BS8233 & ProPG Assessment

of

39 Sunderland Road,

East Boldon,

Tyne & Wear,

NE36 0NA

3rd December 2025

Prepared by:

James Flitton AMIOA

E2 Consultants Ltd
3b South Park Way
Wakefield
West Yorkshire
WF2 0XJ

Table of Contents

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3b South Park Way
Wakefield
West Yorkshire
WF2 0XJ

1.0 Introduction

1.01 E2 Consultants have been commissioned to undertake a noise impact survey and assessment for a new development at 39 Sunderland Road, East Boldon, NE36 0NA.

1.02 The methodology used for this assessment will be BS8233 as this is a new development within the designated area.

1.03 The report will also issue recommendations of acoustic performance of glazing and, if required, ventilation proposals in order for the future dwelling to meet all necessary criteria.

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2.0 Development Description

2.0.1 The proposed development is just off of Sunderland Road on the Southern edge of East Boldon.

2.0.2 The development lies in a mainly residential area with open fields then to the South between the area and the Northen part of Sunderland.

2.0.3 The main noise source likely to disrupt the inhabitants of the proposed new dwellings is the passing traffic along Sunderland Road/A184.

2.0.4 With the above sources in mind the monitoring took place both at the front of the property, close to the A184 road, and at the rear of the proposed site to look at the way noise propagates across the proposed development area.

2.1 Locations of Monitors

2.1.1 Two Type 1 sound level meters were installed at ground-floor level within the existing development area, both on tripods approximately 1.7m from the ground.

2.1.2 Figures 1& 2 show the areas where the monitors were installed.

2.1.3 All location is displayed on site map in figure 2

Figure 1 – Front/Sunderland Road

Figure 2 – Rear of Site

2.1.4 Measurements were made in 15 minute periods, on 1 second averaging, to allow for the removal of anomalies and increased accuracy. The data was averaged into $L_{Aeq16hr}$ daytime and L_{Aeq8hr} night-time with data also recorded for L_{AMax} in both day and night periods for the BS8233:2014 assessment.

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2.1.5 The monitoring was conducted using 2 x Type 1 NTi XL2 sound level meters, outdoor case with batteries and outdoor microphone protection.

2.1.6 The measurements were taken by a fully qualified engineer with AMIOA status with the institute of Acoustics.

2.1.7 All measurements were taken after a field calibration was undertaken to ensure accuracy and repeatability of measurements. Drift was checked post-measurement to validate the data collected.

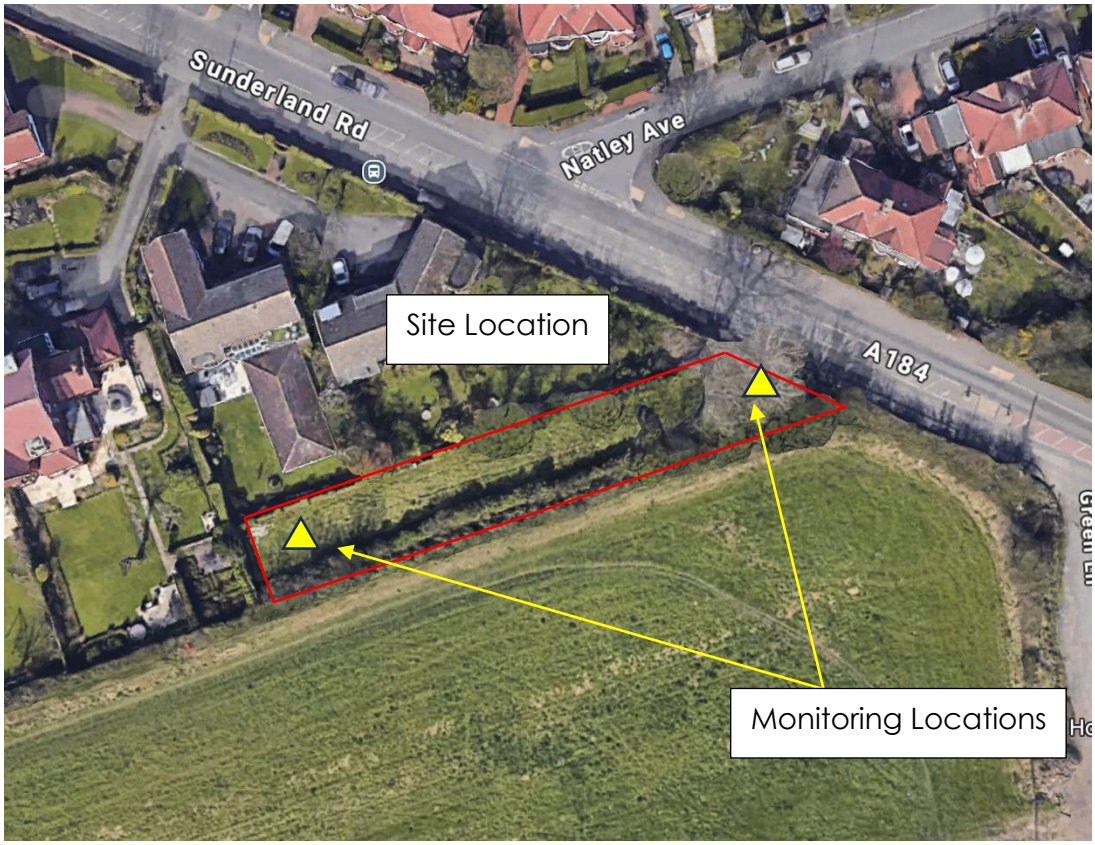
2.1.8 Further data such as wind speed, wind direction, rainfall intensity, temperature and cloud cover were all recorded at the beginning and end of the assessment at the monitoring location.

