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Noise Impact Report

Project Details	
Client	OSBF Pension Scheme
Client Address	Oak Farm Latham York YO42 4PP
Site Address	Land South of the Black Horse High Street Rhostyllen Wrexham LL14 4AD
Reference	22299E

Quality Assurance	
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1 Executive Summary

A noise assessment has been conducted for a proposed residential development comprising 4 no. purpose new-build dwelling houses at Land South of The Black Horse, High Street, Rhostyllen, LL14 4AD.

The assessment is to be submitted as part of a planning application for the development site to Wrexham County Borough Council (WCBC).

The assessment considers the impact of the nearby public house noise and surrounding road network on the proposed residential development in comparison with the Planning Policy Wales Edition 12/ February 2024 (PPW), BS 8233: 2014 and World Health Organisation guideline criteria.

All results and recommendations are within the BS 8233:2014 and WHO guidelines for noise within a residential dwelling and external areas provided the proposed mitigation is implemented, including the glazing and ventilation strategy.

2 Introduction

OSBF Pension Scheme has instructed Spratt and Hamer Limited to undertake an environmental noise survey in order to assess the impact from the nearby public house as well as other noise sources in the area, which may have an impact on future residents of the proposed development.

The proposed development site is vacant plot of land located to the rear of an operational public house on which it is proposed to erect 4no. dwellings with associated outdoor amenity areas.

An outline application (ref: P/2016/0909) for the erection of three dwelling houses was submitted to the local authority in 2016 and subsequently granted in 2017, subject to conditions. A noise impact assessment was not requested as part of the grant.

Following this, a reserved matters application (ref: P/2020/0079) was submitted in 2020 and granted, subject to conditions, that same year. No noise impact assessment was requested as part of this grant, however at the time of writing this report, the planning approval has lapsed. As such a new application must be submitted and while it should be noted that the local authority have not requested a noise impact assessment to accompany the application, the client has requested that Spratt and Hamer assess the potential noise impact from the nearby public house on the proposed development.

This report is prepared solely for OSBF Pension Scheme. Spratt and Hamer Limited accepts no responsibility for its use by any third party.

This document has been prepared using the various documents listed within the appendices of this report, together with drawings, technical information and additional verbal representations made by third parties. We have not audited nor independently verified the content or accuracy of any of the documents and information provided to us in the preparation of this report.

If additional information comes to light subsequent to the production of this report, we reserve the right to revise our opinions, and the conclusions reached within this report.

2.1 Noise Impact Assessment

Spratt and Hamer Limited has undertaken an environmental noise impact assessment at the above site with noise levels measured externally over a 4-hour period (16:00 to 20:00). The measurement was carried out during a Saturday.

This report will state the measured noise levels and will refer to guidance relevant to the nature of this survey whilst considering Local Planning Authority guidance and conditions.

3 Assumptions, Limitations & Uncertainty

a. All suggested specifications require a good level of workmanship and for materials to be installed as the manufacture intends. Any poor workmanship may lead to weaknesses in the sound attenuation provided by the building elements.
b. It is assumed that the sound pressure levels measured on site during the environmental noise survey are typical of the site.
c. It is assumed that the technical data provided by glazing and ventilation manufacturers is up to date and correct.
d. It is assumed that drawings and information supplied by OSBF Pension Scheme and Aubourn Architecture Limited are up to date and correct.
e. It is assumed that noise levels predicted from external patron area are considered a worst-case scenario.

4 Planning Policies, Guidance and Criteria

The planning policies and criteria listed below are taken from associated relevant guidance documents, all of which should be considered for the internal and external noise levels.

4.1 Planning Policy Wales

The Planning Policy Wales Edition 12/ February 2024 (PPW) sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters, which together with PPW provide the national planning policy framework for Wales. PPW, the TANs1, MTANs2 and policy clarification letters comprise national planning policy.

The primary objective of PPW is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales, as required by the Planning (Wales) Act 2015, the Well-being of Future Generations (Wales) Act 2015 and other key legislation and resultant duties such as the Socio-economic Duty. A well-functioning planning system is fundamental for sustainable development and achieving sustainable places.

PPW promotes action at all levels of the planning process which is conducive to maximising its contribution to the well-being of Wales and its communities. It encourages a wider, sustainable, and problem-solving outlook which focuses on integrating and addressing multiple issues rather than on an approach which is fragmented, un-coordinated and deals with issues in isolation. It provides an opportunity to remove any actual or perceived problems in current approaches and stimulate and support innovative and creative ideas as well as high standards of evidence and assessment to underpin the preparation of development plans and strategies and individual proposals. Monitoring and learning from development outcomes so as to drive sustainable improvements in planning practice is also important.

Technical Advice Note 11 of the previous edition 11/ February 2021 of PPW: Noise provides a way of assessing noise exposure inside new residential dwellings by separating it into distinctive categories. When planning applications are considered, local planning authorities should determine into which of the categories the proposed site falls. Noise categories are expressed in Table 1 overleaf.

