The survey was carried out over the following time periods:

- 10:00 Friday 10th April to 09:00 Monday 13th April 2026.

The following noise measurement position was chosen for the Noise Survey:

- Noise Measurement Position 2 (NMP2): Positioned in the southern area of the Site, representative of the proposed receptors. The microphone was located at a height of 1.5 m above ground level and in free-field conditions.

A summary of the measured sound pressure levels from the Noise Survey are presented in Table 3.2.

Table 3.2 Measured Background Sound Levels

DATE	ASSESSMENT PERIOD	RANGE OF MEASURED BACKGROUND SOUND LEVELS, $L_{A90,T}$	MEDIAN MEASURED BACKGROUND SOUND LEVEL, $L_{A90,T}$

		(dB)	(dB)
10/04/2026	Daytime	31.4-41.2	**37.4**
	Night-time	26.3-40.7	33.5
11/04/2026	Daytime	37.5-47.6	43.8
	Night-time	39.4-56.9	52.4
12/04/2026	Daytime	25.0-40.5	39.1
	Night-time	20.3-42.5	**23.4**

The lowest median daytime and night-time background levels highlighted in the above table are used to inform the assessment.

3.4. COMMERCIAL SOUND MEASUREMENTS

E3P has conducted attended measurements along the perimeter of the site to ascertain whether commercial sound is audible on site and to quantify the levels of noise, if any. The survey was carried out over the following time periods:

- 10:30-15:00 Tuesday 7th April 2026.
- 06:00-11:00 Wednesday 8th April 2026.

During this time, no commercial premises to the north were operational.

The following noise measurement positions were chosen for the commercial sound measurements:

- Noise Measurement Position 3 (NMP3): Located in the south eastern corner of the site directly adjacent to the farm to the rear of the site. The microphone was located at a height of 1.5 m above ground level and in free-field conditions. The sound climate was dominated by road traffic from Green Road, but occasional vehicle movements could be seen at the farm.
- Noise Measurement Position 4 (NMP4): Located in the western corner of the site directly adjacent to the farm. The microphone was located at a height of 1.5 m above ground level and in free-field conditions. The sound climate was dominated by road traffic from Green Road, but occasional vehicle movements could be seen at the farm.
- Noise Measurement Position 5 (NMP5): Located along the northern of site, to capture any activity from commercial sites to the north. Or of the farm to the south along Castle Lane. The microphone was located at a height of 1.5 m above ground level and in free-field conditions. The sound climate was dominated by road noise from Green Road.

Table 3.3 details the results of the attended measurements focussing on surrounding commercial.

Table 3.3 Measured Sound Levels of Surrounding Commercial

PERIOD	NMP	MEASURED SOUND LEVEL, $L_{Aeq,T}$	NOTES

		(dB)	
07/04/2026 10:30-11:30	NMP3	59.7	Low noise level movement on farm to the direct south including small tractor moving earth. Green Road is dominant. Nothing audible from the north or along Castle Lane.
07/04/2026 11:30-13:00	NMP4	61.3	
07/04/2026 13:00-14:00	NMP3	55.9	
07/04/2026 14:00-15:00	NMP4	66.2	
08/04/2026 06:00-06:15	NMP5	47.6	No movement from anything to the north or along Castle Lane. Occasional small vehicle movements from the farm to the direct south. Green Road dominant.
08/04/2026 06:15-06:30		46.6	
08/04/2026 06:30-06:45		49.8	
08/04/2026 06:45-07:00		50.3	
08/04/2026 07:00-08:00	NMP3	64.9	
08/04/2026 08:00-09:00	NMP4	56.0	
08/04/2026 10:00-11:00	NMP5	45.7	

Farm vehicle movements are noted to be audible on site. These activities were masked by other sources such as Green Road and so the measured data cannot be fully relied upon to inform the assessment. E3P have relied upon library source data for similar sources, seen in Table 3.4.

Table 3.4 Source Noise Levels

SOURCE	SOUND POWER LEVEL, L_{WA} (dB)	SOURCE HEIGHT (m)
Farm vehicle Movement	80	1.5

Weather conditions were conducive to the measurement of environmental noise throughout.

The equipment outlined in Table 3.5 was used for the noise survey.