2.1.9 Any anomalies (such as noise by the engineer during setup and collection of the kit) were removed from the survey for a true reflection of the ambient levels in the vicinity. This was done by recording audio throughout the survey at each location and listening back through the files during the analysis process to confirm what was recorded manually during the survey.

2.1.10 Care was taken to inform any residents in the area that audio recording was taking place.

2.2 Plan Views of Site with Designated Work Areas

Figure 3



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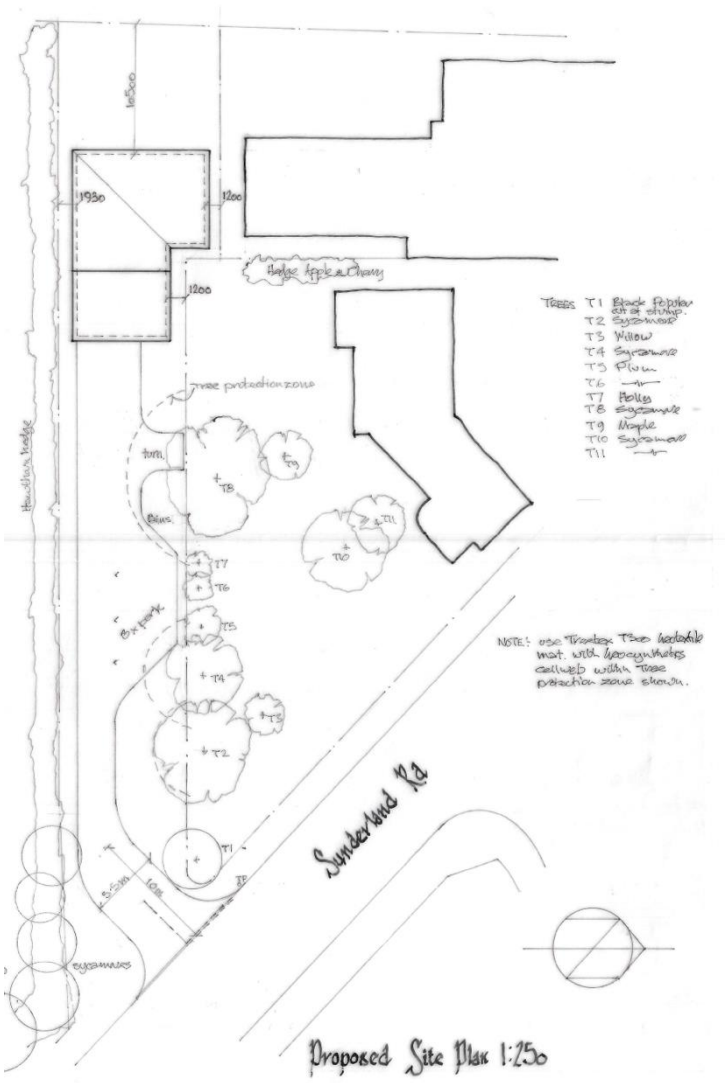
2.3 Proposed Site Layout (example floor)

Figure 4



3.0 Noise Assessment Criteria

3.0.1 The National Planning Policy Framework (NPPF) sets out the Government's economic, environmental and social planning policies for England and "these policies articulate the Government's vision of sustainable development." In respect of noise, Paragraph 174 of the NPPF states the following:

"Planning policies and decisions should contribute to and enhance the natural and local environment by:

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability."

Paragraph 185 goes on to mention:

"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:

a) 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;

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason;"

3.0.2 The NPPF reinforces the March 2010 DEFRA publication, "Noise Policy Statement for England" (NPSE), which states three policy aims, as follows:

"Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- avoid significant adverse impacts on health and quality of life;
- mitigate and minimise adverse impacts on health and quality of life;
- and where possible, contribute to the improvement of health and quality of life."

3.0.3 Together, the first two aims require that no significant adverse impact should occur and that, where a noise level which falls between a level which represents the lowest observable adverse effect and a level which represents a significant observed adverse effect, then according to the explanatory notes in the statement:

> "... 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."

3.0.4. It is possible to apply objective standards to the assessment of noise and the effect produced by the introduction of a certain noise source may be determined by several methods, as follows:

- The effect may be determined by reference to guideline noise values. British Standard (BS) 8233:2014 and World Health Organisation (WHO) "Guidelines for Community Noise" contain such guidelines.
- Another method is to compare the resultant noise level against the background noise level (L_{A90}) of the area. This is the method employed by BS 4142:2014 to determine the likelihood of complaint from noise of an industrial nature. It is best suited to the assessment of steady or pseudo-steady noise.

3.0.5 British Standard 8233:2014 is principally intended to assist in the design of new dwellings; however, the Standard does state that it may be used in the assessment of noise from new sources being brought to existing dwellings.

3.0.6 The WHO guideline values are appropriate to what are termed "critical health effects". This means that the limits are at the lowest noise level that would result in any psychological or physiological effect.

