

# **Acoustic** South East



## Planning Application - New Build Residential Building

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Date: 16/10/2025

Project: J4104

Issue 1

Site: **Rowfold Lodge, Coneyhurst Road, Billingshurst**

Client: **Andrew Rutherford**

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## 1 Introduction and Executive Summary

Acoustic South East have been appointed to undertake an acoustic assessment to support a planning application for a single dwelling adjacent to Coneyhurst Road, Billingshurst, RH14 9DD. Specifically, the client seeks to remove a number of stable units and replace with a single bungalow.

Standards and guidance referenced for this assessment include:

- BS8233 (Sound insulation and noise reduction for buildings) 2014
- National Planning Policy Framework (NPPF), 2024
- Acoustics Ventilation and Overheating Guidance (AVOG), January 2020
- Building Regulations Approved Document O – Overheating
- Association of Noise Consultants (ANC) ADO Guidance, November 2024
- ProPG2017 - Professional Practice Guidance on Planning & Noise

A single class 1 sound level meter was left on site at the position where the new bungalow will be positioned. The duration of the survey allowed for 5 full days and 6 nights and the resulting measured data indicates freefield sound pressure levels of 52dB  $L_{Aeq,16hour}$  for the daytime period and 43dB  $L_{Aeq,8hour}$  for the night time period.

The Sound Reduction Index (SRI) required to protect the future occupants is 17dB for the daytime period, 14dB for the night time period and 18dB to protect against  $L_{Amax}$  events overnight which have the potential to impact sleep.

The proposed bungalow dwelling which replaces the stable block is located approximately 23m back from the roadside and protected by a 2.1m fence-line on the client's property. The garden area is located to the East, protected by the massing of the bungalow. Predicted noise levels in the garden area (42dB  $L_{Aeq,16hour}$  rounded) are comfortably below the requirements of BS8233:2014, ProPG2017 and the World Health Organisation Guidelines for Community Noise dated 1999/Revised 2018.

An initial site risk assessment, consistent with the requirements of ProPG2017 indicates a negligible to low risk for developing the site with regards to noise.

Mitigation measures are not considered necessary and standard thermal double glazing ( $R_{traffic}$  25dB(A)) and trickle vents will be sufficient to protect future occupants from road traffic noise.

A simplified overheating assessment indicates that bedroom windows would be capable of being opened during the night time period to mitigate thermal overheating. Notwithstanding this, it is not typical to carry out such an assessment for ground floor windows due to security, however the information is presented for transparency.

Based on the above findings, planning permission should not be withheld on noise grounds

## 2 Caveat

The findings and outcomes contained within the report are based on the plans and assumptions provided to us by the client. It is critical that the report is read in its entirety to ensure that the information provided and the calculations thereafter remain correct and may be relied upon.

## 3 Context, Noise Criteria & Noise Assessment Methodology

### 3.1 Context

The report provides an account of the site soundscape for the proposed detailed planning application which has been made to Horsham District Council. The application refers to the demolition of the stable units and erection of a single bungalow.

The application is currently live on the Horsham planning website and can be identified under DM/25/1234.

To the North of the application site is Rowfold Lodge, the client's property, to the East are fields and to the South is a mobile home park. To the West is Coneyhurst Road, a single lane, national speed limit road. To the West is a 2.1m fence-line which will remain in place. Beyond the road are further fields and a rural setting.

An Environmental Protection Officer, Kevin Beer (as technical consultee to the local planning authority) has indicated that the adjacent road (Coneyhurst Road) is "*heavily trafficked*" and accordingly, a road traffic noise assessment is required as part of the assessment.

This assessment provides a detailed account of the site soundscape and what measures may be required to protect future occupants of the bungalow property from adverse noise levels.

### 3.2 Site Location

The application site is bordered in red in Figure 1 below.