Table 3.5 Noise Measurement Equipment and Calibration Dates

MEASUREMENT POSITION	EQUIPMENT DESCRIPTION	MANUFACTURER AND TYPE NUMBER	SERIAL NUMBER	CALIBRATION DUE DATE
NMP1-5	Sound Level Meter	01dB Fusion	14616	10/07/2026
	Pre Amp	01dB Pre22	20951	
	Microphone	GRAS 40CD	494264	
	Calibrator	Cirrus CR 515	99206	05/08/2026

4. ROAD TRAFFIC NOISE IMPACT ASSESSMENT

For the purposes of this assessment, E3P has used noise modelling software, CadnaA 2026 MR1, to determine the impact of noise from road traffic sound.

The following inputs have been included in the model:

- Green Road is calibrated to NMP1.
- Road count data is input for Castle Lane.
- Site elevations have been taken as existing by way of a 2 m grid Digital Terrain Model (DTM) which contains public sector information licensed under the Open Government License v3.0.
- Existing buildings are included.
- A reflection order of 2 has been used in all calculations.
- Noise levels generated using ISO 9613-2:2024 “Acoustics – Attenuation of sound during propagation outdoors” and CRTN as incorporated into CadnaA software.

4.1. EXTERNAL AMENITY AREA NOISE LEVEL ASSESSMENT

The noise model has been used to predict noise levels in rear garden areas to be used for relaxation. The predicted levels range between 39 dB and up to 46 dB. All rear garden area fall below the lower criterion given in BS 8233 of 50 dB.

As such, mitigation is not required in order to control road noise in rear gardens.

4.2. INTERNAL NOISE LEVEL ASSESSMENT

With regards internal noise levels, E3P has assumed a standard glazing specification of 4 mm glass/20 mm air space/4 mm glass affords sound insulation performance in the order of 32 dB however this is for a pink noise spectrum. The same unit, weighted for road traffic, has sound insulation performance value of approximately 28 dB and so this value has been used to calculate internal noise levels for noise break in dependant on the dominant source at the façade.

The model has been used to predict façade noise levels at ground floor level given the bungalow design of the dwellings . In order to determine any requirements for mitigation, E3P has added the reduction provided by the glazing to the relevant criterion for day (35 dB) and for night (30 dB). As such, any facades subject to noise levels higher than 63 dB during the day and/or 58 dB during the will require higher specification glazing.

As can be seen from the figures, no facades have levels that exceed this criterion and therefore standard specification glazing is sufficient to mitigate road noise internally.

Consideration must also be given to maximum noise levels generated by road traffic. The 10th highest maximum noise level has been used and distance corrected to the closest plot. Internal maximum noise levels of 45 dB L_{Amax} should also not be exceeded. The sound insulation performance achieved by standard glazing (32 dB) has been added to the 45 dB maximum internal noise level limit. As, such facades subject to maximum noise levels above 74 dB will require higher specification glazing.

The maximum noise level at the worst affected facades is calculated to be 54 dB from Green Road. Therefore, standard specification glazing is sufficient to mitigate against maximum noise levels generated by road traffic.

4.2.1. VENTILATION CONDITION

When considering a partially open window for ventilation purposes, E3P has assumed that a Building Regulations ADF compliant system would be installed as part of the development, in all plots, as it is unlikely the plots are suitable for natural ventilation.

Therefore, the only consideration in relation to noise will be the performance of any window mounted or through walls vents in relation to the passage of external to internal noise.

4.2.2. OVERHEATING CONDITION

E3P has considered the requirements of ADO in relation to opening windows at night to mitigate the potential for overheating, which at this stage is assumed to be required. Therefore, external noise levels at affected facades apply. Any plots that experience noise levels below these limits will be able to have openable windows to mitigate any overheating. Those that exceed these limits will be subject to an Overheating Assessment by a suitably qualified professional.

It is noted that the site is within a medium risk area and, as such, an outside-to-inside level difference for window openings for the simplified method is noted to be 10 dB.

As such, the allowable façade noise levels are 50 dB averaged over the 8 hour night time period and 65 dB $L_{Amax,fast,2min}$ during the night.

As can be seen from Figures 5 and 6, all plots fall below these criteria. As such, these plots can rely upon openable windows to mitigate against overheating.

5. COMMERCIAL NOISE IMPACT ASSESSMENT

For the purposes of this assessment, E3P has used noise modelling software, CadnaA 2026 MR1, to determine the impact of noise from existing commercial noise.