Noise Exposure Categories for New Dwellings	
A	Noise need not be considered as a determining factor in granting planning permission, although the noise level at the high end of the category should not be regarded as desirable.
B	Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to ensure an adequate level of protection.
C	Planning permission should not normally be granted. Where it is considered that permission should be given, for example, because there are no alternative quieter sites available, conditions should be imposed to ensure a commensurate level of protection against noise.
D	Planning permission should normally be refused.

Noise Source		Noise Exposure Category			
		A	B	C	D
		$L_{Aeq,T}$ (dB)	$L_{Aeq,T}$ (dB)	$L_{Aeq,T}$ (dB)	$L_{Aeq,T}$ (dB)
Road Traffic	07:00 – 23:00	<55	55 – 63	63 – 72	>72
	23:00 – 07:00	<45	45 – 57	57 – 66	>66
Rail Traffic	07:00 – 23:00	<55	55 – 66	66 – 74	>74
	23:00 – 07:00	<45	45 – 59	59 – 66	>66
Air Traffic	07:00 – 23:00	<57	57 – 66	66 – 72	>72
	23:00 – 07:00	<48	48 – 57	57 – 66	>66
Mixed Sources	07:00 – 23:00	<55	55 – 63	63 – 72	>72
	23:00 – 07:00	<45	45 – 57	57 – 66	>66

Table 1: Noise Exposure Categories in Accordance with Technical Advice Note 11: Noise

In addition, para 6.7.5 of PPW Edition 12 states that:

"(...) it will be important to consider the relationship of proposed development to existing development and its surrounding area and its potential to exacerbate or create poor air quality or inappropriate soundscapes. The agent of change principle says that a business or person responsible for introducing a change is responsible for managing that change. In practice, for example, this means a developer would have to ensure that solutions to address air quality or noise from nearby pre-existing infrastructure, businesses or venues can be found and implemented as part of ensuring development is acceptable."

4.2 Criteria

4.3 Local Planning Authority Criteria

At the time of writing the report, the consultant is unaware of any conditions or specific criteria provided by the Local Planning Authority. However, it was proposed to WCBC via email on 21/01/2025 that an attended 4-hour measurement during 16:00 and 20:00 and that should there be an event during the measurement period that continues beyond 23:00, the highest $L_{Aeq,1hour}$ measurement will be used. However, should there be no event during the measurement, a -5 dB correction will be applied to the highest $L_{Aeq,1hour}$ to account for the lower level of traffic flow during the nighttime.

In addition, a consultation notice was put forward by the Local Authority. EHO comments raised concerns with regards to any potential impact from entertainment noise emanating from the neighbouring public house and associated carpark.

Consequently, the following noise impact assessment will be conducted in order to meet the criteria of BS 8233:2014. Further context will be evaluated in order to assess the potential impact of noise emissions from the public house, with reference to NR curve targets.

4.4 BS 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings

The British Standard BS 8233:2014, Guidance on Sound Insulation and noise reduction for buildings, provides appropriate internal levels of noise within dwellings, flats, and rooms in residential use when unoccupied.

Section 7.2.2 'Internal ambient noise levels in dwellings' of BS 8233: 2014 states that 'In general, for steady external noise sources, it is desirable that the internal ambient noise level does not exceed the guideline values in Table 4'.

Activity	Location	07:00 to 23:00	23:00 to 07:00
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 $L_{Aeq,8hour}$

Table 2: Table 4 of BS 8233:2014 Indoor ambient levels for dwellings

Note 7 of section 7.7.2 states 'Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed up to 5 dB and reasonable internal conditions still achieved'.

In addition, Note 4 of section 7.7.2 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_{AmaxF} (SIC), depending on the character and number of events per night. Sporadic noise events could require separate values".

In the absence of a specific performance criterion within BS 8233 for short-term noise maxima, reference can be made to guidance published by the WHO. In particular, the WHO publication 'Guidelines for Community Noise' (1999), from which the guidance given in BS 8233: 2014 is itself derived, states that 'for a good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45 dB L_{AFmax} more than ten to fifteen times per night'.

The WHO publication 'Guidelines for Community Noise' (1999) has since been updated in 2018; however, it is widely accepted by Local Authorities that L_{AFmax} 45 dB is the target level for short-term noise maxima between 23:00-07:00.

4.5 WHO Guidelines for Community Noise

In 1999, the WHO (World Health Organisation) published Guidelines for Community Noise, stating the following internal noise levels are applicable within dwellings.

