JPM ACOUSTICS

17 EGERTON STREET, WREXHAM

NOISE IMPACT ASSESSMENT

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Author	Adam Barr		
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REGISTERED ADDRESS
JPM Acoustics Ltd
97 Hazelhurst Road
Worsley
Manchester
M28 2SW

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1.0. INTRODUCTION

1.1. OVERVIEW

1.1.1. JPM Acoustics Ltd has been appointed to undertake a Noise Impact Assessment to support a planning application for a residential development at 17 Egerton Street in Wrexham.

1.1.2. This report considers the potential for the existing noise environment on the site to impact the proposed residential dwellings. The assessment has been undertaken with due regard to relevant planning policies, British Standards, and technical guidance documents relating to noise.

1.1.3. This report is necessarily technical in nature. Therefore, to assist the reader, a glossary of acoustic terminology is provided in **Appendix A**.

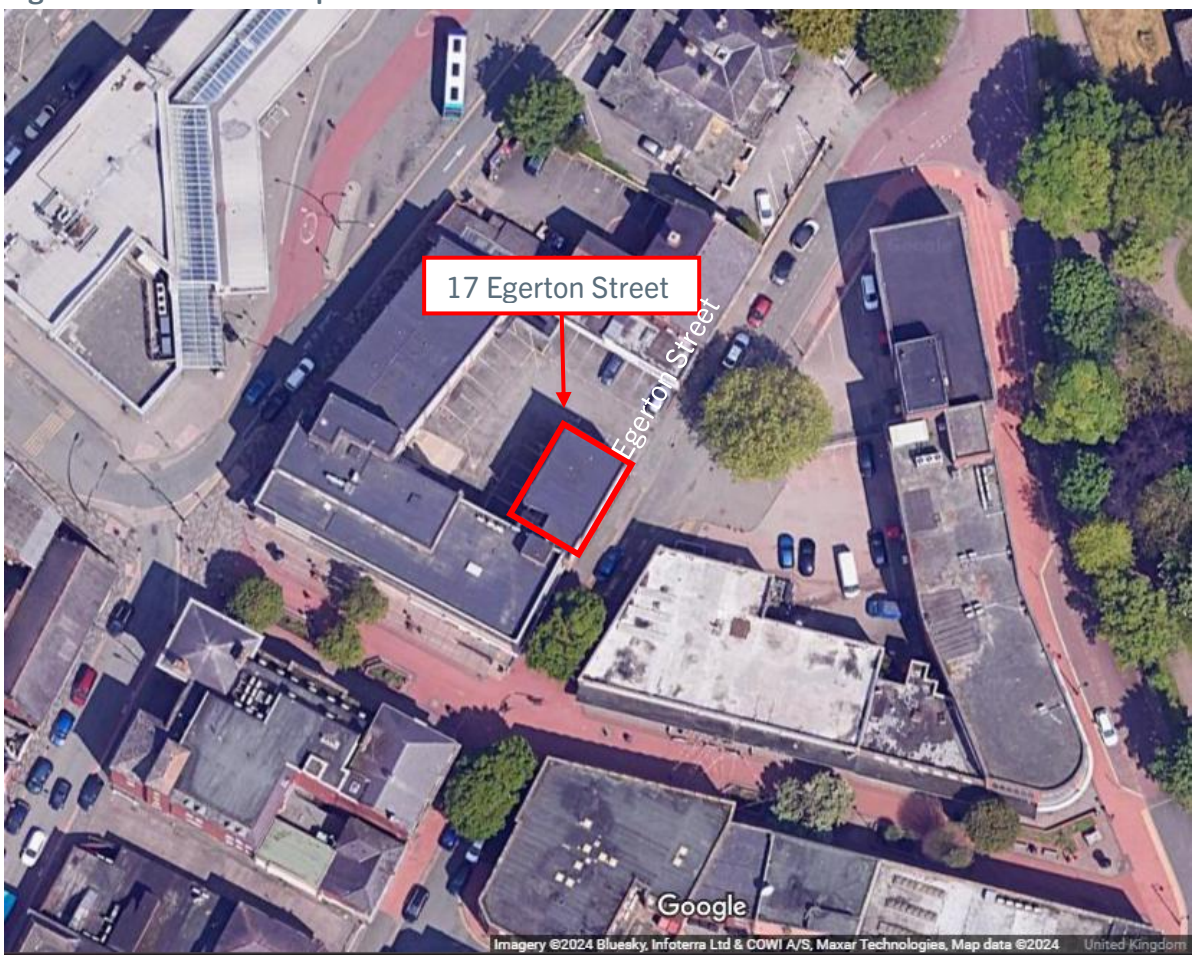
1.2. SITE LOCATION AND PROPOSED DEVELOPMENT

1.2.1. The proposed residential development is to comprise six residential apartments within the existing building at 17 Egerton Street in Wrexham. The building is currently unoccupied but was most recently used as a Beauty Salon.