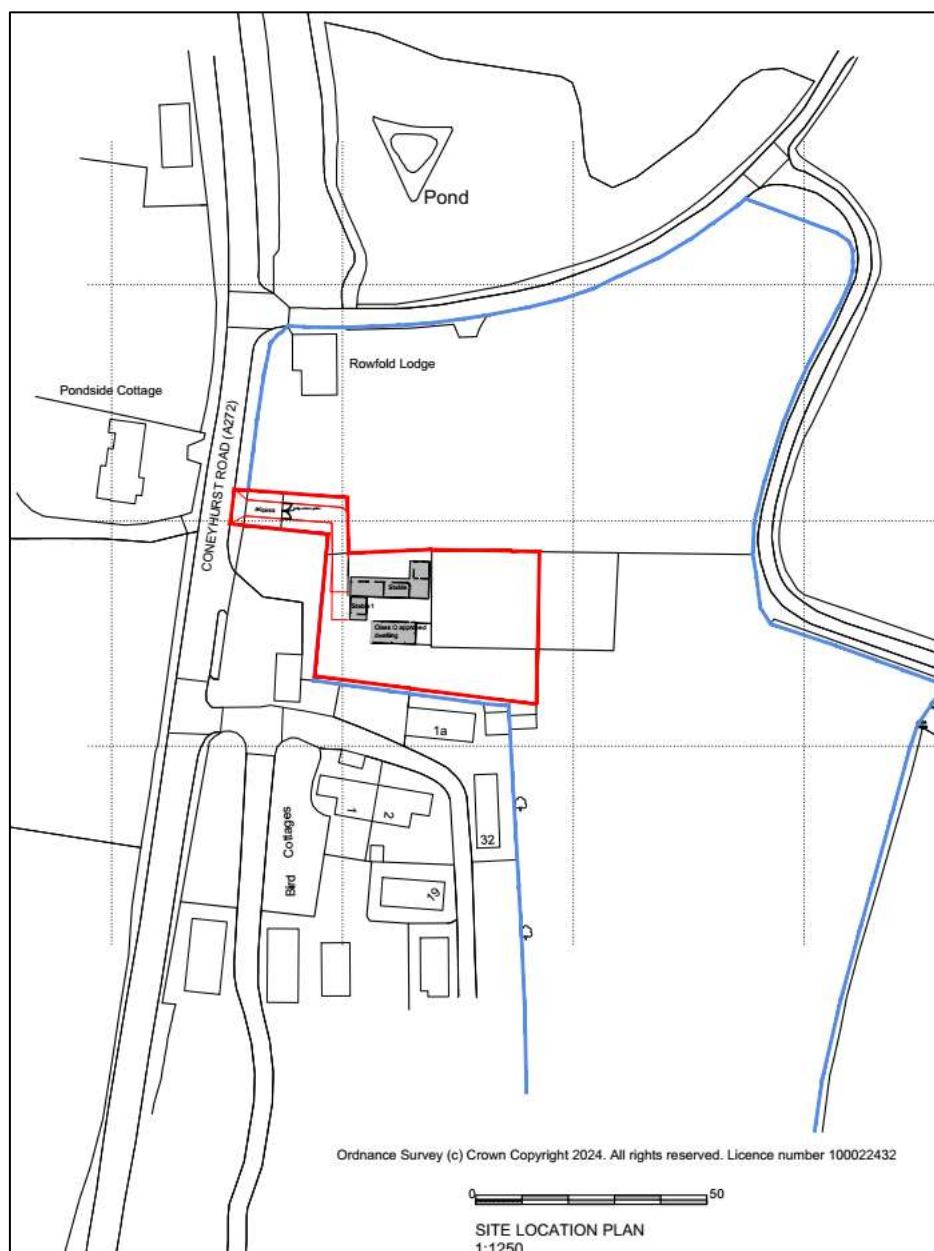


Figure 1. Site Location

### 3.3 Proposed Layout

The proposed layout is shown in Figure 2 below. The brown lines represent the existing stable block which is to be demolished.