Specific Requirement	Critical Health Effect (s)	$L_{Aeq,T}$ (dB)	Time base, T (hours)	L_{AFmax} (dB)
Outdoor living area	Serious annoyance, daytime, and evening	55	16	-
	Moderate annoyance, daytime evening	50	16	-
Dwelling, indoors	Speech intelligibility and moderate annoyance, daytime, and evening	35	16	-
Inside bedrooms	Sleep disturbance, nighttime	30	8	45
Outside bedrooms	Sleep disturbance, window open (outdoor values)	45	8	60

Table 3: A Summary of the Guidance Noise Levels

4.6 Criteria Summary

In order to meet the requirements of Wrexham County Borough Council, the assessment and recommendations will be made with reference to the *Technical Advice Note (TAN) 11: Noise* from WPP, *BS 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings* and WHO *Guidelines for Community Noise*, as well as other relevant criteria such as NR curve targets to assess entertainment noise.

5 Site Description

The proposed development will be located on what is currently a vacant plot of land in the village of Rhostyllen, situated approximately 2.7km southwest from the centre of Wrexham. The area is of a mixed commercial and residential environment with moderate traffic, pedestrian, and patron activity.

Directly to the west and north of the proposed development there are residential dwellings. Approximately 30m north of the site runs High Street which accommodates low volumes of traffic. the Old Black Horse public house and associated 'external patron area' and car park are situated northeast of the proposed site. The public house is licensed to operate between 11:00 and 00:30 from Sunday to Thursday and 11:00 to 01:30 on a Friday and Saturday. It is noted that patrons must vacate any external areas no later than 23:00 daily. In addition, it is along he High Street where other businesses carry out their activity, including a few hot food takeaways (Ali's Tandoori and Kervan Pizza and Kebab House).

It is important to note that the public house is licensed to host entertainment events such as Karaoke which must cease at 00:00 on a Sunday to Thursday and 01:00 on a Friday, Saturday and bank holiday Sundays and Mondays. Events take place in the main space of the public house, situated by the entrance on the east side of the building, therefore not having direct line of sight with the proposed dwellings.

The noise profile of the area is dominated from traffic and other noise sources secondary in nature, such as operation of the Old Black Horse pub.

5.1 Subjective Observations

During site attendance, subjectively the main source of noise were vehicle passings on the High Street and distant road traffic. Some infrequent noise was observed from the from vehicle movement in the public house car park. Noise from birds was also audible however this was also infrequent.

5.2 Weather

15/02/2025	Saturday
Temperature (°C)	2.8 – 5.2
Wind Speed (m/s)	0.0 – 2.5
Wind Direction	WSW
Precipitation (mm/h)	0.0 – 1.8 (mean 0.1)
Damp road/ wet ground	No
Fog/snow/ice	None

Table 4: Measuring Weather Conditions

All weather data taken from wow.metoffice.gov.uk from the Erbistock weather station, located at approximately 6.2km south of the proposed development.

6 Noise Measurement Procedure

6.1 Survey Date(s)

15/02/2025

6.2 Personnel Present

Luke Owen BSc (Hons)

6.3 Survey Equipment Used

Manufacturer	Model	Serial No.	Description
Pulsar	Model 105	93357	Acoustic Calibrator
Rion	NL-52	00976149	Integrating Sound Level Meter and Real Time Analyser

Table 5: Survey Equipment Used

6.4 Calibration

The sound level meter was calibrated with the field calibrator to a level of 94.0 dB @ 1 kHz prior to and on completion of the survey. No significant drift in calibration was observed. The meter used during the survey is a precision grade Class 1.

Calibration certificates are available on request.

6.5 External Ambient Sound Measurements

The measurement location chosen during the survey was deemed suitable for the determination of the noise levels able to impact upon the façades of the proposed development.

The sound level meter was set to measure broadband and 1:1 octave centre frequency bands L_{Aeq}, L_{A90}, L_{A10} and L_{AFmax} in 5-minute periods.

6.5.1 Monitoring Position 1

A microphone was placed 3m south of the external patron area fence on a tripod 1.5m from ground level. The sound level meter was set to record WAV file audio recordings for all maximum sound level events above 65 dBA.

6.6 Location Plan of Measurement Positions

The location plan below shows the proposed development and positions of the monitoring equipment.



Figure 1: Indicative Location Map. Image taken from www.google.com/maps

7 Results and Analysis

7.1 External Ambient Sound Measurement Analysis in Accordance with BS 8233:2014

The following table presents the measured results from all monitoring positions.

The noise profile of the area includes traffic and non-traffic sources. As such, in order to provide a robust approach, and as proposed to WCBC, the same ambient sound levels in 1-hour intervals will be used in the assessment for both day and nighttime periods.

Monitoring position	Day	Time Period	Time Base T	$L_{Aeq,T}$ (dB)	Highest $L_{Aeq,1hour}$ (dB)
1	Saturday	Daytime	4hr	47.1	49.6

Table 6: Measurement Results

Data charts and further measurement results can be found in the appendix.

