
Land at Pound Farm, Ickleford, SG5 3RS

Noise Impact Assessment Report
Report 31280.NIA.01

Bugler Homes Ltd.

Report 31280.NIA.01		
Revision History		
Revision	Written by	Checked by
First Issue 20/01/2026	Thomas Carvell AMIOA Assistant Consultant	Daniel Stuart MIOA Principal Consultant
REVA 30/01/2026	Thomas Carvell AMIOA Assistant Consultant	Daniel Stuart MIOA Principal Consultant
	Revised to include assessment of Independent Special School.	
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1.0 INTRODUCTION

KP Acoustics Ltd has been commissioned to assess the suitability of the Land at Pound Farm, Bedford Road, Pirton, Hitchin SG5 3RS for a new build development comprising residential properties and an educational facility in accordance with the provisions of the National Planning Policy Framework (NPPF) and the Noise Policy Statement for England (NPSE).

The proposal is a Hybrid application for a mixed-use development to provide a total of up to 230 dwellings, a residential care home (Use Class C2), an Independent Special School (ISS) and new sports pitch, with access from Bedford Road, landscaping, parking and SuDS comprising: Phase 1 – Application for full planning permission for the erection of 100 dwellings, an ISS, new sports pitch and associated parking, landscaping, open space and SuDS; Phase 2 – An outline application on the remaining part of the site for the erection of up to 130 dwellings, a residential care home (Use Class C2) and associated works with access from Bedford Road (all matters reserved apart from access).

This report presents the results of the environmental survey undertaken in order to measure prevailing background noise levels and outlines any necessary mitigation measures.

In order to establish the suitability of the proposal the following assessments have been undertaken:

- A noise impact assessment of the existing and predicted external noise sources onto the proposed development has been completed and an appropriate glazing specification has been provided for both the residential dwellings and the Independent Special School (ISS).
- An assessment of appropriate ventilation systems across the development has been undertaken based on existing measured and predicted noise levels.
- A noise impact assessment of the proposed MUGA pitch onto the residential development has been undertaken in line with *Sport England Guidance: Artificial Grass Pitch (AGP) Noise Assessment* guidance.
- Proposed amenity spaces have been considered and assessed against the upper limits shown in BS8233:2014.
- Limiting noise levels have been proposed for plant in accordance with BS4142 so as not to cause an adverse effect on the nearest residential receptors.

2.0 SITE SURVEYS

2.1 Site Description

The site is bounded by Old Pound Farm to the north, farmland to the west, a housing estate to the south, and Bedford Road to the east. Entrance to the site is located on Bedford Road. At the time of the survey, the background noise climate was dominated by road traffic noise from Bedford Road across the site.

2.2 Environmental Noise Survey Procedure

A noise survey was undertaken on the proposed site as shown in Figure 2.1. The location was chosen in order to collect data representative of the worst-case levels expected on the site due to all nearby sources.

Continuous automated monitoring was undertaken for the duration of the survey between 15:00 on 23/10/2025 and 15:35 on 27/10/2025.

Weather conditions varied throughout the measurement period, with some measurement positions exposed to higher winds due to the topography of the land which is explained further in Section 3.0.. The measurement procedure generally complied with ISO 1996-2:2017 Acoustics '*Description, measurement and assessment of environmental noise - Part 2: Determination of environmental noise levels*'.

2.3 Site Map and Measurement Positions

The survey Measurement positions are as described within Table 2.1 and shown within Figure 2.1. The site map is shown in Figure 2.2.

Icon	Descriptor	Description
①	Noise Measurement Position 1	The microphone was installed on Heras fencing 2m above ground at the west of site, as shown in Figure 2.1. The microphone was positioned within free-field conditions at least 10 metres from the nearest surface.
②	Noise Measurement Position 2	The microphone was installed on Heras fencing 2m above ground at the south of site, as shown in Figure 2.1. The microphone was positioned within free-field conditions at least 10 metres from the nearest surface.
③	Noise Measurement Position 3	The microphone was installed on Heras fencing 2m above ground at the east of site overlooking Bedford Road, as shown in Figure 2.1. The microphone was positioned within free-field conditions at least 10 metres from the nearest surface.

Icon	Descriptor	Description
	Attended Measurement Position A	The microphone was installed on a tripod 1.5m ground at the south of site, as shown in Figure 2.1. The microphone was positioned approximately 10m from the road in free-field conditions.
	Nearest Sensitive Receiver (NSR) 1	Old Pound Farm
	Nearest Sensitive Receivers (NSR) 2-4	Residential dwellings to the east of Bedford Road
	Nearest Sensitive Receiver (NSR) 5	North-facing window of 25 Ryder Way

Table 2.1 Measurement positions and descriptions



Figure 2.1 Site Survey Measurement Positions



Figure 2.2 Proposed Site Layout

2.4 Equipment

The equipment calibration was verified before and after use and no abnormalities were observed. The equipment used is described within Table 2.2.

Measurement instrumentation		Serial no.	Calibration Date	Cert no.
Noise Kit 37	NTI Audio XL2 Class 1 Sound Level Meter	A2A-21302-E0	12/09/2023	UK-23-103
	Free-field microphone NTI Acoustics MC230A	A23082		
	Preamp NTI Acoustics MA220	13798		
	NTI Audio External Weatherproof Shroud	-	-	-
Noise Kit 38	NTI Audio XL2 Class 1 Sound Level Meter	A2A-23182-E1	12/09/2023	UK-23-104
	Free-field microphone NTI Acoustics MC230A	A25833		
	Preamp NTI Acoustics MA220	13818		
	NTI Audio External Weatherproof Shroud	-	-	-
Noise Kit 40	NTI Audio XL2 Class 1 Sound Level Meter	A2A-24279-E1	27/01/2024	UK-24-007
	Free-field microphone NTI Acoustics MC230A	A26879		
	Preamp NTI Acoustics MA220	14180		
	NTI Audio External Weatherproof Shroud	-	-	-
Larson Davis CAL200 Class 1 Calibrator		17148	17/12/2024	UCRT24/2677

Table 2.2 Measurement instrumentation

3.0 RESULTS

The $L_{Aeq,5min}$, $L_{Amax,5min}$ and $L_{A90,5min}$ acoustic parameters were measured throughout the duration of the survey. Measured levels are shown as a time history in Figures 31280.TH1-3.

The measured noise levels, as shown in Table 3.1, are considered representative of the noise exposure levels expected to be experienced at all facades of the proposed development.