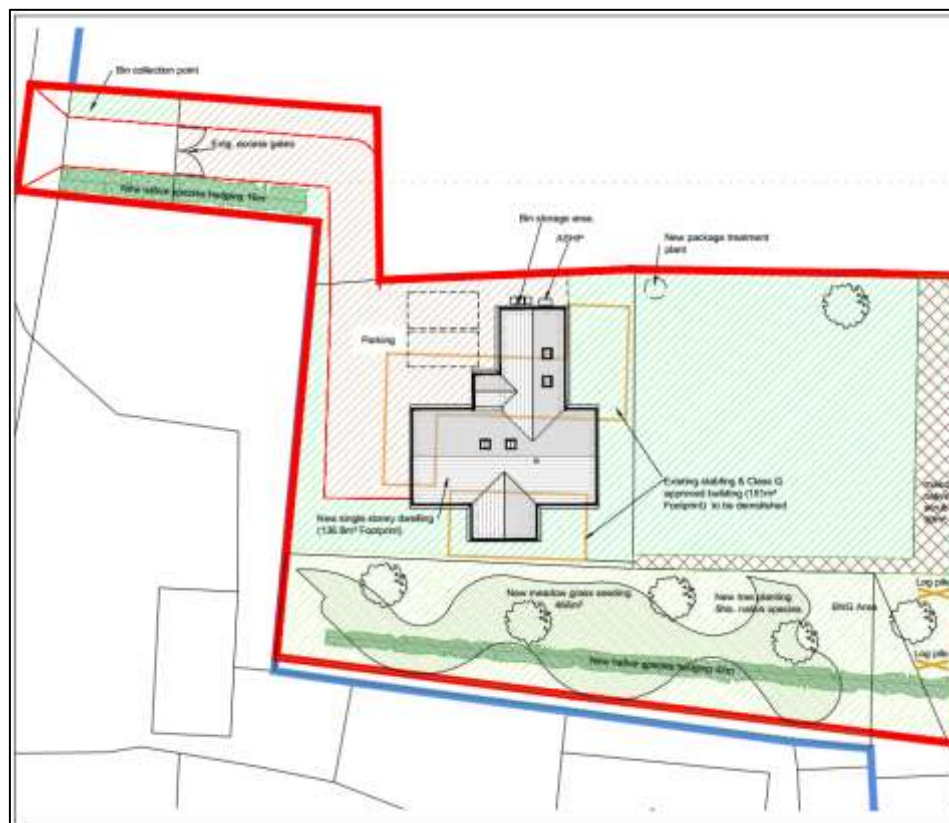
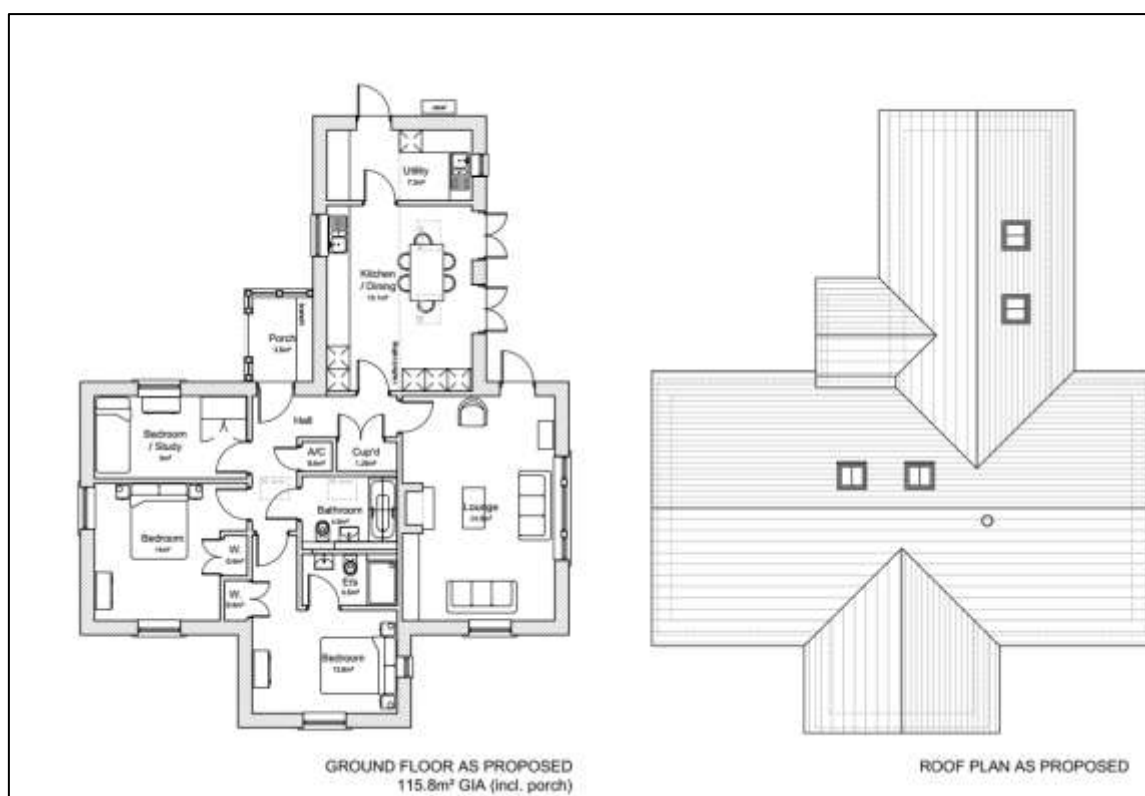


Figure 2. Proposed Site Layout

The proposed internal layout is detailed below in Figure 3



**Figure 3. Proposed Internal Layout**

### 3.4 Soundscape

The soundscape was dominated by passing road traffic on Coneyhurst Road to the West. Birdsong and aviation noise were also noticeable.



### 3.5 Planning Policy and Assessment Criteria

#### 3.5.1 National Planning Policy Framework Dec 2024

The National Planning Policy Framework (Dec 2024) defines the Government's planning policies for England and how these are expected to be applied. It sets out the Government's requirements for the planning system only to the extent that it is relevant, proportionate and necessary to do so.

The following paragraphs are relevant within NPPF Section 15 (Conserving and enhancing the natural environment) states the following:

Paragraph 187(e) - Preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability, and

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

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

Paragraph 200– Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed.

