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External Building Fabric Report

Project Number
18952



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UKAS accreditation is only applicable to pre-completion sound insulation testing services for building regulations undertaken by Clement Acoustics Ltd on behalf of Falcon Energy Ltd and not linked to the certifications shown above

EXECUTIVE SUMMARY

This assessment has been undertaken so external building fabric elements can be specified in order to meet appropriate internal noise criteria at 5-8A Whitehall Parade London Road, East Grinstead .

The assessment adheres to General Permitted Development Order requirements, the principles provided by the *National Planning Policy Framework: 2024* (NPPF) and internal noise criteria stated within BS 8233: 2014 '*Guidance on sound insulation and noise reduction for buildings*'.

The Institute of Acoustics' *Professional Guidance on Planning & Noise: 2017* (ProPG) recommended approach for determining site risk due to environmental noise has also been adopted.

The site currently comprises an unused commercial space. Proposals include the development of 5 No. residential units for residential purposes.

A noise survey has been undertaken as detailed in the report, in order to establish the prevailing environmental noise levels at the site.

A subsequent detailed analysis has been carried out of commercial noise intrusion through the external building fabric. Sound insulation performance specifications have been proposed for glazing systems and trickle ventilators.

The assessment has demonstrated that appropriate internal noise levels should be achievable with the installation of nominal glazing systems and typical ventilators.

It is essential that certificated performances should be sought from the manufacturer(s) of the proposed glazing systems and trickle ventilators.

This report is designed to be suitable to discharge typical noise planning conditions, as per our original scope of work. The report should not be relied upon for further reasons, such as the detailed design of mitigation measures.

Clement Acoustics has used all reasonable skill and professional judgement when preparing this report. The report relies on the information as provided to us at the time of writing and the assumptions as made in our assessment. This report contains confidential information and should not be disclosed to third parties.

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18952-SP1	Indicative Site Plan
Appendix A	Glossary of Acoustic Terminology
Appendix B	ProPG Initial Site Risk Assessment Guidance

REVISION HISTORY

Issue	Date of Issue	Author	Reviewed	Authorised
R0	25/06/25			
		MD Atif Uddin Acoustic Consultant BSc (Hons) TechIOA	Duncan Martin Director BSc (Hons) MIOA	John Smethurst Director BSc (Hons) MIOA

Issue	Comment
R0	First Issue

1.0 INTRODUCTION

Clement Acoustics has been commissioned by Falcon Energy Ltd to assess the suitability of the site at 5-8A Whitehall Parade for residential development.

Proposals are to redevelop a currently unused commercial space into 5 No. residential units as part of a Permitted Development scheme.

This report presents the results of environmental noise surveys undertaken in order to measure prevailing background levels and details the proposed internal noise level criteria.

Full details of necessary mitigation measures in order to meet the proposed criteria are also provided.

2.0 SITE DESCRIPTION

The proposed development site is on the first floor of an existing department store. Proposals are to redevelop this currently unused space into 5 No. residential units.

The site is in a mixed residential and commercial area facing on to London Road, a shopping high street largely populated by commercial retail units. The site is bound by London Road to the west, adjacent retail units to the north and south and existing residential properties and car parking to the rear (east).

At the time of the survey, the background noise climate was dominated on the front façade by road traffic and pedestrian noise from London Road and on the rear façade, existing commercial plant units and ambient traffic noise from surrounding roads.

3.0 ARCHITECTURAL ASSUMPTIONS

3.1 Drawings

The following drawings have been used in our assessment:

- 2350-MAL-XX-ZZ-DR-A-0151 P1 (Feb 2025)

3.2 Room Volume and Window Dimensions

Based on the above drawings we have based our calculations on the following worst case living room and bedroom and window dimensions.

- Living Room
 - Room Volume: 54 m³
 - Window Area: 5 m²

- Bedroom
 - Room Volume: 40 m³
 - Window Area: 4.5 m²

3.3 Room Finishes

Our assessment assumes that bedrooms and living rooms will contain typical amounts of soft furnishings, including sofas, chairs, beds and curtains.

