

SPRATT+HAMER



Noise Impact Report

Client	Mr Peter Wright
Site Address	266 Bamford Road Heywood OL10 4AA
Survey Date	01/02/23
Reference	20519

Quality Assurance

Prepared by	Jack Holmes BSc (Hons) MIOA
Reviewed by	Ben Bielicki BSc (Hons) MIOA
Authorised by	Martin Hamer MSc MIOA
Issue date	17/02/2023

Revision History

Version	Date	Editor	Notes
V1	17/02/2023	Jack Holmes	First issue



SPRATT+HAMER

Contents

1	Introduction.....	5
1.1	An Environmental Noise Assessment.....	5
2	Assumptions, Limitations & Uncertainty	6
3	Planning Policies, Guidance and Criteria	7
3.1	National Planning Policy Framework	7
3.2	Criteria	9
3.2.1	Local Authority Criteria	9
3.2.2	BS8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings	9
3.2.3	WHO Guidelines for Community Noise.....	10
3.3	Criteria Summary	10
4	Site Description	11
4.1	Subjective Observations.....	11
4.2	Weather	11
5	Noise Measurement Procedure	12
5.1	Personnel Present.....	12
5.2	Survey Equipment Used	12
5.3	Calibration	12
5.4	Ambient Sound Measurements.....	12
5.4.1	Monitoring Position 1	12
5.4.2	Monitoring Position 2.....	13
5.4.3	Monitoring Position 3.....	13
5.5	Monitoring Positions	13
6	Results and Analysis	14
6.1	Internal Ambient Sound Measurement Analysis in Accordance with BS8233:2014.....	14
7	Summary.....	15
8	Conclusion	16
9	References.....	17
9.1	Drawing References.....	17
	Appendix.....	18
	Figure 1: Picture Showing Monitoring Position 1	19
	Figure 2: Picture Showing Monitoring Position 2.....	20
	Figure 3: Picture Showing Monitoring Position 3.....	21



Figure 3: Picture Showing Partially Open Window..... 22

Figure 3: Picture Showing Partially Open Skylight..... 23

Measurement Results..... 24

1 Introduction

Mr Peter Wright has instructed Spratt and Hamer Limited to undertake an internal noise survey in order to assess the impact from the nearby road, as well as other general noise within the local environment, which may have an impact on future residents of the proposed development.

The development site is located on Bamford Road in Heywood. The development site is a three-storey building which comprises a ground floor workshop and 1no. residential apartment located on the first and second floors. At the time of the survey, the development was approaching completion, with glazing installed in all areas; therefore, monitoring equipment was set up internally.

This report is prepared solely for Mr Peter Wright. 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.

1.1 An Environmental Noise Assessment

Spratt and Hamer has undertaken an environmental noise assessment at the above site with noise levels measured internally over a 24-hour period, consisting of a sixteen-hour day (07:00 – 23:00) and eight-hour night (23:00 – 07:00). The measurements were carried out during a weekday.

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.



2 Assumptions, Limitations & Uncertainty

- a. It is assumed that the sound pressure levels measured on site during the environmental noise survey are typical of the site.
- b. It is assumed that drawings and information supplied by BM Architectural Designs are up to date and correct.



3 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 and vibration levels.

3.1 National Planning Policy Framework

The National Planning Policy Framework (NPPF) July 2021 set out the Government's planning policies for England and how they are expected to be applied. It provides a framework within which the Local Authorities are to prepare local plans and use their planning powers to minimise the adverse impact of noise. It should contain the following in relation to noise impacts.

174. Planning policies and decisions should contribute to and enhance the natural and local environment by:

'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.'

185. 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 impact resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life'

NPPF previously characterised noise by grading and recommending actions and different effect levels as reproduced in Table 1



SPRATT+HAMER

Perception	Examples of outcomes	Increasing effect level	Action
No Observed Effect Level			
Not present	No Effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level			
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

Table 1: Noise exposure hierarchy based on likely average response



3.2 Criteria

3.2.1 Local Authority Criteria

Since the development is already complete, Rochdale Borough Council has requested a retrospective planning application to be submitted. The application should be supported by an internal noise assessment inside habitable rooms. The commentary is as follows:

“We would be looking for an acoustic assessment to demonstrate that the following internal noise levels are being achieved in all units.