#### 3.5.2 BS8233:2014 – Guidance on Sound Insulation and Noise Reduction for Buildings

Table 4 of BS8233:2014 provides the following guideline values:

Activity	Location	Time period of day	
		07:00-23:00	23:00-07:00
Resting	Living Rooms	35dB L <sub>Aeq,16hour</sub>	-
Dining	Dining Room/Area	40dB L <sub>Aeq,16hour</sub>	-
Sleeping (daytime resting)	Bedroom	35dB L <sub>Aeq,16hour</sub>	30dB L <sub>Aeq,8hour</sub>

Table 1. BS8233:2014 Criteria

It is relevant to note that Table 4 criteria in BS8233:2014 relates to continuous and anonymous sound.

### 3.5.3 ProPG2017

Planning guidance (ProPG2017) relates to new residential development and airborne transportation noise, which includes exposure to road traffic, railway and aviation noise. Whilst ProPG, 2017 generally mirrors the requirements of BS8233:2014 and the World Health Organisation Guidelines, 1999, it goes further in setting a limit for inside bedrooms for  $L_{Amax}$  events and specifically, no more than 10  $L_{Amax}$  events per night time period above 45dB(A).

The internal bedroom  $L_{Amax}$  values will be used in accordance with ProPG2017.

### 3.5.4 Planning Noise Advice Document Sussex, November 2023

A planning noise advice document which all Sussex local authorities have contributed to and signed up to (including Mid Sussex District Council) remains relevant. The guidance document has been followed in respect of measurement parameters and report presentation of data.

### 3.5.5 Building Regulations Approved Document O – Overheating

Recently introduced Part O of the building regulation requires an assessment of whether bedroom windows can be opened at night. It is assumed that bedroom windows will be closed if either of the conditions below are met:

- Internal noise level exceeds 40dB  $L_{Aeq, 8hour}$
- $L_{Amax}$  events exceed 55dB  $L_{Amax}$  more than 10 times a night.

## 3.6 Methodology and Rationale

Given the location and proposal, ie a replacement dwelling, it is not necessary to use any modelling requirements, the sound pressure levels generated from the road traffic noise are capable of being measured at the stable and thus proposed new dwelling location



## 5 Results of the Sound Surveys

All sound survey data is reported as freefield values and uses Fast and A-Weighted filters.

In Figure 5 below, these display the daytime and night time measured sound pressure levels. The 11<sup>th</sup> highest  $L_{Amax}$  events are also presented for 1 minute, to allow a consideration for ProPG2017 and the overnight  $L_{Amax}$  events inside a bedroom space. The  $L_{Amax}$  events are also reported in 2-minute periods for assessing overheating.

### 5.1 LT1

LT1 (Freefield Data)									
Day	Date	$L_{Aeq} 16/8Hr$		11th $L_{Amax}$		Sound Reduction			
		Day	Night	1 min	2min	Day 16Hr	Night 8 Hr	$L_{Amax,1min}$	$L_{Amax,2min}$
Thu	09/10		43.3	63.4	63.4		13	18	18
Fri	10/10	52.2	40.8	63.2	63.2	17	11	18	18
Sat	11/10	51.5	42.1	63	63	17	12	18	18
Sun	12/10	51.7	44.3	63.5	63.2	17	14	19	18
Mon	13/10	52.3	43.8	63.5	63.5	17	14	19	19
Tue	14/10	52.0	43.8	64.3	64	17	14	19	19
AVERAGE:		52	43	63	63	17	13	18	18

Figure 5. Measured Survey Sound Pressure Levels

## 6 Discussion

### 6.1 Calculation of the Sound Reduction Index

By being aware of how the soundscape impacts the proposed properties, a noise modelling approach predicts external sound pressure levels around the building perimeters. Subsequently, the required Sound Reduction Index (SRI) to achieve satisfactory internal sound pressure levels can be calculated.

There are three drivers which impact the façade sound reduction index or SRI. These are the daytime continuous noise levels measured over 16 hours in  $L_{Aeq,T}$ , the night time continuous noise levels over 8 hours, also measured in  $L_{Aeq,T}$ . Thirdly, ProPG2017 requires a consideration of the number of  $L_{Amax}$  events which will occur in a bedroom during the night time period. Specifically, ProPG2017 requires no more than ten events exceeding 45dB  $L_{Amax}$  measured internally. Whichever of these drivers is highest is applied to ensure that the residents are protected from each criterion.

It is relevant to note that living room and bedroom calculations differ, as whilst living rooms are subject to only the daytime predicted sound pressure levels, bedrooms must consider both daytime and night time continuous sound pressure levels as well as  $L_{Amax}$  events during the night to protect sleep.