4.0 CRITERIA

4.1 General Permitted Development Order

It is understood that the development is part of a General Permitted Development Order (GDPO) and therefore local policies do not apply. The noise criteria for a permitted development scheme only takes into consideration noise from commercial premises.

In absence of specific requirements under the GDPO, guidance will be sought from other relevant documents such as BS 8233: 2014: *'Guidance on sound insulation and noise reduction for buildings'*, and The World Health Organisation's (WHO) *'Guidelines for Community Noise'* 1999.

4.2 National Planning Policy Framework: 2024 (NPPF)

The NPPF, which was first published in 2012 with the latest revision in December 2024, outlines the Government's environmental, economic and social policies for England. The NPPF aims to enable local authorities to produce their own distinctive local and neighbourhood plans, which should be applied in order to meet the needs and priorities of their communities.

Paragraph 187 of The *Conserving and enhancing the natural environment* section of the NPPF includes references to noise stating that:

'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. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans;...'

Paragraph 198 of The *Ground Conditions and Pollution* section of the NPPF includes references to noise stating 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:

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...’

4.3 BS 8233: 2014 Internal Noise Criteria

BS 8233: 2014: ‘Guidance on sound insulation and noise reduction for buildings’ describes recommended acceptable internal noise levels for residential spaces during daytime and night-time hours. These levels are shown in Table 4.1.

Activity	Location	Design Range $L_{eq,T}$	
		Daytime (07:00 - 23:00)	Night-time (23:00 – 07:00)
Resting	Living Room	35 dB(A)	-
Dining	Dining Room/Area	40 dB(A)	-
Sleeping	Bedroom	35 dB(A)	30 dB(A)

Table 4.1 BS 8233: 2014 recommended internal background noise levels

4.4 World Health Organisation Guidelines

The World Health Organisation (WHO) document on ‘Guidelines for Community Noise’ 1999 states the internal noise level guidelines as summarised in Table 4.2.

Specific Environment	Critical Health Effects	$L_{eq,T}$	$L_{max,F}$
Dwelling, Indoors	Speech Intelligibility and moderate annoyance, daytime and evening	35 dB(A)	-
Inside Bedrooms	Sleep disturbance, night-time	30 dB(A)	45 dB(A)

Table 4.2 WHO Internal noise level guidelines

The document also states:

“For a good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45dBA L_{Amax} more than 10-15 times per night, (Vallet & Varnet 1991).”

4.5 Proposed Noise Level Criteria

On the basis of Sections 4.1 to 4.4 above, Table 4.3 presents our proposed minimum design targets to be achieved in the worst affected dwellings.

Location	Period	Design Target	
		L _{eq, T}	L _{max, F}
Living Rooms	Daytime (07:00-23:00 hours)	35 dB(A)	-
Bedrooms	Night-time (23:00-07:00 hours)	30 dB(A)	45 dB(A)*

Table 4.3 Proposed noise level criteria

***Please note that this is not an absolute limit, however, L_{max, F} 45 dB(A) should not be regularly exceeded.**

The external building fabric would need to be carefully designed to achieve these recommended internal levels.

4.6 Professional Guidance on Planning & Noise (ProPG)

The Institute of Acoustics' *Planning & Noise: Professional Practice Guidance on Planning and Noise: New Residential Development*: 2017 (the ProPG) provides a recommended approach for dealing with noise within the planning process, specifically in relation to new residential developments.

The ProPG follows 2-stage risk assessment approach. The two stages are as follows:

- Stage 1 - an initial assessment where external noise is rated against the risk of adverse effect; and
- Stage 2 – consideration of key elements to determine the suitability of the site for a residential dwelling.

The results of the initial Site noise risk assessment will determine the appropriate risk of developing the site and therefore how appropriate it is from a noise perspective.

Appendix B presents the Initial Site Risk assessment as presented in ProPG.

Stage 2 attempts to determine that good acoustic design principals have been incorporated into the design so that suitable internal noise levels can be achieved in habitable rooms and that suitable external noise levels can be achieved in outdoor amenity space.

