



## **Proposed Residential Development Noise Assessment**

**Site:**

**Lovett Farm  
Swindon Road  
Little Somerford  
Chippenham  
Wiltshire  
SN15 5BP**

**For:**

**Barnes Plumbing & Heating Ltd**

**25 March 2026**

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# 1 Introduction

## 1.1 Overview

Parker Acoustics Ltd (PAL) has been commissioned by Barnes Plumbing & Heating Ltd to undertake a noise survey and assessment for the proposed residential conversion of an agricultural building at Lovett Farm, Swindon Road, Little Somerford, Chippenham, Wiltshire, SN15 5BP (hereafter referred to as 'the site').

It is understood that a BS8233 noise assessment has been requested to address local authority concerns regarding potential exposure to future occupants of the proposed residential units due to noise in the locality.

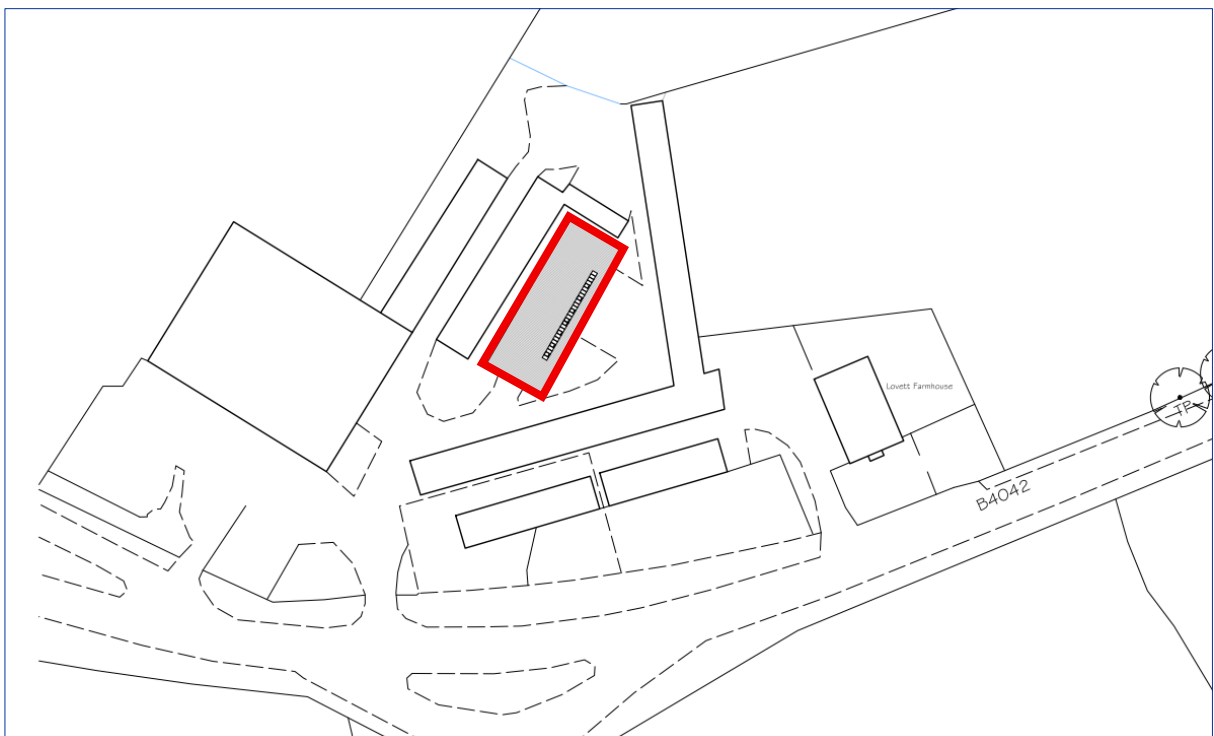
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A glossary of acoustic terms used in the main body of the text is contained in Appendix A.

## 1.2 Site Description

The site is located to the north of the B4042 in Chippenham, as shown (highlighted in red) in Figure 1.1.

**Figure 1.1:** Site Location





## 2 Noise Criteria and Assessment Guidance

### 2.1 Permitted Development

Part 3, Class Q of The Town and Country Planning (General Permitted Development) (England) (Amendment) Order 2015 (as amended) confirms that development consisting of the change of use of a building that is part of an agricultural unit and any land within its curtilage to a use falling within Class C3 (dwelling houses) of Schedule 1 to the Use Classes Order is permitted development subject to conditions.

Where the issue of noise is concerned, it states that:

*'...development is permitted subject to the condition that before beginning the development, the developer must apply to the local planning authority for a determination as to whether the prior approval of the authority will be required as to –*

*...(b) noise impacts of the development*

As such, a discussion is provided herein in regard to, if existing or prevalent at the site, impact of noise from the neighbouring road network on the proposed dwellings.

