

220 & 222 Wellington Road South Stockport

Indoor Sound Survey Report
1160/ISSR1

24 October 2023

For:

TP Portfolio Ltd



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1.0 Introduction

Lighthouse Acoustics has been appointed by TP Portfolio Ltd to undertake an indoor sound survey at 220 & 222 Wellington Road South, Stockport in order to demonstrate that suitable internal sound levels are achieved within the bedrooms of the houses in multiple occupation (HMO).

The survey methodology, results and assessment are presented in this report.

2.0 Objectives

To visit site to undertake a detailed indoor sound survey in order to establish indoor daytime and night-time sound levels due to external sound break-in within a bedroom overlooking Wellington Road South.

To compare the measured indoor daytime and night-time sound levels due to external sound break-in to the sound levels for bedrooms as specified in BS 8233: 2014, "Guidance on sound insulation and noise reduction for buildings" and comment on the acceptability.

3.0 Site Description

The HMO is situated at 220 & 222 Wellington Road South, Stockport and comprises 2 semi-detached 3 storey buildings.

The site is bound by Wellington Road South (A6) to the north east, Lowfield Road to the south east, residential properties to the south west and Lyme Grove to the north west.

The site plan overleaf indicates the extent of the site and the surrounding environment.



Site plan indicating the extent of the site and the surrounding environment

4.0 Acoustic Requirements

It is understood that Stockport Metropolitan Borough Council require that environmental sound should achieve the levels for internal areas as specified in BS 8233: 2014, "Guidance on sound insulation and noise reduction for buildings". These levels are presented in the table below.

Location	07:00 to 23:00	23:00 to 07:00
Living room	35dB $L_{Aeq,16hour}$	-
Dining room	40dB $L_{Aeq,16hour}$	-
Bedroom	35dB $L_{Aeq,16hour}$	30dB $L_{Aeq,8hour}$

In addition, BS 8233: 2014 states the following:

"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 $L_{Amax,F}$, depending on the character and number of events per night."

Based on the above it is proposed that individual noise events should not normally exceed $L_{Amax,F}$ 45dB by more than 15 times in bedrooms during the night-time period (23:00 to 07:00 hours) as per The World Health Organisation document on "Guidelines for Community Noise".

5.0 External Sound Break-In Survey

5.1 Measurements

Automated indoor sound measurements were undertaken from 13:00 hours on Tuesday 17 October 2023 to 13:00 hours on Wednesday 18 October 2023. During this period the $L_{Amax,F}$ and L_{Aeq} sound pressure levels were measured continuously over 15 minute periods.

In addition, the sound level meters were set to log the number of events exceeding $L_{Amax,F}$ 45dB during the night-time period (23:00 to 07:00 hours).

Windows and doors were closed for the duration of the survey period.

5.2 Weather Conditions

At the start of the survey period there was a gentle easterly breeze (<5m/s) and the sky was scattered cloud. There was no rainfall and road surfaces were dry. The temperature was approximately 13°C.

At the end of the survey period there was a gentle easterly breeze (<5m/s) and the sky was scattered cloud. There was no rainfall and road surfaces were dry. The temperature was approximately 16°C.

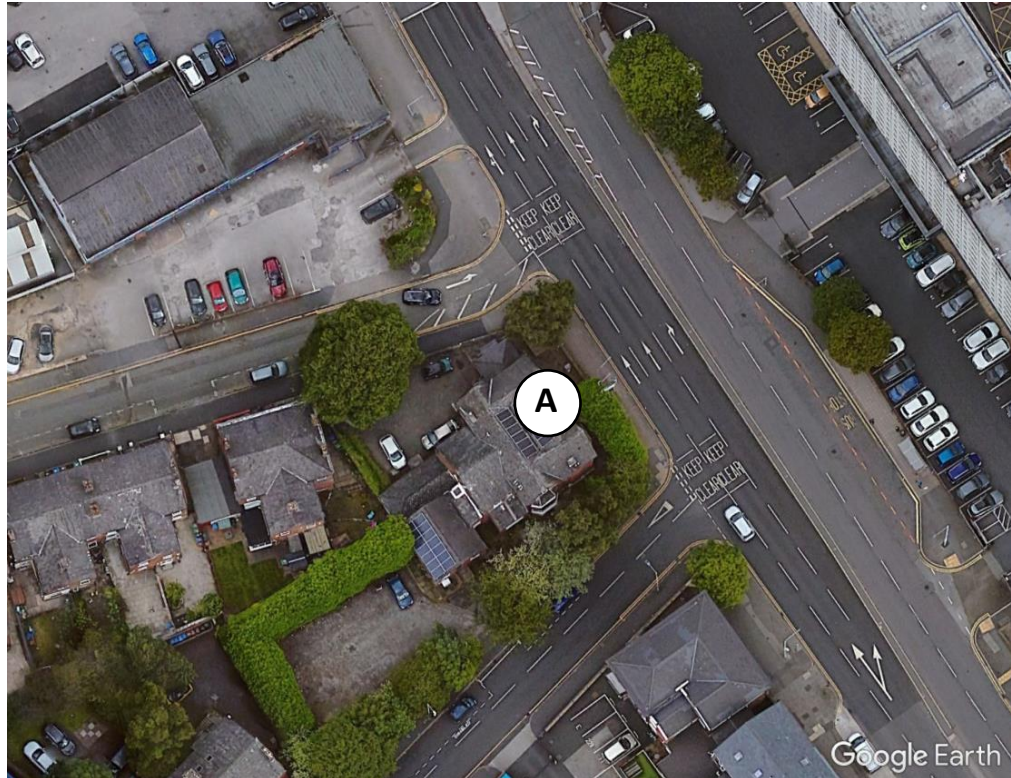
Based on publicly available weather data for the survey period we understand that weather conditions remained similar for the duration of the survey with no significant periods of rainfall or strong breezes. The weather conditions during the survey period are therefore considered to be suitable for undertaking measurements of sound levels.