The following inputs have been included in the model:

- Sources relating to farm vehicle movement are input as moving point sources calibrated to the sound levels noted in table 3.4, and time corrected to approximately 15 minutes of movement within the hour for daytime and 10 minutes of movement within the hour for night-time periods.
- Commercial activity is observed as being active during the daytime and night-time periods and as such both are assessed here.
- Ground elevations have been taken as existing by way of a 2 m grid Digital Terrain Model (DTM) which contains public sector information licensed under the Open Government License v3.0.
- Existing buildings have been included in the model and assumed to have a structured façade.
- A reflection order of 2 has been used in all calculations.
- Noise levels generated using ISO 9613-2:2024 “Acoustics – Attenuation of sound during propagation outdoors” as incorporated into CadnaA software.

For the BS 4142:2014 assessments, penalties are applied to the specific sound level to provide the rating level. These penalties relate to the acoustic features of the sound source. Accordingly, the following objective and subjective features have been accounted for in the assessment, in accordance with the subjective method detailed in BS 4142:2014, for the Site as a whole operation.

Table 5.1 Acoustic Features

ACOUSTIC FEATURE	APPLICABLE?	ATTRIBUTABLE PENALTY	COMMENT
Tonality	No	-	No tonality noted
Intermittency	Yes	+3 dB	Intermittent movement of farm vehicles
Impulsivity	No	-	No impulsive sounds were noted
Other	No	-	Intermittency applied

Figures 7 and 8 determine the specific noise levels across the Site during the daytime and night-time periods due to commercial/industrial sound respectively.

5.1. DAYTIME ASSESSMENT

The grid is calculated at 1.5 m height to show garden rating levels. The background sound levels measured at NMP2 are used to inform the assessment, specifically the lowest median daytime level, 37 dB.

Table 5.2 Calculation of Rating Level and Comparison with Background Sound Level – Daytime

RECEPTOR	MEASURED SPECIFIC LEVEL, $L_{Aeq,1hr}$ (dB)	CALCULATED RATING LEVEL $L_{A,r}$ (dB)	BACKGROUND SOUND LEVEL, $L_{A90,1hr}$ (dB)	DIFFERENCE +/- (dB)
Bungalow 1	18	21	37	-16
Bungalow 2	30	33		-4
Bungalow 3	34	37		0

The assessment has determined that the predicted rating level from the commercial premises meet or fall below the background level at all plots.

As such, mitigation measures in the form of acoustic barriers are not required to mitigate against commercial noise in the daytime period.

5.2. NIGHT-TIME ASSESSMENT- 23:00-07:00

Figure 8 should be used to view the night-time specific noise level at the receptors at bedroom height. The background sound levels measured at NMP2 are used to inform the assessment, specifically the lowest median night-time level taken from 04:09-07:00, when farm vehicles are likely to be in use, 37 dB.

Table 5.3 Calculation of Rating Level and Comparison with Background Sound Level – Night-time

RECEPTOR	CALCULATED SPECIFIC NOISE LEVEL, $L_{Aeq,T}$ (dB)	CALCULATED FAÇADE RATING LEVEL, L_{Ar} (dB)	BACKGROUND SOUND LEVEL, $L_{A90,15MIN}$ (dB)	DIFFERENCE +/- (dB)
Bungalow 1	23	26	37	-11
Bungalow 2	27	30		-7
Bungalow 3	33	36		-1

The assessment has determined that the predicted rating level from commercial activity falls below the background sound level at closest receptors during the night-time period.

As such, mitigation measures are not required to control commercial noise during night-time periods.

6. CONCLUSIONS AND DISCUSSION

E3P was commissioned to undertake a Noise Impact Assessment for the proposed residential development at Castle Lane, Barnsley.

E3P has undertaken an attended road traffic sound measurement for Green Road, along with undertaking a road traffic flow count of Castle Lane, during a typical weekday period. Also, E3P have undertaken a full weekday-weekend background survey in a position deemed representative of proposed receptors.

Additionally, attended measurements have been conducted on the boundaries of the site to capture commercial sound associated with all nearby premises.

A 3D noise model has been constructed to assess road traffic and rail sound across the site and incident upon facades.

Road traffic is assessed in accordance with the criterion, for day and night, given in BS 8233:2014+A1:2019.

Commercial noise associated with the surrounding units is assessed in accordance with BS 4142:2014+A1:2019.