### 2.2 Assessment Guidance

#### British Standard 8233

British Standard 8233:2014 'Guidance on Sound Insulation and Noise Reduction for Buildings' (BS 8233)<sup>1</sup> provides recommendations for the control of noise both in and around buildings and suggests criteria and limits appropriate to their function. For dwellings, the main considerations are:

- Bedrooms - the effect of noise upon sleep
- Other habitable rooms - the effect of noise upon resting, listening and communicating

It is desirable that the internal ambient noise level does not exceed the guideline values as replicated in Table 2.1.

**Table 2.1: Indoor Ambient Noise Levels for Dwellings – BS 8233:2014**

| Activity                   | Location         | 07:00 – 23:00 hrs      | 23:00 – 07:00 hrs     |
|----------------------------|------------------|------------------------|-----------------------|
| 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 states:

*'If relying on closed windows to meet the guide values, there needs to be appropriate alternative ventilation that does not compromise the façade insulation or the resulting noise level. If applicable, any room should have adequate ventilation (e.g. trickle ventilators should be open) during assessment.'*

<sup>1</sup> British Standard 8233:2014 Guidance on sound insulation and noise reduction for buildings. BSI (2014)

For traditional external areas that are used for amenity space, such as gardens, BS 8233 states that:

*'.....it is desirable that the external noise level does not exceed 50 dB LAeq,T, with an upper guideline value of 55 dB LAeq,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.'*

## ProPG Planning and Noise: New Residential Development

ProPG Planning and Noise: New Residential Development (ProPG)<sup>2</sup> recommends compliance with indoor noise level targets in residential dwellings based on the guidance contained in BS 8233 (see Table 2.1). However, it is noted that:

*'Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved. The more often internal L<sub>Aeq</sub> levels start to exceed the internal L<sub>Aeq</sub> target levels by more than 5 dB, the more that most people are likely to regard them as "unreasonable".....Once internal L<sub>Aeq</sub> 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'.*

Additionally, with regard to individual noise events, ProPG states:

*'Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or L<sub>Amax,F</sub>, depending on the character and number of events per night. Sporadic noise events could require separate values. In most circumstances in noise sensitive rooms at night (e.g. bedrooms) good acoustic design can be used so that individual noise events do not normally exceed 45dB L<sub>Amax,F</sub> more than 10 times a night.'*

ProPG acknowledges that the internal target noise levels may only be practically achieved with windows closed in certain areas (e.g. in urban areas or sites adjacent to transportation noise sources) and states that:

*'In such circumstances, internal noise levels can be assessed with windows closed but with any façade openings used to provide 'whole dwelling ventilation' in accordance with Building Regulations Approved Document F (e.g. trickle ventilators in the open position).*

*It should also be noted that the internal noise level guidelines are generally not applicable under 'purge ventilation' conditions as defined by Building Regulations Approved Document F, as this should only occur occasionally (e.g. to remove odour from painting and decorating or from burnt food).'*

ProPG also considers compliance with ambient noise level targets for external amenity areas in line with the recommendation of BS 8233. On this issue, ProPG states that:

*'Where, despite following a good acoustic design process, significant adverse noise impacts remain on any private external amenity space (e.g. garden or balcony) then that impact may be partially off-set if the residents are provided, through the design of the development or the planning process, with access to:*

<sup>2</sup> 'ProPG Planning and Noise: New Residential Development (ProPG)'. Association of Noise Consultants, Institute of Acoustics and the Chartered Institute of Environmental Health (2017)

- a relatively quiet facade (containing openable windows to habitable rooms) or a relatively quiet externally ventilated space (i.e. an enclosed balcony) as part of their dwelling; and/or
- a relatively quiet alternative or additional external amenity space for sole use by a household, (e.g. a garden, roof garden or large open balcony in a different, protected, location); and/or
- a relatively quiet, protected, nearby, external amenity space for sole use by a limited group of residents as part of the amenity of their dwellings; and/or
- a relatively quiet, protected, publicly accessible, external amenity space (e.g. a public park or a local green space designated because of its tranquillity) that is nearby (e.g. within a 5 minutes walking distance). The local planning authority could link such provision to the definition and management of Quiet Areas under the Environmental Noise Regulations.'

