



## Noise Impact Assessment



Rear of Adam  
& Eve Public  
House, 830  
Uxbridge  
Road,  
Hayes,  
UB4 0RR

January 2022

Ref: 17-3077  
NIA Rear

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<i>Revision</i>	<i>NIA Rear</i>
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## 1. Executive Summary

An assessment has been carried out of the present noise climate at the **land to the rear of the Adam & Eve Public House, 830 Uxbridge Road, Hayes, UB4 0RR** and the impact of that noise on the proposed development. The proposed scheme involves the construction of 6No. houses at the rear of the Adam & Eve Public House.

The site is located on Uxbridge Road in a mixed commercial and residential area. Properties along Uxbridge Road are generally commercial at ground floor level with some residential units on upper floors. The area to the north of the site is predominantly residential.

The assessment is based on the results of a noise measurement survey that has been carried out over a 24-hr period at the proposed development site and has considered the advice of local and national planning policy and best practice guidance.

The initial site risk assessment identified that the site is within a *low* risk area in terms of noise.

It has been identified that the requirements of the Local Authority in respect of internal noise levels would nearly be achieved with open windows. However, to ensure acceptable internal noise levels are possible at all times, it has been recommended to install the following building envelope mitigation measures:

- **A façade build-up of a standard brick and block construction (or equivalent) to achieve an  $R_w$  of approximately 55 dB.**
- **A typical double glazing system in a 4/12/6 configuration (or equivalent) to give a Sound Reduction Index (SRI) of 32 dB  $R_w$ .**
- **Appropriately specified acoustic trickle vents, with a  $D_{n,e,w}$  of at least 38 dB, or an alternative means of ventilation, will be installed to allow adequate ventilation without the requirement to open windows.**

The assessment has also shown that the external noise level criteria would be readily achieved in external amenity areas.

**Overall, it has been shown that, through careful consideration of the building envelope construction, the proposed development should avoid future residents being exposed to harmful levels of noise. It can therefore be concluded that significant adverse impacts on the health or quality of life of those future residents would be avoided, in line with the aims of the NPPF, NPSE and PPG-Noise.**

## 2. Introduction

This report has been prepared to support the planning application for the proposed development at the **land to the rear of the Adam & Eve Public House, 830 Uxbridge Road, Hayes, UB4 0RR**. The proposed scheme involves the construction of 6No. houses at the rear of the Adam & Eve Public House.

The report assesses, through on-site noise measurements, the impact of the existing noise climate on the proposed development.

A glossary of acoustic terminology is provided in **Appendix 1**.

The site is located on Uxbridge Road in a mixed commercial and residential area. Properties along Uxbridge Road are generally commercial at ground floor level with some residential units on upper floors. The area to the north of the site is predominantly residential. The location of the proposed development site is provided in **Figure 2.1** and the proposed site layout is provided in **Figure 2.2**.



Figure 2.1: Site Location



Figure 2.2: Proposed Site Layout

### 3. Planning Policy

#### 3.1. National Planning Policy Framework

The National Planning Policy Framework (NPPF) was released in March 2012 and last updated in July 2021. The purpose of the planning system is to contribute to the achievement of sustainable development and to encourage good design. There are three dimensions to sustainable development: economic, social and environmental.

Central to the NPPF, paragraph 10 states: '*At the heart of the National Planning Policy Framework is a presumption in favour of [permitting] sustainable development*'. This is expanded upon in paragraph 11, where it is stated:

'...*For decision-taking this means:*

- *approving development proposals that accord with an up-to-date development plan without delay; or*
- *where there are no relevant development plan policies, or the policies which are most important for determining the application are out-of-date, granting permission unless:*
  - *the application of policies in this Framework that protect areas or assets of particular importance provides a clear reason for refusing the development proposed; or*
  - *any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole'*

Paragraph 174 states '*Planning policies and decisions should contribute to and enhance the natural and local environment by... preventing new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by, unacceptable levels of... noise pollution...*'.

