

TECHNICAL MEMO

Our Ref. 8723_001M_1-0_JE



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SUBJECT: 37 BARFIELD PARK, LANCING – PLANNING SUBMISSION NOTE

1 INTRODUCTION

Anderson Acoustics Ltd was commissioned by Brighton & Hove Albion Football Club to provide acoustic consultancy support for the 37 Barfield Park development in Lancing.

The project comprises the provision of a new MRI scanning facility in a new building at the site located at 37 Barfield Park. The MRI unit will operate 24/7 and the new building will also contain residential accommodation.

As part of the works, Anderson Acoustics Ltd have already completed an environmental noise survey on site, aimed at establishing appropriate plant noise targets and input into the selection/mitigation options required to suitably control noise from external plant at the nearest noise sensitive receptors. A full noise impact assessment will be completed when the final plant selection has been confirmed to discharge conditions relating to plant noise.

Furthermore, consultancy support will also be provided to achieve appropriate conditions for the new residential element of the scheme in accordance with the Planning Noise Advice Document: Sussex and Approved Document E of the Building Regulations.

Details of noise units and a glossary of terms can be found [here](#).

2 THE SITE

37 Barfield Park (the Site) is located in Lancing, West Sussex (postcode BN15 9DF).

The Site is bounded by Barfield Park to the south-west, Mash Barn Lane to the north, and Brighton & Hove Albion FC's Elite Football Performance Centre to the east.

Excluding the adjacent football training facility, the site lies within a predominantly residential area. The nearest noise-sensitive receptors comprise existing residential properties along Barfield Park Road and Mash Barn Lane.

The existing noise climate is predominantly characterised by local and distant road traffic noise associated with the surrounding highway network. Additional contributions arise from distant railway activity, with the nearest railway line located approximately 320m to the south of the Site, and from occasional overhead aircraft movements.

The location of the proposed development site is shown in Figure 2-1 below.

Figure 2-1: Site boundary and noise monitoring locations



3 PLANT NOISE

The relevant acoustic guidance for this project is summarised in the following sections.

The proposed external plant will be assessed to achieve the requirements detailed within the Planning Noise Advice Document – Sussex and any applicable noise related planning conditions.

Assessment guidance is summarised below. These should be read in conjunction with the government's overarching planning principles with respect to noise including Noise Policy Statement for England ¹; National Planning Practice Framework ² and Planning Practice Guidance – Noise ³.

Allowance for mitigation options such as an acoustic enclosure and/or acoustic louvres should be included to ensure that the impact of external plant is suitably controlled. Suitable mitigation options should be developed at the next design stage.

3.1 LOCAL AUTHORITY REQUIREMENTS

Adur District Council noise guidance is defined in Planning Noise Advice Document ⁴. With regard to noise sources of an industrial and commercial nature, this document states the following:

2.6.1 For a new noise source being introduced near existing noise sensitive premises then an ambient and background noise survey (LA90) should cover the times when the proposed development will be in operation. The expected levels and duration of all the potential noise sources likely to be in operation from the proposed development, whether

¹ Department for Environment, Food and Rural Affairs - Noise Policy Statement for England

² Ministry of Housing, Communities & Local Government - National Planning Policy Framework

³ Ministry of Housing, Communities & Local Government - Planning Practice Guidance - Noise

⁴ Planning Noise Advice Document: Sussex 2023

measured or predicted, should be provided with details of tonality, character, impulsivity and/or intermittency of each noise (e.g. BS 4142). Reference shall also be made if a noise source is anticipated to be readily distinctive against the residual acoustic environment. This could also apply to extensions/ alterations to existing development.

3.2.1. The rating level of the industrial or commercial sound source should, where practicable, achieve a level no greater than the representative background sound, when measured in accordance with BS 4142:2014 + A1: 2019. There may be instances, for specific sites, where a rating level below background is deemed appropriate. This can be determined through discussion with the Local Planning Authority (LPA). A rating level below background may be required if there are concerns for potential noise creep, for example in a High Street setting. It is considered that meeting this criterion would avoid adverse noise impacts, in the interests of ensuring a good standard of amenity and protecting human health. Where these criteria are not attainable, the noise report should explain why, and how best practicable means will be implemented to control noise in order to satisfy the LPA that the development is acceptable. At all times the reports shall have regard to the context. Good Acoustic Design will be a consideration for any mitigation proposals.

Details of BS 4142 are provided below.

3.2 BS 4142:2014+A1:2019

Guidance on the rating of noise from fixed installations and sources of an industrial nature is provided in British Standard (BS) 4142:2014+A1:2019⁵. The "+A1:2019" in the reference reflects that the 2014 version of the Standard received minor (mostly typographical) amendments in 2019. It provides a procedure for the measurement and rating of noise levels outside dwellings from industrial or commercial type sources and forms current best practice. It includes guidance on determining the likely degree of adverse impact, but the assessment of nuisance explicitly falls outside the scope of this British Standard. This is for the Council to determine as the need arises.

The rating level (L_{A,r,T_r}) is defined in BS 4142 as the level from the industrial or commercial source(s) in question (known as the specific sound level (L_{Aeq,T_r})) outside residential dwellings, having been corrected for any (potentially) noticeable characteristics. The "subjective method" is typically used for this purpose, where a correction of between 0 and 6 dB is considered for tonal noise sources, and/or a correction of between 0 and 9 dB for impulsive sources. Additionally, or alternatively, a correction of up to 3 dB can be made for other sound characteristics, such as intermittency of the noise source, or "Where the specific sound features characteristics that are neither tonal nor impulsive, nor intermittent, though otherwise are readily distinctive against the residual acoustic environment..."