## Building Regulations - Approved Document O (Overheating)

Requirement O1(2)(a)<sup>3</sup> of Schedule 1 to the Building Regulations 2010 states:

*'(1) Reasonable provision must be made in respect of a dwelling, institution or any other building containing one or more rooms for residential purposes, other than a room in a hotel ("residences") to –*

*.....*

*(b) provide an **adequate means to remove heat** from the indoor environment.*

*(2) In meeting the obligations in paragraph (1) –*

*(a) account must be taken of the **safety of any occupant, and their reasonable enjoyment** of the residence; and*

*(b) mechanical cooling may only be used where insufficient heat is capable of being removed from the indoor environment without it.*

*.....*

*In the Secretary of State's view, requirement **O1(2)(a)** is met in a new residential building if the building's **overheating mitigation strategy** for use by occupants **takes account of** all of the following.*

*a. **Noise at night**.....'*

Section 3 of ADO address noise at night as follows:

*'In locations where external noise may be an issue (for example, where the local planning authority considered external noise to be an issue at the planning stage), the overheating mitigation strategy should take account of the likelihood that windows will be closed during sleeping hours (11pm to 7am)....*

*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).'*

<sup>3</sup> The Building Regulations 2010 Approved Document O 'Overheating' (ADO) (2021)

## 3 Noise Survey

### 3.1 Methodology

Noise monitoring was carried out at the site between Wednesday 18<sup>th</sup> and Thursday 19<sup>th</sup> March 2026 to establish existing external noise levels affecting the proposed development.

The adopted external noise monitoring position (shown as 'X' in Appendix B) was circa 23 metres to the north of the B4042 and circa 37 metres to the south-west of the existing building. This location was selected as it enabled measurement of the dominant local noise source (i.e. the B4042) without shielding from existing buildings that will be demolished in the future. Measurement at the position of the existing building would have resulted in unrepresentatively low ambient noise levels due to shielding / screening of road traffic noise from the aforementioned commercial building.

Measurements were acquired in 'free field' conditions (i.e. at least 3.5 metres from a vertical reflective surface).

Noise measurements were undertaken using a Norsonic Nor 118 Type 1 integrating sound level meter<sup>4</sup> connected to a windshield covered microphone positioned 1.7 metres above ground in 'free field' conditions (i.e. at least 3.5 metres from a vertical reflective surface).

The measurement system calibration was verified immediately before and after the survey using a Norsonic Nor 1255 portable calibrator<sup>5</sup>. No significant drift in calibration level was noted (0.1 dB in this instance).

Measurements consisted of A-weighted broadband parameters including  $L_{Aeq}$  and  $L_{AFmax}$  together with linear frequency data.

Weather conditions during survey commissioning and decommissioning were dry, warm and calm with a slight breeze.

Reference has been made to online meteorological data measured at a local weather station to identify periods of adverse weather if they occurred during the remainder of the survey. Where appropriate, these periods have been identified and the corresponding noise data excluded from analysis, as detailed further in Section 3.3.

### 3.2 Summary of Measured Noise Data

The measured noise data time history is presented as a chart in Figure 3.1.

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<sup>4</sup> Serial number 31839; UKAS calibration certificate number U52828 valid until 3<sup>rd</sup> December 2027

<sup>5</sup> Serial number 125525543; UKAS calibration certificate number U52830 valid until 3<sup>rd</sup> December 2026

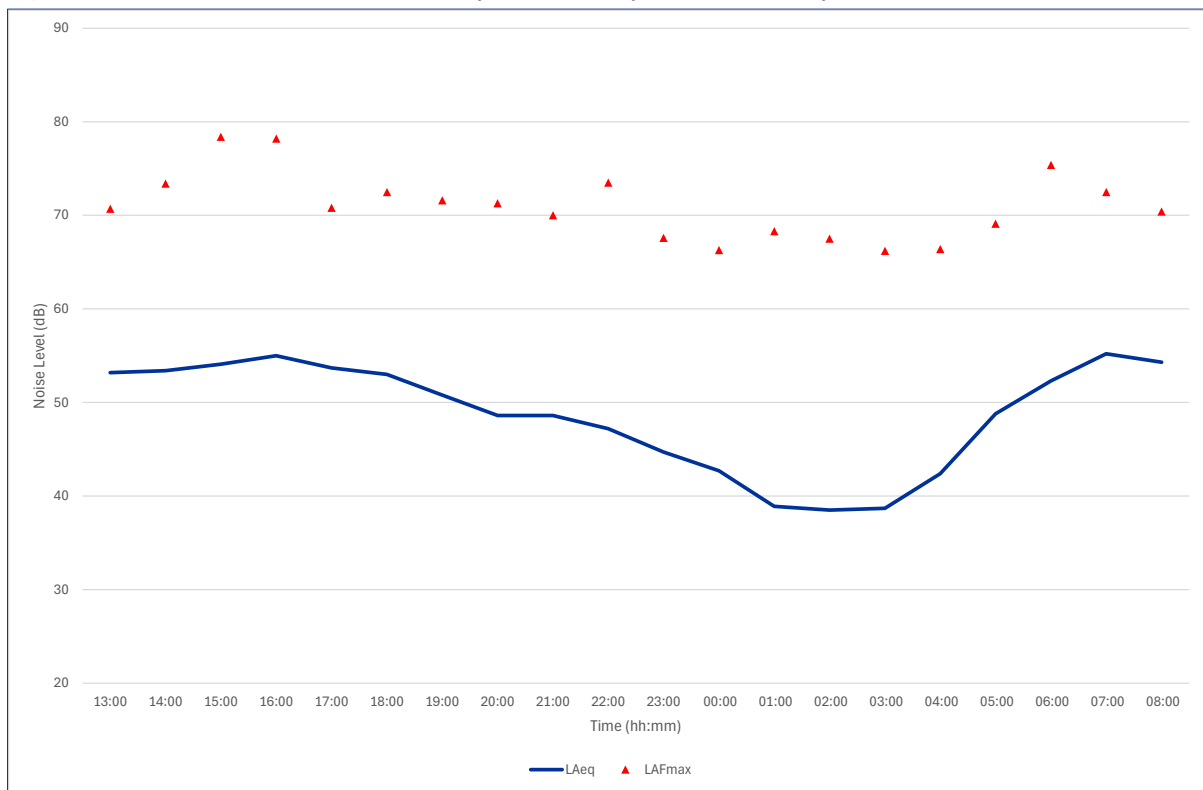
**Figure 3.1:** Measured Noise Time History, Wednesday 18<sup>th</sup> – Thursday 19<sup>th</sup> March 2026