7.2 L_{AFmax} Analysis

To provide a robust assessment, the L_{AFmax} measured during the daytime (16:00 – 20:00) has been analysed and used to predict the nighttime L_{AFmax} noise impact. WHO Community Noise Guidelines states "For a good night sleep it is believed that indoor sound pressure should not exceed approximately 45 dB L_{AFmax} more than 10 – 15 times per night (Vallet & Vernet 1991).

7.2.1 Nighttime L_{AFmax} at Monitoring Position 1

Analysis has established that the highest L_{AFMax} event is 69.6 dB. As such, it can be estimated that this level is not likely to be exceeded during the nighttime and therefore will be used for the assessment at this monitoring position as it is considered representative of L_{AFmax} events during the nighttime period.

7.2.2 Predicted External Patron Noise

The external patron area was not in operation during the monitoring period. In order to account for potential to cause disturbance on future residents, this section will predict the noise emissions from the external patron area at full capacity, representing a worst-case scenario. The resulting predicted noise emissions will then be compared to the highest 1-hour ambient noise levels in order to provide our recommendations, thus representing a robust approach.

Licensing documentation for the public house indicates that external areas are not to be used by patrons after 23:00. The assessment is therefore based on daytime hours only.

The following assumptions have been made in the assessment:

- 16 no. 4-person tables, equating to a maximum of 64 patrons and a maximum of 32 no. conversations at any one time (1 out of 2 patrons speaking) of which it is assumed that 25% (8 conversations) will involve raised voices and 75% (24 conversations) normal voices, representing a worst-case scenario.
- A sound pressure level of a normal voice (60 dBA at 1m) and raised voice (66 dBA at 1m) will be used in the assessment. The value has been taken from www.engineeringtoolbox.com.
- Octave frequency spectrum for a male voice is taken from www.dpamicrophones.com.



- The distance from the closest boundary (closest table) to the window is approximately 12m.
- A 10dB sound reduction provided by the perimeter fence will be incorporated. Visual inspection of the fence demonstrated that the fence is a solid close-boarded barrier likely to have approximately a 10kg/m^2 mass.
- For robustness, attenuation of patron noise is based on propagation of a plane source.

The table below outlines the predicted noise emissions of the external patron area onto the proposed development.

External patron area Noise	Un-weighted Octave Band Centre Frequency Hz (dB)					dBA
	250	500	1K	2K	4k	
External patron area Sound Level	73.4	77.3	71.3	67.0	62.8	77.1
Distance attenuation (12m)	-10.5	-10.5	-10.5	-10.5	-10.5	-
Shielding	-10.0	-10.0	-10.0	-10.0	-10.0	-
Noise at NSR1	53.0	56.8	50.9	46.5	42.3	56.6

Table 7: External patron area Noise

Furthermore, the following table adds the predicted entertainment noise emissions at the nearest façade of the proposed development, therefore representing a worst-case scenario. The entertainment noise prediction is presented in the NR Curve Target assessment section later in this report.

Daytime $L_{Aeq,t}$	Un-weighted Octave Band Centre Frequency Hz (dB)							dBA
	63	125	250	500	1K	2K	4K	
External patron area sound level	-	-	53.0	56.8	50.9	46.5	42.3	56.6
Measured Highest $L_{Aeq,1hr}$	56.5	52.2	46.3	44.9	46.0	40.1	33.2	49.6
Entertainment Noise	52.0	49.0	39.0	32.0	24.0	27.0	15.0	37.1
Cumulative sound level	57.8	53.9	54.0	57.1	52.1	47.4	42.8	57.4

Table 8: Predicted Cumulative Noise Emissions

8 Recommendations

In order to provide a robust approach, the estimated internal noise levels attributed by the external noise sources for both day and nighttime periods have been assessed using:

- The cumulative octave band ambient sound levels of both the highest 1-hour interval $L_{Aeq,T}$ and the predicted noise emissions of the external patron area and the internal entertainment noise for the daytime.
- The daytime highest 1-hour interval octave band ambient sound levels will be used to assess the nighttime period, therefore providing a robust approach.
- The nighttime L_{AFmax} maximum value analysis.

The above, along with the building element evaluation will provide the basis for the following recommendations.

8.1 Glazing & Ventilation Specification

The glazing and ventilation specification in bedrooms & living rooms should consist of double-glazed unit in well-sealed frames and a quality passive acoustic vent as shown in the table below.

Room	Glazing	Ventilation
Bedrooms	6mm glass / 16mm air / 4mm glass	Greenwood EAQ42W Acoustic Window Vent
Living rooms		

Table 9: Specification

8.2 Notes on Ventilation

NOTE 5 in section 7.7.2 of BS 8233:2014 states "if relying on closed windows to meet the guide values, there needs to be an appropriate alternative ventilation that does not compromise the façade insulation or the resulting noise level."

It should be noted that it's the responsibility of OSBF Pension Scheme to ensure that the ventilation strategy is sufficient to meet the requirements of Building Regulations Approved Documents F and O.