Paragraph 185 states: '*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 (see Explanatory Note to the Noise Policy Statement for England (DEFRA)).*
- *identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and*
- *limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.'*

#### 3.2. Noise Policy Statement for England

The Noise Policy Statement for England (NPSE) aims to '*through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:*

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

### 3.3. Local Planning Policy

The site is located within the administrative boundary of the London Borough of Hillingdon (LBH).

LBH's Supplementary Planning Document (SPD) on Noise was published in April 2006 and references PPG24 *Planning and Noise*, which was revoked in March 2012 by the NPPF. In Section 5 of the SPD, residential noise criteria are presented based on the advice provided within BS 8233:1999. BS 8233:1999 was substantially revised and replaced in 2014.

In order to demonstrate that adverse impacts from the effects of noise can be avoided, Syntegra will utilise the more recently published Professional Practice Guidance on Noise (ProPG), as detailed in **Section 4.2**. The ProPG is based on more recent research and is widely considered to have replaced PPG24 in terms of planning guidance. Additionally, the internal noise level standards set out in the ProPG are fully in line with the most recent version of BS 8233.

## 4. Guidance Documents

### 4.1. Planning Practice Guidance for Noise

The Planning Practice Guidance for Noise (PPG-Noise) was published in March 2014 and last updated in July 2019. The PPG provides advice on how to determine the noise impact on development:

*'Plan-making and decision making need to take account of the acoustic environment and in doing so consider:*

- whether or not a significant adverse effect is occurring or likely to occur;
- whether or not an adverse effect is occurring or likely to occur; and
- whether or not a good standard of amenity can be achieved.

*In line with the Explanatory Note of the Noise Policy Statement for England, this would include identifying whether the overall effect of the noise exposure (including the impact during the construction phase wherever applicable) is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation. As noise is a complex technical issue, it may be appropriate to seek experienced specialist assistance when applying this policy.'*

The document goes on to provide a definition for the levels of noise exposure at which an effect may occur:

***Significant observed adverse effect level:*** this is the level of noise exposure above which significant adverse effects on health and quality of life occur.

***Lowest observed adverse effect level:*** this is the level of noise exposure above which adverse effects on health and quality of life can be detected.

***No observed effect level:*** this is the level of noise exposure below which no effect at all on health and quality of life can be detected.'

It is important to understand that as the PPG-Noise does not provide any advice with respect to specific noise levels/ limits for different sources of noise, it is appropriate to consider other sources of advice and guidance documents when considering whether new developments would be sensitive to the prevailing acoustic environment.

### 4.2. Professional Practice Guidance on Planning & Noise.

The Professional Practice Guidance (ProPG) on Planning and Noise for New Residential Development was published in May 2017 by the Association of Noise Consultants (ANC), Institute of Acoustics (IOA) and Chartered Institute of Environmental Health (CIEH). The document has been produced to provide practitioners with guidance on a recommended approach to the management of noise within the planning system in England and provides numerical acoustic standards in line with the objectives of the Government's planning and noise policy. As a collaboration between the ANC, IOA and CIEH the document has been designed to encourage a good acoustic design process and aims to protect people from the harmful effects of noise.

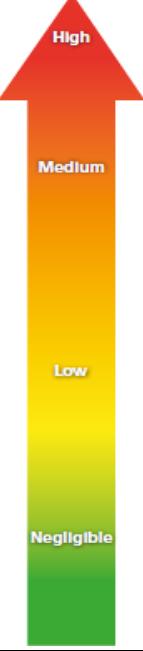
The ProPG notes that it *'does not constitute an official government code of practice and neither replaces nor provides an authoritative interpretation of the law or government policy on which users should take their own advice as appropriate'*.

The ProPG advocates a two-stage approach, first providing an initial noise risk assessment of the proposed development site before undertaking a systematic approach to the noise impact assessment. The results of the initial noise risk assessment are an indication as to how detailed the noise impact assessment will need to be in order to satisfactorily assess all acoustic challenges.