The assessment has found that standard specification glazing is sufficient and that openable windows are sufficient to mitigate against overheating.

With mitigation measures in place, this assessment has shown that no adverse impact is predicted day or night at the receptors due to commercial sound or road traffic sound.

END OF REPORT

Appendix I: Limitations

GENERAL

1. This report and any associated works (together comprising the "Services") were compiled and carried out by E3P for the client (as present in Section 1) under the E3P “Terms of Business” or with those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed and outlined in the body of the report.

2. Unless explicitly agreed otherwise, in writing, this report has been prepared under E3P Standard Terms and Business as included within our proposal to the Client.

3. Project-specific appointment documents may be agreed upon at our discretion and a charge may be levied for both the time to review and finalise appointment documents and also for associated changes to the appointment terms. E3P reserves the right to amend the fee should any changes to the appointment terms create an increased risk to E3P.

4. The report needs to be considered in light of the proposal and associated limitations of scope. The report needs to be read in full and isolated sections cannot be used without full reference to other elements of the report and any previous works referenced within the report.

NOISE AND VIBRATION IMPACT ASSESSMENTS

5. Where a noise or vibration survey is required to inform an assessment, E3P will endeavour to ensure that all noise and vibration measurements taken are robust, representative and reliable in order to inform an accurate assessment.

6. Where mitigation measures are specified in this report, it should be noted that these measures are relative to a specific sound or vibration source, both in terms of the measured sound pressure and vibration level and the character of the sound source. Where either the sound pressure level or the character of the sound varies following completion of the sound survey, E3P cannot be held responsible for any subsequent variations in the proposed mitigation performance.

7. The works undertaken to prepare this report comprised a study of available and easily documented information from a variety of sources (including the Client), together with (where appropriate) a brief walkover inspection of the Site and correspondence with relevant authorities and other interested parties. Due to the short timescales associated with these projects responses may not have been received from all parties. E3P cannot be held responsible for any disclosures that are provided post-production of our report and will not automatically update our report.

8. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only for the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, E3P reserves the right to review such information and, if warranted, to modify the opinions accordingly.

9. E3P does not warrant work/data undertaken/provided by others.

Appendix II: Glossary

NOISE

Noise is defined as unwanted sound. Human ears are able to respond to sound in the frequency range 20 Hz (deep bass) to 20,000 Hz (high treble) and over the audible range of 0 dB (the threshold of perception) to 140 dB (the threshold of pain). The ear does not respond equally to different frequencies of the same magnitude but is more responsive to mid-frequencies than to lower or higher frequencies. To quantify noise in a manner that approximates the response of the human ear, a weighting mechanism is used. This reduces the importance of lower and higher frequencies, in a similar manner to the human ear.

Furthermore, the perception of noise may be determined by a number of other factors, which may not necessarily be acoustic. In general, the impact of noise depends upon its level, the margin by which it exceeds the background level, its character and its variation over a given period of time. In some cases, the time of day and other acoustic features such as tonality or impulsiveness may be important, as may the disposition of the affected individual. Any assessment of noise should give due consideration to all of these factors when assessing the significance of a noise source. The most widely used weighting mechanism that best corresponds to the response of the human ear is the “A”-weighting scale. This is widely used for environmental noise measurement, and the levels are denoted as dB(A) or LAeq, LA90 etc., according to the parameter being measured.

The decibel scale is logarithmic rather than linear, and hence a 3 dB increase in sound level represents a doubling of the sound energy present. Judgement of sound is subjective but, as a general guide, a 10 dB(A) increase can be taken to represent a doubling of loudness, whilst an increase in the order of 3 dB(A) is generally regarded as the minimum difference needed to perceive a change under normal listening conditions. An indication of the range of sound levels commonly found in the environment is given in the following table.