The daytime required SRI is the predicted external freefield sound pressure level minus 35dB as per the Table 4 values in BS8233:2014 and the same for the night time values (albeit minus 30dB).

The  $L_{Amax}$  required SRI is achieved by using the predicted night time external sound pressure level and comparing this with the measured night time survey noise level. The SRI figure is then adjusted to prevent no more than 10  $L_{Amax}$  events occurring per night inside the bedroom environment above 45dB.

The long-term survey position has been used to assess night time data and  $L_{Amax}$  considerations. The West facing bedrooms have been considered as these represent a worst case, ie closest to Coneyhurst Road.

Summary of Sound Reduction Index (SRI) Required for Bedrooms								
Location	Highest Predicted <u>Daytime</u> External Sound Pressure Level ( $L_{Aeq, 16 \text{ hour}}$ )-Rounded	BS8233:2014 Daytime Criterion	Daytime SRI	Highest Predicted <u>Night Time</u> External Sound Pressure Level $L_{Aeq, 8 \text{ hour}}$ -Rounded	BS8233:2014 Night Time Criterion	Night Time SRI	SRI to ensure less than 10 $L_{Amax}$ events 45dB(A)	SRI to Apply
LT1 (West Elevation)	52	35 dB $L_{Aeq, 16 \text{ hour}}$	17	44	30 dB $L_{Aeq, 8 \text{ hour}}$	14	18	18
All data presented is dB(A) and Freefield								

**Figure 6. Sound Reduction Index (SRI) Requirements- Bedrooms**

From Figure 6 above, it is noted that the highest SRI required to protect future occupants inside a bedroom is 18dB to prevent against night time  $L_{Amax}$ es.

Given that the SRI needed is below 21dB, then there is not a requirement for upgraded glazing and/or ventilation.

**Table B-2 Potential level differences associated with different ventilation Systems from ADF**

Ventilation System from ADF	Cont. equiv. ( $L_{Aeq}$ ) or events ( $L_{AFmax}$ )	Level Difference, external free field level – internal reverberant level, dB	
		Typical windows and vent	Higher acoustic performance windows and vent
1, 2	$L_{Aeq}$	21	31
	$L_{AFmax}$	22	35
3 (with trickle vent)	$L_{Aeq}$	23	33
	$L_{AFmax}$	24	38
4 (no trickle vent)	$L_{Aeq}$	27	38
	$L_{AFmax}$	31	45

**Figure 7. Table B2 of Acoustics Ventilation and Overheating Guidance (AVOG), Jan 2020**

## 6.2 Consideration of External Amenity Areas

Given that the survey position is 52dB  $L_{Aeq,16hour}$  (freefield), this will be less at the garden position which is located further to the East, behind the bungalow.

The survey position is estimated to be approximately 23m from the roadside.

The garden position is an additional 20m at least to the East.

A 10log relationship for the road using inverse square law to determine additional distance attenuation will be  $10\log(43/23) = 2.7\text{dB}$  reduction.

The bungalow itself will also act as a barrier which is a 6.6m apex height, so a potential 5-10dB reduction is capable of being applied. A 7dB reduction will be used, which in conjunction with the 2.7dB reduction for distance equates to a 9.7dB reduction in sound pressure levels.

The garden area is therefore predicted to be 42.3dB  $L_{Aeq,16hour}$ , and is comfortably below the requirements of BS8233:2014, ProPG2017 and the World Health Organisation Guidelines for Community Noise dated 1999, revised 2018.

### 6.3 Overheating Assessment (Simplified)

Recently introduced Part O of the Building Regulations requires an assessment of whether bedroom windows can be opened at night. It is assumed that bedroom windows will be closed if either of the conditions below are met:

- Internal noise level exceeds 40dB  $L_{Aeq,8hour}$
- $L_{Amax}$  events exceed 55dB  $L_{Amax}$  more than 10 times a night.

Further to the November 2024 Association of Noise Consultants (ANC) overheating guidance, a simplified assessment for the purpose of Building Regulations, Approved Document O may be carried out whereby the night time conditions are below 50dB  $L_{Aeq,8hour}$ . From Figures 5 and 6 above, it is noted that the simplified assessment is capable of being considered.

The simplified assessment process subtracts 10dB from the freefield conditions to determine whether **both** continuous conditions and the  $L_{Amax}$  events are achieved internally inside the bedroom space.

As stated, a simplified assessment may only be carried out where the night time soundscape is below 50dB  $L_{Aeq,8hour}$ .

The night time soundscape is comfortably below 50dB  $L_{Aeq,8hour}$  and will allow a simplified assessment to be made. A 10 dB reduction demonstrates 33dB  $L_{Aeq,8hour}$  internally, which satisfies ADO.