35 dB(A) $L_{eq, (16 \text{ hour})}$ in the bedrooms with windows shut and other means of ventilation provided between 7 am and 11pm;

30dB(A) $L_{eq, (8 \text{ hour})}$ in the bedrooms with windows shut and other means of ventilation provided between 11pm and 7am;

35 dB(A) $L_{eq, (16 \text{ hour})}$ in the living room/s with windows shut and other means of ventilation provided between 7 am and 11pm;

40dB(A) $L_{eq, (16 \text{ hour})}$ in other habitable rooms with windows shut and other means of ventilation provided at all times.”

3.2.2 BS8233:2014 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 BS8233: 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’. Table 1.3 identifies the guideline values for dwellings.

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living Room	35 dB $L_{Aeq,16\text{hour}}$	–
Dining	Dining room/area	40 dB $L_{Aeq,16\text{hour}}$	–
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16\text{hour}}$	30 dB $L_{Aeq,8\text{hour}}$

Table 2: 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 $L_{Amax,F}$, 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 BS8233 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 BS8233: 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} 45dB is the target level for short-term noise maxima between 23:00–07:00.

3.2.3 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 Environment	Critical Health Effect (s)	L_{Aeq} (dB)	Time base (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, night-time	30	8	45
Outside bedrooms	Sleep disturbance, window open (outdoor values)	45	8	60

Table 3: WHO Guidelines for Community Noise

3.3 Criteria Summary

In order to meet the requirements of Rochdale Borough Council the assessment and recommendations will be made in reference to BS8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings and WHO Guidelines for Community Noise 1999.



4 Site Description

The development is an existing three-storey building located on Bamford Road on the outskirts of Heywood town centre. The front façade of the development faces south-west onto Bamford Road which is a relatively busy road carrying traffic to and from Heywood town centre. The development is located on a corner junction of Bamford Road and Mine Street. Mine Street is a relatively quiet road leading to some residential and commercial properties. The ground floor of the development is a car garage/ workshop area.

The development site is in close proximity to multiple commercial premises. Across the other side of Bamford Road, located to the south west, is an industrial area including commercial garages and a body repair shop. A skip hire company is located adjacent to the south east. On the opposite side of Bamford Road is located Body Matters Gym.

Spratt and Hamer understand that the external walls of the development are of solid brick construction. The windows appear to be standard double glazing such as 4/20/4. During site attendance it was noted that passive or mechanical ventilation was not installed in all areas. As the development is completed and occupied, measurements have been taken with windows partially open in accordance with BS8233:2014 to determine the internal ambient noise levels within a ventilated room.

The development was occupied and furnished.

4.1 Subjective Observations

During site attendance, subjectively the main source of noise was road traffic from Bamford Road.

4.2 Weather

Description	Daytime Average	Night time Average
Temperature	8°C	6°C
Wind Speed	3.5m/s	3.0m/s
Wind Direction	East	East
Precipitation	Dry	Dry
Any damp road/ wet ground	None	None
Any fog/snow/ice	None	None

Table 4: Weather Conditions



5 Noise Measurement Procedure

5.1 Personnel Present

Ben Bielicki BSc (Hons) MIOA

5.2 Survey Equipment Used

Manufacturer	Model	Serial No.	Description
Rion	NA - 28	00211582	Real Time Analyser Sound Level Meter
Rion	NL - 52	01054205	Real Time Analyser Sound Level Meter
Rion	NA - 28	00392481	Real Time Analyser Sound Level Meter
Pulsar	Model 105	59964	Acoustic Calibrator

Table 5: Survey Equipment Used

5.3 Calibration

The sound level meters were 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 meters used during the survey are precision grade class 1.