It is our understanding that all dwellings may be ventilated either with passive vents or mechanically ventilated. Where mechanical ventilation is utilised, the system is to be designed by a suitably qualified engineer or M&E consultant. The system shall be designed so the sound levels from any external plant or inlet/outlets do not exceed the background noise level at any noise receptor, i.e., outside a neighbouring window. This may require further assessment once the type and location of system has been specified.

The glazing and ventilation suggestions have been calculated assuming the windows are tightly closed. However, it must be noted that windows are suggested to be openable to provide rapid or purge ventilation or means of escape.

8.3 Open Window Assessment in Accordance with Approved Document O

Approved Document O establishes that in locations where external noise may be an issue (...), 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).

As can be seen in the table below, considering the sound reduction of 13dB of a partially open window, noise levels do not exceed 53 dB at all façades. In addition, analysis shows that over a 4-hour period during the daytime, 68 dB L_{AFmax} is exceeded once. As such it is considered unlikely that 68 dB L_{AFmax} will be exceeded more than 10 times in a nighttime period.

Plot	Room	Time period	Measured External $L_{Aeq,T}$ (dB)	ADO criteria*	ADO exceedance
Plots 1 - 4	Bedroom	Nighttime (23:00 – 07:00)	50.0	53.0	-3.0

Table 10: ADO Analysis

**with open window R_w of 13dB*

It should be noted that he $L_{Aeq,T}$ used for the assessment in the table above is a highest $L_{Aeq,1hour}$ measurement from the daytime. This is therefore a robust assessment given this level is likely to reduce during the nighttime.

Consequently, the overheating mitigation strategy should take account of the likelihood that windows can remain open during sleeping hours and therefore the minimum free areas of Approved Document O simplified method can be met. In such cases, Approved Document O states that the simplified method should be used. It should be noted that further specialist assessment maybe required.

8.4 External Amenity Space

The architect's drawings show gardens on the north side of the bungalow (plot 4), adjoining the external patron area.

Section 7.7.3.2 of BS 8233:2014 states:

> *"For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces but should not be prohibited."*

By adopting the highest measured $L_{Aeq,1hour}$ of 50 dB, the level at the outdoor amenity space would not exceed the WHO lower guideline. While it is acknowledged that during warmer summer days patron activity in the external patron area may increase, thus slightly increasing overall ambient noise level, the levels at the outdoor amenity space would still be considered as acceptable throughout the day.

To add further context, the predicted external patron area noise is considered a worst-case scenario, and it is unlikely it will be at the capacity used in the assessment for the majority of the year. As such the level at the external space is likely to be lower for the majority of the time.

8.5 Calculation Methodology

Calculations for the BS 8233:2014 assessment have been based on the rigorous calculation method of BS 8233:2014 and BS EN 12354-3.

The calculations aim to meet the requirement of Approved Document F (ventilation). However, Part F specialist advice must be sought. If more ventilation is required, further calculations may need to be carried out.

All room dimensions used in calculations are based on drawings provided by the architect. See appendix - Site plans.

The calculations assume the external walls to be brick and block as stated in BS8233:2014. The predictions also have been calculated assuming all windows are tightly closed.

The calculations assume each room has a reverberation time of 0.5 seconds in living rooms and 0.4 seconds in bedrooms.

8.6 Building Elements

The following table shows the expected performance of the glazing and ventilation.

Element	Description	$R_w / D_{n,e,w}$ (C; C_{tr}) (dB)	Octave Centre Frequencies (Hz) SRI / $D_{n,e}$ (dB)					
			125	250	500	1k	2k	4k
Glazing	6mm (16) 4mm	32 (-2;-4)	21	20	26	38	37	39
Ventilation	Greenwood EAQ42W Acoustic Window Vent	42 (0;0)	41	42	37	44	46	41

Table 11: Glazing & Ventilation SRI

The selected units or products described have been used as a guide to form part of the specification. Other similar units or products can be used provided they can achieve the given minimum acoustic performance.

8.7 Example of Estimated Performance

The following table compares the estimated performance values with the measured values at the most exposed façades.

Location	Time period	Measured Level		Estimated Internal	
		$L_{Aeq,T}$ (dB)	L_{AFmax} (dB)	$L_{Aeq,T}$ (dB)	L_{AFmax} (dB)
Rear Facade	Daytime (07:00 – 23:00)	60.0	-	30.6	-
	Nighttime (23:00 – 07:00)	49.9	69.9	21.8	44.7

Table 12: Estimated performance

8.8 Entertainment Noise Breakout Assessment

In accordance with the commentary put forward by the Local Authority in their public consultation response from March 2025, this section will assess any potential impact from entertainment noise emanating from the public house. It is understood that the Black Horse hosts small scale entertainment events such as karaoke nights, using a small-size PA system.