1.2.2. The site is bounded by Egerton Street to the East, an adjoining office building to the south, which has a bank branch on the ground floor, and a small courtyard used as a car park on all other sides. Egerton Street is a cul-de-sac and, as such, sees no through traffic. Therefore, there are no significant noise sources in the vicinity of the site.

1.2.3. **Figure 1.1** shows the site location.

Figure 1.1: Site location plan



2.0. STANDARDS AND GUIDANCE

2.1. BS 8233:2014: GUIDANCE ON SOUND INSULATION AND NOISE REDUCTION FOR BUILDINGS (BS 8233)

2.1.1. BS 8233 provides guidance for the control of noise in and around buildings and recommends internal and external noise level criteria for residential dwellings. The British Standard states that it is desirable that internal ambient noise levels do not exceed the guideline values in **Table 2.1**.

Table 2.1: Internal desirable guideline values from BS 8233

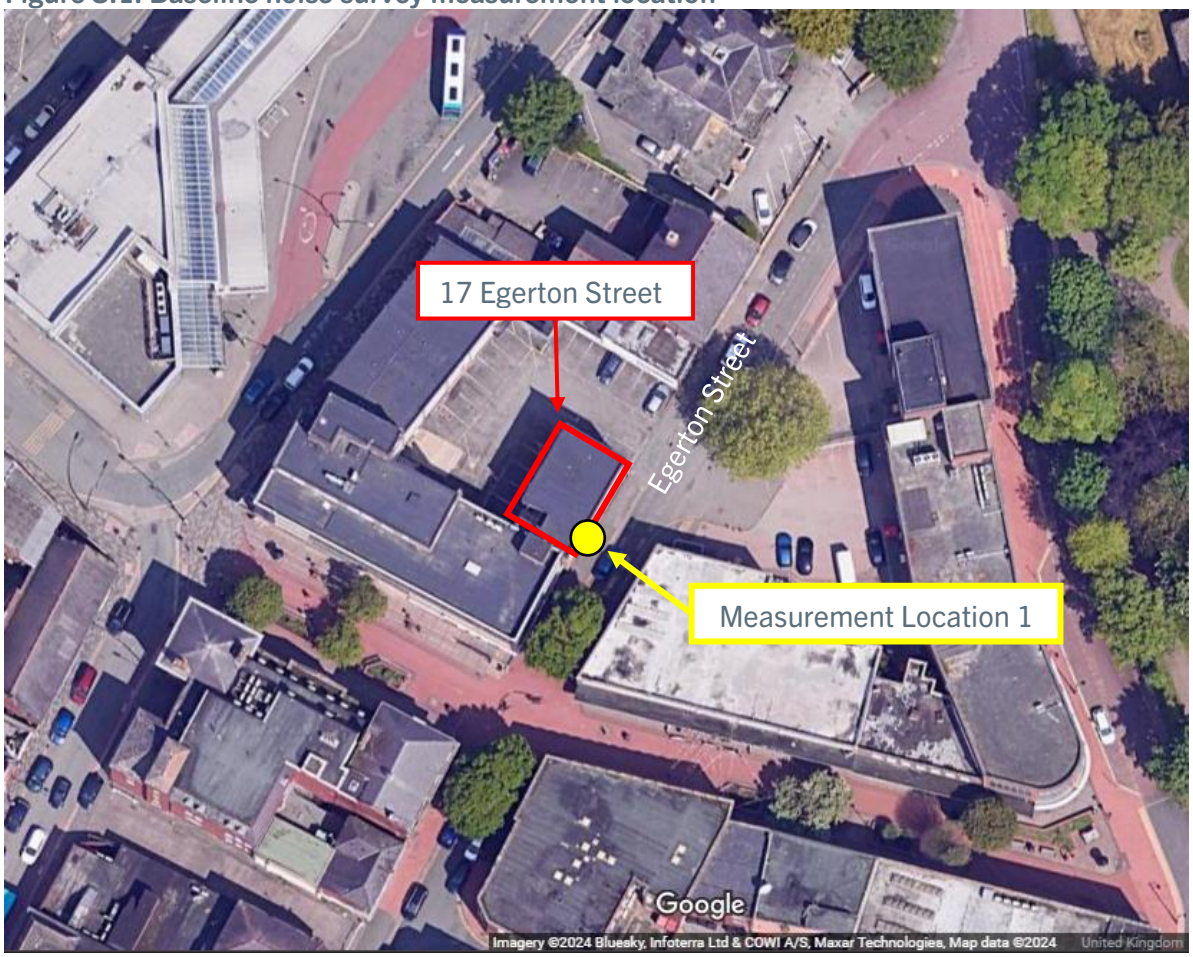
Activity	Location	Period	
		07:00 to 23:00 (Daytime)	23:00 to 07:00 (Night-Time)
Resting	Living Room	35 dB $L_{Aeq, 16h}$	-
Dining	Dining Room/Area	40 dB $L_{Aeq, 16h}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq, 16h}$	30 B $L_{Aeq, 8h}$