Calibration certificates are available on request.

5.4 Ambient Sound Measurements

The measurement locations chosen during the survey were deemed suitable for the determination of the internal noise levels of the proposed development.

The sound level meters were set to measure L_{Aeq} , L_{A90} , L_{A10} , and L_{AFmax} in 5 minute periods, as well as A-weighted 1:1 octave spectrum analysis.

Measurement results can be found in the appendix.

5.4.1 Monitoring Position 1

A microphone was placed within the first floor front kitchen/living Room. The microphone was set on a tripod, 1.2m from the floor in the centre of the room and at least 1m away from any reflective surface.

During the measurement period, windows were partially open.



5.4.2 Monitoring Position 2

A microphone was placed within the first floor rear living room/ studio. The microphone was set on a tripod, 1.2m from the floor in the centre of the room and at least 1m away from any reflective surface. The sound level meter was set to record WAV file audio recordings for all maximum sound level events above 45 dBA.

During the measurement period, windows were partially open.

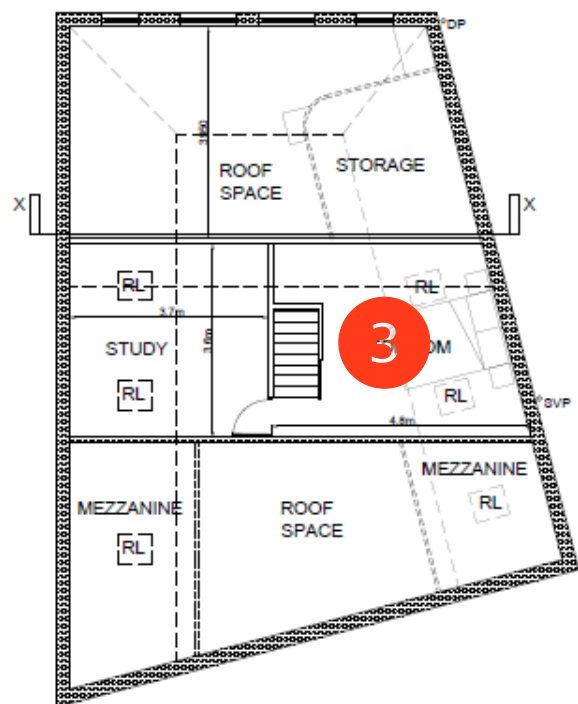
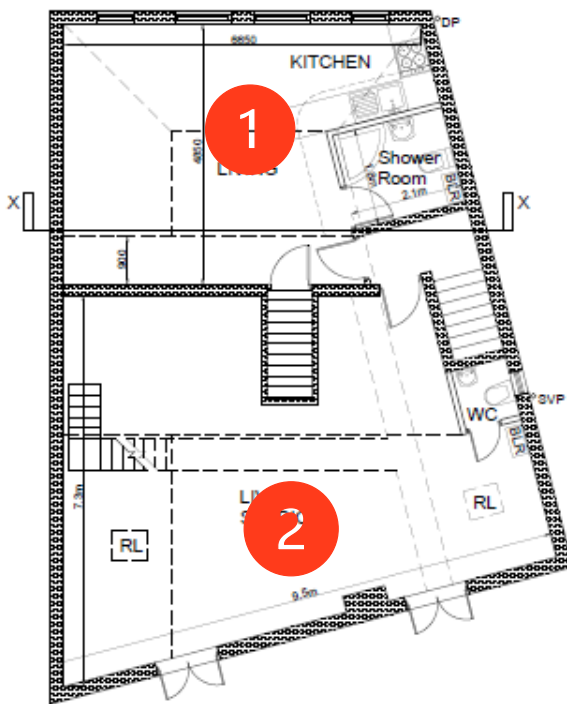
5.4.3 Monitoring Position 3

A microphone was placed within the rear second floor bedroom. The microphone was set on a tripod, 1.2m from the floor in the centre of the room and at least 1m away from any reflective surface. The sound level meter was set to record WAV file audio recordings for all maximum sound level events above 45 dBA.