4.7 Guidance on Ventilation

Guidance on ventilation and associated acoustic considerations is given in Acoustic Ventilation and Overheating – Residential Design Guide [AVO] issued jointly by the Association of Noise Consultants and the Institute of Acoustics.

In this guide, the need for ventilation (which falls under the requirements of Approved Document F [ADF]) are covered in three main requirements as follows:

- Whole Dwelling Ventilation
 - General ventilation – continuous ventilation of rooms or spaces at a relatively low rate
- Extract Ventilation
 - Removal of air from a space or spaces (typically stale air from bathrooms or kitchens) to outside
- Purge Ventilation
 - Manually controlled removal of air at a high rate to eliminate fumes and odours, e.g. during painting and decorating or from burnt food. May be provided by natural or mechanical means.

Four main template systems for providing each of the above ADF ventilation requirements are summarised in the AVO guide as shown in Table 4.4.

Ventilation System	Method of Whole Dwelling Ventilation	Method of Extract Ventilation	Method of Purge Ventilation
System 1 [Background ventilators and intermittent extract fans]	Background ventilators (trickle vents)	Intermittent extract fans	Typically provided by opening windows
System 2 [Passive Stack]	Background ventilators (trickle vents) & passive stack	Continuous via passive stack	Typically provided by opening windows
System 3 [Continuous Mechanical Extract (MEV)]	Continuous mechanical extract (low rate), trickle vents provide fresh air	Continuous mechanical extract (high rate), trickle vents provide fresh air	Typically provided by opening windows
System 4 [Continuously mechanical supply and extract with heat recovery (MVHR)]	Continuous mechanical supply and extract (low rate)	Continuous mechanical supply and extract (high rate)	Typically provided by opening windows

Table 4.4 Summary of template systems for ADF ventilation requirements

Where possible, natural forms of ventilation are typically preferred. However, in high noise areas, it may be necessary to recommend System 4, in order to minimise penetrations through the external building façade, which weaken the overall sound reduction performance.

Ventilation requirements will be assessed with consideration to the above systems.

5.0 ENVIRONMENTAL NOISE SURVEY

5.1 Attended Noise Survey Procedure

Attended noise measurements were undertaken on 6 and 9 June 2025 to provide further understanding of the prevailing noise environment.

The sound level meters were mounted on a tripod approximately 1.5 m above ground level under free-field conditions at the locations described in Table 5.1.

Position No.	Description
AN1	The sound level meter was located in front of London Road Bar & Grill. Noise from people coming in and out along with music from the venue.
AN2	The sound level meter was located in front of The Engine Room Bar. Noise from outside seating area of the pub along with music from the venue.
AN3	The sound level meter was located in front of the Spirit Mind & Body Studio. Noise from lessons occurring with human speech only.

Table 5.1 Description of attended monitoring locations

The measurements were taken during representative periods of time avoiding traffic noise as much as possible.

The locations of the measurement positions are shown on attached site plan 18952-SP1.

5.2 Weather Conditions

At the time the attended measurements, the weather conditions were clear and dry with light winds.

It is considered that the weather conditions did not significantly adversely affect the measurements and are therefore considered suitable for the measurement of environmental noise.

5.3 Equipment

The equipment calibration was verified, by means of a field verification check, before and after use and no abnormalities were observed.

The equipment used was as summarised in Table 5.2.

Position	Instrument	Manufacturer	Type
All	Class 1 sound level meter ^[1]	Norsonic	Nor 145
All	Class 1 sound level meter calibrator ^[1]	Svantek	SV33B

Table 5.2 Instrumentation used during the survey

Note [1]: Calibration certificates available upon request

6.0 RESULTS

6.1 Attended Noise Survey Results

Table 6.1 presents the results of the measurements carried out at the attended positions shown in attached site plan 18952-SP1. For each measurement position, the $L_{Aeq,15 \text{ min}}$ noise levels have been obtained.