The reference time intervals, T_r , are 1 hour and 15 minutes during the day and night, respectively. Where the on time of the source or sources is less than these periods, a time correction is applied.

In terms of the assessment of impacts, the Standard states:

The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs. An effective assessment cannot be conducted without an understanding of the reason(s) for the assessment and the context in which the sound occurs/will occur. When making assessments and arriving at decisions, therefore, it is essential to place the sound in context.

Obtain an initial estimate of the impact of the specific sound by subtracting the measured background sound level (see Clause 8) from the rating level (see Clause 9).

NOTE 1 More than one assessment might be appropriate.

- a) Typically, the greater this difference, the greater the magnitude of the impact.

⁵ BS 4142:2014+A1:2019 - Methods for rating and assessing industrial and commercial sound

- b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on context.
- d) 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 or significant 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 depending on the context."

NOTE 2 Adverse impacts may include but not be limited to annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact.

Where the initial estimate of the impact needs to be modified due to the context, take all pertinent factors into consideration, including the following.

- 1 The absolute level of sound. For a given difference between the rating level and the background sound level, the magnitude of the overall impact might be greater for an acoustic environment where the residual sound level is high than for an acoustic environment where the residual sound level is low.

Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night. Where residual sound levels are very high, the residual sound might itself result in adverse impacts or significant adverse impacts, and the margin by which the rating level exceeds the background might simply be an indication of the extent to which the specific sound source is likely to make those impacts worse.

- 2 The character and level of the residual sound compared to the character and level of the specific sound. Consider whether it would be beneficial to compare the frequency spectrum and temporal variation of the specific sound with that of the ambient or residual sound to assess the degree to which the specific sound source is likely to be distinguishable and will represent an incongruous sound by comparison to the acoustic environment that would occur in the absence of the specific sound. Any sound parameters, sampling periods and averaging time periods used to undertake character comparisons should reflect the way in which sound of an industrial and/or commercial nature is likely to be perceived and how people react to it.

NOTE 3 Consideration should be given to evidence on human response to sound and, in particular, industrial and/or commercial sound where it is available. A number of studies are listed in the "Effects on humans of industrial and commercial sound" portion of the "Further reading" list in the Bibliography.

- 3 "The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions, such as:
 - i) facade insulation treatment;
 - ii) ventilation and/or cooling that will reduce the need to have windows open so as to provide rapid or purge ventilation; and
 - iii) acoustic screening."

An assessment, therefore, is effectively split into two parts. The first part results in an initial indication of the impact, which is subsequently considered in terms of the context unique to the situation at hand; whereas the second part may require consideration of alternative guidance and metrics. Alternatively, the context can be considered upfront and a specific threshold (or set of thresholds) determined accordingly in place of the default values presented in points a) to d) quoted above.

3.3 EXISTING PLANT ITEMS

No fixed external plant items were present on the 37 Barfield Park Site at the time of the baseline noise survey.

During the site visit, fixed external plant associated with the adjacent Brighton & Hove Albion FC Elite Football Performance Centre was observed; however, this plant was located sufficiently distant from the measurement positions such that its noise contribution was negligible with respect to the baseline noise measurements.

4 RESIDENTIAL

4.1 LOCAL AUTHORITY REQUIREMENTS

With regard to New Noise Sensitive Developments, the Planning Noise Advice Document the following guidance:

6.4.2 Development affected by transportation noise sources shall use the recommended acoustic approach set out in Pro PG: Planning and Noise – Professional Practice Guidance on Planning and Noise- New Residential Development 2017.

6.4.3 When assessing the impact of transportation noise, be that from road, rail or air, then an Acoustic Design Statement shall be provided following the principles set out in ProPG: Planning and Noise (2017) “Professional Planning Guidance on Planning and Noise – New Residential Development. A Good Acoustic Design process shall be followed to achieve appropriate internal and external acoustic conditions.

6.5.2 Design control measures should aim to meet the recommended standards set out in table 4 of BS 8233:2014 and regular night time noise events such as scheduled aircraft or passing trains which can cause sleep disturbance shall be minimized and assessed as (LAfmax), as recommended in the World Health Organisation’s (WHO) Night Noise Guidelines for Europe (2009), unless there are particular reasons why this is not considered appropriate. In such cases, a clear explanation of the reasons should be provided.

6.5.3 As the standards for BS 8233:2014 and the WHO relate only to anonymous noise, eg distant road traffic and noise without characteristics such as impulsivity, low frequency content or tones then, if these are present, additional discussion will be required with the LPA for the purpose of establishing suitable assessment techniques and standards to be achieved e.g. BS 4142:2014 + A1: 2019 for delivery noise.

6.5.4 While noise mitigation measures can be used to achieve suitable internal sound levels, preference is to be given to criteria based on windows being partially open.

6.5.5 Where it is proposed to have windows closed, in order to meet adequate internal noise levels, or where the Local Planning Authority consider that the proposed circumstances and plans could lead to potential overheating or inadequate amenity, an overheating assessment shall be conducted in accordance with Acoustics Ventilation and Overheating (AVO) Residential Design Guide (January 2020) and / or CIBSE’s Design Methodology for the Assessment of Overheating Risk in Homes (TM59: 2017).

Further details of the guidance referenced is presented below.

4.2 PROPG: PLANNING & NOISE

The Professional Practice Guidance on Planning & Noise for New Residential Development was produced to provide practitioners with guidance on a recommended approach to the management of noise within the planning system in England.