#### 4.2.1. Stage 1: Initial Site Noise Risk Assessment

The initial noise risk assessment compares the site noise levels (which can be obtained by measurement or prediction, or a combination of the two, as appropriate) against a risk scale and determines the risk of adverse effects from noise at the site. The purpose of the initial noise risk assessment is to provide an indication of the level of acoustic challenges at the site. In general, the higher the level of risk identified, the greater the level of detail that will be required within the noise impact assessment in order to satisfactorily demonstrate that adverse impacts will be minimised to an acceptable level.

The initial risk assessment and associated notes are provided in Figure 1 of the ProPG and reproduced in **Table 4.1**.

Noise Risk Assessment		Potential Effect Without Noise Mitigation	Pre-Planning Application Advice
Indicative Daytime Noise Levels, $L_{Aeq,16hr}$	Indicative Night-time Noise Levels, $L_{Aeq,8hr}$		
70 dB	60 dB		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 Acoustic Design Statement (ADS). Applicants are strongly advised to seek expert advice.
65 dB	55 dB		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.
60 dB	50 dB		
55 dB	45 dB		At low noise levels, the site is likely 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.
50 dB	40 dB		
		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:**

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

Table 4.1: Stage 1: Initial Site Risk Assessment

Where sites are exposed to industrial or commercial noise that is considered to be “dominant” then an assessment in line with BS 4142:2014 ‘*Methods for rating and assessing industrial and commercial sound*’ should be carried out.

#### 4.2.2. Stage 2: Full Assessment

##### 4.2.2.1. Stage 2: Element 1 – Good Acoustic Design Process

Following a good acoustic design process is an implicit part of achieving good design as required by Government planning and noise policy. It is imperative that acoustic design is considered at an early stage of the development process and the aim should be to avoid “unreasonable” acoustic conditions and prevent “unacceptable” acoustic conditions.

Good acoustic design does not simply mean compliance with the recommended internal and external noise criteria. Instead, an integrated solution should be provided whereby the optimal acoustic outcome is achieved, without design compromises that will adversely affect living conditions and the quality of life of residents or other sustainable design objectives and requirements.

A good acoustic design should consider (in this order):

- *'Maximising the spatial separation of noise sources and receptors.'*
- *'Investigating the necessity and feasibility of reducing existing noise levels and relocating existing noise sources.'*
- *'Using topography and existing structures (that are likely to last the expected life of the noise-sensitive scheme) to screen the proposed development site from significant sources of noise.'*
- *'Incorporating noise barriers as part of the scheme to screen the proposed development site from significant sources of noise.'*
- *'Using the layout of the scheme to reduce noise propagation across the site.'*
- *'Using the orientation of buildings to reduce the noise exposure of noise-sensitive rooms.'*
- *'Using the building envelope to mitigate noise to acceptable levels.'*

##### 4.2.2.2. Stage 2: Element 2 – Internal Noise Level Guidelines

The ProPG contains Figure 2, which is a table with associated notes drawing on the advice contained within BS 8233:2014 ‘*Guidance on sound insulation and noise reduction for buildings*’, the World Health Organization’s Guidelines for Community Noise 1999 (WHO guidelines) and current best practice. This table is reproduced in **Table 4.2**.

Activity	Location	07:00 – 23:00	23:00 – 07:00
Resting	Living room	35 dB L <sub>Aeq,16hour</sub>	-
Dining	Dining room/area	40 dB L <sub>Aeq,16hour</sub>	-
Sleeping (daytime resting)	Bedroom	35 dB L <sub>Aeq,16hour</sub>	30 dB L <sub>Aeq,8hour</sub> 45 dB L <sub>Amax,F</sub> <sup>(Note 4)</sup>

**NOTE 1** The Table provides recommended internal L<sub>Aeq</sub> target levels for overall noise in the design of a building. These are the sum total of structure-borne and airborne noise sources. Ground-borne noise is assessed separately and is not included as part of these targets, as human response to ground-borne noise varies with many factors such as level, character, timing, occupant expectation and sensitivity.