Position	Duration	Noise Source Description	Average ambient noise level $L_{Aeq, T}$, dB	Maximum noise level $L_{AFmax: 5min}$, dB
AN1	20 min	Noise from people coming in and out along with music from the venue.	66	92*
AN2	15 min	Noise from people at outside seating area of the pub along with music from the venue.	54	67
AN3	15 min	Noise from lessons taking place, human speech only	45	60*

Table 6.1 Average ambient and minimum background noise levels

***These values were noted to be due to traffic on public roads and not the commercial activities themselves.**

7.0 COMMERCIAL NOISE ANALYSIS

Due to GDPO criteria, this assessment will only take into account commercial noise without any consideration for traffic or general pedestrian noise.

The main sources of commercial noise are regarded to be the following:

- London Road Bar and Grill restaurant located opposite the site which is a minimum of 17 m away from the building
- The Engine Room Bar located east of the site which is a minimum of 18 m away from the building
- Spirit, Mind & Body Studio located east of the site which is a minimum of 18 m away from the building.
- 2 No. Fujitsu AOYG45LETL Air Conditioning units currently servicing the ground floor department store located to the southern side of the building 1 m away from the nearest proposed windows.

Noise emissions for the sources have been determined through the attended measurements and through manufacturer provided data, and are presented in Table 7.1.

Source	Sound Pressure Level (at 1 m, dB) in each Frequency Band, Hz								
	63	125	250	500	1k	2k	4k	8k	dB(A)
London Road Bar and Grill	64	59	57	63	63	56	49	38	66
The Engine Room Bar	54	52	52	46	46	47	49	40	54
Spirit, Mind & Body Studio	55	46	48	41	41	35	28	22	45
Fujitsu AOYG45LETL	61	56	54	53	50	46	47	43	56

Table 7.1 Sources noise emissions levels

An outline analysis has been conducted to determine the worst-case spectral noise levels at the proposed residential façade from these main sources of commercial noise. Calculated façade noise levels are shown in Table 7.2

Receiver	Sound Pressure Level (at 1 m, dB) in each Frequency Band, Hz							
	63	125	250	500	1k	2k	4k	8k
Worst-case noise level at façade	64	59	57	56	49	42	43	39

Table 7.2 Predicted worst case levels at façade from commercial noise

8.0 PROPG INITIAL SITE RISK ASSESSMENT

The environmental noise survey has determined the onsite noise levels. Table 7.2 shows the predicted day and night-time noise levels to be used in the noise assessment.

With reference to the ProPG risk assessment guidance presented in Appendix B, Table 8.1 shows the identified risk level of this site.

Location	Period	Measured Noise Level	ProPG Noise Risk	ProPG Action Guideline
Building Façade	Daytime [07:00 - 23:00]	56 dB(A)	Low	See Note [1]
	Night-time [23:00 - 07:00]		Medium	See Note [2]

Table 8.1 ProPG initial site risk assessment

Note [1]: Low – ‘At low noise levels, the site is likely to be acceptable from a noise perspective provided that a good acoustic design process is followed and is demonstrated in an Acoustic Design Statement (ADS) which confirms how the adverse impacts of noise will be mitigated and minimised in the finished development.’

Note [2]: Medium – ‘As noise levels increase, the site is likely to be less suitable from a noise perspective and any subsequent application may be refused unless a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised, and which clearly demonstrates that a significant adverse noise impact will be avoided in the finished development.’

In consideration of the above, we would therefore recommend that assessing the site according to the guidance of British Standard 8233: 2014 will demonstrate that the impacts of noise can be suitably mitigated to avoid an adverse impact.

Provided adequate mitigation measures are put in place during the design and construction phase of the development, recommended internal noise levels can be achieved. Outline mitigation measures are described in Section 9.0 of this report.

9.0 EXTERNAL BUILDING FABRIC ASSESSMENT

9.1 External Building Fabric - Non Glazed Elements

It is currently assumed that the non-glazed external building fabric elements of the proposed development would be comprised of existing masonry. This would contribute towards a significant reduction of ambient noise levels in combination with a good quality window configuration, as shown in Section 9.2.