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The WHO/BS 8233 guideline noise values are summarised in the following table:

Table 1

Guidance Document	L_{AeqT}	L_{AMax}	Outcome
World Health Organisation "Community Noise 2000"	55dB		Serious annoyance, daytime and evening. (Continuous noise, outdoor living areas)
	50dB		Moderate annoyance, daytime and evening. (Continuous noise, outdoor living areas).
	35dB		Moderate annoyance, daytime and evening. (Continuous noise, dwellings, indoors)
	30dB		Sleep disturbance, night-time (indoors)
		60dB	Sleep disturbance, windows open at night. (Noise peaks outside bedrooms, external level).
		45dB	Sleep disturbance at night (Noise peaks inside bedrooms, internal level)
BS 8233:2014 "Sound Insulation and noise reduction for buildings"	55dB		Upper limit for external steady noise. (gardens and patios).
	50dB		Desirable limit for external steady noise. (gardens and patios).
	L_{Aeq} 16 hours = 35 dB		Resting, living room day. (Internal – steady noise)
	L_{Aeq} 16 hours = 40 dB		Dining, dining room day. (Internal – steady noise)
	L_{Aeq} 16 hour = 35 dB		Sleeping, bedroom day (Internal – steady noise)
	L_{Aeq} 8 hours = 30 dB		Sleeping, bedroom day (Internal – steady noise)

3.0.7 For L_{AeqT} criteria the time base (T) given in the documents is 16 hours for daytime limits and 8 hours for night time limits. All surveys are conducted on 1 hour daytime and 15 minute night values – based on 1 second readings on a Type 1 sound level meter. The readings are taken every 5 mins for noise to allow the elimination of erroneous data if required.

3.0.8 The WHO guidelines are also concerned with the L_{AMax} for night-time sleep disturbance. The guideline states:

> "For a good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45 dB L_{AFmax} more than 10-15 times per night"

3.0.9 On this basis, for the purpose of assessing night-time L_{AFmax} noise events, it is considered appropriate to adopt the 10th highest L_{AFmax} noise event occurring in a typical night-time (23:00 – 07:00) period.

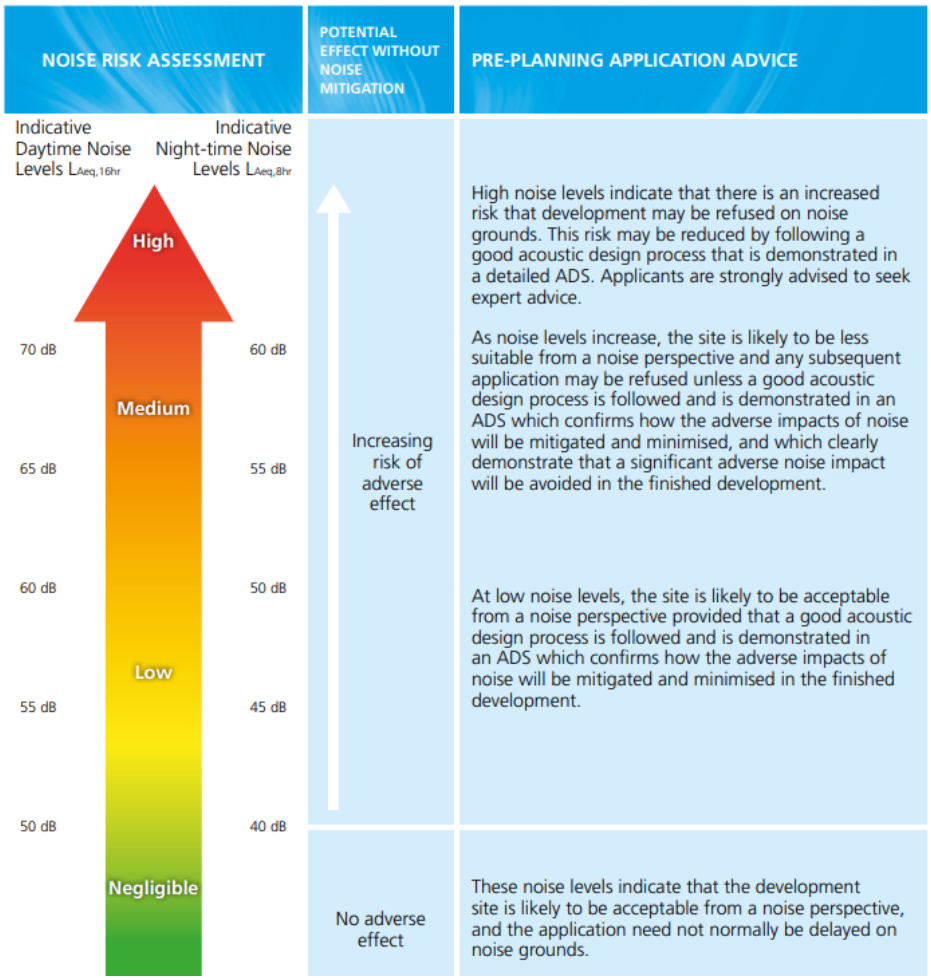
3.0.10 Audio recordings are taken throughout the measurements to allow for further assessments on high levels. Listening to the audio and performing tonal analysis will allow anomalies to be removed from the data, if required.

3.1 ProPG Stage 1 – Assessment

3.1.1 The stage one risk assessment is used to assess the site for potential risks that may occur in terms of noise impact. The ProPG sets out four categories of risk:1) negligible, 2) low, 3) medium or 4) high risk. **Error! Reference source not found.** below illustrates the ProPG risk assessment and the values associated with each risk category.

3.1.2 The risk assessment also considers the risk based on the number of L_{AFmax} events per night as follows;
A site should not be considered a negligible risk if more than 10 L_{AFmax} events exceed 60 dB during the night period and;
A site should be considered a high risk if the L_{AFmax} events exceed 80 dB more than 20 times per night.
Paragraph 2.9 of ProPG states that;
"The noise risk assessment may be based on measurements or prediction (or a combination of both) as appropriate and should aim to describe noise levels over a "typical worst case" 24 hour day either now or in the foreseeable future."