2.1.2. BS 8233 does not provide specific criteria for one-off noise events (L_{AFmax}), however, it is common practice to adopt 45 dB L_{AFmax} as a criterion for typical events at night, based on the guidance from the World Health Organisation (WHO) *Guidelines for Community Noise* 1999 and *Environmental Noise Guidelines for the European Region* 2018. Therefore, this criterion has been adopted for this assessment.

3.0. BASELINE NOISE SURVEY

3.1.1. A baseline noise survey has been undertaken to determine the prevailing noise climate on the site. **Figure 3.1** shows the measurement location adopted during the survey.

Figure 3.1: Baseline noise survey measurement location



3.1.2. Unattended measurements were undertaken at Measurement Location 1 (ML1) from 13:30 on 28th November until 07:00 on 1st December 2024. The purpose of the measurements was to establish the prevailing noise climate on the site. The microphone was fixed to a pole protruding 1 m from a first-floor window in façade conditions.

3.2. EQUIPMENT

3.2.1. The noise survey was undertaken using the Class 1 specification noise measurement equipment detailed in **Table 3.1**. The measurement equipment was calibrated using a portable calibrator immediately before and after the measurements with no significant drift in calibration observed.

3.2.2. The sound level meter, pre-amplifier and microphone were calibrated to traceable standards within 24 months prior to the measurements. The portable calibrator was calibrated within 12 months prior to the measurements.

Table 3.1: Equipment details

Equipment	Make and Model	Serial Number	Calibration due Date
Sound Level Meter	01 dB Fusion	11327	06/09/2025
Microphone	Grass 40CE	259479	
Preamplifier	01 dB PRE 22	1605201	
Calibrator	Svantek SV33A	90275	21/02/2025

3.3. WEATHER CONDITIONS

3.3.1. Weather conditions during the survey were generally conducive to environmental noise monitoring, it being dry with low wind speeds (<5 ms^{-1}).

3.4. RESULTS

3.4.1. A summary of the measured noise levels at ML1 during the survey is presented in **Table 3.2**. The free-field noise levels in **Table 3.2** have been derived from the measured façade noise levels by applying a -3 dB correction.

Table 3.2: Summary of measured sound pressure levels, free-field

Date and Start time	Period	Duration	Sound Pressure Levels		
			dB $L_{Aeq,T}$	dB $L_{A90,T}$[1]	dB L_{AFmax}[2]
28/11/2024 13:30	Daytime	16 hours	52	46	-
28/11/2024 23:00	Night-time	8 hours	49	40	76
29/11/2024 07:00	Daytime	16 hours	57	47	-
29/11/2024 23:00	Night-time	8 hours	51	40	74
30/11/2024 07:00	Daytime	16 hours	59	46	-
30/11/2024 23:00	Night-time	8 hours	47	39	72

[1] Taken to be the mean of measured $L_{A90,15min}$ values during relevant periods.
[2] 90th percentile of measured $L_{AFmax,15min}$ periods during the night-time.

4.0. ASSESSMENT

4.1.1. In accordance with guidance from BS 8233, internal noise levels in dwellings can be estimated from external free-field noise levels by applying a -15 dB correction, assuming the façade contains a partially open window for ventilation or cooling. **Table 4.1** shows the predicted internal noise levels within proposed habitable overlooking Egerton Street (i.e. the worst affected elevation) with windows open.

Table 4.1: Predicted internal noise levels with windows open

Date and Start time	Period	Duration	Measured Sound Pressure Levels		
			dB $L_{Aeq,T}$	dB $L_{A90,T}$[1]	dB L_{AFmax}[2]
28/11/2024 13:30	Daytime	16 hours	37	31	-
28/11/2024 23:00	Night-time	8 hours	34	25	61
29/11/2024 07:00	Daytime	16 hours	42	32	-
29/11/2024 23:00	Night-time	8 hours	36	25	59
30/11/2024 07:00	Daytime	16 hours	44	31	-
30/11/2024 23:00	Night-time	8 hours	32	24	57

[1] - Taken to be the mean of measured $L_{A90,15min}$ values during relevant periods.
[2] - 90th percentile of measured $L_{AFmax,15min}$ periods during the night-time.

4.1.2. It can be seen from **Table 4.1** that the predicted internal noise levels with windows open are above the desirable guideline values from BS 8233, as detailed in **Table 2.1**. As such, consideration has been given to the noise levels that can be achieved with windows closed.