All non-glazed elements of the building facades should be designed to provide a sound reduction performance of at least the figures shown in Table 9.1 when tested in accordance with BS EN 10140-2: 2021.

Element	Octave band centre frequency SRI, dB					
	125	250	500	1k	2k	4k
Non glazed element SRI	41	43	48	50	55	55

Table 9.1 Minimum required sound reduction performance from non-glazed elements

9.2 External Building Fabric - Specification of Glazed Units

Sound reduction performance calculations have been undertaken in order to specify the minimum performance required from glazed elements in order to achieve recommended internal noise levels shown in Table 4.3. This specification therefore presents the most robust assessment, for BS 8233: 2014 criteria for internal noise levels in a bedroom at all affected facades.

The minimum sound reduction index (SRI) value required for all glazed elements to be installed is shown in Table 9.2. **The performance is specified for the whole window unit, including the frame and other design features.**

Type	Façade	Minimum Sound Reduction Index (dB) at Octave Band Centre Frequency (Hz)						$R_w + C_{tr}$
		125	250	500	1k	2k	4k	
A	All	21	17	25	35	37	31	25

Table 9.2 Required glazing performance

Note 1 The $R_w + C_{tr}$ should be considered an indication of the overall performance of the glazing. The minimum performance values per octave bands must be achieved.

Where non-vision spandrel panels and external doors are proposed within habitable spaces, they should provide sound reduction performance at least equal to that required of the glazing in order to maintain the acoustic integrity of the external building fabric.

The attached site plan indicates 18952-SP2 indicates the location of the proposed glazing types.

It is essential that prospective glazing system suppliers can demonstrate compliance with the acoustic performance detailed in our specification rather than simply offering a generic glazing configuration. The complete glazing system should achieve the performance requirements stated in Table 9.2 when tested in accordance with BS EN 10140-2: 2021.

It is essential that the performance presented in Table 9.2 is met. However, the following typical configuration would be expected to meet the required levels of sound insulation:

- Type A: 4 mm Glass / 6 mm Air / 4 mm Glass

N.B. This is a nominal glazing configuration

It is understood that the glazing for the front façade has already been installed with the following configuration: 6 mm Glass / 16 mm Air / 6 mm Glass, therefore indicative of a glazing configuration that would improve on the required performance.

It should be ensured that any new window created achieves a minimum performance of the values shown in Table 9.2.

Please note that the above guidance only considers acoustic performance. Other disciplines, which consider thermal, safety, durability etc. should be consulted to ensure suitability.

9.3 External Building Fabric - Specification of Trickle Ventilators

It is understood the proposal on this site is to use System 1 ventilation as summarised in Table 4.4.

In order to comply with Building Regulations (Part F), fresh air ventilation to habitable rooms is required via trickle ventilators.

The trickle ventilators should comply with the minimum octave band normalised weighted level differences stated in Table 9.3.

Type	Façade	Minimum $D_{n,e}$ Values(dB) at Octave Band Centre Frequency (Hz)						$D_{n,eW}^{[1]}$
		125	250	500	1k	2k	4k	
A	All	29	22	32	30	29	29	23

Table 9.3 Required ventilator performance

Note 1 The $D_{n,eW}$ should be considered an indication of the overall performance of the ventilator. The minimum performance values per octave bands must be achieved.

It should be ensured that all mechanical extract and supply ventilation is designed to not exceed the internal noise criteria stated in Table 4.3.

N.B. Type B and C should be achievable with standard units; however, Type A performance may call for an acoustic trickle ventilator.

9.4 Flanking Transmission

It is understood that the external building fabric for this development does not include curtain walling or any other lightweight cladding. Therefore, a flanking performance specification should not be required.

Junctions where party walls and floors interface with the external building fabric should however be carefully detailed. Suitable flexible cavity stops should be introduced into cavities at party floor/wall lines.