The ProPG acknowledges and reflects the Government’s overarching Noise Policy Statement for England (NPSE), the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance on Noise, as well as other authoritative sources of guidance.

The two sequential stages of the overall approach are:

- Stage 1 – an initial noise risk assessment of the proposed development site; and
- Stage 2 – a systematic consideration of four key elements.

Where sites are deemed to be “negligible” risk under Stage 1, there would not normally be a need for a Stage 2 assessment.

The four key elements to be undertaken in parallel during Stage 2 of the recommended approach are:

- Element 1 – demonstrating a “Good Acoustic Design Process”
- Element 2 – observing internal “Noise Level Guidelines”
- Element 3 – undertaking an “External Amenity Area Noise Assessment”
- Element 4 – consideration of “Other Relevant Issues”

ProPG recommends that the details of the assessment(s) are presented in an Acoustic Design Statement (ADS). An ADS should not be necessary for a site assessed as negligible risk.

4.2.1 STAGE 1: INITIAL SITE NOISE RISK ASSESSMENT

The noise risk assessment is intended to provide an indication of the likely risk of adverse effects from noise without any measures in place. It may be based on measurement or prediction (or a combination) as appropriate and should aim to describe noise levels over a “typical worst case” 24-hour day either now or in the foreseeable future.

The noise risk assessment categories are presented in Figure 1 of the ProPG, which is reproduced in Table 4-1 below. It illustrates how an initial noise risk assessment is linked with an increasing risk of adverse effect from noise, and how this in turn is broadly associated with indicative noise levels derived from current guidance and experience.

The indicative noise levels are intended to provide a sense of the noise challenge at a potential residential development site. Whilst it is noted that they “...should be interpreted flexibly having regard to the locality, the project and the wider context...”, there is considered to be no need to amend them for the purposes of this assessment.

In the final column, the initial noise risk assessment is aligned with pre-planning application guidance that highlights the increasing importance of good acoustic design as the noise risk increases.

Table 4-1: Stage 1 initial site noise risk assessment (as per ProPG Figure 1)

Noise risk assessment		Potential effect without noise mitigation	Pre-planning application advice
Indicative Daytime Noise Levels L _{Aeq,16h}	Indicative Night-time Noise Levels L _{Aeq,8h}		
		Increasing risk of adverse effect	High noise levels indicate that there is an increased risk that development may be refused on noise grounds. This risk may be reduced by following a good acoustic design process that is demonstrated in a detailed ADS. Applicants are strongly advised to seek expert advice. 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 demonstrate that a significant adverse noise impact will be avoided in the finished development. 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 ADS which confirms how the adverse impacts of noise will be mitigated and minimised in the finished development.
		No adverse effect	These noise levels indicate that the development site is likely to be acceptable from a noise perspective, and the application need not normally be delayed on noise grounds.

Notes

- [a] Indicative noise levels should be assessed without inclusion of the acoustic effect of any scheme specific noise mitigation measures.
 [b] 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".
 [c] L_{Aeq,16h} is for daytime 0700 – 2300, L_{Aeq,8h} is for night-time 2300 – 0700.
 [d] 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.

ProPG states that "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". Though, presumably, this would be acceptable for sites/noise levels deemed negligible risk (when a Stage 2 assessment or ADS would not normally be required).

It is noted that the categories (negligible, low, medium, and high) do not necessarily correspond with a given threshold. This is perhaps understandable since these may vary in practice due to various acoustic and non-acoustic factors (which may vary from site to site); however, it is not helpful when it comes to consistently determining the degree of risk.

To determine thresholds for this purpose, it is logical in the first instance to take from the table above that 50 dB and 40 dB represent the thresholds between negligible and low for the day and night-time periods respectively. As discussed subsequently, the daytime level of 50 dB is the bottom of the criteria range applied to external amenity areas, whilst the equivalent level inside a dwelling based on a window being partially open (providing 10-15 dB reduction) would be 35-40 dB, which is in keeping with the relevant criteria, also discussed subsequently. The same is broadly the case in terms of the night-time period; although, since the day and night internal criteria are only 5 dB apart (shown later), and the external thresholds are 10 dB apart, the external night threshold is more stringent relative to the daytime equivalent.

Applying a banding of 10 dB results in the following thresholds in Table 4-2, which correspond well with the ProPG table reproduced above.

Table 4-2: Interpretation of the Level 1 initial site noise risk assessment thresholds

Noise risk category	$L_{Aeq,16h}$ (07-23)	$L_{Aeq,8h}$ (23-07)	L_{AFmax} (23-07)	Level 2 assessment?	Pre-planning application advice
High	> 70 dB	> 60 dB	> 10 events > 60 dB	Required	"...an increased risk that development may be refused on noise grounds. This risk may be reduced by following a good acoustic design process..."
Medium	61 – 70 dB	51 – 60 dB			"...application may be refused unless a good acoustic design process is followed and is demonstrated... how the adverse impacts of noise will be mitigated and minimised, and... a significant adverse noise impact will be avoided..."
Low	51 – 60 dB	41 – 50 dB			"...the site is likely to be acceptable from a noise perspective provided that a good acoustic design process is followed..."
Negligible	≤ 50 dB	≤ 40 dB	Less than the above	Not normally required	"...the development site is likely to be acceptable from a noise perspective, and the application need not normally be delayed on noise grounds."