Time Period	Noise Measurement Position 1 (Measured Noise level – dBA)	Noise Measurement Position 2 (Measured Noise level – dBA)	Noise Measurement Position 3 (Measured Noise level – dBA)
Daytime $L_{Aeq,16hour}$	53	54	58
Night-time $L_{Aeq,8hour}$	50	52*	51
Daytime Representative $L_{A90, 5mins}$	47	42	53
Night-time Representative $L_{A90, 5mins}$	47	36	43
15 th highest Night-time L_{Max}	67**	70**	67

Table 3.1 Site average noise levels for daytime and night time

**Higher night-time levels were measured at Measurement Position 2 and it is assumed that this was due to activity coming from the nearby gardens of the Estate to the East of the proposed development over the weekend period.*

***It is noted that Measurement Positions 1 and 2 were exposed to gusts of wind due to the topography of the land, resulting in higher-than-expected L_{Max} night-time levels for certain periods. Measurement Position 3 was partially screened by surrounding buildings and not impacted by windy conditions, as reflected by 31280.TH3.*

Further manual measurements have been undertaken to assess the expected traffic noise levels from Westmill Lane to the South. The results of these measurements are as follows:

Attended Measurement Location	Measurement Period	Attended Noise Level Measurement (dBA)	
		$L_{Aeq,T}$	L_{A90}
A	14:20-14:35	49	46

Table 3.2 Attended noise measurements

4.0 NOISE ASSESSMENT GUIDANCE

4.1 National Planning Policy Framework 2024 & Noise Policy Statement for England 2010

The National Planning Policy Framework (NPPF) has superseded and replaces Planning Policy Guidance Note 24 (PPG24), which previously covered issues relating to noise and planning in

England. Paragraph 187 of NPPF 2024 states that planning policies and decisions should contribute to the natural and local environment by:

“preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of 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.”

In addition, Paragraph 198 of the NPPF states that ‘*Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:*

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

The Noise Policy Statement for England (NPSE) was developed by DEFRA and published in March 2010 with the aim to ‘*Promote good health and good quality of life through the effective management of noise within the context of Government policy on sustainable development.*’

Noise Policy Statement England (NPSE) noise policy aims are 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*

The Noise Policy Statement England (NPSE) outlines observed effect levels relating to the above, as follows:

- NOEL – No Observed Effect Level

- This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.
- LOAEL – Lowest Observed Adverse Effect Level
 - This is the level above which adverse effects on health and quality of life can be detected.
- SOAEL – Significant Observed Adverse Effect Level
 - This is the level above which significant adverse effects on health and quality of life occur.

As stated in The Noise Policy Statement England (NPSE), it is not currently possible to have a single objective based measure that defines SOAEL that is applicable to all sources of noise in all situations. Specific noise levels are not stated within the guidance for this reason, and allow flexibility in the policy until further guidance is available.

4.2 BS 8233:2014

BS 8233:2014 ‘Sound insulation and noise reduction for buildings’ describes recommended internal noise levels for residential spaces. These levels are shown in Table 4.1.

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living Rooms	35 dB(A)	-
Dining	Dining Room/area	40 dB(A)	-
Sleeping (daytime resting)	Bedrooms	35 dB(A)	30 dB(A)

Table 4.1 BS8233 recommended internal background noise levels

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

In addition to guidance on internal levels, BS8233:2014 also states the following with regards to noise within external amenity spaces:

‘For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$, which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and

other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited.'

As outlined above, the resulting noise levels in external amenity areas should not be a reason for refusal, providing that the noise levels are designed to be as low as practically possible within external amenity areas.

Expected levels within the proposed external amenity areas are outlined in Section X.X in more detail.

4.3 WHO Guidelines for Community Noise (1999) & Night Noise Guidelines for Europe (2009)

WHO Guidelines for Community Noise (1999) recommend that internal noise levels for individual events should not exceed 45dB L_{Amax} more than 10-15 times per night.

WHO Night Noise Guidelines for Europe (2009) presents guidelines for noise levels outside dwellings and discusses the relationship between these and the criteria for internal noise presented in Guidelines for Community Noise. The document states that the two should be considered complimentary and that the 1999 guidelines should be considered valid to achieve the 2009 guidelines.

4.4 Approved Document O (ed. 2021)

Approved Document O (ADO) supports Part O of Schedule 1 to the Building Regulations 2010. ADO introduces requirements for residential premises in order to prevent overheating from occurring. There are two specific requirements from ADO:

Requirement O1 (1):

To limit unwanted solar gains in summer and to provide adequate means to remove heat from the indoor environment.

Requirement O1 (2):

- (a) Account must be taken of the safety of the occupant, and their reasonable enjoyment of the residence.
- (b) Mechanical cooling may only be used where sufficient heat cannot be removed from the indoor environment without it.

The statutory guidance to support Requirement O1(2)(a) contains requirements relating to noise at night.

4.4.1 Application

The guidance within ADO applies to new residential buildings only and are defined within the following table:

Title	Purpose for which the building is intended to be used.
Residential (dwellings)	Dwellings, which includes both dwellinghouses and flats.
Residential (institutions)	Home, school or other similar establishment, where people sleep on the premises. The building may be living accommodation for the care or maintenance of any of the following. A. Older and disabled people, due to illness or other physical or mental condition. B. People under the age of 5 years.
Residential (other)	Residential college, hall of residence and other student accommodation, and living accommodation for children ages 5 years or older.

Table 4.2 Residential buildings within the scope of ADO (ref. Table 0.1 of Approved Document O)

Paragraphs 3.2 and 3.3 of ADO specifically refer to noise within bedrooms at night. Whilst any habitable room could be used as a bedroom, it is proposed that the scope is confined to those rooms specifically designated as bedrooms.

4.4.2 Internal Noise Level Targets

ADO sets internal noise level targets within Paragraph 3.3 of the document:

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

- a. 40dB $L_{Aeq,T}$, averaged over 8 hours (between 11pm and 7am)*
- b. 55dB L_{AFmax} , more than 10 times a night (between 11pm and 7am).”*

Where an openable window for the removal of excess heat is predicted to result in the above internal noise levels to be exceeded, then the overheating mitigation strategy must adopt one of the alternative means listed within Paragraph 2.10 of ADO (presented within Section 4.7.3 of this report). This constraint applies regardless of which method is used to demonstrate compliance with Requirement O1 (1).

4.4.3 Methods to Remove Excess Heat

Paragraph 2.10 of ADO lists the means for removing excess heat from dwellings according to the following:

- Openable windows
- Ventilation louvres in external walls

- A mechanical ventilation system
- A mechanical cooling system

Where mitigation of impacts related to overheating is required, this must be led by an overheating specialist.

4.5 **BS4142: 2014 ‘Methods for rating and assessing industrial and commercial sound’**

British Standard BS4142:2014 ‘*Methods for rating and assessing industrial and commercial sound*’ describes a method for rating and assessing sound of an industrial and/or commercial nature, which includes:

- Sound from industrial and manufacturing processes
- Sound from fixed installations which comprise mechanical and electrical plant and equipment
- Sound from the loading and unloading of goods and materials at industrial and/or commercial premises, and
- Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes.