Table A Typical Sound Pressure Levels

SOUND PRESSURE LEVEL	LOCATIONS/EXAMPLE
0	Threshold of hearing
20-30	Quiet bedroom at night
30-40	Living room during the day
40-50	Typical office
50-60	Inside a car
60-70	Typical high street
70-90	Inside a factory
100-110	Burglar alarm at 1 m away
110-130	Jet aircraft on take off
140	Threshold of pain

ACOUSTIC TERMINOLOGY

Table B Terminology

DESCRIPTOR	EXPLANATION
dB (decibel)	The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (2E-05 Pa).
dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. “A” weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
LAeq, T	LAeq is defined as the notional steady sound level which, over a stated period of time (T), would contain the same amount of acoustical energy as the A-weighted fluctuating sound measured over that period.
LAmax	LAmax is the maximum A-weighted sound pressure level recorded over the period stated. LAmax is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall Leq noise level but will still affect the noise environment. Unless described otherwise, it is measured using the “fast” sound level meter response.
L10 and L90	If a non-steady noise is to be described, it is necessary to know both its level and the degree of fluctuation. The Ln indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L10 is the level exceeded for 10% of the time and as such can be regarded as the “average maximum level”. Similarly, L90 is the “average minimum level” and is often used to describe the background noise. It is common practice to use the L10 index to describe traffic noise.
Free-field Level	A sound field determined at a point away from reflective surfaces other than the ground with no significant contributions due to sound from other reflective surfaces. Generally, as measured outside and away from buildings.
Fast	A time weighting used in the root-mean-square section of a sound level meter with a 125-millisecond time constant.
Slow	A time weighting used in the root-mean-square section of a sound level meter with a 1000-millisecond time constant.
dB (decibel)	The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (2E-05 Pa).
dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. “A” weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.