As noted above, the rating or categorisation at this stage is not to be taken as the final word on the site, but rather an initial guide as to the degree of measures likely to be required to achieve an acceptable development.

In achieving 'Good Acoustic Design' ProPG states: "Designing the site layout and the dwellings so that the internal target levels can be achieved with open windows in as many properties as possible demonstrates good acoustic design. Where it is not possible to meet internal target levels with windows open, internal noise levels can be assessed with windows closed, however any façade openings used to provide whole dwelling ventilation (e.g. trickle ventilators) should be assessed in the "open" position and, in this scenario, the internal L_{Aeq} target levels should not normally be exceeded, subject to the further advice in Note 7".

Note 7 states that "Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal L_{Aeq} target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved. The more often internal L_{Aeq} levels start to exceed the internal L_{Aeq} target levels by more than 5 dB, the more that most people are likely to regard them as "unreasonable". Where such exceedances are predicted, applicants should be required to show how the relevant number of rooms affected has been kept to a minimum. Once internal L_{Aeq} levels exceed the target levels by more than 10 dB, they are highly likely to be regarded as "unacceptable" by most people, particularly if such levels occur more than occasionally. Every effort should be made to avoid relevant rooms experiencing "unacceptable" noise levels at all and where such levels are likely to occur frequently, the development should be prevented in its proposed form."

In summary, exceeding the WHO guideline internal values (which are the same as those in BS 8233 [3] presented below) by up to 5 dB is likely to be acceptable, but where they are exceeded by more than 10 dB, then this may be unacceptable to occupants. It is at this point, therefore, where occupants may wish to close windows, and where, therefore, alternative means of ventilation and/or overheating control may be required.

4.2.2 STAGE 2: FULL ASSESSMENT

A full ProPG Stage 2 assessment, incorporating consideration of the four key elements set out in Section 4.2, will be undertaken once the final residential layouts have been confirmed, in order to discharge the relevant planning conditions relating to the residential areas.

4.3 BRITISH STANDARD 8233

British Standard BS 8233:2014⁶ provides guideline values for internal noise levels within a number of building types including residential dwellings.

⁶ BS 8233:2014 Guidance on sound insulation and noise reduction for buildings

In general, for steady external noise sources, it is desirable that the internal ambient noise level does not exceed the guideline values in Table 4-3:

Table 4-3: British Standard 8233 Indoor Noise Levels

Activity	Location	Daytime (07:00 – 23:00 hours)	Night-time (23:00 – 07:00 hours)
Resting	Living room	35 dB $L_{Aeq, 16hour}$	-
Dining	Dining room/area	40 dB $L_{Aeq, 16hour}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq, 16hour}$	30 dB $L_{Aeq, 8hour}$

BS 8233:2014 suggests that proposed development within noisy environments should be designed to ensure that the recommended internal design standards are achieved; although it acknowledges that in certain circumstances meeting the external design recommendations may not be feasible, or necessary, especially where the provision of such spaces is desirable for other technical, planning or policy reasons.

4.4 WORLD HEALTH ORGANISATION GUIDELINES

The following guideline values for community ambient noise levels in specific environments are presented in the World Health Organization (WHO) Guidelines for Community Noise.

Table 4-4: WHO Guideline Noise Values

Specific Environment	Critical Health Effect(s)	dB $L_{Aeq,T}$	Time Base hours	dB $L_{Amax,F}$
Dwelling indoors	Speech intelligibility and moderate annoyance, daytime and evening	35	16	-
Inside bedrooms	Sleep disturbance, night-time	30	8	45

The 45 dB $L_{Amax,F}$ criterion applies to “single sound events” within bedrooms at night. This guideline is generally interpreted as the value that individual noise events should not normally exceed more than 10 times a night.

4.5 APPROVED DOCUMENT O – BUILDING REGULATIONS

Building Regulations Approved Document O (ADO) ⁷ provides guidance on mitigating overheating risk within residential developments and advises that the requirement should be met using passive measures as far as reasonably practicable. In terms of removing excess heat, the primary approach is therefore the use of openable windows.

ADO sets out both a *simplified method* for demonstrating compliance and an alternative approach using *dynamic thermal modelling*. The document acknowledges that, in some circumstances, external noise may constrain the ability to rely on open windows for overheating mitigation. In this regard, ADO states:

“The standards in this section may mean that the standards of the simplified method cannot be met. For example, if external noise is an issue, it is unlikely that windows would be opened by an occupant and therefore the minimum free areas of the simplified method cannot be met. In such cases, dynamic thermal modelling should be used.” (Paragraph 3.1).

ADO further advises that, where external noise is present, the overheating strategy should account for the likelihood that windows will be closed during sleeping hours (23:00–07:00), and that windows are likely to remain closed where internal bedroom noise levels exceed:

⁷ Ministry of Housing, Communities and Local Government – Overheating: Approved Document O, 2022

- 40 dB $L_{Aeq,8h}$ (23:00–07:00), or
- 55 dB L_{AFmax} more than 10 times per night (23:00–07:00).

While ADO does not explicitly define limiting external noise levels for application of the simplified method, the ANC Approved Document O Noise Guide ⁸ provides authoritative clarification on this matter. The ANC guide identifies external free-field noise levels above which the simplified method should not be relied upon, and dynamic thermal modelling is required.

For residential development, the ANC Approved Document O Noise Guide identifies the following limiting external night-time noise levels:

Table 4-5: ANC ADO Noise Guide – Limiting External Night-time Noise Levels for the Simplified Method

Parameter	High Risk Location	Medium Risk Location
$L_{Aeq,8h}$, averaged over 8 hours (between 11pm and 7am)	45 dB	50 dB
L_{AFmax} , more than 10 times a night (between 11pm and 7am)	60 dB	65 dB

Note: “High” and “Medium” refer to overheating risk rather than noise sensitivity.