This Standard compares the Rating Level due to the noise source/s under assessment for a one-hour period during the daytime (07:00 – 23:00 hours) and a fifteen-minute period during the night-time (23:00 – 07:00 hours) with the existing background noise level in terms of an L_{A90} when the noise source is not operating.

It should be noted that the Rating Level is the Specific Sound Level in question (L_{Aeq, T_r}), including any relevant acoustic feature corrections, as follows:

- **Tonality** – ‘*For sound ranging from not tonal to prominently tonal the Joint Nordic Method gives a correction of between 0dB and +6dB for tonality. Subjectively, this can be converted to a penalty of 2dB for a tone which is just perceptible at the noise receptor, 4dB where it is clearly perceptible, and 6dB where it is highly perceptible*’
- **Impulsivity** – ‘*A correction of up to +9dB can be applied for sound that is highly impulsive, considering both the rapidity of the change in sound level and the overall change in sound level. Subjectively, this can be converted to a penalty of 3dB for impulsivity which is just perceptible at the noise receptor, 6dB where it is clearly perceptible, and 9dB where it is highly perceptible*’

- **Intermittency** – *‘If the intermittency is readily distinctive against the residual acoustic environment, a penalty of 3dB can be applied’*
- **Other sound characteristics** – *‘Where the specific sound features characteristics that are neither tonal nor impulsive, though otherwise are readily distinctive against the residual acoustic environment, a penalty of 3dB can be applied’*

Once the Rating Level has been obtained, the representative background sound level is subtracted from the Rating Level to obtain an initial estimate of the impact, as follows:

- Typically, the greater this difference, the greater the magnitude of the impact
- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context
- A difference of around +5 dB could be an indication of an adverse impact, depending on the context
- The lower the rating level is relative to the measured background sound level, the less likely it is that there will be 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 having a low impact, depending on the context

NOTE: 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.

4.6 Sport England Guidance: Artificial Grass Pitch (AGP) Noise Assessment

Sport England provides specific guidance for assessing noise from Artificial Grass Pitches in their *"A Guide to the Management of Artificial Grass Pitches"*.

This guidance acknowledges that in some circumstances, particularly where there are changes to existing pitches or where existing noise levels are high, a comparative assessment methodology may be appropriate as given in IEMA guidelines in the following subsection. This involves comparing the predicted noise from the AGP with the existing noise climate (L_{Aeq} over the same time period).

Sport England's guidance notes that where noise from the new AGP does not exceed the existing noise climate, the increase in noise will be no more than 3 decibels (dB). This level of change is generally considered the minimum perceptible under normal conditions, aligning with previous Planning Policy Guidance Document 24.

Therefore, if the predicted L_{Aeq} from the AGP at a receptor is equal to or less than the existing L_{Aeq} at that receptor, the noise impact is likely to be considered minimal.

Based on measurements taken during various sports sessions (football, hockey, and rugby) involving different age groups, Sport England has determined a typical free-field noise level of 58 dB $L_{Aeq(1 \text{ hour})}$ at a distance of 10 metres from the sideline halfway marking of an AGP, with appropriate mitigation for impact noises (e.g., from hockey boards). This value will be used as the source noise level for our predictions.

However, when noise levels are lower an absolute level assessment is recommended against WHO prescribed levels of 50dB $L_{Aeq,T}$.

5.0 EXTERNAL BUILDING FABRIC SPECIFICATION (RESIDENTIAL)

SoundPlan noise modelling software has been used to predict the expected noise levels across the development. As the dominating noise source was road traffic noise from Bedford road, the model was calibrated using the noise data from Measurement Position 1 which directly overlooks Bedford Road.

Sound reduction performance calculations have been undertaken in order to specify the minimum performance required from glazed and non-glazed elements in order to achieve the recommended internal noise levels shown in Table 4.1, taking into account average and maximum noise levels monitored during the environmental noise survey.

L_{Amax} spectrum values of night-time peaks have also been considered and incorporated into the glazing calculation in order to cater for the interior limit of 45 dB L_{Amax} for individual events, as recommended in WHO Guidelines.

As the exact room and glazing dimensions are currently unknown, glazing calculations have been undertaken based on the following assumptions:

- Each bedroom will span, at maximum 50% of the façade length;
- The glazed elements will make up 33% of the façade;
- The depth of the room has been assumed to be a minimum of 3m with a internal floor to ceiling height of 2.5m.

Please note that the glazed and non-glazed element calculations would need to be finalised once all design proposals are finalised.

5.1 Non-Glazed Elements

At this project stage, the exact construction of the non-glazed external building fabric is unknown, however, it is understood that it would be based upon the construction proposed in Table 5.1 and would be expected to provide the minimum figures shown in the following table when tested in accordance with the BS EN ISO 10140 series of standards.

Element	Sound Reduction Index , dB, at Octave Band Centre Frequency, Hz					
	125	250	500	1k	2k	4k
Brickwork Cavity Wall	41	43	48	50	55	55

Table 5.1 Assumed sound reduction performance for non-glazed elements

5.2 Glazed Elements

Minimum octave band sound reduction index (SRI) values required for all glazed elements to be installed are shown in Table 5.2. The performance is specified for the whole window unit, including the frame, seals, etc. as appropriate. Sole glass performance data would not demonstrate compliance with this specification.

Glazing performance calculations have been based both on average measured night-time noise levels. The combined most robust results of these calculations are shown in Table 5.2.

Configuration	Sound Reduction Index , dB, at Octave Band Centre Frequency, Hz						R _w (C;C _{tr}), dB
	125	250	500	1k	2k	4k	
All Elevations	24	20	25	35	38	35	31(-1;-4)

Table 5.2 Required glazing performance

The nominated glazing supplier should verify that their proposed window system meets the attenuation figures shown at each centre frequency band as shown in Table 5.2.

Example glazing types that would be expected achieve the above spectral values are shown in Table 5.3.

Configuration	Example Glazing Type
All Elevations	6/12/6

Table 5.3 Example glazing types

All major building elements should be tested in accordance with the BS EN ISO 10140 series of standards.

Independent testing at a UKAS accredited laboratory will be required in order to confirm the performance of the chosen system for an ‘actual’ configuration.

6.0 VENTILATION AND OVERHEATING RELIEF

6.1 Ventilation Strategy

Approved Document F 2021 describes the following system types for background and extract ventilation:

Ventilation System Type	Whole Dwelling Ventilation	Extract Ventilation
Natural Ventilation	Trickle ventilators	Intermittent extract fans
Continuous Mechanical Extract Ventilation (MEV)	Continuous mechanical extract (low rate) and trickle vents for supply	Continuous mechanical extract (high rate) with trickle vents providing inlet air
Mechanical Ventilation with Heat Recovery (MVHR)	Continuous mechanical supply and extract (low rate)	Continuous mechanical supply and extract (high rate)

Table 6.1 Ventilation system types as described in ADF 2021

Based on the results of the noise survey, the suitability of each system type and the required trickle ventilator performance is shown in Table 6.2 below.