Measurements on site were not been possible at the time of the survey. As such, the expected noise emissions will be taken from the 'Good Practice Guide from Pubs & Clubs, which states that '(...) Many bars playing music had noise levels of 90 – 95 dB L_{Aeq} during busy periods'. The noise emissions of 95dB $L_{Aeq,t}$ are also associated to loud amplified music, as previously measured by Spratt & Hamer Limited at larger entertainment venues. Therefore, it is deemed representative of a conservative scenario.

Entertainment events take place within the main area of the public house, situated near the entrance on the northeast façade. Due to to the building's geometry, the receptor is positioned outside the direct line of sight from the source of noise.

8.8.1 NR Curve Target Assessment

NR Curve analysis is used to gain a greater understanding of the frequency content of a sound. Considering that the closest habitable room is a living room at Plot 4, the daytime NR30 curve target will be used for the assessment, as well as a the Moorhouse curve for the lowest frequency bands in order to minimise audibility.

The following considerations and/or assumptions have been made.

- The noise emissions of 95 dB $L_{Aeq,t}$ of loud pub and amplified music activity.
- The weakest element of the façade is considered to be the windows. A typical single glazing 6mm glass with a sound reduction R_w of 29 will be used as a worst-case scenario.
- The distance to the receptor i.e. Plot 4 has been taken from the northeast corner of the pub which is approximately 19m.
- The distance attenuation takes into account façade plane source propagation.
- 10 dB attenuation for full shielding due to the pub building's geometry, blocking the direct line of sight to the receptor.
- A 15 dB attenuation of a partially open window at the receptor. Data taken from a study carried out by Napier University - NANR116: 'Open/Closed Window Research' Sound Insulation Through Ventilated Domestic Windows.

Description	Un-weighted Octave Band Centre Frequency Hz (dB)							dBA
	63	125	250	500	1K	2K	4K	
Internal Noise Emissions	95	98	93	93	90	85	78	95
Window Sound Reduction R_w	-12	-18	-23	-30	-35	-27	-32	-
Distance Attenuation (19m)	-21	-21	-21	-21	-21	-21	-21	-
Full Shielding	-10	-10	-10	-10	-10	-10	-10	-
Noise at NSR1 Facade	52	49	39	32	24	27	15	37
Partially Open Window R_w	-20	-14	-14	-16	-14	-17	-19	-15
Internal Noise Level	32	35	25	16	10	10	-4	22
NR30 / Moorhouse*	47*	41*	40	34	30	27	25	35
Exceedance	-15	-6	-15	-18	-20	-17	-29	-13

Table 13: Entertainment Noise Assessment

The table above indicates that the noise ingress within the proposed NSR would not exceed NR30 / Moorhouse criteria for both overall and frequency band values. As anticipated, the expected impact onto the proposed development is deemed to be negligible.

8.9 Car Park Noise Assessment

In addition, following commentary put forward by the Local Authority, the following calculation will establish the noise levels at the nearest receptor from vehicle movement within the carpark associated with the neighbouring pub. Based on the size of the car park, it is estimated that there is capacity for 10 no. cars.

The following considerations and/or assumptions have been made.

- The access road will be used by cars. No heavy vehicles are expected.
- The sound power level of 77 L_{WA} of a car will be used. This value has been taken from a previous report by Spratt and Hamer for cars travelling at a speed of approximately 10mph. m
- Vehicles will have to drive approximately 30m in the car park to the last parking space. This distance will be used as a worst-case scenario.
- 20 no. car movements are expected per hour, equating to 10 cars entering and leaving the site.
- The receptor is situated approximately 12m from the centre of the car park.
- A 5 dB partial shielding attenuation provided by the existing fence.

Description	Value
Sound Power Level (dBA)	77
Speed (kph)	16
Distance (m)	30
Total Time (mins)	2.3
Time Corrected *L*w (dBA)	63
Sound pressure level at 1m (dBA)	55
Partial shielding	-5
Distance attenuation (12m)	-22
Sound pressure Level at Receptor Façade (dBA)	18

Table 14: Car Park Noise Assessment

Given the predicted $L_{Aeq,1hour}$ is 57 dB, and that the sound pressure levels at the receptor façade, any contribution by vehicle movement is considered negligible.

8.9.1 Door Slam Noise Assessment

Furthermore, the following calculation will establish the noise levels at the nearest receptor as a result of car door slam noise, which will be compared to a 50 dB LAmax limit criteria as there is no specific L_{AFmax} criteria for the daytime, which equates to an additional 5 dB applied to the nighttime criteria with reference to BS8233: 2014. The following considerations have been taken into account.

- The maximum L_{AFmax} level of 85 dB, measured at 1m by Spratt and Hamer Limited.
- The distance between the closest parking space and the receptor is approximately 6m, thus representing a worst-case scenario.
- A 5 dB partial shielding attenuation provided by the existing fence.