Appendix III: Hourly Measured Sound Pressure Levels

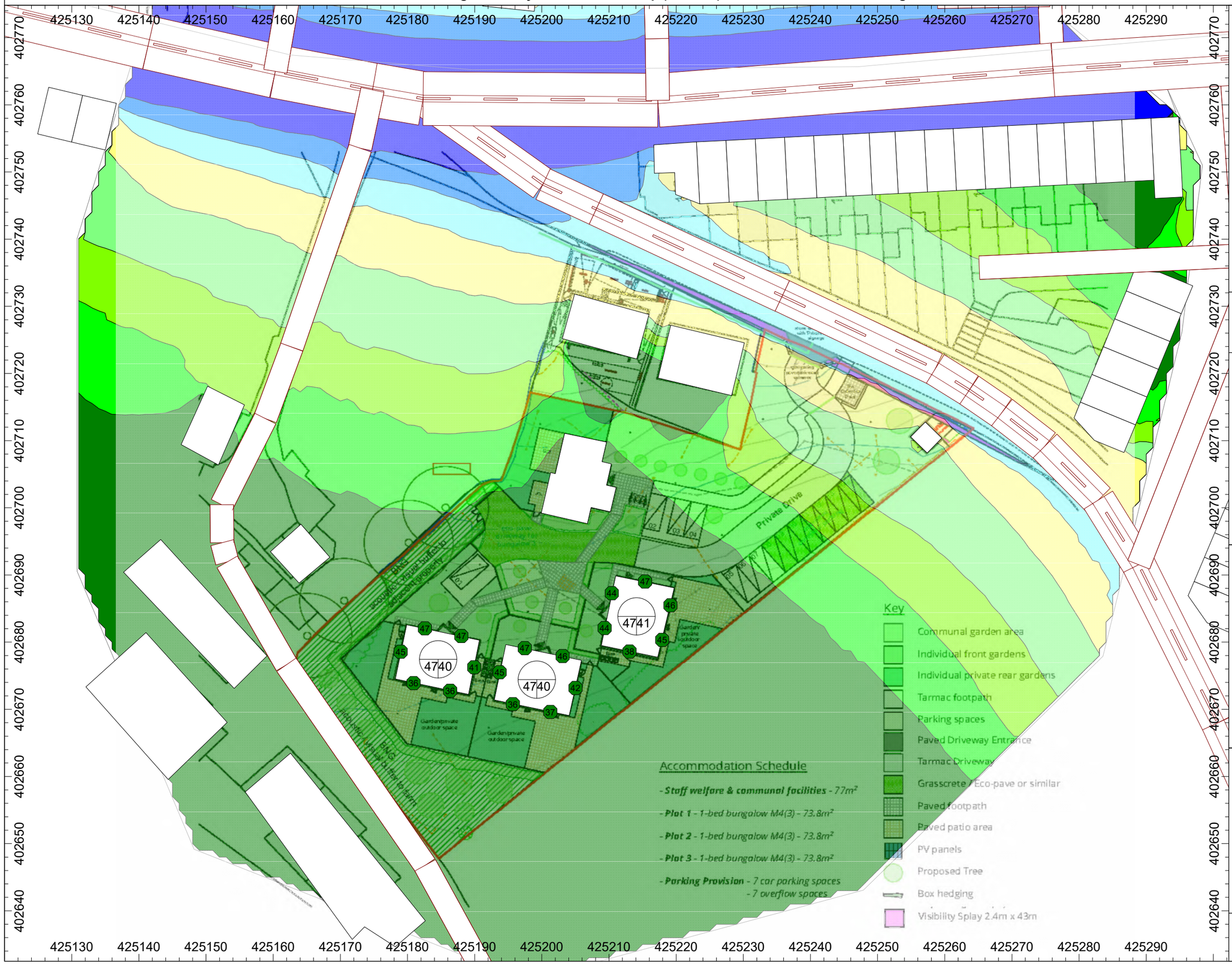
Hourly Measured Sound Pressure – NMP2

MEASUREMENT START TIME	MEASURED SOUND PRESSURE LEVEL, $L_{Aeq,1hr}$ (dB)	MEASURED BACKGROUND SOUND LEVEL, $L_{A90,1hr}$ (dB)
10/04/2026 10:00	49.1	37.6
10/04/2026 11:00	45.4	40.8
10/04/2026 12:00	46.9	36.9
10/04/2026 13:00	45.0	35.8
10/04/2026 14:00	44.1	37.4
10/04/2026 15:00	53.0	41.2
10/04/2026 16:00	49.3	39.2
10/04/2026 17:00	50.8	38.3
10/04/2026 18:00	46.7	39.4
10/04/2026 19:00	45.2	35.3
10/04/2026 20:00	39.8	32.3
10/04/2026 21:00	40.1	32.1
10/04/2026 22:00	40.5	31.4
10/04/2026 23:00	44.7	34.2
11/04/2026 00:00	46.0	36.2
11/04/2026 01:00	42.8	33.5
11/04/2026 02:00	41.1	30.1
11/04/2026 03:00	33.2	27.0
11/04/2026 04:00	37.0	27.8
11/04/2026 05:00	50.2	35.6
11/04/2026 06:00	45.0	38.3
11/04/2026 07:00	43.2	37.5
11/04/2026 08:00	48.5	39.0
11/04/2026 09:00	51.0	39.8
11/04/2026 10:00	53.7	42.8
11/04/2026 11:00	54.2	43.4
11/04/2026 12:00	55.3	41.9
11/04/2026 13:00	57.0	44.5
11/04/2026 14:00	56.9	44.9
11/04/2026 15:00	59.9	47.6
11/04/2026 16:00	55.7	44.0
11/04/2026 17:00	56.0	45.5
11/04/2026 18:00	52.5	44.6
11/04/2026 19:00	52.8	43.5
11/04/2026 20:00	55.7	44.4
11/04/2026 21:00	53.8	42.5
11/04/2026 22:00	59.0	46.1
11/04/2026 23:00	63.5	53.1
12/04/2026 00:00	64.2	53.8
12/04/2026 01:00	63.4	53.5
12/04/2026 02:00	61.6	50.4
12/04/2026 03:00	62.4	51.5
12/04/2026 04:00	62.8	52.6
12/04/2026 05:00	58.4	48.1
12/04/2026 06:00	52.9	41.3
12/04/2026 07:00	43.7	36.3
12/04/2026 08:00	47.4	39.0
12/04/2026 09:00	50.4	40.3
12/04/2026 10:00	50.2	40.3
12/04/2026 11:00	48.2	40.5

MEASUREMENT START TIME	MEASURED SOUND PRESSURE LEVEL, $L_{Aeq,1hr}$ (dB)	MEASURED BACKGROUND SOUND LEVEL, $L_{A90,1hr}$ (dB)
12/04/2026 12:00	49.8	39.9
12/04/2026 13:00	45.4	39.5
12/04/2026 14:00	47.8	38.8
12/04/2026 15:00	47.1	39.7
12/04/2026 16:00	48.4	39.1
12/04/2026 17:00	49.1	39.1
12/04/2026 18:00	45.8	36.1
12/04/2026 19:00	45.2	35.4
12/04/2026 20:00	44.0	30.8
12/04/2026 21:00	37.6	29.1
12/04/2026 22:00	34.5	25.0
12/04/2026 23:00	33.4	22.8
13/04/2026 00:00	26.6	21.2
13/04/2026 01:00	31.3	23.1
13/04/2026 02:00	26.9	23.3
13/04/2026 03:00	29.4	23.3
13/04/2026 04:00	34.3	24.5
13/04/2026 05:00	43.4	36.9
13/04/2026 06:00	48.5	41.4