4.1.3. In accordance with Section G.1 of BS 8233, internal noise levels with windows closed can be estimated by subtracting the sound insulation performance of the glazing from the external free-field noise levels. Standard, thermally proficient double glazed window units typically achieve a sound insulation performance of circa 33 dB R_w. **Table 4.2** shows the predicted internal noise levels in habitable spaces overlooking Egerton Street (i.e. the worst affected elevation) assuming windows are closed.

Table 4.2: Predicted internal noise levels with windows closed

Date and Start time	Period	Duration	Measured Sound Pressure Levels		
			dB $L_{Aeq,T}$	dB $L_{A90,T}$[1]	dB L_{AFmax}[2]
28/11/2024 13:30	Daytime	16 hours	19	13	-
28/11/2024 23:00	Night-time	8 hours	16	7	43
29/11/2024 07:00	Daytime	16 hours	24	14	-
29/11/2024 23:00	Night-time	8 hours	18	7	41
30/11/2024 07:00	Daytime	16 hours	26	13	-
30/11/2024 23:00	Night-time	8 hours	14	6	39

[1] - Taken to be the mean of measured $L_{A90,15min}$ values during relevant periods.
[2] - 90th percentile of measured $L_{AFmax,15min}$ periods during the night-time.

4.1.4. It can be seen from **Table 4.2** that the desirable guideline values from BS 8233 are predicted to be achieved consistently with windows closed, assuming standard double glazing is installed. The 45 dB L_{AFmax} night-time criterion from the WHO guidelines is also predicted to be achieved.

4.1.5. It is assumed that whole dwelling ventilation rates (as defined in Approved Document F of the Building Regulations) could be achieved using a continuous mechanical extract ventilation (MEV) system, with passive frame mounted trickle ventilators installed in the building façade (i.e. System 3 from Approved Document F). To ensure that trickle ventilators in the building façade do not undermine the sound insulation performance of the wider façade, it is recommended that all ventilators are selected to achieve a minimum sound insulation performance of 33 dB $D_{n,e,w}$ when in the open position. This is achievable by most proprietary non-acoustic trickle ventilators (Greenwood EAV vent or similar).

4.1.6. Given that the desirable guideline values can be achieved with standard double glazing and trickle ventilators, it is considered that further mitigation measures are unwarranted.

5.0. CONCLUSION

5.1.1. JPM Acoustics Ltd has been appointed to undertake a Noise Impact Assessment to support a planning application for a residential development at 17 Egerton Street in Wrexham.

5.1.2. This report considers the potential for the existing noise environment on the site to impact the proposed residential dwellings. The assessment has been undertaken with due regard to relevant planning policies, British Standards, and technical guidance documents relating to noise.

5.1.3. The assessment of noise levels measured on the site indicated that the desirable guideline values from BS 8233 are achievable with standard double glazing and trickle ventilators.

5.1.4. Given the findings of this assessment, it is considered that noise need not be a determining factor in granting planning consent for the proposed development.

APPENDIX A: GLOSSARY

Table A.1: Noise terminology

Terminology	Description
A-weighting, dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. 'A' - weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
Decibel, (dB)	A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds s1 and s2 is given by 20 $\log_{10}$ (s1/s2). The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is 20 Pa.
Façade	At a distance of 1m in front of a large sound reflecting object such as a building façade.
Fast Time Weighting (F)	Averaging time constant used in sound level meters and commonly used in the measurement of environmental noise.
Free-Field	Far from the presence of sound reflecting objects (except the ground), usually taken to mean at least 3.5m away.
$L_{10,T}$	A noise level index. The noise level exceeded for 10% of the time over the period, T. L_{10} may be thought of as the "average maximum" noise level. Generally used to describe road traffic noise.
$L_{90,T}$	A noise level index. The noise level exceeded for 90% of the time over the period, T. L_{90} may be thought of as the "average minimum" noise level. Generally used to describe background noise.

Terminology	Description
$L_{eq,T}$	A noise level index called the equivalent continuous noise level over the time period, T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded.
$L_{max,T}$	A noise level index defined as the maximum noise level during the period, T. L_{max} is sometimes used for the assessment of occasional loud noises, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
Noise Level Indices	Noise levels usually fluctuate over time, so it is often necessary to consider an average or statistical noise level. This can be done in several ways, so a number of different noise indices have been defined, according to how the averaging or statistics are carried out.
Sound Power	The sound energy radiated per unit time by a sound source. Measured in watts (W).
Sound Power Level, L_w	Sound power measured on a decibel scale, relative to a reference value of 10^{-12} W.
Sound Pressure	Sound, or sound pressure, is a fluctuation in air pressure over the static ambient pressure. Measured in pascals (Pa).
Sound Pressure Level (Sound Level), L_p	The sound level is the sound pressure on a decibel scale, relative to a reference value of $20x10^{-6}$ Pascals.