A more detailed review of the  $L_{Amax}$  events, using an open window with an SRI of 10dB also indicates only 3 events per night over 55dB  $L_{Amax}$ . However, whilst windows are clearly capable of being opened due to the night time soundscape, the overheating assessment will not theoretically apply, as it is not applicable to ground floor windows.

It is also relevant to note that the bedrooms on the Western elevation, both have windows on the offset elevations to the road, likely allowing a further reduction in the received sound pressure levels.

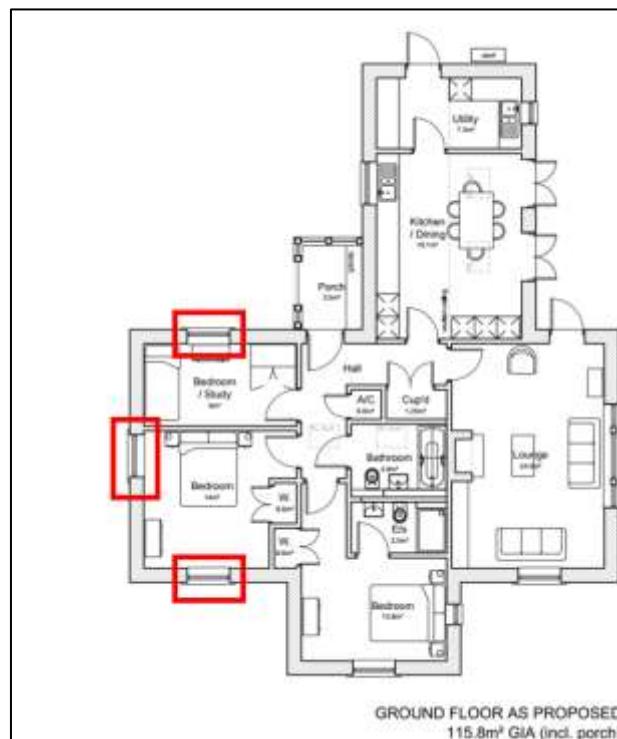


Figure 8. Location of Bedroom Windows



## 6.4 ProPG2017 Initial Site Risk Assessment

In line with the requirements of ProPG2017, an initial site risk assessment has been undertaken which requires that the worst case/typical 24 hours are represented.

The initial site risk assessment used to inform decision makers is presented below and concludes that the site is a negligible to low risk in terms of noise and mitigation measures required to protect future occupants.