Exceedance of these external noise levels indicates that reliance on openable windows as the sole means of overheating mitigation is unlikely to be appropriate, and that compliance with Approved Document O should instead be demonstrated using dynamic thermal modelling and/or alternative overheating mitigation measures.

It is noted that references to high and medium risk locations relate specifically to overheating risk, rather than noise sensitivity. The ANC guidance also recognises that these limiting noise levels are relatively low and may be exceeded at sites within urban areas or in proximity to transport infrastructure or other noise-generating activities.

4.6 ACOUSTICS, VENTILATION AND OVERHEATING GUIDE (AVO)

Many buildings require closed windows to provide good internal acoustic conditions, however, opening a window is the preferred way to keep a building cool during the warmer summer months. These opposing requirements have become a major issue in the design of buildings, in particular for housing, especially given the general desire to avoid the widespread use of mechanical cooling.

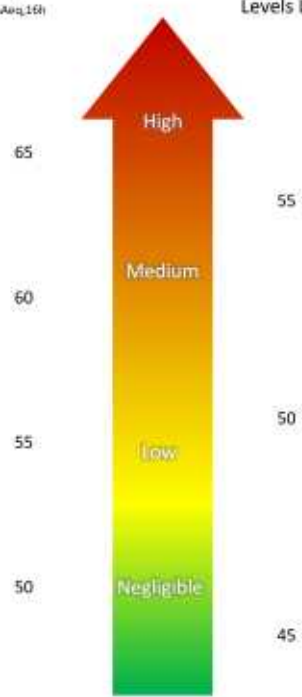
The Acoustics Ventilation & Overheating (AVO) guide, published by the Association of Noise Consultants (ANC) and Institute of Acoustics (IOA) attempts to address the need for an integrated approach to consider noise, ventilation, and overheating. The guide involves a two-level approach to addressing issues of overheating with respect to noise.

A Level 2 assessment provides guidance for acceptable internal noise thresholds during overheating periods. This differs to a Level 1 assessment which considers external noise levels incident on the development. A Level 2 assessment is recommended for developments identified as ‘high’ risk categories, a Level 2 assessment is optional for ‘medium’ or ‘low’ risk categories, and no requirement for a Level 2 assessment for ‘negligible’ risk categories.

A Level 2 assessment requires that considerations of the adverse effect from noise exposure should include an estimate of how frequently and for what duration the overheating condition occurs. Depending on the level of overheating risk, measures to limit the requirement for windows to be opened will need to be explored. This may involve the short-term opening of windows, opening of windows during unoccupied hours to use the benefit of thermal mass of the structure, solar shading (brise soleil / balconies), Low G-value glass, etc. The use of mechanical systems to provide ambient air at higher ventilation rates (ventilative cooling) or systems which provide cooled air (commonly referred to as comfort cooling) may also require consideration.

⁸ The Association of Noise Consultants – Approved Document O Noise Guide, 2024

Table 4-6: AVO Level 1 Risk Assessment

Risk category for Level 1 assessment ^[Note 5]		Potential effect without Mitigation	Pre-planning application advice
Indicative Daytime Noise Levels $L_{Aeq,16h}$	Indicative Night-time Noise Levels $L_{Aeq,8h}$		
		Increasing risk of adverse effect	Recommended
65	55		
60	50		
55	45		Optional
50		Use of opening windows as a primary means of mitigating overheating is not likely to result in adverse effect	Not required

5 UNATTENDED NOISE SURVEY

The prevailing noise conditions at the site have been determined by a detailed unattended environmental noise survey, supported with observations of the existing noise environment at the nearest noise sensitive premises. The unattended survey was undertaken in order to determine the representative background and ambient sound levels at the assessment location.

The location of the development site and the location of monitoring positions are shown in Figure 2-1.

Measurement locations were considered representative of the acoustic conditions at the nearby noise sensitive receptors on Barfield Park (UP1) and representative of the acoustic conditions at the northern site boundary which is representative of the acoustic conditions at the nearby noise sensitive receptors on Mash Barn Lane (UP2).

Table 5-1: Measurement Details

Reference	Measurement Height	Measurement Condition	Start Date	End Date
UP1	2.4 m above ground	Free field	19 th January 2026	23 rd January 2026
UP2	1.5 m above ground	Free field	19 th January 2026	23 rd January 2026

5.1 INSTRUMENTATION

All noise measurements were undertaken by a consultant certified as competent in environmental monitoring. All acoustic measurement equipment used during the noise survey conformed to Type 1 specification of British Standard

61672⁹. A full inventory of this equipment is shown in Table 5-2 below. All equipment's calibration certificates are available on request.

Table 5-2: Unattended survey equipment details

Measurement Type	Equipment	Model	Serial Number	Calibration	
				Cert. Number	Expiry Date
Unattended Monitoring (UP1)	Sound Level Meter	Rion NL-52	00743139	TCRT25/1371	09/05/2027
	Preamplifier	Rion NH-25	42864		
	Microphone	Rion UC-59	17093		
Unattended Monitoring (UP2)	Sound Level Meter	NL-52	00732147	TCRT26/2065	04/02/2028
	Preamplifier	NH-25	32175		
	Microphone	UC-59	05339		
Calibrator		Rion NC-74	34304643	TCRT25/1586	28/07/2026

The noise measurement equipment used during the survey was calibrated at the start and end of each measurement. The calibrator used had itself been calibrated by a UKAS accredited calibration laboratory within the 12 months preceding the measurements. No significant drift in calibration was found to have occurred.