10.0 CONCLUSION

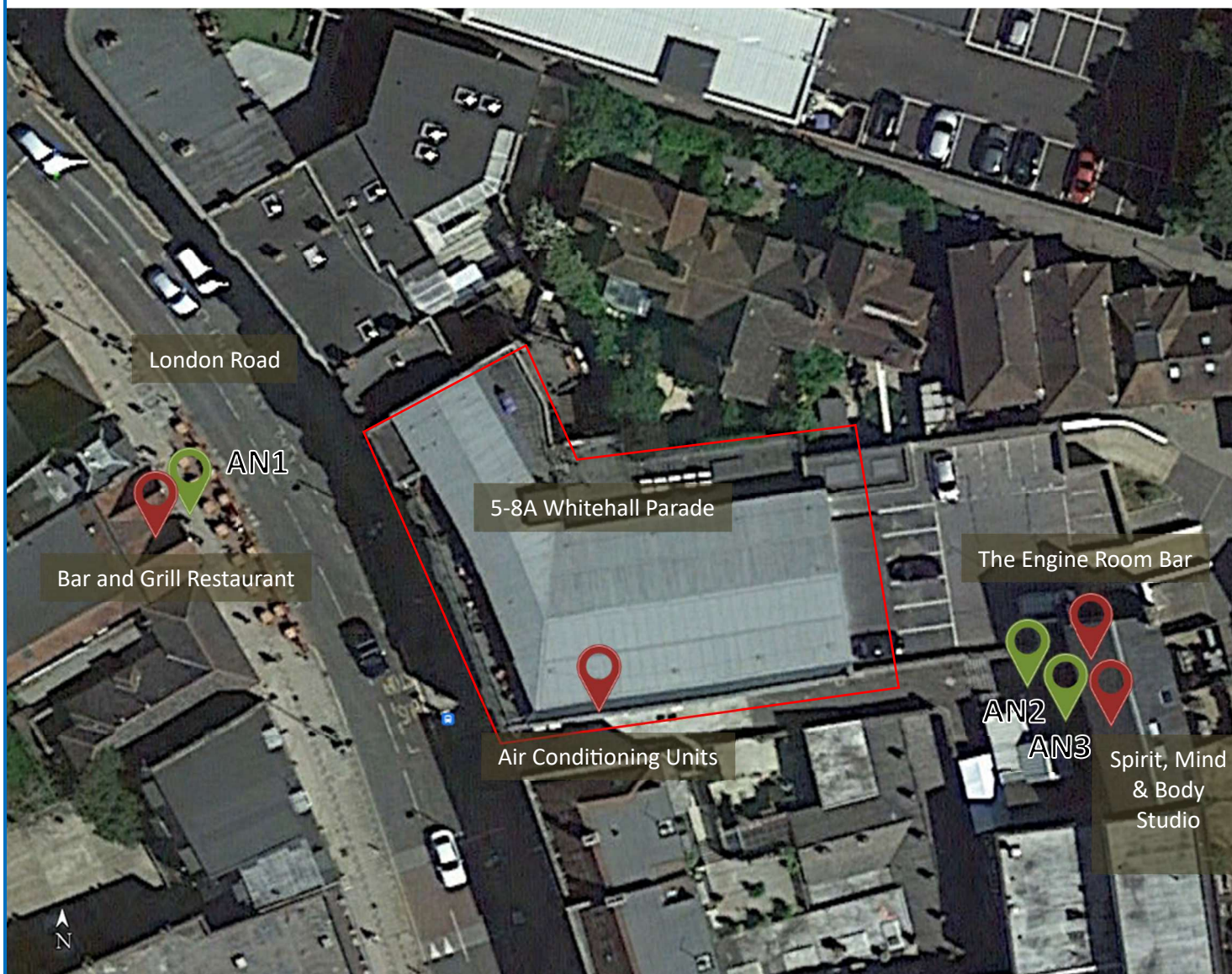
An environmental noise survey has been undertaken at 5-8A Whitehall Parade, London Road, East Grinstead in order to measure ambient noise levels in the area.

Measured noise levels have allowed an assessment of the level of exposure to noise of the proposed development site to be made.