**NOTE 2** The internal L<sub>Aeq</sub> target levels shown in the Table are based on the existing guidelines issued by the WHO and assume normal diurnal fluctuations in external noise. In cases where local conditions do not follow a typical diurnal pattern, for example on a road serving a port with high levels of traffic at certain times of the night, an appropriate alternative period, e.g., 1 hour, may be used, but the level should be selected to ensure consistency with the internal L<sub>Aeq</sub> target levels recommended in the Table.

**NOTE 3** These internal L<sub>Aeq</sub> target levels are based on annual average data and do not have to be achieved in all circumstances. For example, it is normal to exclude occasional events, such as fireworks night or New Year’s Eve.

Activity	Location	07:00 – 23:00	23:00 – 07:00
<p><b>NOTE 4</b> 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 <math>L_{Amax,F}</math>, 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 45 dB <math>L_{Amax,F}</math> more than 10 times a night. However, where it is not reasonably practicable to achieve this guideline then the judgement of acceptability will depend not only on the maximum noise levels but also on factors such as the source, number, distribution, predictability and regularity of noise events.</p> <p><b>NOTE 5</b> 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 <math>L_{Aeq}</math> target levels should not normally be exceeded, subject to the further advice in Note 7.</p> <p><b>NOTE 6</b> Attention is drawn to the requirements of the Building Regulations.</p> <p><b>NOTE 7</b> Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal <math>L_{Aeq}</math> target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved. The more often internal <math>L_{Aeq}</math> levels start to exceed the internal <math>L_{Aeq}</math> 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 <math>L_{Aeq}</math> 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.</p>			

Table 4.2: ProPG Internal Noise Level Guidelines

#### 4.2.2.3. Stage 2: Element 3 – External Amenity Area Noise Assessment

The ProPG considers the advice provided within BS 8233:2014 and the PPG-Noise in respect of external amenity areas, and presents the following advice, which is selected from both documents, in order to carry out a full assessment of noise levels:

- i. *‘If external amenity spaces are an intrinsic part of the overall design, the acoustic environment of those spaces should be considered so that they can be enjoyed as intended.’*
- ii. *‘The acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 – 55 dB  $L_{Aeq,16hr}$ .’*
- iii. *‘These guideline values may not be achievable in all circumstances where development might be desirable. In such a situation, development should be designed to achieve the lowest practicable noise levels in these external amenity spaces.’*
- iv. *‘Whether or not external amenity spaces are an intrinsic part of the overall design, consideration of the need to provide access to a quiet or relatively quiet external amenity space forms part of a good acoustic design process’*
- v. *‘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:*
  - *A relatively quiet façade (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*

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*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, publically accessible, external amenity space (e.g., a public park or a local green space designated because of its tranquility) that is nearby (e.g., within a 5 minute walking distance). The local planning authority could link such provision to the definition and management of Quiet Areas under the Environmental Noise Regulations.'*

#### 4.2.2.4. **Stage 2: Element 4 – Assessment of Other Relevant Issues**

The final element of Stage 2 is an assessment of '*other relevant issues*' and the ProPG suggests that the following issues are considered before making any final conclusions with respect to noise impacts:

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

The ProPG notes that '*not all of the issues listed above will arise in every planning application and some may already have been addressed as an inherent part of good acoustic design. In addition, LPAs [Local Planning Authorities] may wish to add other relevant issues depending on local circumstances and priorities.'*

## 5. Baseline Noise Levels

In order to determine the extent to which the site is currently affected by noise, a detailed measurement study has been carried out at the site. Measurements have been carried out in order to characterise the existing noise climate over a 24-hour period. The local noise climate was dominated by road traffic noise from Uxbridge Road, with occasional noise from cars manoeuvring and parking.