Appendix IV: Figures

Figure 3 - Daytime Grid Noise Map (BS 8233) - Calculation at 1.5 m above ground level



Project:
Castle Lane,
Barnsley

Project-No:
52-057

Client:
Halsall Lloyds Partnership Ltd

Daytime Noise Level, LAeq,16hr (dB)

- ... <= 48
- 48 < ... <= 50
- 50 < ... <= 52
- 52 < ... <= 56
- 56 < ... <= 58
- 58 < ... <= 60
- 60 < ... <= 62
- 62 < ... <= 65
- 65 < ...

Noise Map Objects

- Line Source
- Road
- Crossing
- Parking Lot
- Building
- Barrier
- Building Evaluation
- Calculation Area

e3p

Project Engineer: Melissa Bailey
Date: 16/04/2026

Figure 4 - Night-time Grid Noise Map (BS 8233) - Calculation at 4 m above ground level

Project:
Castle Lane,
Barnsley

Project-No:
52-057

Client:
Halsall Lloyds Partnership Ltd

Night-time Noise Level, LAeq,8hr (dB)

- ... <= 42
- 42 < ... <= 45
- 45 < ... <= 47
- 47 < ... <= 50
- 50 < ... <= 52
- 52 < ... <= 55
- 55 < ... <= 57
- 57 < ... <= 60
- 60 < ...

Noise Map Objects

- Line Source
- Road
- Crossing
- Parking Lot
- Building
- Barrier
- Building Evaluation
- Calculation Area

e3p

Project Engineer: Melissa Bailey
Date: 16/04/2026

Figure 5 - Part O Requirements - 50 dB Criterion

Project:
Castle Lane,
Barnsley

Project-No:
52-057

Client:
Halsall Lloyds Partnership Ltd

Night-time Noise Level, LAeq,8hr (dB)

... <= 50
50 < ...

Noise Map Objects

- Line Source
- Road
- Crossing
- Parking Lot
- Building
- Barrier
- Building Evaluation
- Calculation Area

e3p

Project Engineer: Melissa Bailey
Date: 16/04/2026

Figure 6 - Part O Requirements - Maximum Criterion

Project:
Castle Lane,
Barnsley

Project-No:
52-057

Client:
Halsall Lloyds Partnership Ltd

Night-time Max Noise Level, LAFMax,2min (dB)

... <= 65
65 < ...

Noise Map Objects

- Line Source
- Road
- Crossing
- Parking Lot
- Building
- Barrier
- Building Evaluation
- Calculation Area

e3p

Project Engineer: Melissa Bailey
Date: 16/04/2026

Figure 7 - Daytime Grid Noise Map (BS 4142) - Calculated at 1.5m above ground level

Project:
Castle Lane,
Barnsley

Project-No:
52-057

Client:
Halsall Lloyds Partnership Ltd

Specific Noise Level, LAeq,T (dB)

- ... <= 38
- 38 < ... <= 40
- 40 < ... <= 42
- 42 < ... <= 45
- 45 < ... <= 48
- 48 < ... <= 50
- 50 < ... <= 52
- 52 < ... <= 55
- 55 < ...

Noise Map Objects

- Line Source
- Road
- Crossing
- Parking Lot
- Building
- Barrier
- Receiver
- Building Evaluation
- Calculation Area

e3p

Project Engineer: Melissa Bailey
Date: 16/04/2026

Figure 8 - Night-time Grid Noise Map (BS 4142) - Calculated at 1.5m above ground level

Project:
Castle Lane,
Barnsley

Project-No:
52-057

Client:
Halsall Lloyds Partnership Ltd

Specific Noise Level, LAeq,T (dB)

- ... <= 32
- 32 < ... <= 35
- 35 < ... <= 38
- 38 < ... <= 40
- 40 < ... <= 42
- 42 < ... <= 45
- 45 < ... <= 48
- 48 < ... <= 50
- 50 < ...

Noise Map Objects

- Line Source
- Road
- Crossing
- Parking Lot
- Building
- Barrier
- Receiver
- Building Evaluation
- Calculation Area

e3p

Project Engineer: Melissa Bailey
Date: 17/04/2026