During the measurement period, windows were partially open.

5.5 Monitoring Positions

The annotated drawings below show the monitoring positions.



6 Results and Analysis

6.1 Internal Ambient Sound Measurement Analysis in Accordance with BS8233:2014

The following tables present the measured results from all monitoring positions.

Monitoring position	Time Period	Time Base T (hours)	$L_{Aeq,T}$ (dB)	L_{AFmax} (dB)	L_{A90} (dB)	L_{A10} (dB)
1	Daytime	16	49.8	-	32.7	53.2
2	Daytime	16	40.0	-	28.0	43.1
	Night time	8	30.7	18.3 – 50.2	17.3	26.3
3	Daytime	16	45.2	-	29.2	48.9
	Night time	8	35.9	23.0 – 59.0	19.4	28.4

Table 6: Measurement Results



7 Summary

The following tables compare the measured results within the bedrooms and kitchen/ lounge against the criteria recommended in BS8233:2014 & the WHO Guidelines.

Monitoring Position	Time Period	$L_{Aeq,T}$ (dB)	Criteria	Summary	L_{AFmax} 45dB Exceedance
1	Daytime	49.8	35	Criteria Not Met	-
2	Daytime	40.0	35	Criteria Not Met	-
	Night time	30.7	30	Criteria Not Met	34
3	Daytime	45.2	35	Criteria Not Met	-
	Night time	35.9	30	Criteria Not Met	62

Table 7: Results compared with BS8233 and WHO Guidelines

The results demonstrate the $L_{Aeq,T}$ criteria set out by Rochdale Borough Council has not been achieved in all areas, with windows partially open. The L_{AFmax} levels exceeded 45dB 34 times at monitoring position 2, and 62 times at monitoring position 3.

BS8233:2014 states:

"If partially open windows were relied upon for background ventilation, the insulation would be reduced to approximately 15 dB)."

When considering the above, it is clear that the sound insulation performance of the external façade is limited to approximately 15dB due to the partially open window.

ProPG also states the following regarding open/ closed windows:

"Where the LPA accepts that there is a justification that the internal target noise levels can only be practically achieved with windows closed, which may be the case in urban areas and at sites adjacent to transportation noise sources, special care must be taken to design the accommodation so that it provides good standards of acoustics, ventilation and thermal comfort without unduly compromising other aspects of the living environment. In such circumstances, internal noise levels can be assessed with windows closed but with any façade openings used to provide "whole dwelling ventilation" in accordance with Building Regulations Approved Document F (e.g. trickle ventilators) in the open position (see Supplementary Document 2). Furthermore, in this scenario the internal L_{Aeq} target noise levels should not generally be exceeded."

Therefore, in order for internal levels to be reduced and measured with windows closed, sufficient alternative ventilation should be provided to all areas of the residential development.



8 Conclusion

The noise assessment has shown that the target internal ambient levels outlined by Rochdale Borough Council as well as BS8233:2014 have not been achieved in all areas of the development. Further investigation should be undertaken to assess the sound insulation performance of the external facades to ensure internal ambient noise levels meet the relevant criteria whilst providing adequate ventilation in all areas of the residential development.



9 References

National Planning Policy Framework (NPPF)

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

WHO Guidelines for Community Noise

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

9.1 Drawing References

266 BAMFORD ROAD HEYWOOD LOCATION PLAN

FORMER CO-OP 266 BAMFORD ROAD HEYWOOD PL1

FORMER CO-OP 266 BAMFORD ROAD HEYWOOD PL2 (4)

FORMER CO-OP 266 BAMFORD ROAD HEYWOOD PL3 (1)