Table 3.1 presents a summary of the unattended noise measurement data, for each measurement session, rounded to the nearest decibel.

**Table 3.1: Summary of Noise Survey Data**

| Date                    | Time (hh:mm)  | Noise Level (dB)   |                    | Weather Conditions        |
|-------------------------|---------------|--------------------|--------------------|---------------------------|
|                         |               | L <sub>Aeq,T</sub> | L <sub>AFmax</sub> |                           |
| 18/03/2026              | 13:00 – 23:00 | 52                 | 78                 | Dry; windspeeds 2 – 5 m/s |
| 18/03/2026 – 19/03/2026 | 23:00 – 07:00 | 46                 | 75                 | Dry; windspeeds 2 – 4 m/s |
| 19/03/2026              | 07:00 – 09:00 | 55                 | 73                 | Dry; windspeeds 1 – 3 m/s |

### 3.3 Analysis

During survey commissioning and decommissioning, it was noted that ambient noise levels at the site were dominated by road traffic noise from the B4042.

No adverse weather affected the site during the noise survey; therefore, it has not been necessary to exclude any periods from the analysis set out below.

Average<sup>6</sup> ambient noise levels were around 53 dB L<sub>Aeq,T</sub> during the day and 46 dB L<sub>Aeq,T</sub> at night.

Maximum noise levels measured at ≤ 75 dB L<sub>AFmax</sub> at night. The assessed value (i.e. the 10<sup>th</sup> highest value per night<sup>7</sup>) was 69 dB L<sub>AFmax</sub>.

<sup>6</sup> Derived via logarithmic average of the data

<sup>7</sup> The assessed L<sub>AFmax</sub> should be such that internal noise levels do not exceed 45 dB L<sub>AFmax</sub> more than 10 times per night as per ProPG guidance

## 4 Noise Assessment

### 4.1 External Levels

As discussed in Section 3.1, the adopted external noise monitoring position was circa 23 metres to the from the dominant noise source (i.e. the B4042) whereas the proposed development is circa 38 metres from the B4042; therefore, a distance correction of -2 dB has been applied to the measured noise data to account for distance attenuation<sup>8</sup> between the survey position and dwellings.

Based on the above, external noise levels at the proposed development are calculated to be:

- 51 dB  $L_{Aeq,T}$  during the day
- 44 dB  $L_{Aeq,T}$  and 67 dB  $L_{AFmax}$  at night

### 4.2 External Amenity

As detailed in Section 4.1, daytime external ambient noise levels at the site are expected to be around 51 dB  $L_{Aeq,16hr}$  once the scheme is complete, this is:

- Below (and thus compliant with) the upper guideline value of  $\leq 55$  dB  $L_{Aeq,T}$  as recommended by BS 8233 / ProPG
- Marginally above (+ 1 dB) the 'desirable' guideline value of  $\leq 50$  dB  $L_{Aeq,T}$  as recommended by BS 8233 / ProPG

Based on the above, it is considered that external noise levels in proposed gardens will be satisfactory without any additional mitigation measures incorporated into the site layout design.

### 4.3 Internal Noise Levels

As a starting point, it is assumed that the preferred ventilation strategy to be employed at the site will be background ventilators and intermittent extract fans (typically the most cost effective) – calculations incorporate this assumption.

Where an alternative ventilation strategy is preferred (e.g. mechanical ventilation), alternative sound reduction performances may be appropriate for glazing (i.e. typically a lower specification).