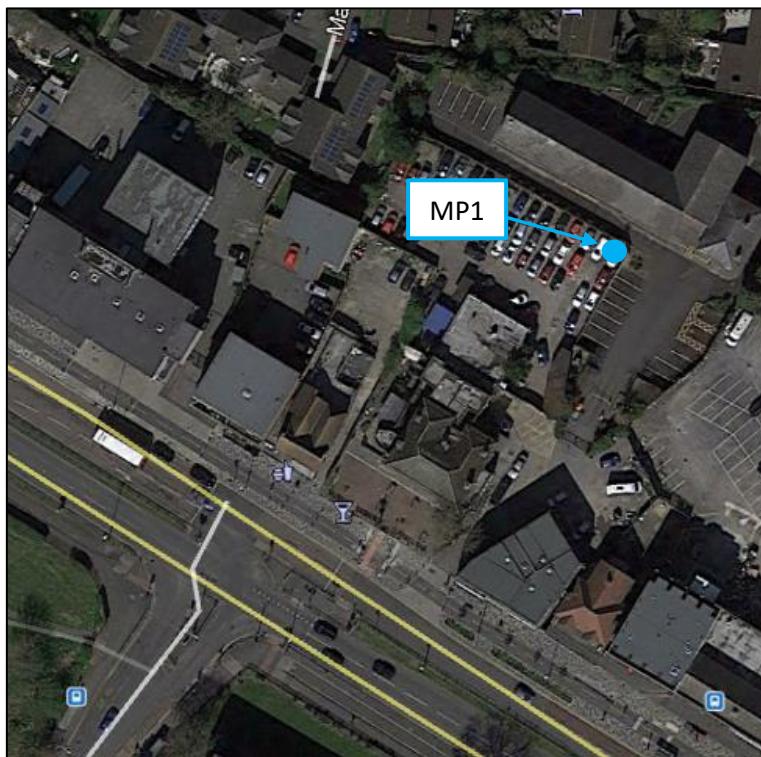
The noise measurements utilised a Svantek 958 Type 1 Precision Sound Level Meter with a current certificate of calibration, the full list of equipment is detailed in **Appendix 3**. Before and after the measurement period the equipment was calibrated in order to ensure that the equipment had remained within reasonable calibration limits (+/- 0.5 dB). Noise Measurements were carried out in consecutive 5 minutes periods with a 1 second resolution.

Measurements were carried out between 1135 hrs on Tuesday 25<sup>th</sup> January 2022 and 1135 hrs on Wednesday 26<sup>th</sup> January 2022.

During the noise measurement survey, the temperature was up to 8°C during the daytime, dropping to approximately 2°C overnight. There was a low (approximately 1 – 2 m/s) south-westerly wind throughout the survey period. The cloud cover was noted to be 100% at the start and end of the survey, with no precipitation noted throughout.

Noise measurements were carried out at Measurement Position 1 (MP1) in a free-field location at a height of 1.5m within the existing rear car park of the Public House. The position was chosen as representative of the proposed houses in terms of noise climate.

The noise monitoring position is shown in **Figure 5.1**.



*Figure 5.1: Noise Monitoring Location*

**Table 5.1** below displays a summary of the measured noise levels and detailed measurement results are presented in **Appendix 4**.

Measurement Position	Period (hours)	$L_{Aeq,T}$ (dB)	$L_{Amax}$ (dB)
MP1	Daytime (0700 – 2300)	50	72
	Night-time (2300 – 0700)	45	62

Table 5.1: Summary of Free Field Semi-Permanent Noise Levels

**Note:** The average noise levels stated are logarithmic for  $L_{Aeq}$ . The  $L_{Amax,F}$  noise levels stated are the arithmetic average of the hourly noise levels during the daytime (0700 hrs – 2300 hrs) and the 10<sup>th</sup> highest  $L_{Amax,F,5min}$  noise level at night (2300 hrs – 0700 hrs), as noted in Table 4.2.

## 6. Initial Site Risk Assessment

The initial site risk assessment has been carried out by comparing the results of the noise measurement survey against the criteria presented in **Table 4.1**. The outcome of the initial site risk assessment is presented in **Table 6.1**.