3.1.3 To assess the noise impact with the ProPG risk categories a baseline noise survey was undertaken on the site to quantify the existing noise environment.



3.2 Chosen Criteria

3.2.1 Based on the proposed development for a new dwelling, BS8233 was selected for this assessment. The procedure for ProPG will also be used as part of the assessment.

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4.0 Results

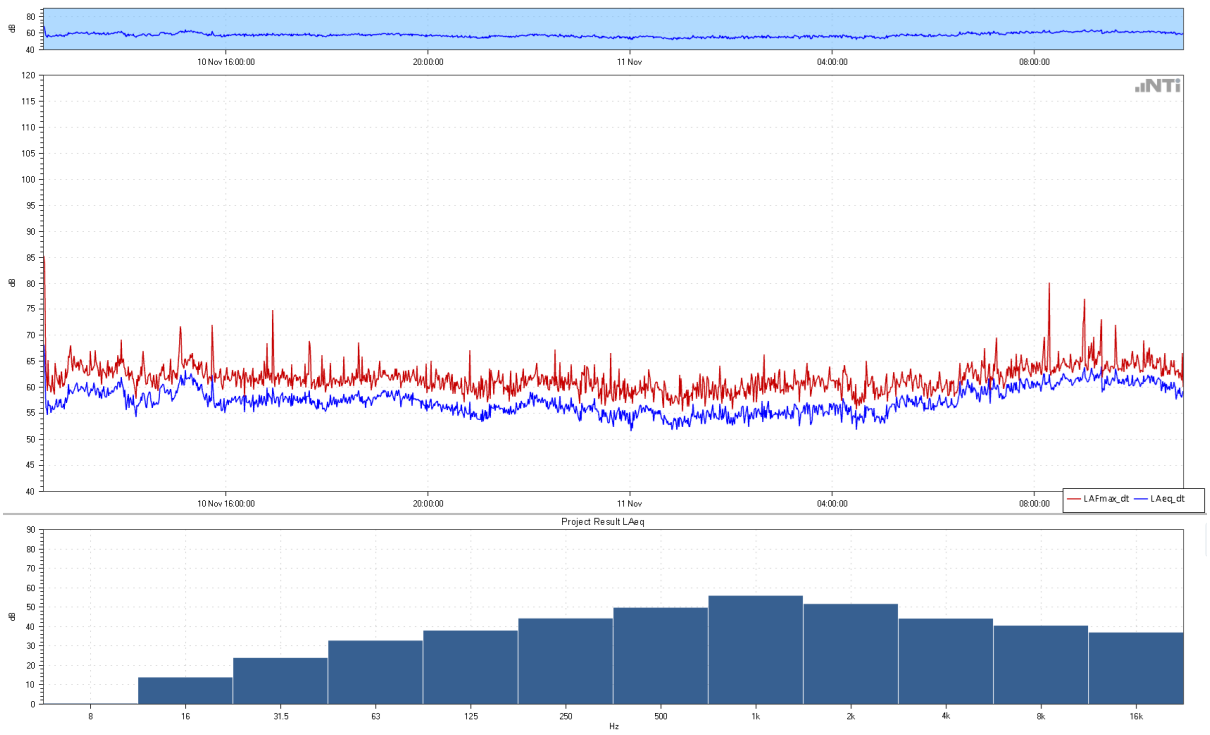
4.1 Front/Sunderland Road – 13.52pm 20/11/25 – 11.20am 21/11/25

Table 2

Time Period	L_{Aeq_16hr}	L_{Aeq_8hr}	L_{Amax} (10th highest)
Day	**69.6dBA**		
Night		**59.7dBA**	**84.7dBA**

4.1.1 Comments: Mainly traffic pass-by noise. Some bird song adding to spikes. No tonal features

Figure 4



Day/Time	Cloud Cover	Temperature (Celcius)	Prescence of fog/snow/ice	Wind Speed (m/s)	Wind Direction
Installation	2	2	No	0.3	NW
Collection	3	4	No	1.4	W

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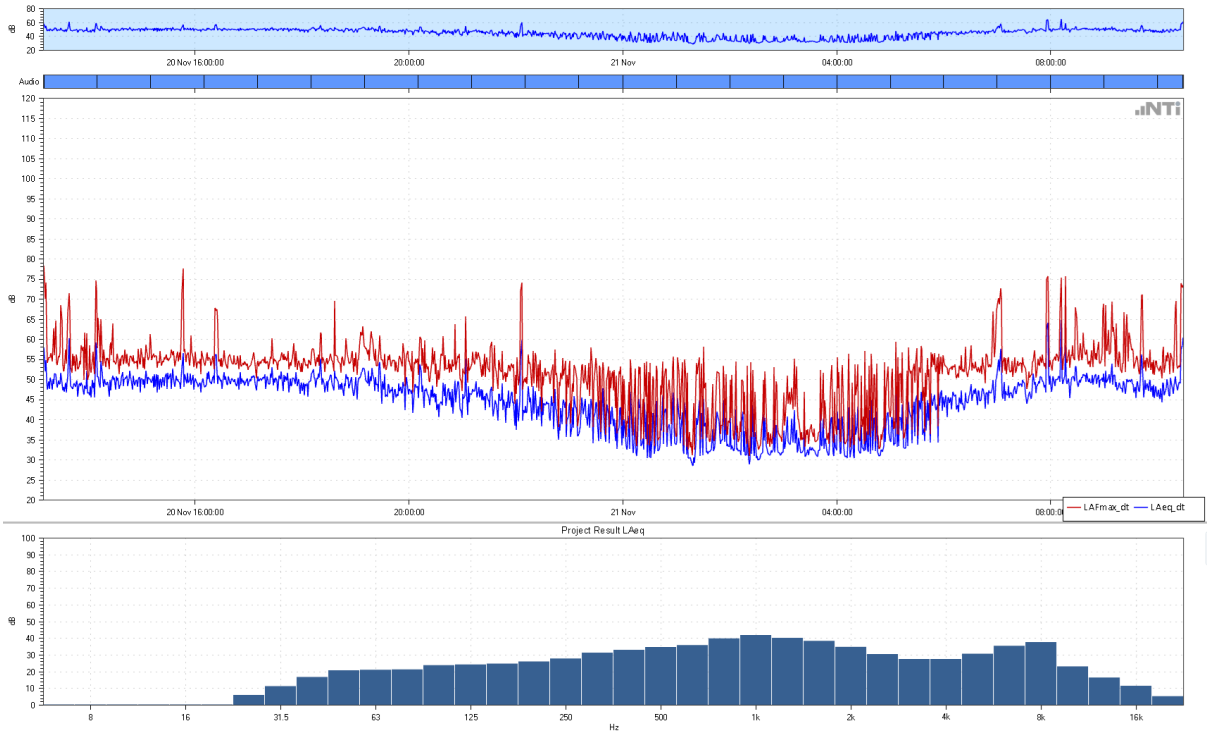
4.2 Rear of Site – 13.11pm 20/11/25 – 14.15am 21/11/25