Configuration	ADF Ventilation System Type Suitable?			Minimum Trickle Ventilator Performance (dB $D_{n,e,w}$)
	Natural Vent	MEV	MVHR	
Configuration 1	Yes	Yes	Yes	35

Table 6.2 Suitability and required performance of ventilation systems

As trickle vents introduce a weak point in the building façade, increasing the number of trickle vents will reduce the composite performance of the facade. If trickle vents are proposed, the total number of trickle vents for each sensitive space should be confirmed so that calculations can be accurately revised.

Where mechanical ventilation is proposed, systems should be designed so that the combined internal noise levels from external sources and from the mechanical ventilation meet the BS 8233: 2014 criteria shown in Table 4.1.

In all cases, purge ventilation would be provided by openable windows. As outlined in Section 4.5, the internal noise level requirement would not be applicable during purge conditions as this would only occur occasionally.

6.2 Openable Windows for Overheating Relief

Approved Document O (ADO) only applies to Bedrooms during night. The advice within this section would therefore only apply to Bedrooms during night-time hours (23:00-07:00) to ensure that the internal noise level targets of 40dB(A) $L_{eq,T}$ and 55dB(A) L_{max} are not exceeded.

Table 6.3 presents the open area of the window (as a %age of the floor area) which would need to be achieved to ensure that sufficient attenuation is provided from outside to inside. This should be used in correspondence with **SoundPlan Heatmap Nighttime $L_{Aeq,8hour}$ Noise Levels**, attached.

Zone	External Noise Level $L_{Aeq,8hour}$	Sound Reduction Required to Achieve ADO Target Internal L_{Aeq} Noise Levels	Sound Reduction Required to Achieve ADO Target Internal L_{Amax} Noise Levels	Maximum Open Area of the Window as a Percentage of the Floor Area to Achieve ADO Target Internal Noise Levels
Yellow and Orange	40-50dB	10-12 dB	12 dB	3 %
Green	≤40dB	0 dB	0 dB	No attenuation required, openable windows permitted

Table 6.3 Window open areas

Note: Acoustic open area is the measurable, cross-sectional, geometric area of an opening. For a partially open window, this is considered to be the lesser of either the size of the hole in the window frame that is left by the opening light, or the combined cross-sectional area around the opening light through which air must pass to move from outside to inside. The area around a hinged opening light includes the triangular areas on the sides adjacent to the hinge, and the rectangular area on the side opposite the hinge. This should not be used for comparing the air-flow performance of elements because this will also be dependent on factors such as depth (length of air-path), surface roughness and tortuosity.

The ADO assessment methodology assumes a maximum noise reduction through an open window, which could be improved upon by the use of specific window designs or other passive methods of cooling such as louvred wall vents.

Where mitigation of impacts related to overheating is required, this must be led by an overheating specialist. We would be happy to review the acoustic implications of any proposed mitigation strategies, though this would require a more detailed assessment.

7.0 EXTERNAL AMENITY AREA ASSESSMENT

External amenity areas are proposed to the rear of all dwellings at ground level and it is understood that most gardens would be screened by the building envelopes of surrounding buildings with the exception of Plots closest to Bedford Road to the east which would be within direct line of sight of the road.

As shown on the attached SoundPlan heat map '*Daytime Noise Levels*', expected noise levels at the rear gardens of each building do not exceed the BS8233 upper limit of 55 dB $L_{Aeq, T}$.

8.0 EXTERNAL BUILDING FABRIC SPECIFICATION (INDEPENDENT SPECIAL SCHOOL)

A further noise impact assessment has been undertaken to assess the impact of road traffic noise onto the proposed Independent Special School, in line with BB93 guidance. An Internal Ambient Noise Level (IANL) target of 30 dBA has been adopted which is considered as the most onerous target within a school, corresponding with '*Teaching spaces intended specifically for students with special hearing and communication needs*', ensemble rooms and recording studio rooms.

Assuming the external building fabric will comprise brickwork with minimum sound reduction index values outlined in Table 5.1 and minimum 6/12/6mm glazing with minimum sound reduction index values outlined in Table 5.2, it is expected that the internal target of 30 dBA would be achieved.

9.0 MULTI USE GAMES AREA (MUGA) ASSESSMENT

SoundPlan noise prediction software has been used to predict noise levels of the Multi Use Games Area (MUGA) and the impact onto the proposed development. The assessment has been undertaken in line with *Sport England Guidance: Artificial Grass Pitch (AGP) Noise Assessment* guidance.

Plot 100 has been identified as being within the nearest vicinity to the proposed MUGA pitch, approximately 57m away from the northern façade of the dwelling. It is assumed that the pitch would be in direct line of sight of Plot 100.

As stated in *Sport England Guidance: Artificial Grass Pitch (AGP) Noise Assessment* guidance, the source emanating from the MUGA pitch was calibrated to 58 dBA $L_{Aeq, 1hour}$ at 10 metres in free-field conditions from the halfway line. Detailed SoundPlan calculations can be found in Appendix B.

The above guidance refers to the World Health Organisation (WHO) ‘*Guidelines for Community Noise*’ guidelines for noise impact assessment of sporting activities onto residential developments. WHO guidance states that “*during the daytime and evening the noise level should not exceed 50 dB $L_{Aeq(T)}$* ”.

As shown on the attached SoundPlan heat map ‘*Sport Pitches Noise Levels*’, the predicted noise level at Plot 100 is 49 dB $L_{Aeq, 1hour}$ when the pitch is in use and therefore meets the criterion.

Table 9.1 below shows the expected cumulative noise level of the MUGA pitch at worst-case and existing ambient noise level.

Existing Ambient Noise Level, $L_{Aeq, 16hour}$ [A]	Worst-case MUGA pitch Noise Level $L_{Aeq, 1hour}$ [B]	Cumulative Noise Level, $L_{Aeq, 16hour}$ [A] + [B]
38 dB	49 dB	49 dB

Table 9.1 Expected Cumulative Noise Level

As shown in Table 8.1, the cumulative noise level of the ambient noise level and the noise from the MUGA pitch at worst-case is expected to be 49 dB $L_{Aeq, 1hour}$ which would still maintain WHO levels.

10.0 PLANT NOISE ASSESSMENT

10.1 Noise Emissions Criterion

It is assumed that the proposed plant may be operational at any time of day or night. The cumulative noise emissions from all plant units should be limited in order to minimise adverse impacts on the nearest sensitive receivers as stipulated in BS4142, which states “*Where the rating level does not exceed the background sound level, this is an indication of the specific sound having a low impact*”. To achieve a low impact the plant rating level should not exceed the levels in the table below as such.