Measurement Position	Daytime Ambient Noise Level $L_{Aeq,16hr}$ (dB)	Initial Noise Risk Assessment (Daytime)	Night-time Ambient Noise Level $L_{Aeq,8hr}$ (dB)	Initial Noise Risk Assessment (Night-time)
MP1	50	<i>Negligible-Low</i>	45	<i>Low</i>

*Table 6.1: Initial Site Risk Assessment*

The results of the initial site risk assessment based on the measured noise levels indicate that the site has a *negligible-low* risk in terms of noise during the daytime, and a *low* risk at night. As the site experiences  $L_{Amax}$  noise levels in excess of 60 dB, the site should not be considered *negligible* risk, in line with **note d of Table 4.1**. The initial site risk assessment can therefore conclude that the site has a *low* risk in terms of noise. The pre-application advice associated with this risk category is:

**Low:** *'At low noise levels, the site is likely be acceptable from a noise perspective provided that a good acoustic design process is followed and is demonstrated in an Acoustic Design Statement (ADS) which confirms how the adverse impact will be mitigated and minimised in the finished development.'*

## 7. Full Assessment

### 7.1. Internal Noise Level Assessment

Note 5 of **Table 4.2** suggests that internal noise levels should ideally be achieved in as many properties as possible with windows open. With open windows, noise levels would be reduced by up to 15 dB.

**Table 7.1** identifies the likely  $L_{Aeq}$  and  $L_{Amax}$  internal noise levels, assuming windows open, utilising the *Simple Calculation Method* described in BS 8233:2014.

Assessment Location	Period (hrs)	External Noise Levels (dB) (ref. Table 5.1)	Noise Level Reduction of an Open Window (dBA)	Internal Noise Levels (dB)	Compliance with ProPG Criteria
<b>Ambient Noise Level <math>L_{Aeq}</math> (dB)</b>					
MP1	Daytime (0700 – 2300)	50	15	35	✓
	Night-time (2300 – 0700)	45		30	✓
<b>Maximum Noise Level <math>L_{Amax}</math> (dB)</b>					
MP1	Night-time (2300 – 0700)	62	15	47	X

Table 7.1: Internal Noise Levels – Open Windows

It can be identified, from **Table 7.1**, that the internal noise levels would just achieve the internal noise level criteria in terms of  $L_{Aeq}$  however would fail the  $L_{Amax}$  criterion, albeit by just 2 dB.

To ensure acceptable internal noise levels at all times, Syntegra recommend that an alternative means of primary ventilation is installed to ensure that residents do not have to open their windows to achieve adequate background ventilation. We note that this does not necessitate that the windows be sealed shut but requires that an alternate primary means of ventilating the properties is provided (as defined by the Building Regulations Approved Document F). In carrying out our assessment, Syntegra have therefore made the following assumptions:

- The façade build-up will be a standard brick and block construction (or equivalent) to achieve an  $R_w$  of approximately 55 dB.
- A typical double glazing system in a 4/12/6 configuration (or equivalent) will be installed to give a Sound Reduction Index (SRI) of 32 dB  $R_w$ .
- Appropriately specified acoustic trickle vents, with a  $D_{n,e,w}$  of at least 38 dB, or an alternative means of ventilation will be installed to allow adequate ventilation without the requirement to open windows.

**Table 7.2** identifies the likely  $L_{Aeq}$  and  $L_{Amax}$  internal noise levels, assuming windows closed, utilising the *Simple Calculation Method* described in BS 8233:2014. It can be seen that habitable rooms will readily achieve the requirements of the ProPG with closed windows.