In order to determine sound reduction requirements for the glazing and ventilation, noise ingress calculations have been performed using:

- The measured/calculated external noise level data on site
- The calculation methodology outlined in BS8233:2014
- Room dimensions and façade element surface areas determined from the proposed layout and elevation drawings issued by LPC (Trull) Ltd<sup>9</sup>
- Assumed room reverberation time of 0.5 seconds

<sup>8</sup> Distance attenuation from line source =  $A_d = 10 \log d_1 / d_2 = 10 \log 23 / 38 = -2.2$  dB

<sup>9</sup> Drawing ref:

- LPC 884 PR 302 A 'Proposed Plan'
- LPC 884 PR 303 A 'Proposed Elevations'

It is assumed (and recommended) that the roof and external walls are designed such that sound insulation performances are at least 10 dB higher than the highest glazing specifications detailed in Table 4.1 (i.e.  $\geq 35 \text{ dB } R_w + C_{tr}$ ).

In order to satisfy the internal noise criteria detailed in Section 2 it is necessary to incorporate mitigation measures in the form of appropriate ventilation / glazing with the minimum specifications presented in Table 4.1.

**Table 4.1: Ventilation and Glazing Recommendations**

| Room                                                                                                                                                                                          | Element                  | Required Sound Reduction   | Indicative Specification <sup>A</sup>                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|----------------------------|---------------------------------------------------------|
| Living Rooms                                                                                                                                                                                  | Glazing                  | 25 dB $R_w + C_{tr}$       | '4 (12) 4' Double Glazing                               |
|                                                                                                                                                                                               | Ventilation <sup>B</sup> | 16 dB $D_{n,e,w} + C_{tr}$ | Greenwood 8000HD (or equivalent)<br>Window Trickle Vent |
| Bedrooms                                                                                                                                                                                      | Glazing                  | 25 dB $R_w + C_{tr}$       | '4 (12) 4' Double Glazing                               |
|                                                                                                                                                                                               | Ventilation <sup>B</sup> | 29 dB $D_{n,e,w} + C_{tr}$ | Greenwood 8000HD (or equivalent)<br>Window Trickle Vent |
| Notes:                                                                                                                                                                                        |                          |                            |                                                         |
| <sup>A</sup> For more information, Appendix C and Appendix D present lists of various commercially available glazing and ventilation units along with associated sound reduction performances |                          |                            |                                                         |
| <sup>B</sup> Requirements apply to trickle vents per habitable room (i.e. living room / bedroom) in open position                                                                             |                          |                            |                                                         |

It can be seen that the internal noise criteria can be satisfied with a relatively basic configuration of glazing and ventilation (i.e. standard 4/12/4 glazing and basic window trickle vents).

The following should be noted:

- When selecting a glazing system to satisfy the requirements outlined in Table 4.1, it is important to ensure that both the  $R_w$  and  $R_w + C_{tr}$  requirements are satisfied. Published  $R_w$  values tend to be higher than corresponding  $R_w + C_{tr}$  values; therefore, incorrect selection could result in an overestimation of sound reduction performance which in turn could result in higher internal noise levels
- The opening and free area of the ventilation unit should be checked by a mechanical service engineer before designs are finalised
- Should the equivalent open area be insufficient to meet the minimum requirements of Part F of the Building Regulations, it may be necessary to increase the number of units per habitable room. Where this applies, the required sound reduction of the ventilation units should be increased accordingly (3 dB per doubling of required no. of vent units)
- Where mechanical ventilation is provided, the system should be designed such that internal ambient noise levels from mechanical services do not exceed 30 dB  $L_{Aeq,T}$  in living rooms and 26 dB  $L_{Aeq,T}$  in bedrooms

### Feasibility of Open Windows – Overheating

A publication by the Institute of Acoustics (IOA) and Association of Noise Consultants (ANC) 'Guide to Demonstrating Compliance with the Noise Requirements of Approved Document O' suggests that, in order to provide enough free area to satisfy the requirements of Approved Document O of the Building Regulations, the degree of window opening that may be required is estimated to reduce noise from outside to inside by circa 9 dB.

On this basis, internal noise levels at night in bedrooms with open windows have been calculated, as shown in Table 4.2.

**Table 4.2: External to Internal Noise Levels at Night (Window Open)**

| Room    | External Noise Levels (dB)      |                            | Assumed Reduction via Open Window (dB) | Internal Noise Levels (dB)      |                            |
|---------|---------------------------------|----------------------------|----------------------------------------|---------------------------------|----------------------------|
|         | Ambient (L <sub>Aeq,8hr</sub> ) | Max (L <sub>AFmax</sub> )* |                                        | Ambient (L <sub>Aeq,8hr</sub> ) | Max (L <sub>AFmax</sub> )* |
| Bedroom | 44                              | 67                         | -9                                     | 35                              | 58                         |

\* No more than 10 times per night

It can be seen that, internal noise levels are expected be above the thresholds<sup>10</sup> for which ‘*windows are likely to be closed during sleeping hours*’ (according to ADO) in bedrooms. On this basis, the overheating mitigation strategy should take account of the likelihood that windows are likely to be closed during sleeping hours (23:00 – 07:00 hrs) for the bedrooms.