Time Period	Plant Noise Rating Level, $L_{Aeq, Tr}$ at Nearest Residential Receiver 1 (North)	Plant Noise Rating Level, $L_{Aeq, Tr}$ at Nearest Residential Receiver 2-4 (East)	Plant Noise Rating Level, $L_{Aeq, Tr}$ at Nearest Residential Receiver 5 (South)
Night-time (23:00 – 07:00)	≤ 43 dB(A)	≤ 43 dB(A)	≤ 36 dB(A)

Table 10.1 Proposed noise emissions criterion

10.2 Proposed Plant Installations

Currently, the exact details of the proposed units are unknown. Once all M&E proposals have been finalised, this report will be revised to include calculations which demonstrate compliance to the criterion set in Table 10.1.

11.0 CONCLUSION

An environmental noise survey has been undertaken of the Land at Pound Farm, Bedford Road, Hitchin SG5 3RS allowing the assessment of daytime and night-time levels likely to be experienced by the proposed development.

Measured noise levels allowed a robust glazing specification to be proposed for both the residential dwellings and the Independent Special school buildings the which would provide internal noise levels commensurate to the design ranges of BS8233:2014 and BB93, respectively.

The maximum openable area for bedroom windows with the development has been presented based upon the requirements of Approved Document O.

An assessment of the external amenity areas with the development has been undertaken. The noise levels within the external amenity areas are in line with the guidance presented within BS8233:2014.

An assessment of the proposed MUGA pitch has been undertaken using noise modelling software. The predicted noise levels were assessed against the *Sport England Guidance: Artificial Grass Pitch (AGP) Noise Assessment* guidance and are in accordance with the criterion outlined in this document. The impact was concluded to be non-adverse in line with WHO levels.

Limiting noise levels have been proposed for plant in accordance with BS4142 so as not to cause an adverse effect on the nearest residential receptors. The cumulative noise level from all plant units running should not exceed the values outlined in Table 9.1.

Land at Pound Farm, Bedford Road, Pirton, Hitchin SG5 3RS - Position 1
Environmental Time History
23/10/2025 to 27/10/2025

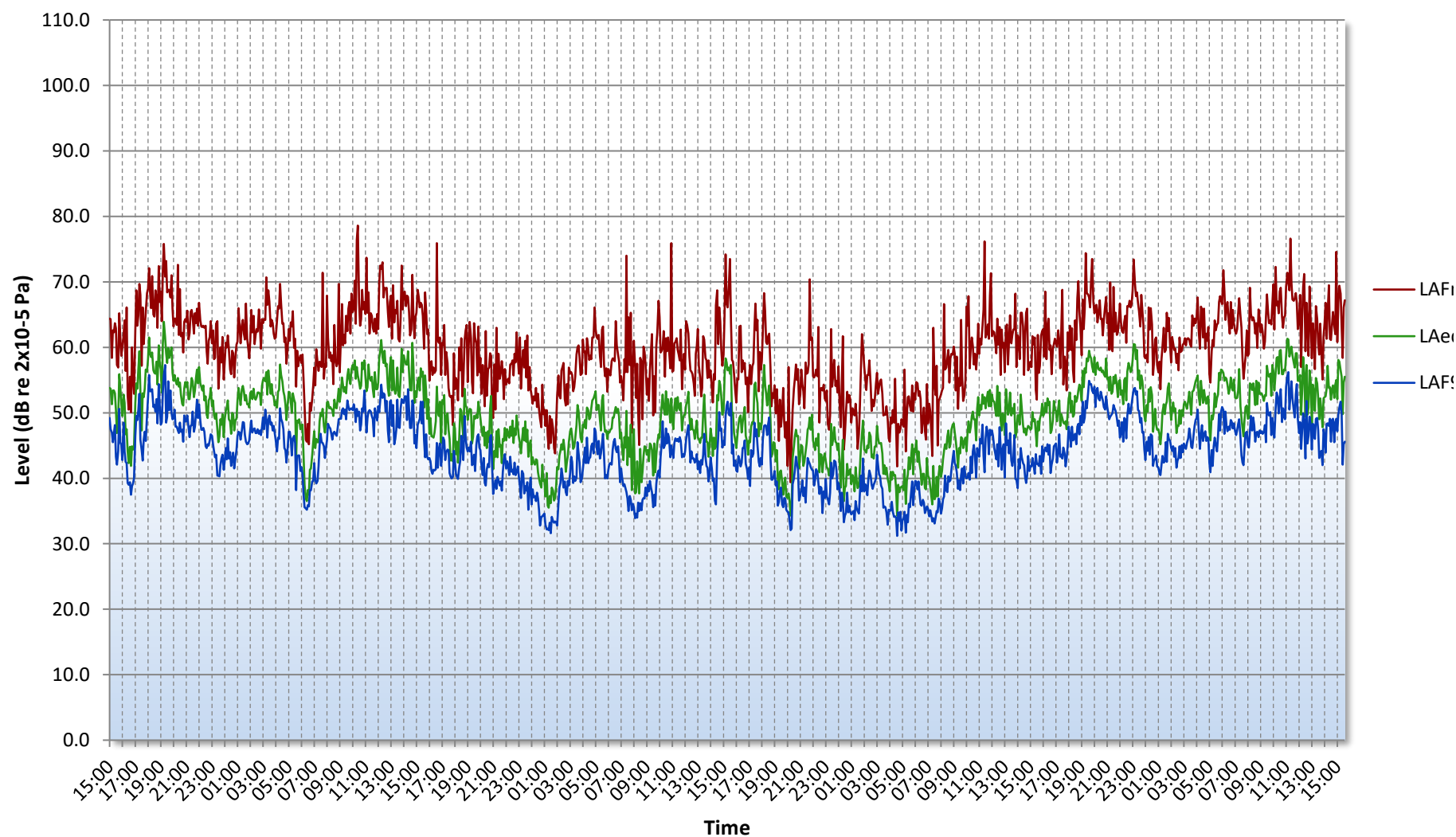


Figure 312

Land at Pound Farm, Bedford Road, Pirton, Hitchin SG5 3RS - Position 2
Environmental Time History
23/10/2025 to 27/10/2025