Assessment Location	Period (hrs)	External Noise Levels (dB) (ref. Table 5.1)	Sound Insulation of Glazing (dBA)	Internal Noise Levels (dB)	Compliance with ProPG Criteria
<b>Ambient Noise Level <math>L_{Aeq}</math> (dB)</b>					
MP1	Daytime (0700 – 2300)	50	32	18	✓
	Night-time (2300 – 0700)	45		13	✓
<b>Maximum Noise Level <math>L_{AFmax}</math> (dB)</b>					
MP1	Night-time (2300 – 0700)	62	32	30	X

Table 7.2: Internal Noise Levels – Closed Windows

## 7.2. External Noise Level Assessment

The site layout plans in **Figure 2.2** indicate rear gardens behind the houses in relation to the nearest noise source (Uxbridge Road).

The measured daytime noise level at MP1 was 50 dB  $L_{Aeq,16hr}$  and noise levels are likely to be lower in rear gardens due to shielding from the intervening proposed houses and potential garden fences. Accordingly, it can be safely concluded that the lower guideline set out in the ProPG (50 dB  $L_{Aeq,16hr}$ ) would be readily achieved and amenity area noise levels therefore would be acceptable.

## 7.3. Assessment of Other Relevant Issues

The assessment has shown that a reasonable internal noise environment can be achieved, in line with the requirements of the Local Authority, BS 8233 and the ProPG through careful consideration of the building envelope and ventilation requirements. Whilst it would be ideal to achieve the internal level criteria with open windows it is common to achieve the criteria relying on closed windows in noisier areas. Such as an approach is advocated in the PPG-Noise.

The assessment has also shown that the external noise level criteria would be readily achieved in external amenity areas.

**Overall, it has been shown that, through careful consideration of the building envelope construction, the proposed development should avoid future residents being exposed to harmful levels of noise. It can therefore be concluded that significant adverse impacts on the health or quality of life of those future residents would be avoided, in line with the aims of the NPPF, NPSE and PPG-Noise.**

## 8. Conclusion

An assessment has been carried out of the present noise climate at the **land to the rear of the Adam & Eve Public House, 830 Uxbridge Road, Hayes, UB4 0RR** and the impact of that noise on the proposed development.

The assessment is based on the results of a noise measurement survey that has been carried out over a 24-hr period at the proposed development site and has considered the advice of local and national planning policy and best practice guidance.

The initial site risk assessment identified that the site is within a *low* risk area in terms of noise.

It has been identified that the requirements of the Local Authority in respect of internal noise levels would nearly be achieved with open windows. However, to ensure acceptable internal noise levels are possible at all times, it has been recommended to install the following building envelope mitigation measures:

- **A façade build-up of a standard brick and block construction (or equivalent) to achieve an  $R_w$  of approximately 55 dB.**
- **A typical double glazing system in a 4/12/6 configuration (or equivalent) to give a Sound Reduction Index (SRI) of 32 dB  $R_w$ .**
- **Appropriately specified acoustic trickle vents, with a  $D_{n,e,w}$  of at least 38 dB, or an alternative means of ventilation will be installed to allow adequate ventilation without the requirement to open windows.**

The assessment has also shown that the external noise level criteria would be readily achieved in external amenity areas.

**Overall, it has been shown that, through careful consideration of the building envelope construction, the proposed development should avoid future residents being exposed to harmful levels of noise. It can therefore be concluded that significant adverse impacts on the health or quality of life of those future residents would be avoided, in line with the aims of the NPPF, NPSE and PPG-Noise.**