Description	Sound Level (dBA)
Sound Level L_{AFmax} (dB) at 1m	85
Partial Shielding	-5
Distance Attenuation (6m)	-16
Partially Open Window Attenuation (dB)	-15
Calculated Internal L_{AFmax} Sound Level (dB)	49
Criteria	50
Exceedance	-1

Table 15: Door Slam Noise Assessment

The assessment indicates that the maximum levels would fall below the criteria by 1 dB, demonstrating the likelihood of negligible impact from occasional door slams.



9 Conclusion

Analysis of the prevailing sound levels in the area has demonstrated that the proposed site lies between Categories A and B in accordance with the Technical Advice Note 11 (TAN11) of Planning Policy Wales. As such, a noise impact assessment has been conducted considering the Local Authority commentary and conditions as well as other relevant standards and guidance.

The report concludes that when installing the glazing and ventilation detail as discussed in the recommendations section, the internal noise levels described in BS 8233:2014 can be achieved in all habitable rooms and external amenity spaces.

Furthermore, following the Local Planning Authority consultation response from March 2025, it has been demonstrated that noise intrusion from activity associated with the neighbouring public house is likely to be negligible, including amplified music events and vehicle movement.

10 References

TAN 11: Noise, Welsh Government, 1997

BS 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings

World Health Organisation Guidelines for Community Noise

BS 7445-1:2003 Description and measurement of environmental noise – Part 1: Guide to quantities and procedures

BS EN 12758:2011 Glass in building – Glazing and airborne sound insulation

www.google.co.uk/maps

The Little Red Book of Acoustics: A Practical Guide

NANR116: 'Open/Closed Window Research' Sound Insulation Through Ventilated Domestic Windows

10.1 Drawing References

AO85-PL-003 – Proposed Site Plan Draft

AO85-PL-004 – Plots 1 – 3 Proposed Floor Plans Draft

AO85-PL-005 – Plots 1 – 3 Elevations Draft

AO85-PL-006 – Plots 4 Proposed Floor Plans and Elevations Draft

A085 – SK – 001 – Design Option 001 – 4 dwellings

Location Plan

Appendix

Photograph showing Monitoring Position 1



Proposed Site Plan

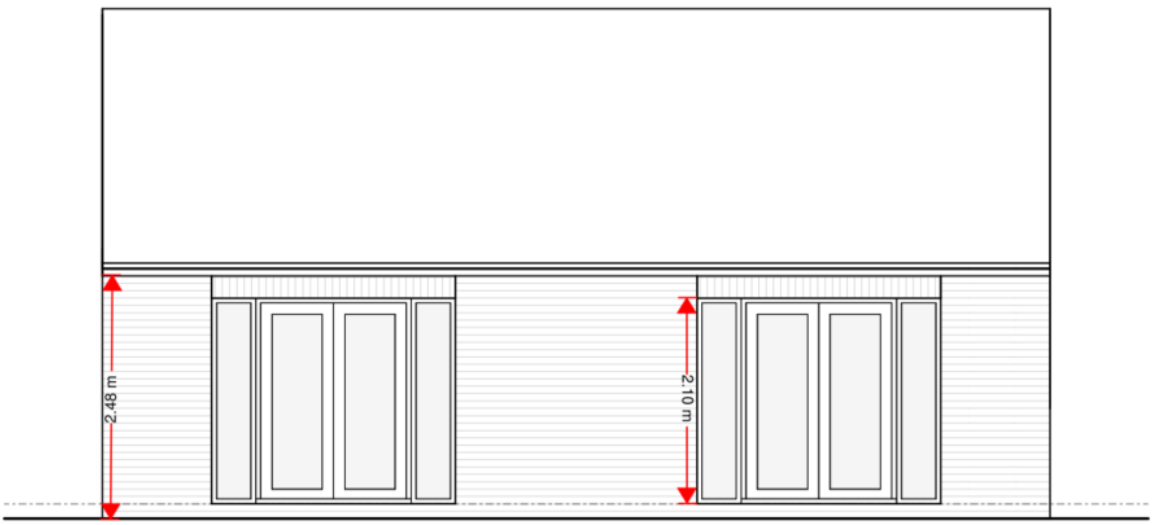


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Proposed Plot 4 Floor & Elevation Plan