5.2 WEATHER CONDITIONS

Weather conditions during the survey period have been obtained from an internet source www.wunderground.com (weather station Kemp Town, ID IBRIGH113), which indicates light wind throughout the survey period. Some periods of wet weather were also indicated. The data has been analysed alongside weather data to determine whether any adverse conditions may impact measurements.

At the time of setting up and collecting the equipment, conditions were noted to be dry with light winds. Weather conditions are not considered to have impacted measurements.

5.3 RESULTS – UP1

The results of the background sound level survey at UP1 are summarised in Table 5-3 and presented in graphical form in Appendix A.

Table 5-3: Daily Results Summary – UP1 (Free-field Conditions)

Date	Period	Ambient Noise Level L _{Aeq,T} dB	Typical Night-time L _{AFmax} Level dB ^[1]	Modal Background Noise Level L _{A90,5min} dB ^[2]
Monday 19 January 2026	07:00 to 23:00	45	55	40
	23:00 to 07:00	37		32
Tuesday 20 January 2026	07:00 to 23:00	51	59	46
	23:00 to 07:00	41		40
Wednesday 21 January 2026	07:00 to 23:00	49	57	47
	23:00 to 07:00	43		40
Thursday 22 January 2026	07:00 to 23:00	48	59	42
	23:00 to 07:00	42		37

⁹ British Standard 61672 - Electroacoustics. Sound level meters. Specifications. 2013

Date	Period	Ambient Noise Level $L_{Aeq,T}$ dB	Typical Night-time L_{AFmax} Level dB ^[1]	Modal Background Noise Level $L_{A90,5min}$ dB ^[2]
Overall	07:00 to 23:00	49	59	46
	23:00 to 07:00	41		40

Notes

[1] Typical night-time L_{AFmax} representative of the 11th highest level recorded.

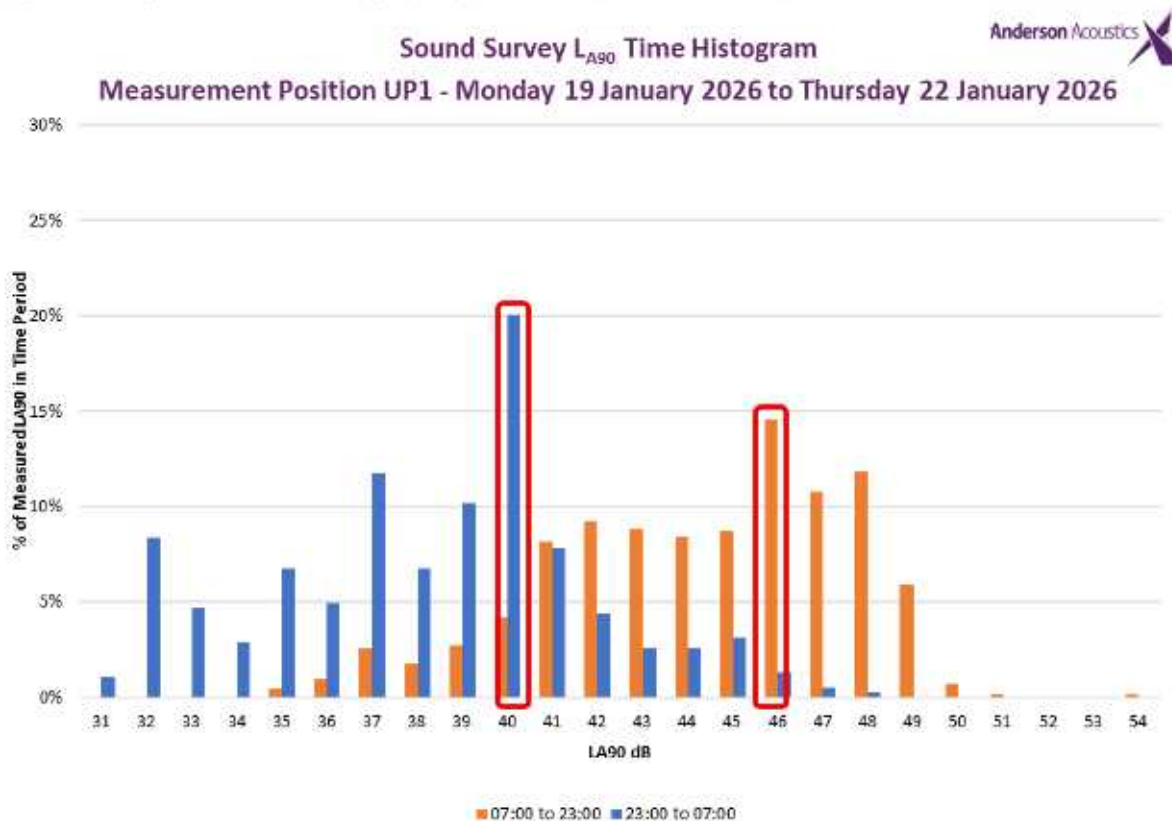
[2] Typical $L_{A90,T}$ Value (modal).

[3] Figure 5-1 below presents a statistical analysis of the measured background sound levels, which has been used to determine a suitable representative background sound level. The representative background sound levels have been highlighted in red for daytime periods and blue for night-time periods.