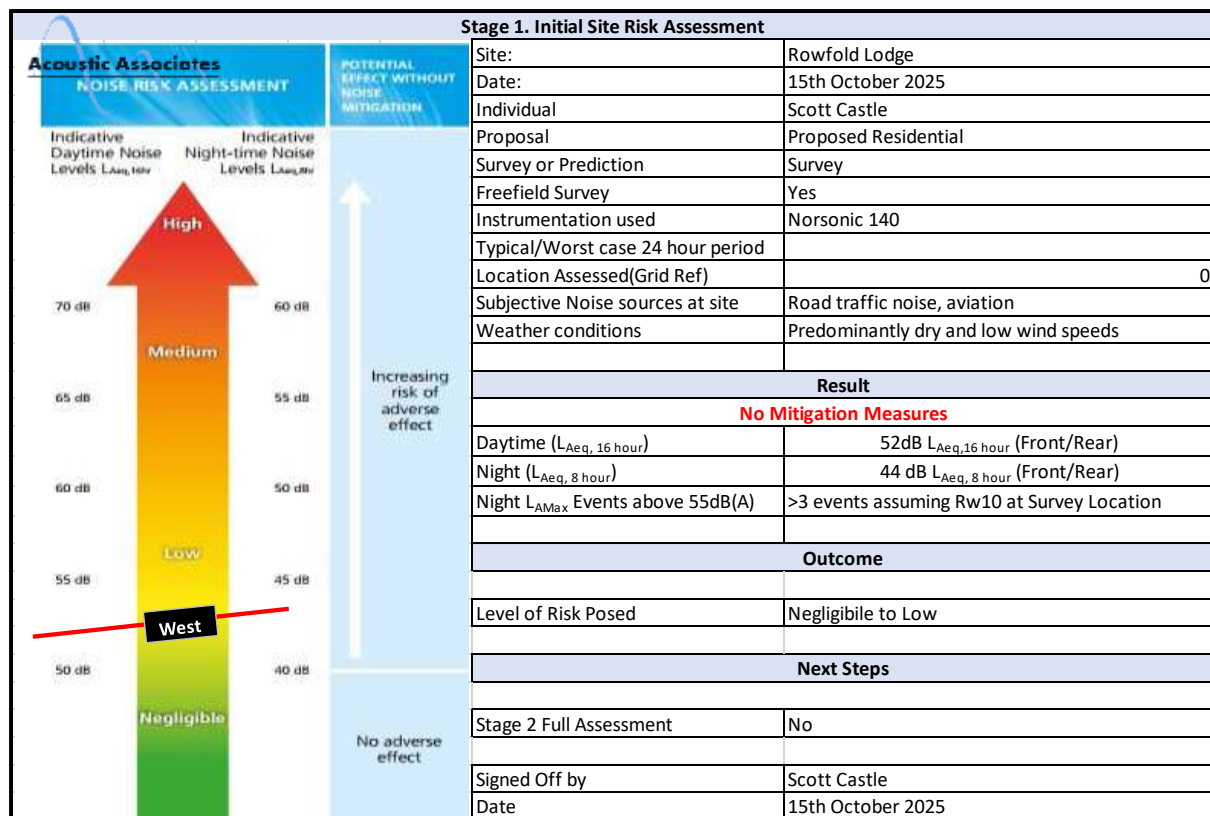


Figure 9. ProPG 2017 Initial Site Risk Assessment



## 6.5 Rigorous Calculation

Rigorous calculations, as per Annex G2 of BS8233:2014 consider the worst-case measured external (freefield levels) sound pressure level, but rather than using a simplistic external to internal sound pressure level subtraction, the Sound Reduction Index (SRI) is achieved using ratios of window sizes, facades, glazing specification as well as the proposed ventilation considerations.

The master bedroom has been considered with a floor area of 14m<sup>2</sup>.

The rigorous calculations have taken account of the following:

- The worst case highest daytime sound pressure levels have been used.
- All rigorous calculations use freefield data.
- The calculations have assumed a masonry cavity wall and for the roof, tiles on felt, a pitched roof, 100mm of mineral wool on top of a plasterboard ceiling.
- Where there is glazing on more than one elevation, the glazing has been summed and considered against the noisiest elevation
- 35dB L<sub>Aeq,16hour</sub> has been applied as the daytime criteria for a bedroom setting
- A window frame slot vent was used within the assessment with a 5000mm<sup>2</sup> equivalent area.

Non Frequency Dependent Variables			Key for Table Below				
Term	Derivation	Value	R <sub>wi</sub>	Sound Reduction of Table Window (Octave)			
A <sub>o</sub>	Given in BS EN 20140-10 = 10 (m^2)	10	R <sub>ew</sub>	Sound Reduction Index of External Wall (Octave)			
S <sub>f</sub>	Total Facade Area (m^2)	19.92	R <sub>rr</sub>	Sound Reduction Index of Roof/Ceiling (Octave)			
S <sub>wi</sub>	Window Area (m^2)	2.7	A	Equivalent Absorbtion Area of Rx Room			
S <sub>ew</sub>	External Wall Area (m^2)	17.22	D <sub>n,e</sub>	Insulation of Trickle Vent (BS EN 20140-10)			
S <sub>rr</sub>	Ceiling Area (m^2)	14					
S	Total Area sound enters the room (m^2)	33.92					
Frequency Dependent Variables							
Term	Description	Octave Band Centre Frequency					
		125	250	500	1000	2000	4000
Leq,ff	Free-Field External Noise Level	53.6	49.6	47.6	47.6	44.6	37.6
D <sub>n,e</sub>	Greenwood 5000EA(5230mm2)	39.5	37.3	35.5	32	31	33.5
R <sub>wi</sub>	4_12_4	24	20	25	35	38	35
R <sub>ew</sub>	Cavity Masonry (Brick Cavity with Insulation lightweight block)	41	39	44	52	60	65
R <sub>rr</sub>	Tile on Felt, Pitched Roof, 100mm mineral wool on plasterboard ceiling	28	34	43	43	43	43
A	Equivalent Absorbtion Area of Room (Copied from BS8233)	11.00	14.00	16.00	16.00	15.00	15.00
BS8233 Calculation Details							
Term From Equation Below		Octave Band Centre Frequency					
		125	250	500	1000	2000	4000
Leq,ff		53.6	49.6	47.6	47.6	44.6	37.6
A <sub>o</sub> /S . 10^(-D <sub>n,e</sub> /10)		3.31E-05	5.49E-05	8.31E-05	0.000186	0.000234	0.000132
S <sub>wi</sub> /S . 10^(-R <sub>wi</sub> /10)		0.000317	0.000796	0.000252	2.52E-05	1.26E-05	2.52E-05
S <sub>ew</sub> /S . 10^(-R <sub>ew</sub> /10)		4.03E-05	6.39E-05	2.02E-05	3.2E-06	5.08E-07	1.61E-07
S <sub>rr</sub> /S . 10^(-R <sub>rr</sub> /10)		0.000654	0.000164	2.07E-05	2.07E-05	2.07E-05	2.07E-05
10log10(S/A)+3		7.890632	6.843278	6.263359	6.263359	6.543646	6.543646
Leq,2		31.67945	26.77394	19.61177	17.5754	15.42477	6.640646
A-Weighting		-16.1	-8.6	-3.2	0	1.2	1
A-Weighted Leq		15.57945	18.17394	16.41177	17.5754	16.62477	7.640646
A-Weighted Level Outside		52	Master Bedroom				
BS8233 Predicted Internal A-Weighted Level		24					
Prediced Building Envelope SRI		28					
BS8233 Calculation can be seen below:							
$L_{eq,2} \approx L_{eq,ff} + 10 \log_{10} \left( \frac{A_0}{S} 10^{\frac{-D_{n,e}}{10}} + \frac{S_{wi}}{S} 10^{\frac{-R_{wi}}{10}} + \frac{S_{ew}}{S} 10^{\frac{-R_{ew}}{10}} + \frac{S_{rr}}{S} 10^{\frac{-R_{rr}}{10}} \right) + 10 \log_{10} \left( \frac{S}{A} \right) + 3$							