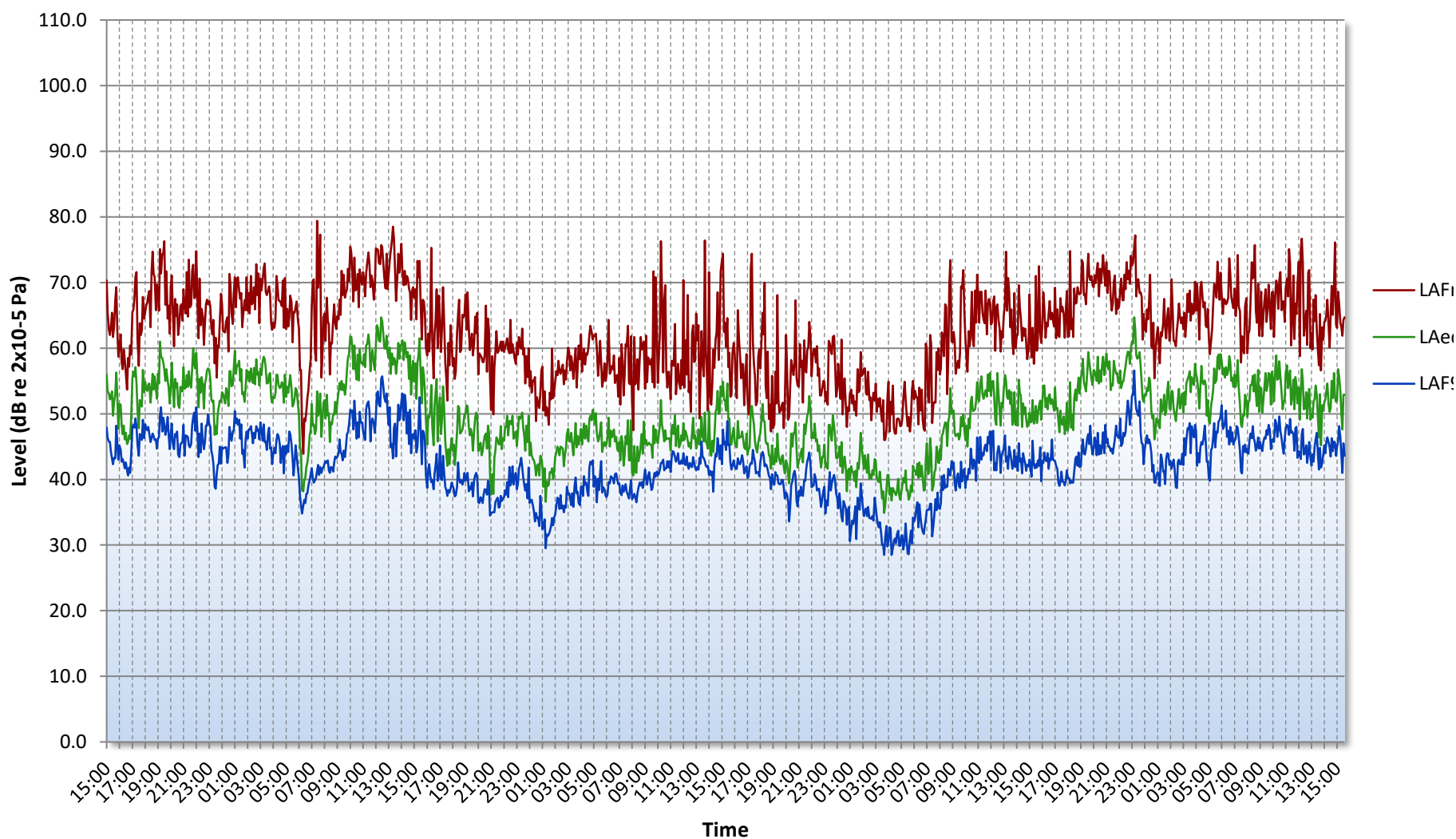


Figure 312

Land at Pound Farm, Bedford Road, Pirton, Hitchin SG5 3RS - Position 3
Environmental Time History
23/10/2025 to 27/10/2025

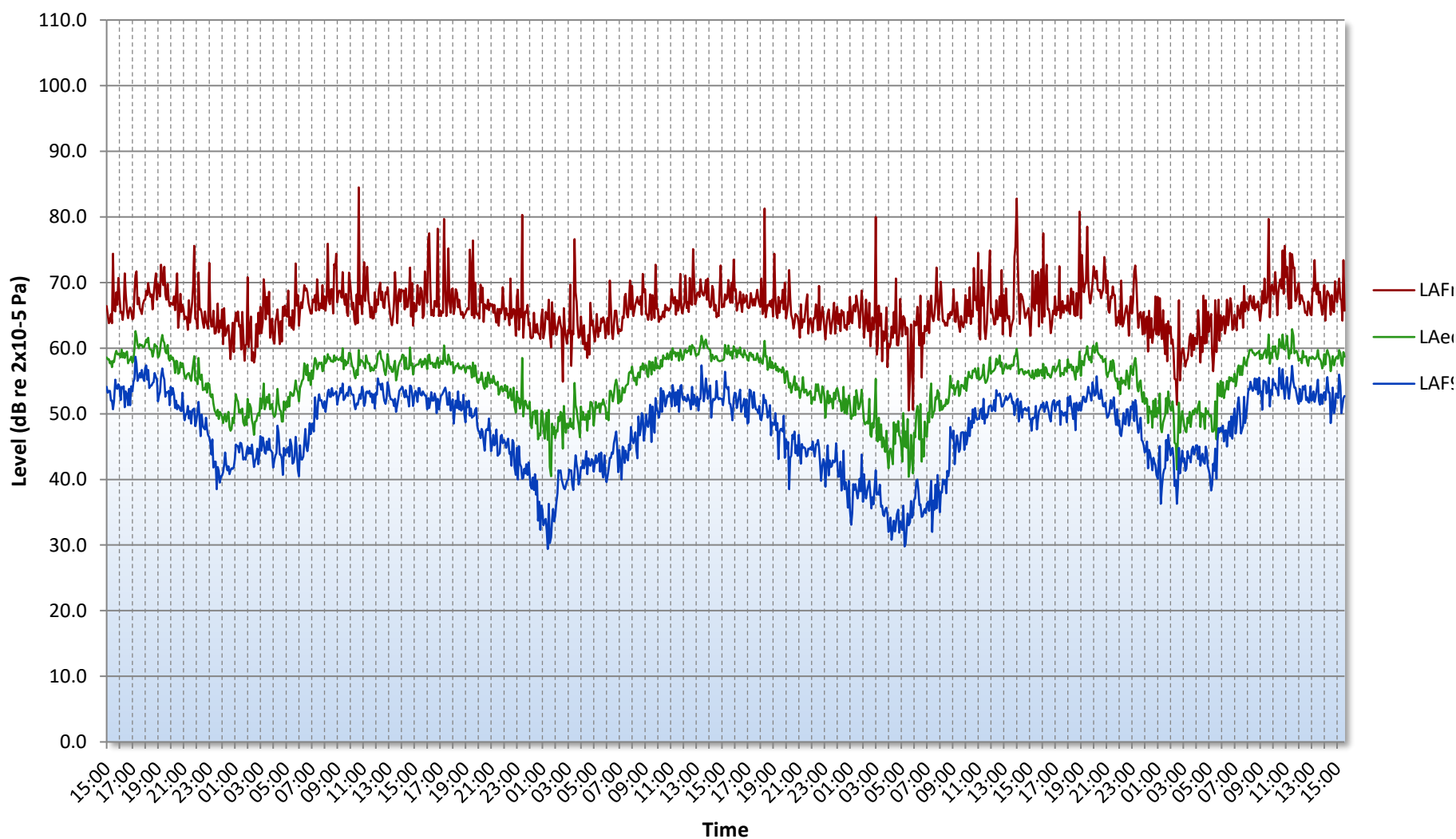


Figure 312

Land at Pound Farm, Bedford Road, Pirton, Hitchin SG5 3RS - Position 3
Representative Daytime Background Noise Level
23/10/2025 to 27/10/2025