## 9. Appendix 1: Glossary of Acoustic Terminology

Term	Description
'A'-Weighting	<i>This is the main way of adjusting measured sound pressure levels to take into account human hearing, and our uneven frequency response.</i>
Decibel (dB)	<i>This is a tenth (deci) of a bel. The decibel can be a measure of the magnitude of sound, changes in sound level and a measure of sound insulation. Decibels are not an absolute unit of measurement but are an expression of ratio between two quantities expressed in logarithmic form.</i>
$L_{Aeq,T}$	<i>The equivalent steady sound level in dB containing the same acoustic energy as the actual fluctuating sound level over the given period, T. T may be as short as 1 second when used to describe a single event, or as long as 24 hours when used to describe the noise climate at a specified location. <math>L_{Aeq,T}</math> can be measured directly with an integrating sound level meter.</i>
$L_{A10}$	<i>The 'A'-weighted sound pressure level of the residual noise in decibels exceeded for 10 per cent of a given time and is the <math>L_{A10T}</math>. The <math>L_{A10}</math> is used to describe the levels of road traffic noise at a particular location.</i>
$L_{A50}$	<i>The 'A'-weighted sound pressure level of the residual noise in decibels exceeded for 50 per cent of a given time and is the <math>L_{A50T}</math>.</i>
$L_{A90}$	<i>The 'A'-weighted sound pressure level of the residual noise in decibels exceeded for 90 per cent of a given time and is the <math>L_{A90T}</math>. The <math>L_{A90}</math> is used to describe the background noise levels at a particular location.</i>
$L_{Amax}$	<i>The 'A'-weighted maximum sound pressure level measured over a measurement period.</i>

## 10. Appendix 2: Professional Statement

### David Yates

David Yates is a full member of the Institute of Acoustics (MIOA) and has over ten years' experience in acoustic consultancy. David has particular expertise in environmental noise providing acoustic consultancy for residential and mixed use planning applications, plant noise and vibration, construction noise and the design of acoustic, noise and vibration control. David is also experienced in providing sound insulation testing and design advice. David is familiar with the application of all relevant standards associated with his work, including but not limited to, BS 4142, BS 8233, BS 7445, BS 6472, BS 5228, BS 140 series, BS 16283 series and BS 717 series. David manages the acoustic department and is responsible for maintaining Syntegra's ANC membership.

## 11. Appendix 3: List of Equipment

Equipment Type	Manufacturer	Serial Number	Calibration Certification Number	Date of Last Calibration Check
SV36 Sound Calibrator	Svantek	73463	36311	November 2020
SVAN 958	Svantek	92843	<i>No certificate number provided</i>	February 2021
MK 255 Microphone	Microtech Gefell	20197	<i>No certificate number provided</i>	February 2021
SV12L Preamplifier	Svantek	106885	<i>No certificate number provided</i>	February 2021

## 12. Appendix 4: Detailed Noise Measurement Results

Measured Noise levels – MP1 – 25.01.2022

Time	L <sub>Aeq,T</sub> (dB)	L <sub>AF(max)</sub> (dB)	L <sub>A10</sub> (dB)	L <sub>A90</sub> (dB)
1100-1200	54	87	48	40
1200-1300	49	74	51	43
1300-1400	50	67	52	45
1400-1500	50	77	52	45
1500-1600	51	77	52	46
1600-1700	50	70	51	45
1700-1800	49	68	51	46
1800-1900	49	68	51	46
1900-2000	48	70	50	46
2000-2100	49	72	50	46
2100-2200	48	68	50	45
2200-2300	48	75	49	44
2300-0000	45	75	47	42
<b>1100-2300</b>	<b>50</b>	<b>73</b>	<b>51</b>	<b>45</b>
<b>2300-0000</b>	<b>45</b>	<b>75</b>	<b>47</b>	<b>42</b>

Measured Noise levels – MP1 – 26.01.2022

Time	L <sub>Aeq,T</sub> (dB)	L <sub>AF(max)</sub> (dB)	L <sub>A10</sub> (dB)	L <sub>A90</sub> (dB)
0000-0100	44	74	46	38
0100-0200	42	65	44	37
0200-0300	42	58	44	39
0300-0400	43	54	45	40
0400-0500	45	65	47	41
0500-0600	46	62	48	43
0600-0700	48	65	50	45
0700-0800	50	67	52	47
0800-0900	51	73	53	47
0900-1000	51	72	53	47
1000-1100	50	72	51	46
1100-1200	49	67	52	46
<b>0700-1200</b>	<b>50</b>	<b>70</b>	<b>52</b>	<b>46</b>
<b>0000-0700</b>	<b>45</b>	<b>63</b>	<b>46</b>	<b>40</b>