5.3 Measurement Position

Indoor sound levels were measured within 1No. bedroom on-site as described in the table below.

Position	Description
A	Microphone situated in a vacant bedroom with window overlooking Wellington Road South in the centre of the room at 1.2m above floor level.

The measurement position is shown on the site plan below.



Site plan showing measurement position

The measurement position was selected in order to assess typical indoor sound levels in the most sensitive room on the worst case facade of the building.

5.4 Equipment

The following equipment was used to undertake the environmental sound survey.

Equipment	Manufacturer	Model	Serial No.	Calibration Date
Class 1 Sound Level Meter	Casella	633C	2811231	25/07/2023
Preamplifier	Casella	495	001239	25/07/2023
Microphone	Casella	251	1841	25/07/2023
Class 1 Sound Calibrator	Casella	120/1	3864878	27/10/2022

Field calibration checks were performed on the sound level meter prior to and on completion of the survey and were found to be within acceptable tolerance limits.

5.5 Results

5.5.1 Time History Graph

The results of the indoor sound survey are presented on Time History Graph 1160/THG1 enclosed at the rear of the report.

5.5.2 $L_{Aeq,T}$ Ambient Sound Levels

In order to compare the results of the indoor sound survey with the internal noise limits it is necessary to convert the $L_{Aeq,15min}$ indoor sound levels into single figure daytime $L_{Aeq,16hour}$ and night-time $L_{Aeq,8hour}$ sound levels. This has been calculated using the following formula:

$$L_{Aeq,T} = 10 \log_{10} \left(\frac{1}{N} \sum_i^N 10^{L_{Aeq,15min}^i / 10} \right)$$

The calculated daytime $L_{Aeq,16hour}$ and night-time $L_{Aeq,8hour}$ indoor sound levels at each measurement position are presented in the table below.

Position A	
Daytime $L_{Aeq,16hour}$ (dB)	Night-time $L_{Aeq,8hour}$ (dB)
35	29

5.5.3 $L_{Amax,F}$ Sound Level Events

The number of external events exceeding $L_{Amax,F}$ 45dB during the night-time period (23:00 to 07:00 hours) at each measurement position are detailed in the table below.

No. of Events Exceeding $L_{Amax,F}$ 45dB During the Night-time Period
Position A
13

5.6 Discussion of Results

The measured daytime $L_{Aeq,16hour}$ indoor sound level due to external sound break-in achieves the internal sound limit of $L_{Aeq,16hour}$ 35dB for bedrooms at measurement Position A.

The measured night-time $L_{Aeq,8hour}$ indoor sound level due to external sound break-in achieves the internal sound limit of $L_{Aeq,8hour}$ 30dB for bedrooms at measurement Position A.

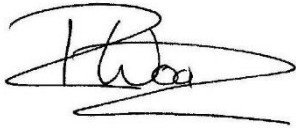
The measured number of events exceeding the internal sound limit of $L_{Amax,F}$ 45dB during the night-time period for bedrooms due to external sound break-in achieve the limit of 15 events in any night-time period at measurement Position A.

Based on the above, the measured indoor daytime and night-time sound levels due to external sound break-in achieve the sound levels for bedrooms as specified in BS 8233: 2014, "Guidance on sound insulation and noise reduction for buildings".

6.0 Conclusions

A detailed indoor sound survey has been undertaken in order to establish indoor daytime and night-time sound levels within a bedroom overlooking Wellington Road South.

The measured indoor daytime and night-time sound levels due to external sound break-in achieve the sound levels for bedrooms as specified in BS 8233: 2014, "Guidance on sound insulation and noise reduction for buildings".

A handwritten signature in black ink, appearing to read 'R Wood', with a large, sweeping horizontal stroke underneath.

Robin Wood
LIGHTHOUSE ACOUSTICS

220 & 222 Wellington Road South, Stockport

Time History Graph - Tuesday 17 October 2023 to Wednesday 18 October 2023

$L_{Amax,15min}$, $L_{Aeq,15min}$ & $L_{A90,15min}$ Noise Levels at Position A