Further information has recently been provided via a publication by the Institute of Acoustics (IOA) and Association of Noise Consultants (ANC) ‘*Approved Document O – Noise Guide Version 1.1*’ (dated November 2024); this provides guidance to calculate the target Equivalent Area<sup>11</sup> of a partially open window (m<sup>2</sup>) based on the room geometry and the required façade level difference, as follows:

$$EA \text{ based on freefield level difference} = V \times 10^{\left(\frac{-(D_{nT} + 8)}{10}\right)}$$

Comparison of the measured external noise levels with the internal noise thresholds set out in ADO suggests that a façade level difference of at least 12 dB would be required to satisfy the ADO internal L<sub>Aeq</sub> and L<sub>AFmax</sub> criteria.

Using the equation above the following target Equivalent Areas have been calculated based on the room geometry of the proposed bedrooms:

- Bedroom 1: ≤ 0.3m<sup>2</sup>
- Bedroom 2: ≤ 0.3m<sup>2</sup>
- Bedroom 3: ≤ 0.2m<sup>2</sup>

<sup>10</sup> > 40 dB L<sub>Aeq,8hr</sub> and > 55 dB L<sub>AFmax</sub>

<sup>11</sup> Once a target equivalent area has been determined, this information can be made available to a dynamic thermal modeller, where utilised

## 5 Summary and Conclusions

A noise survey and assessment have been performed for a proposed residential conversion of an agricultural building at Lovett Farm, Swindon Road, Little Somerford, Chippenham, Wiltshire, SN15 5BP.

Noise monitoring was carried out at the site between Wednesday 18<sup>th</sup> and Thursday 19<sup>th</sup> March 2026 to establish existing external noise levels affecting the proposed development.

Section 4 provides recommendations to mitigate external noise to satisfy the indoor noise criteria set out in BS8233 / ProPG guidelines. Mitigation measures include the specification of appropriate configurations of glazing and ventilation.

## Appendix A – Abbreviations and Definitions

### Sound Pressure Level ( $L_p$ )

The basic unit of sound measurement is the sound pressure level. As the pressures to which the human ear responds can range from 20  $\mu\text{Pa}$  to 200 Pa, a linear measurement of sound levels would involve many orders of magnitude. Consequently, the pressures are converted to a logarithmic scale and expressed in decibels (dB) as follows:

$$L_p = 20 \log_{10}(p/p_0)$$

Where  $L_p$  = sound pressure level in dB;  $p$  = rms sound pressure in Pa; and  $p_0$  = reference sound pressure (20  $\mu\text{Pa}$ ).

### A-weighting

A frequency filtering system in a sound level meter, which approximates under defined conditions the frequency response of the human ear. The A-weighted sound pressure level, expressed in dB(A), has been shown to correlate well with subjective response to noise.

### Human Perception of Sound

Audibility of sound covers a range of approximately 0 to 140 dB. The human ear system does not respond uniformly to sound across the detectable frequency range and consequently instrumentation used to measure noise is weighted to represent the performance of the ear, using the 'A weighting' [dB (A)]. Table A1 lists the sound pressure level in dB (A) for common situations:

**Table A.1: Noise levels for Common Situations**

| Typical Noise Level dB(A) | Example                                                          |
|---------------------------|------------------------------------------------------------------|
| 0                         | Threshold of hearing                                             |
| 30                        | Rural area at night, still air                                   |
| 40                        | Public library, refrigerator humming at 2m                       |
| 50                        | Quiet office, no machinery<br>Boiling kettle at 0.5m             |
| 60                        | Normal conversation                                              |
| 70                        | Telephone ringing at 2m<br>Vacuum cleaner at 3m                  |
| 80                        | General factory noise level<br>Heavy goods vehicle from pavement |
| 90                        | Powered lawn motor at operator's ear                             |
| 100                       | Pneumatic drill at 5m                                            |
| 120                       | Discotheque – 1m in front of loudspeaker                         |
| 140                       | Threshold of pain                                                |

### Human Perception of Loudness

Because of the logarithmic nature of the decibel scale, it should be borne in mind that noise levels in dB(A) do not have a simple linear relationship. For example, 100dB(A) is not twice as loud as 50 dB(A) sound level. It has been found experimentally that changes in the average level of fluctuating sound, such as traffic noise, need to be of the order of 3 dB(A) before becoming definitely perceptible to the human ear. Data from other experiments have indicated that a change in sound level of 10 dB(A) is perceived by the average listener as a doubling or halving of loudness.