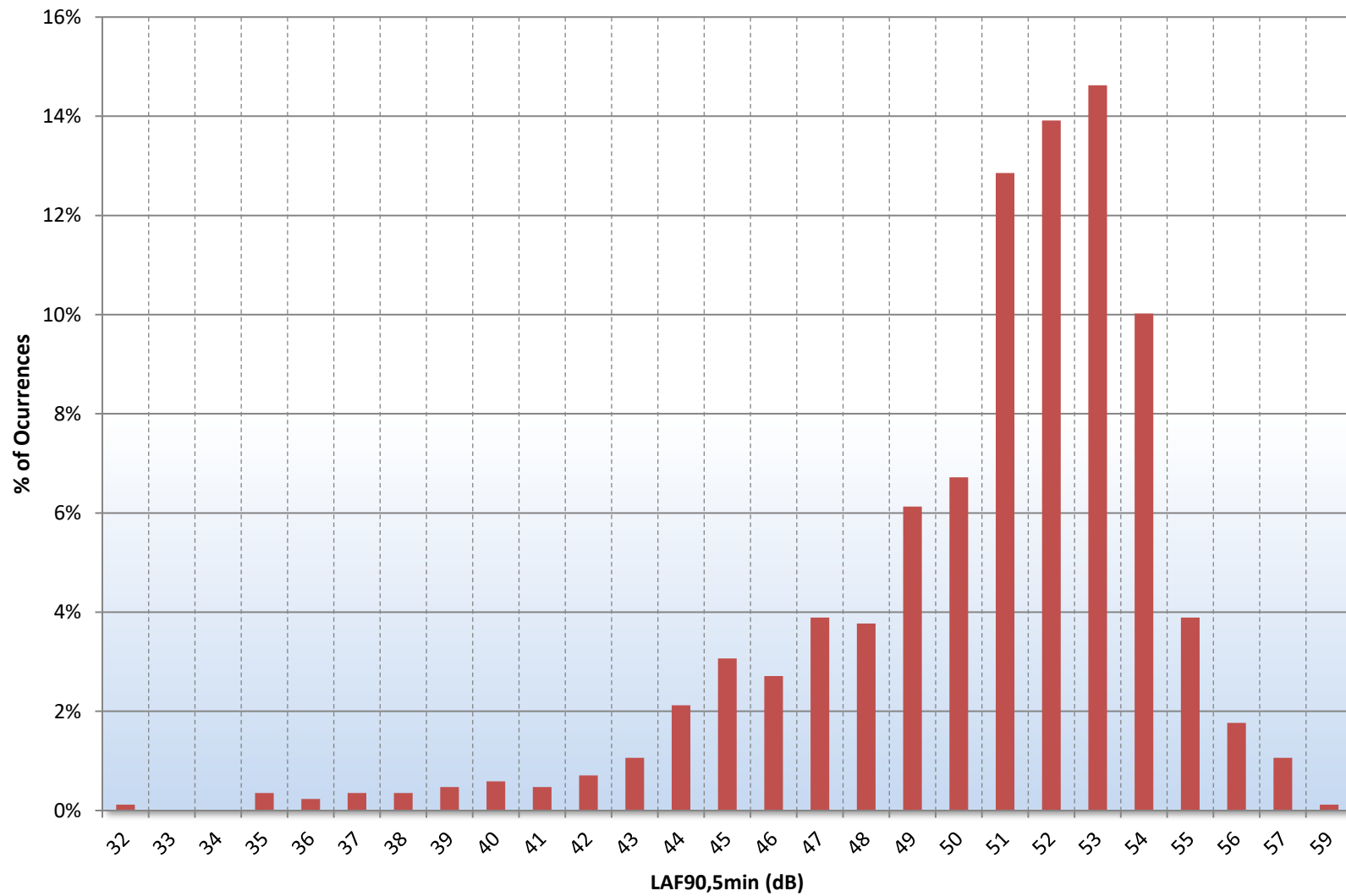


Figure 31280.Daytime L90.TH3

Land at Pound Farm, Bedford Road, Pirton, Hitchin SG5 3RS - Position 3
Representative Night-time Background Noise Level
23/10/2025 to 27/10/2025