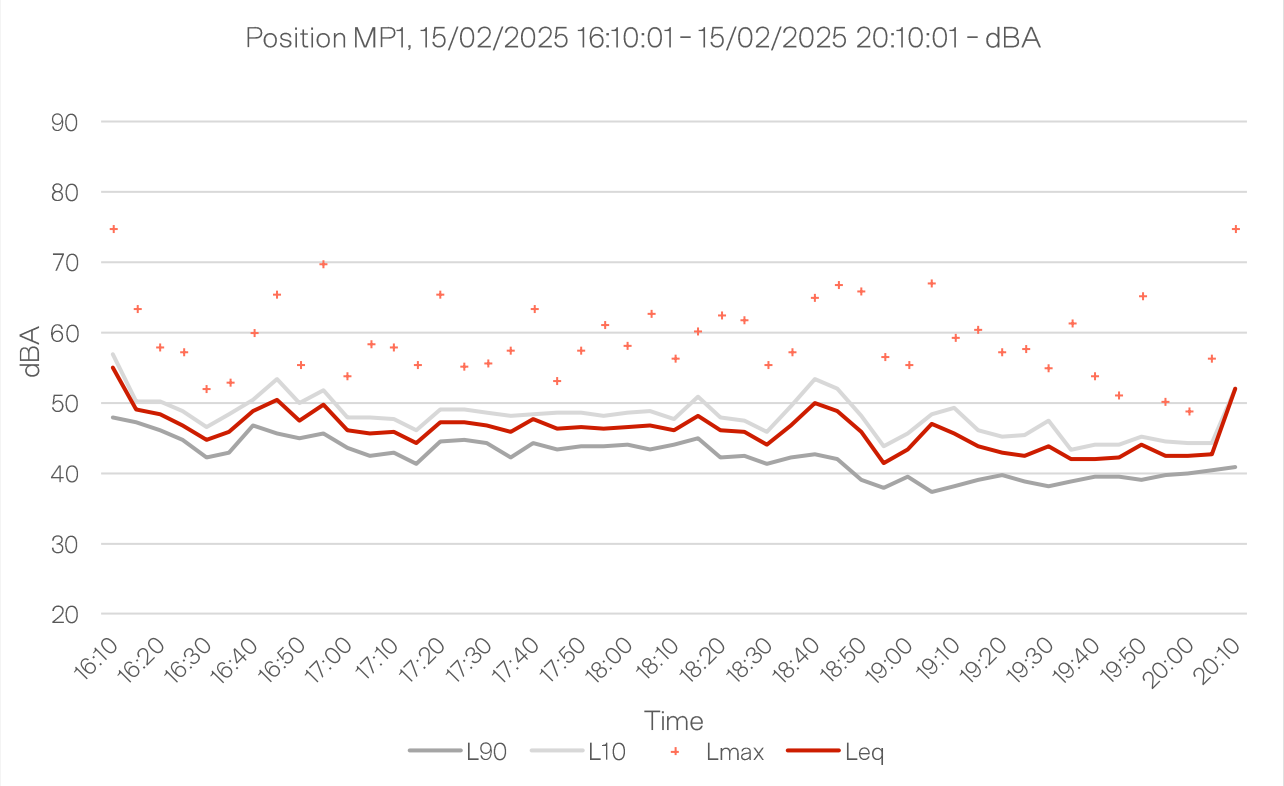
Proposed Ground Floor Plan
1 : 50



Proposed Rear Elevation
1 : 50

Measurement Results

Monitoring Position 1



Monitoring position	Day	Time	Time Base T	$L_{Aeq,T}$ (dB)	L_{AFMax}	$L_{A90,T}$	$L_{A10,T}$
1	Saturday	16:10 – 20:15	4hr, 5mins	47.1	48.8 – 74.7	38.8	49.0

Glossary of Acoustical Terms

A-weighting

Noise levels are corrected to represent human response to sound.

L_{Aeq}

This is a continuous equivalent of time varying noise, or effectively the average measured (A weighted) noise level over a defined period of time.

$L_{Aeq,16hour}$

A 16 hour long measurement of the L_{Aeq} over the period between 07:00 and 23:00, also known as a daytime measurement.

$L_{Aeq,8hour}$

An 8 hour long measurement of the L_{Aeq} over the period between 23:00 and 07:00, also known as a night time measurement.

L_{AFmax}

The highest, or maximum A-weighted sound pressure level measured over a specified time period. The 'F' defines a time weighting in Fast.

L_{A90}

The A-weighted noise level or average level which is exceeded for 90 percent of the measured time period. Also known as a background level.

L_{A10}

The A-weighted noise level or average level which is exceeded for 10 percent of the measured time period.

1:1 & 1:3 octave spectrum analysis

A single measurement that is separated into frequency bands to allow for a more detailed analysis of the noise source in question.

R_w

The weighted sound reduction index of a partition or facade. A single number value based on the performance of a partition between two rooms across the frequency range 100Hz to 3150Hz. The level is adjusted for the effects of reverberation and background noise.

$D_{n,e,w}$

The weighted level difference of a partition or façade which takes into account a small element such as a grill or vent.

SEL (sound exposure level)

A measure of A-weighted sound energy used to describe a particular event, such as a train pass. It is the sound energy, which, if occurring over one second would contain the same energy as the event.

Free field sound pressure

Is where the radiation or spread of sound is completely unaffected by the presence of any reflecting surfaces or boundaries.

Low Frequency Noise

A term generally used for sound below a frequency of 100 to 150Hz.



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