Figure 10. Rigorous Calculation

The outcome of the rigorous assessment is that standard thermal double glazing and a trickle slot vent will provide an SRI of 28dB. This is 10dB higher than the most onerous SRI required.

## 7 Recommendations

### 7.1 Glazing

The assessment indicates that standard thermal double glazing will be sufficient to protect future occupants. Whilst Pilkington glazing (4\12\4) has been used within the reporting it is important to understand the relevant metric for comparison, should alternative glazing providers be approached. The only comparable metric for glazing is  $R_w+C_{tr}$ , and this is sometimes referred to as  $R_{traffic}$ . The  $R_{traffic}$  for the bedroom windows should be no less than 25dB(A).

*N.B. This is the required  $R_w+C_{tr}$  of the frame and glazing together. If the glazing supplier has test results for the glass on its own an  $R_w+C_{tr}$  value 2-3dB higher would be required (glazing tested on its own will outperform glazing that is tested within a window frame). Please note  $R_w+C_{tr}$  is also referred to as  $R_{traffic}$ .*

### 7.2 Ventilation

The rigorous calculation was carried out using a Greenwood 5000EA slot vent. This has a  $D_{n,e,w}+C_{tr}$  rating (when open) of 37/38dB. Whilst it might sound obvious, if/when approaching ventilation providers, the vent test data needs to be reviewed for only the vent's "open" position, otherwise the data is not comparable.

If slot vents were not used, a through wall passive ventilator (Rytens AAC125HP LookRyt vent) is capable of providing 8500mm<sup>2</sup> of free area and would be capable of being placed onto the quieter façade(s). The  $D_{n,e,w}+C_{tr}$  rating is 41dB, again when open and the rigorous calculation shows the internal sound pressure level achieved would be 22dB with an SRI of 29dB achieved, again comfortably above that required.

### 7.3 Existing Roadside Fence

The 2.1 m fence should remain in place at the Western elevation of the site location.

## 8 Conclusion

A single class 1 sound level meter was left on site at the position where the new bungalow will be positioned. The duration of the survey allowed for 5 full days and 6 nights and the resulting measured data indicates freefield sound pressure levels of 52dB  $L_{Aeq,16hour}$  for the daytime period and 43dB  $L_{Aeq,8hour}$  for the night time period.

The Sound Reduction Index (SRI) required to protect the future occupants is 17dB for the daytime period, 14dB for the night time period and 18dB to protect against  $L_{Amax}$  events overnight which have the potential to impact sleep.

The proposed bungalow dwelling which replaces the stable block is located approximately 23m back from the roadside and protected by a 2.1m fence-line on the client's property. The garden area is located to the East, protected by the massing of the bungalow. Predicted noise levels in the garden area (42dB  $L_{Aeq,16hour}$  rounded) are comfortably below the requirements of BS8233:2014, ProPG2017 and the World Health Organisation Guidelines for Community Noise dated 1999/Revised 2018.

An initial site risk assessment, consistent with the requirements of ProPG2017 indicates a negligible to low risk for developing the site with regards to noise.

Mitigation measures are not considered necessary and standard thermal double glazing ( $R_{traffic}$  25dB(A)) and trickle vents will be sufficient to protect future occupants from road traffic noise.

A simplified overheating assessment indicates that bedroom windows would be capable of being opened during the night time period to mitigate thermal overheating. Notwithstanding this, it is not typical to carry out such an assessment for ground floor windows due to security, however the information is presented for transparency.

Based on the above findings, planning permission should not be withheld on noise grounds.