Outline mitigation measures, including a glazing specification and the use of appropriate ventilation have been recommended and should be sufficient to achieve recommended internal noise levels for the proposed development according to BS 8233: 2014, WHO and General Permitted Development Order requirements.



Not to scale



Description:

Indicative site plan showing noise monitoring positions relative to identified noise sources

Date	25 June 2025
Reference	18952-SP1
Project Name	5-8A Whitehall Parade
Image ©	Google Earth

Key:

	Identified Noise Source
	Attended Noise Survey Position

GLOSSARY OF ACOUSTIC TERMINOLOGY

dB(A)

The human ear is less sensitive to low (below 125Hz) and high (above 16kHz) frequency sounds. A sound level meter duplicates the ear's variable sensitivity to sound of different frequencies. This is achieved by building a filter into the instrument with a similar frequency response to that of the ear. This is called an A-weighting filter. Measurements of sound made with this filter are called A-weighted sound level measurements and the unit is dB(A).

L_{eq}

The sound from noise sources often fluctuates widely during a given period of time. An average value can be measured, the equivalent sound pressure level L_{eq} . The L_{eq} is the equivalent sound level which would deliver the same sound energy as the actual fluctuating sound measured in the same time period.

L_{10}

This is the level exceeded for not more than 10% of the time. This parameter is often used as a "not to exceed" criterion for noise

L_{90}

This is the level exceeded for not more than 90% of the time. This parameter is often used as a descriptor of "background noise" for environmental impact studies.

L_{max}

This is the maximum sound pressure level that has been measured over a period.

Octave Bands

In order to completely determine the composition of a sound it is necessary to determine the sound level at each frequency individually. Usually, values are stated in octave bands. The audible frequency region is divided into 10 such octave bands whose centre frequencies are defined in accordance with international standards.

Addition of noise from several sources

Noise from different sound sources combines to produce a sound level higher than that from any individual source. Two equally intense sound sources operating together produce a sound level which is 3dB higher than one alone and 10 sources produce a 10 dB higher sound level.

Attenuation by distance

Sound which propagates from a point source in free air attenuates by 6dB for each doubling of distance from the noise source. Sound energy from line sources (e.g. stream of cars) drops off by 3 dB for each doubling of distance.

Subjective impression of noise

Sound intensity is not perceived directly at the ear; rather it is transferred by the complex hearing mechanism to the brain where acoustic sensations can be interpreted as loudness. This makes hearing perception highly individualised. Sensitivity to noise also depends on frequency content, time of occurrence, duration of sound and psychological factors such as emotion and expectations. The following table is a reasonable guide to help explain increases or decreases in sound levels for many acoustic scenarios.

Change in sound level (dB)	Change in perceived loudness
1	Imperceptible
3	Just barely perceptible
6	Clearly noticeable
10	About twice as loud
20	About 4 times as loud

Barriers

Outdoor barriers can be used to reduce environmental noises, such as traffic noise. The effectiveness of barriers is dependent on factors such as its distance from the noise source and the receiver, its height and its construction.

Reverberation control

When sound falls on the surfaces of a room, part of its energy is absorbed and part is reflected back into the room. The amount of reflected sound defines the reverberation of a room, a characteristic that is critical for spaces of different uses as it can affect the quality of audio signals such as speech or music. Excess reverberation in a room can be controlled by the effective use of sound-absorbing treatment on the surfaces, such as fibrous ceiling boards, curtains and carpets.