The unattended survey results at UP1 indicate daily free-field ambient sound levels ranging between 45 and 51 dB $L_{Aeq,16hrs}$ for daytime, and 37 and 43 dB $L_{Aeq,8hrs}$ for night-time periods.

Additionally, the 'typical' daily free-field maximum noise levels range between 55 dB L_{AFmax} and 59 dB L_{AFmax} for night-time periods.

Figure 5-1: Background Sound Level during daytime periods – UP1 (Free-field Conditions)



Based on the above analysis, the representative typical background sound levels are taken to be 46 dB and 40 dB $L_{A90,5min}$ for daytime and night-time periods, respectively.

5.4 RESULTS – UP2

The results of the background sound level survey at UP2 are summarised in Table 5-4 and presented in graphical form in Appendix A.

Table 5-4: Daily Results Summary – UP2 (Free-field Conditions)

Date	Period	Ambient Noise Level $L_{Aeq,T}$ dB	Typical Night-time $L_{Amax,T}$ Level dB ^[1]	Modal Background Noise Level $L_{A90,5min}$ dB ^[2]
Monday 19 January 2026	07:00 to 23:00	55	69	43
	23:00 to 07:00	44		35
Tuesday 20 January 2026	07:00 to 23:00	57	70	48
	23:00 to 07:00	46		37
Wednesday 21 January 2026	07:00 to 23:00	58	73	49
	23:00 to 07:00	47		41
Thursday 22 January 2026	07:00 to 23:00	57	72	47
	23:00 to 07:00	48		42
Overall	07:00 to 23:00	57	73	47
	23:00 to 07:00	46		41

Notes

[1] Typical night-time L_{Amax} representative of the 11th highest level recorded.

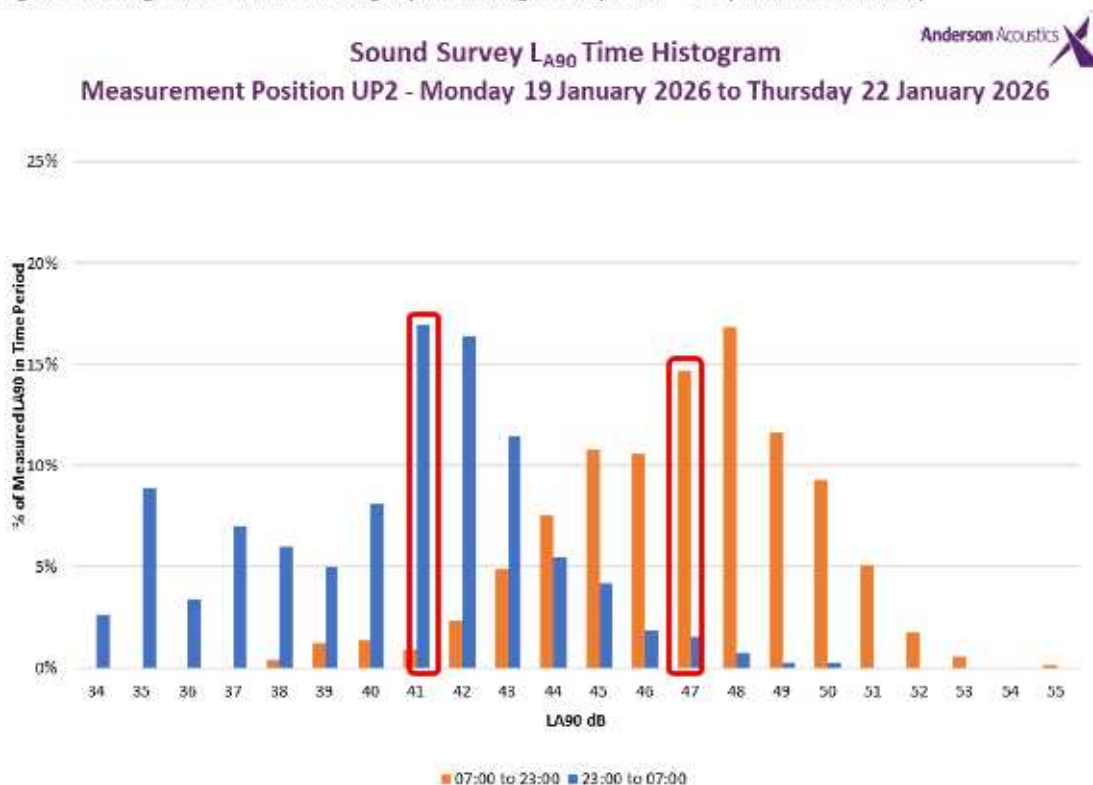
[2] Typical $L_{A90,T}$ Value (modal)

[3] Figure 5-2 below presents a statistical analysis of the measured background sound levels, which has been used to determine a suitable representative background sound level. The representative background sound levels have been highlighted in red for daytime periods and blue for night-time periods.

The unattended survey results at UP2 indicate daily free-field ambient sound levels ranging between 55 and 58 dB $L_{Aeq,16hrs}$ for daytime, and 44 and 48 dB $L_{Aeq,8hrs}$ for night-time periods.

Additionally, the 'typical' 11th percentile daily free-field maximum noise levels range between 69 dB L_{AFmax} and 73 dB L_{AFmax} for night-time periods.

Figure 5-2: Background Sound Level during daytime and night-time periods – UP2 (Free-field Conditions)



Based on the above analysis, the representative typical background sound levels are taken to be 47 dB and 41 dB $L_{A90,5min}$ for daytime and night-time periods, respectively.