Table 3

Time Period	L_{Aeq_16hr}	L_{Aeq_8hr}	L_{Amax} (10th highest)
Day	**49.2dBA**		
Night		**40.0dBA**	**56.7dBA**

4.1.1 Comments: Some distant traffic pass-by noise. Bird song causing most of the spikes. No tonal features.

Figure 5



Day/Time	Cloud Cover	Temperature (Celcius)	Prescence of fog/snow/ice	Wind Speed (m/s)	Wind Direction
Installation	2	2	No	0.3	NW
Collection	3	4	No	1.4	W

5.0 ProPG Stage 1 – Initial Risk Assessment

5.0.1 The measured noise levels on the site and future noise levels have been predicted for existing noise climate to assess the probability of an adverse impact upon habitation of the proposed development. This includes the predicted levels on shielded facades away from the measured traffic/ambient noise level post construction.

5.0.2 Table 4 below identifies the Noise Risk Categorisation of the site based on the predicted free field façade noise levels. The site has been categorised as low to medium risk. Considering this risk categorisation of the development mitigation measures will be required to mitigate the noise risk in following with ProPG guidance and good acoustic design process.

5.0.3 It should be noted that the ProPG 2017states the following with regard to how the initial site noise risk is to be used:

"2.12 It is important that the assessment of noise risk at a proposed residential development site is not the basis for the eventual recommendation to the decision maker. The recommended approach is intended to give the developer, the noise practitioner, and the decision maker an early indication of the likely initial suitability of the site for new residential development from a noise perspective and the extent of the acoustic issues that would be faced. Thus, a site considered to be high risk will be recognised as presenting more acoustic challenges than a site considered as low risk. A site considered as negligible risk is likely to be acceptable from a noise perspective and need not normally be delayed on noise grounds. A potentially problematical site will be flagged at the earliest possible stage, with an increasing risk indicating the increasing importance of good acoustic design."

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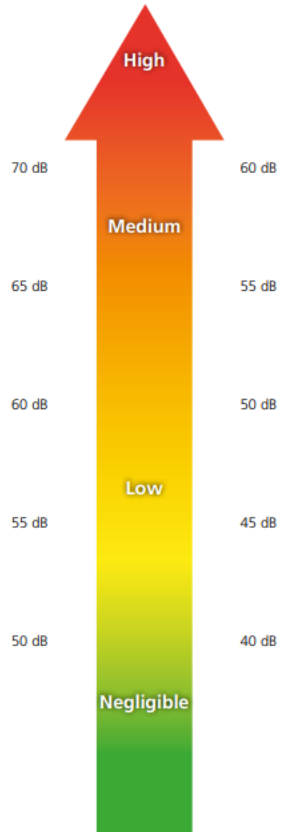
Table 4: ProPG Stage 1 Risk Assessment of Existing Noise Levels

Noise Risk Assessment		**Risk Assessment Rating**	
Indicative Daytime Noise Levels $L_{Aeq,16hour}$	**Indicative Night-time Noise Levels $L_{Aeq,8hour}$**	**Daytime Noise Levels**	**Night-time Noise Levels**
		**High Risk**	**High Risk**
		N/A	N/A
		Medium Risk	**Medium Risk**
		The South boundary of the site is in the medium to low risk. Good acoustic design should be considered.	The South boundary of the site is in the medium to low risk. Good acoustic design should be considered.
		Low Risk	**Low Risk**
		The majority of the site is at low risk at daytime. Good acoustic design should be considered.	Most of the site is at low risk at nighttime. Good acoustic design should be considered.
		Negligible Risk	**Negligible Risk**
		N/A	N/A

5.1 ProPG Stage 2- Full Assessment

5.1.1 This section outlines the full stage 2 acoustic design assessment in line with ProPG guidance.

5.2 Element 1: Good Acoustic Design Process

5.2.1 ProPG States the following in relation to Good Acoustic Design Process:

"A good acoustic design process takes a multi-faceted and integrated approach to achieve optimal acoustic conditions, both internally (inside noise-sensitive parts of the building(s)) and externally (in spaces to be used for amenity purposes)."