ProPG Initial Site Risk Assessment Guidance

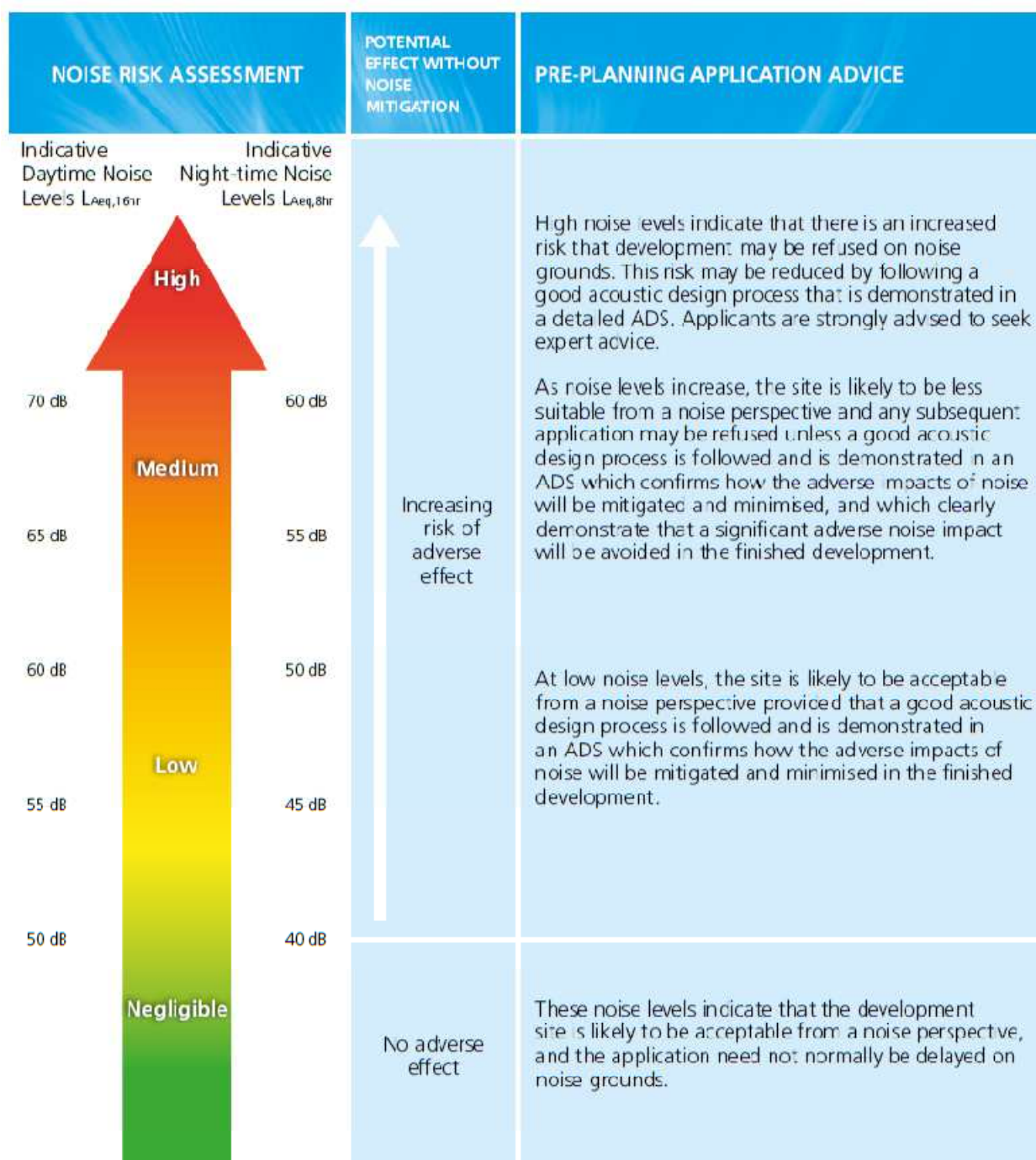


Figure 1 Notes:

- Indicative noise levels should be assessed without inclusion of the acoustic effect of any scheme specific noise mitigation measures.
- Indicative noise levels are the combined free-field noise level from all sources of transport noise and may also include industrial/commercial noise where this is present but is "not dominant".
- $L_{Aeq,16hr}$ is for daytime 0700 – 2300, $L_{Aeq,8hr}$ is for night-time 2300 – 0700.
- An indication that there may be more than 10 noise events at night (2300 – 0700) with $L_{Amax,F} > 60$ dB means the site should not be regarded as negligible risk.

Figure 1. Stage 1– Initial Site Noise Risk Assessment