6 OUTLINE PLANT NOISE CRITERIA

Plant affecting the noise environment at the nearest NSRs should be assessed in line with methodology detailed in BS 4142 and mitigated where necessary such that noise levels, in terms of the rating level $L_{A,T}$ (dB), are acceptable in comparison to the existing background sound levels.

Should the plant contain acoustically distinguishable features such as intermittency, tones or impulsiveness, appropriate penalties (as defined in BS 4142) should be applied to determine the maximum acceptable sound pressure level at the façade of the NSRs.

The typical background sound data measured at the development site has been used to set the maximum external plant noise level limits at the nearby noise receivers. The monitoring locations are considered to be representative of the noise conditions at the nearby noise sensitive receptors.

It is noted that the planning requirements may change, therefore plant noise criteria should be reviewed once planning conditions relating to noise are imposed by the local authority.

The established outline plant noise limits are detailed in Table 6-1.

Table 6-1: Outline Plant Noise Limits

Noise Sensitive Receptor Location	Assessment Period	Typical Background Sound Level, $L_{A90,T}$	Plant Noise Criteria, $L_{A,T}$
Barfield Park	Daytime	47 dB	47 dB
	Night-time	41 dB	41 dB
Mash Barn Lane	Daytime	46 dB	46 dB
	Night-time	40 dB	40 dB

APPENDIX A

FIGURES

Figure A-1: UP1 Time History

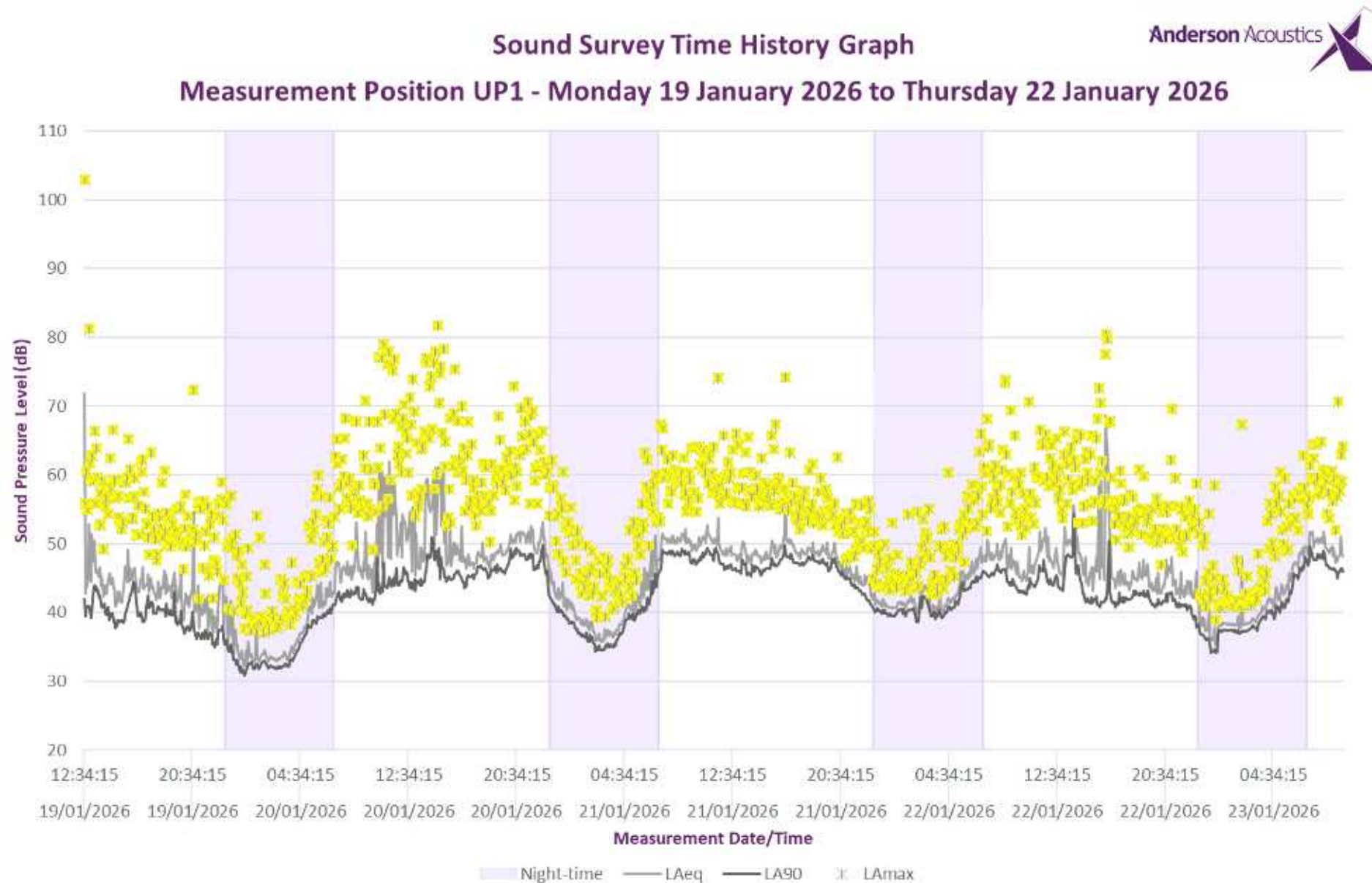


Figure A-2: UP2 Time History

Sound Survey Time History Graph

Measurement Position UP2 - Monday 19 January 2026 to Thursday 22 January 2026