"Good acoustic design should avoid "unreasonable" acoustic conditions and prevent "unacceptable" acoustic conditions (these terms are defined in Element 2). Good acoustic design does not mean overdesign or gold plating of all new development but seeking to deliver the optimum acoustic outcome for a particular site"

5.2.2 The following considerations are recommended by ProPG:

- *"Check the feasibility of relocating, or reducing noise levels from relevant sources.*
- *Consider options for planning the site or building layout.*
- *Consider the orientation of proposed building(s).*
- *Select construction types and methods for meeting building performance requirements.*
- *Examine the effects of noise control measures on ventilation, fire regulation, health and safety, cost, CDM (construction, design and management) etc.*
- *Assess the viability of alternative solutions.*
- *Assess external amenity area noise."*

5.2.3 Discussion of Good Acoustic Design

5.2.3.1 The development is located close to the existing road noise source on the East boundaries of the site, therefore it is not possible to reduce or relocate the relevant noise sources.

5.2.4 Site Layout and Orientation

5.2.4.1 The proposed site consists of 1 property within the footprint, with outdoor amenity spaces. The design maximises the available space on the existing plot to provide comfortable space for the dwelling.

5.2.5 Construction Methods

5.2.5.1 Section 5.3.6 considers the construction methods required to meet the building performance control measures. The construction measures are in general robust, providing standard external wall and façade details to meet thermal, fire and weathertightness requirements will in general provide adequate performance to achieve good levels of sound insulation.

5.2.6 Impact of Noise Control Measures

5.2.6.1 The effects for noise control measures on other building elements including ventilation are considered in Section 5.3.6. It is generally impractical to provide ventilation via openable windows in urban/built up areas. An open window will provide 10-15dB of attenuation which in built-up urban areas is not practical. In general, the good acoustic design process in these areas is to provide ventilation via attenuated natural vents or mechanical ventilation. This allows the occupants to have adequate ventilation with adequate noise levels.

5.2.7 External Amenity

5.2.7.1 ProPG states the following with regard to external amenity spaces:

> *"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 LAeq,16hr."*

5.2.7.2 The external amenity source noise levels are considered in section 5.4.

5.3 Element 2 – Assessment of Internal Noise Levels

5.3.1 This section outlines the assessment of the building envelope including the façade noise modelling, and specification of the glazing requirements.

5.3.2 A noise intrusion assessment for the proposed development has been completed in accordance with the methodology outlined International Standard *ISO EN 12354-3:2017 Building acoustics — Estimation of acoustic performance of buildings from the performance of elements — Part 3: Airborne sound insulation against outdoor sound*. The standard provides a method for calculating the indoor noise levels due to road traffic noise.

5.3.3 The calculation method accounts for multiple factors including:

- The external noise level at the affected building façade.
- The frequency characteristics of the specific noise source (i.e. Road traffic noise).
- The sound insulation performance of each façade element (i.e. Windows, Walls, Roof…).
- The area of each façade element.
- Direct and flanking transmission paths.
-

5.3.4 Predicted Internal Noise Levels

5.3.4.1 The proposed development is predicted to achieve the internal noise limits defined in Section **Error! Reference source not found.** from 8233:2014 subject to implementing the construction details outlined in Section 5.3.6 of this report.

5.3.5 Building Envelope Specification

5.3.5.1 This section outlines the building envelope requirements based on the measurements outlined in Section **Error! Reference source not found.**. Facade, wall, glazing, roof and ventilation specifications have been determined to achieve the internal noise level criteria for the development. The specification has been determined in accordance with BS8233:2014 Annex G and EN ISO 12354-3: 2017 based on the predicted façade day and night noise levels, the room and facade dimensions from the drawings provided.

5.3.5.2 Table 5 below provides the basic guidance calcs for each area and the classification of property type greatest affected within each area. For a robust guideline the highest value in each category has been used for the initial linear calculation in table 4.

Table 5: Linear calcs based on modelled impact

Boundary Location	**L_{AeqT} (16hr Day & 8hr Night)**	**L_{AMax}**	**BS8233 & WHO Internal noise**	**BS8233 & WHO External Noise**	**Difference to L_{Aeq} & L_{AMax} (internal/external)**
East Boundary					
Day (0700-2300)	70dBA		35dBA	55dBA	(+35dBA/ +15dBA)
Night (2300-0700)	60dBA	85dBA (10th Highest)	30dBA (45dBA L_{AMax})	(60dBA L_{AMax})	(+30dBA) (+40dBA)
West Boundary					
Day (0700-2300)	49dBA		35dBA	55dBA	(+14dBA/ -6dBA)
Night (2300-0700)	40dBA	57dBA (10th Highest)	30dBA (45dBA L_{AMax})	(60dBA L_{AMax})	(+10dBA) (+13dBA)

5.3.5.3 Based on the details from Table 5 the full site can be fitted with standard double glazing with a Rw specification typically of 30dB for the site, although this is in excess of the required attenuation levels of 14dB. This is possible because the site is set back from the road towards the West

boundary. If it was at the front of the site, close to Sunderland Road, the specification for the glazing would need to be far higher.

5.3.5.4 This can be further checked by looking at the combined break-in noise impact using the BS8233:2014 Annex G / EN ISO 12354-3: 2017 calculations. The results of this and the exact recommended glazing type/example for the site are shown in table 6.

5.3.6 Glazed Elements and Ventilation

5.3.6.1 The glazed elements and ventilation openings are typically the acoustically weakest elements of any façade. The required sound insulation performance of façade glazed is outlined in table 6 below.