### Equivalent Continuous A-weighted Sound Pressure Level ( $L_{Aeq, T}$ )

The value of the A-weighted sound pressure level in decibels of continuous steady sound that within a specified time interval,  $T$ , has the same mean-square sound pressure as a sound that varies with time.

$L_{Aeq, 16h}$  (07:00 to 23:00 hours) and  $L_{Aeq, 8h}$  (23:00 to 07:00 hours) are used to qualify daytime and night time noise levels.

$L_{A10, T}$

The A-weighted sound pressure level in decibels exceeded for 10% of the measurement period, T.  $L_{A10, 18h}$  is the arithmetic mean of the 18 hourly values from 06:00 to 24:00 hours.

 **$L_{A90, T}$** 

The A-weighted sound pressure level of the residual noise in decibels exceeded 90% of a given time interval, T.  $L_{A90}$  is typically taken as representative of background noise.

 **$L_{AF \max}$** 

The maximum A-weighted noise level recorded during the measurement period. The subscript 'F' denotes fast time weighting, slow time weighting 'S' is also used.

**Single Event Level / Sound Exposure Level (SEL or  $L_{AE}$ )**

The energy produced by a discrete noise event averaged over one second, regardless of event duration. This allows for comparison between different noise events which occur over different lengths of time.

**Weighted Sound Reduction Index ( $R_w$ )**

Single number quantity which characterises the airborne sound insulation properties of a material or building element over a defined range of frequencies ( $R_w$  is used to characterise the insulation of a material or product that has been measured in a laboratory).

## Appendix B – Noise Monitoring Position



## Appendix C – Example Glazing Units

Table C.1 presents a range of example glazing configurations along with their associated sound reduction performance. The following should be noted:

- Data is as per manufacturers publications; therefore, it is the responsibility of the manufacturer in ensuring the product achieves the specified performance
- These are example solutions only, alternative solutions are available and may be considered; however, where alternatives are sourced, the sound reduction data should be obtained from the manufacturer to ensure the required sound reduction performance is satisfied
- The stated dimensions are in millimetres with the void size indicated in brackets e.g. '4 (16) 6' refers to a double-glazed unit comprising a 4mm glass pane and a 6mm glass pane separated by a 16mm air void
- The use of letters (beside the dimensions) denotes laminated or acoustic glass, see notes at the bottom of the table

**Table C.1: Example Glazing Units and Associated Sound Reduction Performances**

| Configuration       | Manufacturer | Sound Reduction (dB) |                |
|---------------------|--------------|----------------------|----------------|
|                     |              | $R_w$                | $R_w + C_{tr}$ |
| 4 (16) 4            | Saint Gobain | 30                   | 26             |
| 6 (12) 4            | Saint Gobain | 32                   | 29             |
| 6 (15) 4            | Saint Gobain | 33                   | 29             |
| 6 (25) 4            | Saint Gobain | 34                   | 30             |
| 4 (16) 8            | Saint Gobain | 35                   | 30             |
| 4 (6) 10            | Saint Gobain | 36                   | 33             |
| 4 (12) 6.8P         | Pilkington   | 36                   | 30             |
| 6 (12)10            | Saint Gobain | 37                   | 33             |
| 10 (6) 8.8S         | Saint Gobain | 38                   | 35             |
| 6 (12) 6.8P         | Pilkington   | 38                   | 33             |
| 6 (15) 8.8A         | Saint Gobain | 39                   | 33             |
| 5 (16) 8.8P         | Pilkington   | 39                   | 33             |
| 6 (27) 10           | Saint Gobain | 40                   | 36             |
| 10.8L (12) 6.8P     | Pilkington   | 40                   | 34             |
| 8 (15) 8.8A         | Saint Gobain | 41                   | 35             |
| 6 (16) 8.8P         | Pilkington   | 41                   | 34             |
| 10 (12) 8.8A        | Saint Gobain | 42                   | 37             |
| 8 (16) 8.8P         | Pilkington   | 42                   | 34             |
| 12 (15) 8.8A        | Saint Gobain | 43                   | 39             |
| 8 (16) 10.8P        | Pilkington   | 43                   | 36             |
| 8.4A (16) 10.4A     | Saint Gobain | 44                   | 38             |
| 10 (16) 8.8P        | Pilkington   | 44                   | 37             |
| 10 (16) 12.4A       | Saint Gobain | 45                   | 40             |
| 10 (16) 9.1P        | Pilkington   | 45                   | 39             |
| 8.8S (20) 10.8A     | Saint Gobain | 46                   | 40             |
| 9.1P (12) 4 (12) 10 | Pilkington   | 46                   | 40             |
| 12.8A (15) 12.8A    | Saint Gobain | 47                   | 41             |
| 8.8P (16) 12.8P     | Pilkington   | 47                   | 39             |
| 16.8A (15) 16.8A    | Saint Gobain | 48                   | 44             |
| 9.1P (20) 13.1P     | Pilkington   | 49                   | 42             |
| 14.8A (24) 12.8A    | Saint Gobain | 50                   | 46             |
| 9.1P (20) 17.1P     | Pilkington   | 50                   | 43             |
| 11.1P (20) 17.1P    | Pilkington   | 51                   | 46             |
| 9.1P (20 Arg) 17.1P | Pilkington   | 52                   | 44             |