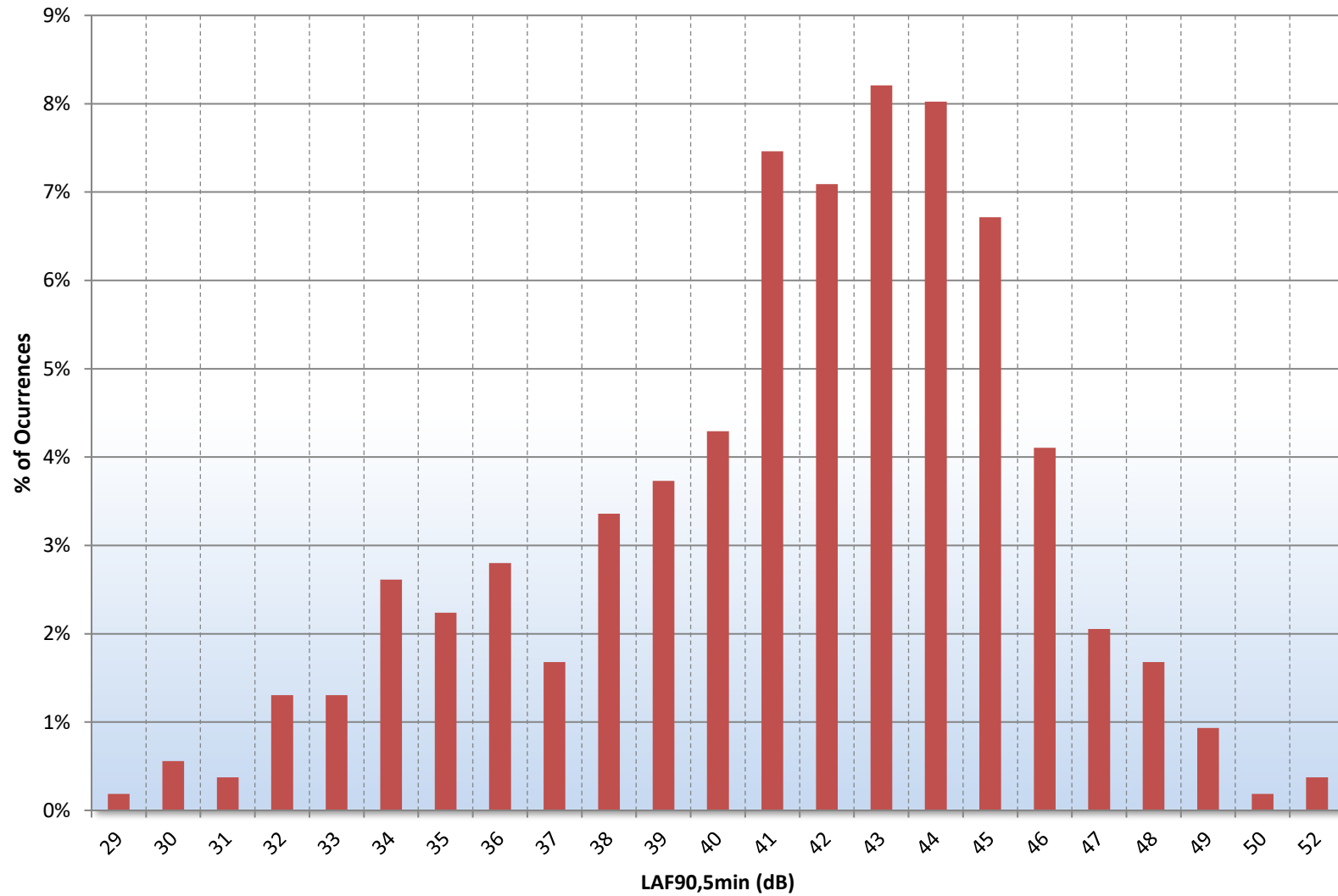


Figure 31280.Night-time L90.TH3

Legend

-  Buildings
-  Monitoring Locations
-  Roads
-  Approx. Development Area

Noise Level $L_{Aeq, 16hour}$ dB(A)

	< 30
	30 - 35
	35 - 40
	40 - 45
	45 - 50
	50 - 55
	55 - 60
	60 - 65
	>= 65

PROJECT:
Land at Pound Farm,
Bedford Road, Pirton,
Hitchin SG5 3RS

DRAWING TITLE:
Daytime Noise Levels

DRG No.

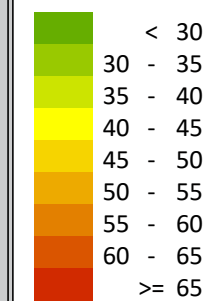
SCALE
1:2800

CLIENT:
Bugler Homes Ltd

Legend

-  Buildings
-  Monitoring Locations
-  Roads
-  Approx. Development Area

Noise Level $L_{Aeq, 8\text{hour}}$ dB(A)



PROJECT:

Land at Pound Farm,
Bedford Road, Pirton,
Hitchin SG5 3RS

DRAWING TITLE:

Night-time Noise Levels

DRG No.

SCALE
1:2800

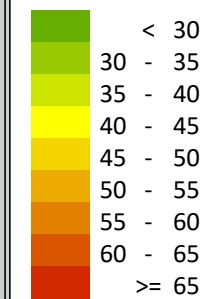
CLIENT:

Bugler Homes Ltd

Legend

-  Buildings
-  Monitoring Locations
-  Roads
-  Approx. Development Area

Noise Level $L_{A_{Fmax}}$ dB(A)



PROJECT:

Land at Pound Farm,
Bedford Road, Pirton,
Hitchin SG5 3RS

DRAWING TITLE:

Night-time Max Noise Levels

DRG No.

SCALE
1:2800

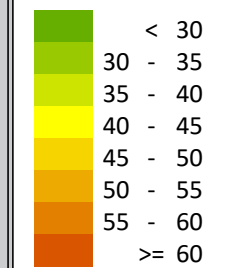
CLIENT:

Bugler Homes Ltd

Legend

-  Buildings
-  Approx. Development Area
-  Sport Pitches

Noise Level $L_{Aeq,T}$ dB(A)



PROJECT:

Land at Pound Farm,
Bedford Road, Pirton,
Hitchin SG5 3RS

DRAWING TITLE:

Sport Pitches Noise Levels

DRG No.

SCALE
1:2800

CLIENT:

Bugler Homes Ltd

GENERAL ACOUSTIC TERMINOLOGY

Decibel scale - dB

In practice, when sound intensity or sound pressure is measured, a logarithmic scale is used in which the unit is the 'decibel', dB. This is derived from the human auditory system, where the dynamic range of human hearing is so large, in the order of 10^{13} units, that only a logarithmic scale is the sensible solution for displaying such a range.

Decibel scale, 'A' weighted - dB(A)

The human ear is less sensitive at frequency extremes, below 125Hz and above 16Khz. A sound level meter models the ears variable sensitivity to sound at different frequencies. This is achieved by building a filter into the Sound Level Meter with a similar frequency response to that of the ear, an A-weighted filter where 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 no 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 no 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 11 such octave bands whose centre frequencies are defined in accordance with international standards. These centre frequencies are: 16, 31.5, 63, 125, 250, 500, 1000, 2000, 4000, 8000 and 16000 Hertz.

Environmental noise terms are defined in BS7445, *Description and Measurement of Environmental Noise*.

APPLIED ACOUSTIC TERMINOLOGY

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 a single source and 4 sources produce a 6dB 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 3dB for each doubling of distance.

Subjective impression of noise

Hearing perception is 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 guide to explain increases or decreases in sound levels for many scenarios.

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

Transmission path(s)

The transmission path is the path the sound takes from the source to the receiver. Where multiple paths exist in parallel, the reduction in each path should be calculated and summed at the receiving point. Outdoor barriers can block transmission paths, for example traffic noise. The effectiveness of barriers is dependent on factors such as its distance from the noise source and the receiver, its height and construction.

Ground-borne vibration

In addition to airborne noise levels caused by transportation, construction, and industrial sources there is also the generation of ground-borne vibration to consider. This can lead to structure-borne noise, perceptible vibration, or in rare cases, building damage.

Sound insulation - Absorption within porous materials

Upon encountering a porous material, sound energy is absorbed. Porous materials which are intended to absorb sound are known as absorbents, and usually absorb 50 to 90% of the energy and are frequency dependent. Some are designed to absorb low frequencies, some for high frequencies and more exotic designs being able to absorb very wide ranges of frequencies. The energy is converted into both mechanical movement and heat within the material; both the stiffness and mass of panels affect the sound insulation performance.