5.3.6.2 It is required that the glazing, frame and seals as a whole achieve the performance when the window is in the closed position. The performance requirements outlined in table 6 below are considered to provide more than adequate sound insulation to achieve the relevant day and night internal design goals respectively. This is based on existing modern double-glazing. The use of such glazing provides a margin of error of around 0-13dB across the site which should further mitigate for any noise sources that were not apparent during the assessment, and also traffic levels caused by movement of vehicles serving the proposed development.

Table 6: Example Sound Insulation performance requirements for glazed elements and ventilation

Location	Glazed Elements (Frame & Glazing) Sound Insulation Requirements (Indicative requirements equal or approved)						
	Octave Band Frequency Requirements[1] R dB						Glazing Acoustic Performance dB R_W (C, Ctr)
	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	
Proposed Dwelling	21	17	25	35	37	31	29 (-1;-4)

Natural ventilation assumed throughout. Should this change to mechanical ventilation the above specification may be reduced. An acoustic consultant should be engaged to assess the level of reduction appropriate to maintain the internal noise level criteria. The calculation assumes a maximum of 1 ventilation opening per bedroom at the specification outlined in Table .

5.3.6.3 It is important to note that the requirements outlined above are an over-specification of the requirements for the glazed element as a whole. These figures are based on the standard double-glazing offered by Pilkington. It is recommended that the values do not drop below Rw20 if such a product is discovered. This will then protect the site against any future increases in noise levels.

5.3.6.4 We understand the ventilation strategy for the development has not been confirmed at this stage of the design. It has been assumed that ventilation will be provided via natural ventilation system. Typically, the use of a

natural ventilation strategy will lead to an enhanced glazing specification compared to a sealed mechanical ventilation system. This assessment is based on the windows in closed position and ventilation elements in the open position. Should mechanical ventilation be used this will need to be of the same specification, or greater, than the figures provided in table 7 can be used as a guide. However, the levels across the site are so low that acoustics should not be the determining factor when considering how many vents are required and where they are to be placed.

5.3.6.5 The calculations for the glazing figures in Table 6 are based on the use of basic non-acoustic trickle vents. The values used in the Annex G calculations are based on the example figures from table 7 below.

Table 7: Recommended ventilation specification

Description	**Octave Band Centre Frequency (Hz) Sound Reduction Index $D_{n,e}$ dB**					
	125	**250**	**500**	**1k**	**2k**	**4k**
Standard non-acoustic trickle ventilator typically ≥ $D_{n,e,w}$ 30dB	30	30	30	30	30	28

5.3.7 External Wall Construction

5.3.7.1 The façade wall construction has been assumed to achieve a minimum sound insulation performance of 56dB R_W. Typical façade construction such as concrete, blockwork, timber frame and brick offer high levels of sound insulation and will meet this requirement.

5.3.8 Roof Construction

5.3.8.1 The roof construction has been assumed to achieve a minimum sound insulation performance of 54dB R_W. Any skylights and glazing in the roof system to corridor or communal areas should be of standard double-glazed construction to meet a minimum performance of 29 dB R_W.

5.4 Element 3- External Amenity Spaces

5.4.1 Based on the measured noise levels at the site and the predicted noise model it is predicted that all of the gardens will fall below the required limit of 55dBA L_{Aeq_16hr} in accordance with BS8233:2014. This is once the proposed buildings and fencing had been constructed to provide further screening from the road noise to the front garden area. All fencing should be solid in construction to provide sound reduction into the site. The rear garden, to the West of the site, will fall below the 'desirable' limit of 50dBA L_{Aeq_16hr}.

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5.5 Element 4- Assessment of Other Relevant Issues

5.5.1 This section of the acoustic design report considers the other relevant issues. Element 4 considers other issues which may remain relevant to the assessment, these issues are as follows:

- 4(i) compliance with relevant national and local policy.
- 4(ii) magnitude and extent of compliance with ProPG .
- 4(iii) likely occupants of the development.
- 4(iv) acoustic design v unintended adverse consequences and;
- 4(v) acoustic design v wider planning objectives.
-

5.5.2 Compliance with Relevant National and Local Policy

5.5.2.1 There are no specific noise guidance or policy documents for residential developments other than the ProPG and BS8233:2014 guidance that has been used throughout this document.

5.5.3 Magnitude and Extent of Compliance with ProPG

5.5.3.1 This report demonstrates that the dwelling will meet the specified internal noise level requirements provided the guidance in this report is followed. External amenity spaces have been provided in line with the guidance set out in ProPG. Based on this the development is in general compliance with the ProPG requirements.

5.5.4 Likely Occupants of The Development

5.5.4.1 Additional needs of the future occupants are not known at this stage however the needs of all potential occupants have been considered with the assessment of adequate internal noise levels and provision of adequate external amenity spaces to meet the needs of potential occupants.

5.5.5. Acoustic Design v Unintended Adverse Consequences

5.5.5.1. The design has considered the impact of adverse consequences, mitigation has been provided by specification of the sound insulation and ventilation requirements. The design has also considered the external amenity noise levels on balconies and outdoor spaces.

5.5.6 Acoustic Design v Wider Planning Objective

5.5.6.1 Where possible the wider planning objectives have been considered including the need for residential housing with good transport links. It is

assumed that the winder planning objectives have been adhered to by following the ProPG guidance.

5.6 Stage 2 Assessment Conclusion

5.6.1 The stage 2 assessment considers all four (4) elements, the principals of good acoustic design have been followed.

5.6.2 The element 2 assessment has considered the measures required to provide an adequate acoustic environment with appropriate noise levels for internal spaces. The sound insulation and ventilation requirements have been specified based on the predicted façade noise levels.