A = 'Stadip Silence' (Saint Gobain); S = 'Stadip' (Saint Gobain); P = 'Optiphon' (Pilkington); L = 'Optilam' (Pilkington); Arg = Argon Filled Cavity

## Appendix D – Example Ventilation Units

Table D.1 presents a range of example ventilators, including trickle vents and acoustic air bricks, along with their associated sound reduction performance. The following should be noted:

- Data is as per manufacturers publications; therefore, it is the responsibility of the manufacturer in ensuring the product achieves the specified performance
- These are example solutions only, alternative solutions are available and may be considered; however, where alternatives are sourced, the sound reduction data should be obtained from the manufacturer to ensure the required sound reduction performance is satisfied
- The units listed may not always provide the required free area through one ventilator alone; for each additional ventilator, the required  $D_{n,e,w}$  should be increased by  $10 \log(n)$ , where 'n' is the number of ventilators

**Table D.1: Example Ventilation Units and Associated Sound Reduction Performances**

| Manufacturer | Model                    | Type           | Equivalent Area (mm <sup>2</sup> ) | Sound Reduction (dB) |                      |
|--------------|--------------------------|----------------|------------------------------------|----------------------|----------------------|
|              |                          |                |                                    | $D_{n,e,w}$          | $D_{n,e,w} + C_{tr}$ |
| Greenwood    | 8000HD                   | Window Vent    | 6400                               | 30                   | 31                   |
| Titon        | Trimvent Select Xtra S16 | Window Vent    | 4600                               | 31                   | 31                   |
| Greenwood    | 6000S                    | Window Vent    | 4200                               | 32                   | 31                   |
| Titon        | SF Xtra                  | Window Vent    | 4000                               | 32                   | 32                   |
| Titon        | Trimvent Select Xtra S13 | Window Vent    | 5000                               | 32                   | 33                   |
| Greenwood    | 5000EA                   | Window Vent    | 5300                               | 33                   | 33                   |
| Greenwood    | 2500F                    | Window Vent    | 2500                               | 33                   | 34                   |
| Greenwood    | 4000L                    | Window Vent    | 3200                               | 34                   | 33                   |
| Greenwood    | 3000S                    | Window Vent    | 2500                               | 35                   | 34                   |
| Greenwood    | 2500EA                   | Window Vent    | 2723                               | 36                   | 36                   |
| Ryton        | TAL9H&M                  | Thru-Wall Vent | 12800                              | 38                   | 35                   |
| Ryton        | TAL4H&M                  | Thru-Wall Vent | 6300                               | 38                   | 37                   |
| Airvent      | SM Ultima 5000           | Window Vent    | 5000                               | 39                   | 37                   |
| Greenwood    | 5000EAW.AC1              | Window Vent    | 5713                               | 39                   | 37                   |
| Greenwood    | AWV39                    | Thru-Wall Vent | 2500                               | 39                   | 37                   |
| Ryton        | TALH&M                   | Thru-Wall Vent | 10500                              | 39                   | 37                   |
| Ryton        | TAL4HMCWL                | Thru-Wall Vent | 6300                               | 39                   | 38                   |
| Ryton        | TAL9HMCWL                | Thru-Wall Vent | 12700                              | 40                   | 37                   |
| Greenwood    | 5000EAW.AC2              | Window Vent    | 5493                               | 42                   | 38                   |
| Ryton        | TALHMCWL                 | Thru-Wall Vent | 9800                               | 42                   | 39                   |
| Greenwood    | 2500EAW.AC1              | Window Vent    | 2749                               | 42                   | 40                   |
| Greenwood    | EAR 42W                  | Window Vent    | 3325                               | 42                   | 42                   |
| Ryton        | AAC125HP                 | Thru-Wall Vent | 8500                               | 43                   | 41                   |
| Ryton        | AAH125HP                 | Thru-Wall Vent | 7700                               | 44                   | 42                   |
| Greenwood    | AAB4000                  | Thru-Wall Vent | 2500                               | 44                   | 44                   |
| Greenwood    | 2500EAW.AC2              | Window Vent    | 2736                               | 45                   | 42                   |
| Ryton        | AAC125HPCWL              | Thru-Wall Vent | 8400                               | 45                   | 42                   |
| Airvent      | SM Ultima 2960           | Window Vent    | 2960                               | 47                   | 45                   |
| Greenwood    | MA3051                   | Thru-Wall Vent | 2500                               | 55                   | 52                   |