5.6.3 The element 3 assessment of external amenity spaces has considered the noise impact on the development and the external amenity spaces. Appropriate provision of external amenity space has been provided in line with the ProPG guidance.

5.6.4 Other relevant issues have been considered including, local policy, unintended consequences and the wider planning objectives.

6.0 Observations and Further Discussions

6.0.1 The day values measured over the course of the measurement period show that the garden noise levels are below the 'upper limit' and shown in table 1 as part of the guidelines from WHO and BS5223 of 55dBA L_{Aeq_16hr} for the proposed property.

6.0.2 With the proposed construction, glazing and ventilation strategy all properties will meet BS8233:2014 guidelines.

E2 Consultants Ltd
3b South Park Way
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7.0 Credentials

Name	Title	Credentials
James Flitton BSc AMIOA	**Acoustic Consultant**	**IOA Diploma in Acoustics & Noise Control**
		Associate Member Institute of Acoustics
		CSCS Professionally Qualified person
		Affiliate Member of IDE
Signed	[redacted]	

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Appendix A – Acoustic Terminology

Parameter	Description
Ambient Noise Level	The totally encompassing sound in a given situation at a given time, usually composed of a sound from many sources both distant and near (LAeq,T).
Decibel (dB)	A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds s1 and s2 is given by 20 log10 (s1/s2). The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is 20μPa. The threshold of normal hearing is in the region of 0 dB and 140 dB is the threshold of pain. A change of 1 dB is only perceptible under controlled conditions.
dB(A), L_{Ax}	Decibels measured on a sound level meter incorporating a frequency weighting (A weighting) which differentiates between sounds of different frequency (pitch) in a similar way to the human ear. Measurements in dB(A) broadly agree with people's assessment of loudness. A change of 3 dB(A) is the minimum perceptible under normal conditions, and a change of 10 dB(A) corresponds roughly to halving or doubling the loudness of a sound. The background noise in a living room may be about 30 dB(A); normal conversation about 60 dB(A) at 1 metre; heavy road traffic about 80 dB(A) at 10 metres; the level near a pneumatic drill about 100 dB(A).
Free-field	Sound pressure level measured outside, far away from reflecting surfaces (except the ground), usually taken to mean at least 3.5 metres
Façade	Sound pressure level measured at a distance of 1 metre in front of a large sound reflecting object such as a building façade.
$L_{Aeq,T}$	A noise level index called the equivalent continuous noise level over the time period T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded.
$L_{max,T}$	A noise level index defined as the maximum noise level recorded during a noise event with a period T. L_{max} is sometimes used for the assessment of occasional loud noises, 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.
$L_{10,T}$	A noise level index. The noise level exceeded for 10% of the time over the period T. L_{10} can be considered to be the "average maximum" noise level. Generally used to describe road traffic noise. $L_{A10,18h}$ is the A –weighted arithmetic average of the 18 hourly $L_{A10,1h}$ values from 06:00-24:00.
$L_{90,T}$	A noise level index. The noise level exceeded for 90% of the time over the period T. Generally used to describe background noise level.

E2 Consultants Ltd
3b South Park Way
Wakefield
West Yorkshire
WF2 0XJ

Appendix B - Noise Survey Instrumentation

Type	Manufacturer	Model	Serial Number	Last Cal	Cal Due
SLM	NTi	XL3-TA	A3A-1773-FO	09/07/2025	09/07/2027
Pre-amp	NTi	MA220	15205	09/07/2025	09/07/2027
Microphone	NTi	MC230A	A31329	09/07/2025	09/07/2027
SLM	NTi	XL3-TA	A3A-01774-FO	10/07/2025	10/07/2027
Pre-amp	NTi	MA220	15221	10/07/2025	10/07/2027
Microphone	NTi	MC230A	A31393	10/07/2025	10/07/2027
Calibrator	NTi	CAL200	19829	12/11/2024	12/11/2025

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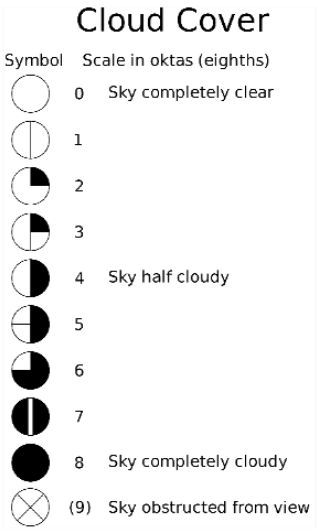
3b South Park Way
Wakefield
West Yorkshire
WF2 0XJ

Appendix C – Weather Conditions Chart Used

(Blank Version)

<table>
<tr><th colspan="5">Weather Conditions</th></tr>
<tr><th>Measurement Location</th><th>Date/Time</th><th>Description</th><th>Beginning of Survey</th><th>End of Survey</th></tr>
<tr><td></td><td></td><td>Temperature:</td><td></td><td></td></tr>
<tr><td colspan="2" rowspan="8"> 
</td><td>Precipitation:</td><td></td><td></td></tr>
<tr><td>Cloud cover (oktas - see guide)</td><td></td><td></td></tr>
<tr><td>Presence of fog/snow/ice</td><td></td><td></td></tr>
<tr><td>Presence of damp roads/wet ground</td><td></td><td></td></tr>
<tr><td>Wind Speed (m/s)</td><td></td><td></td></tr>
<tr><td>Wind Direction</td><td></td><td></td></tr>
<tr><td>Conditions that may cause temperature inversion (i.e. calm nights with no cloud)</td><td></td><td></td></tr>
</table>