FORMER CO-OP 266 BAMFORD ROAD HEYWOOD PL4



Appendix



Figure 1: Picture Showing Monitoring Position 1

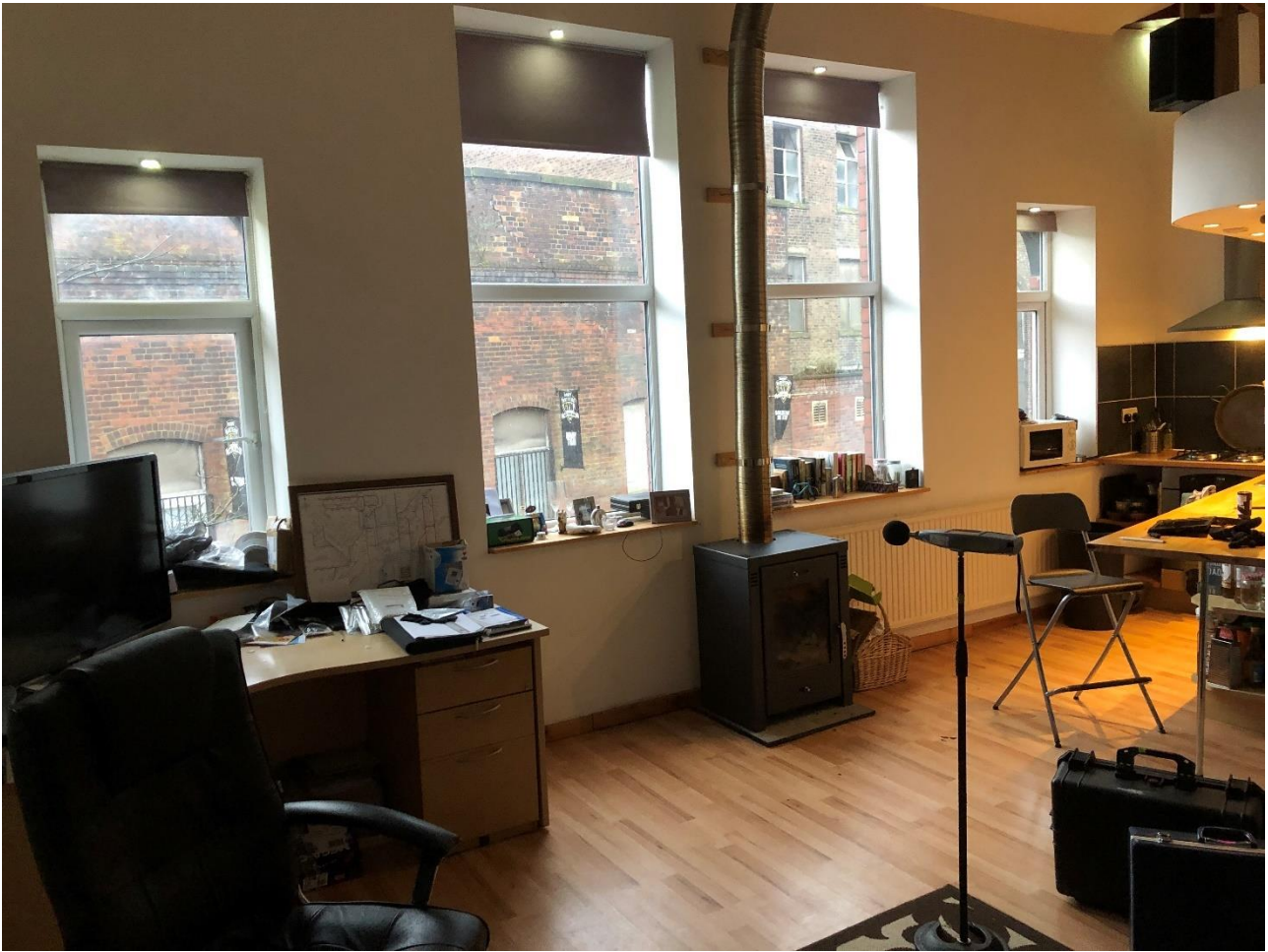


Figure 2: Picture Showing Monitoring Position 2



Figure 3: Picture Showing Monitoring Position 3

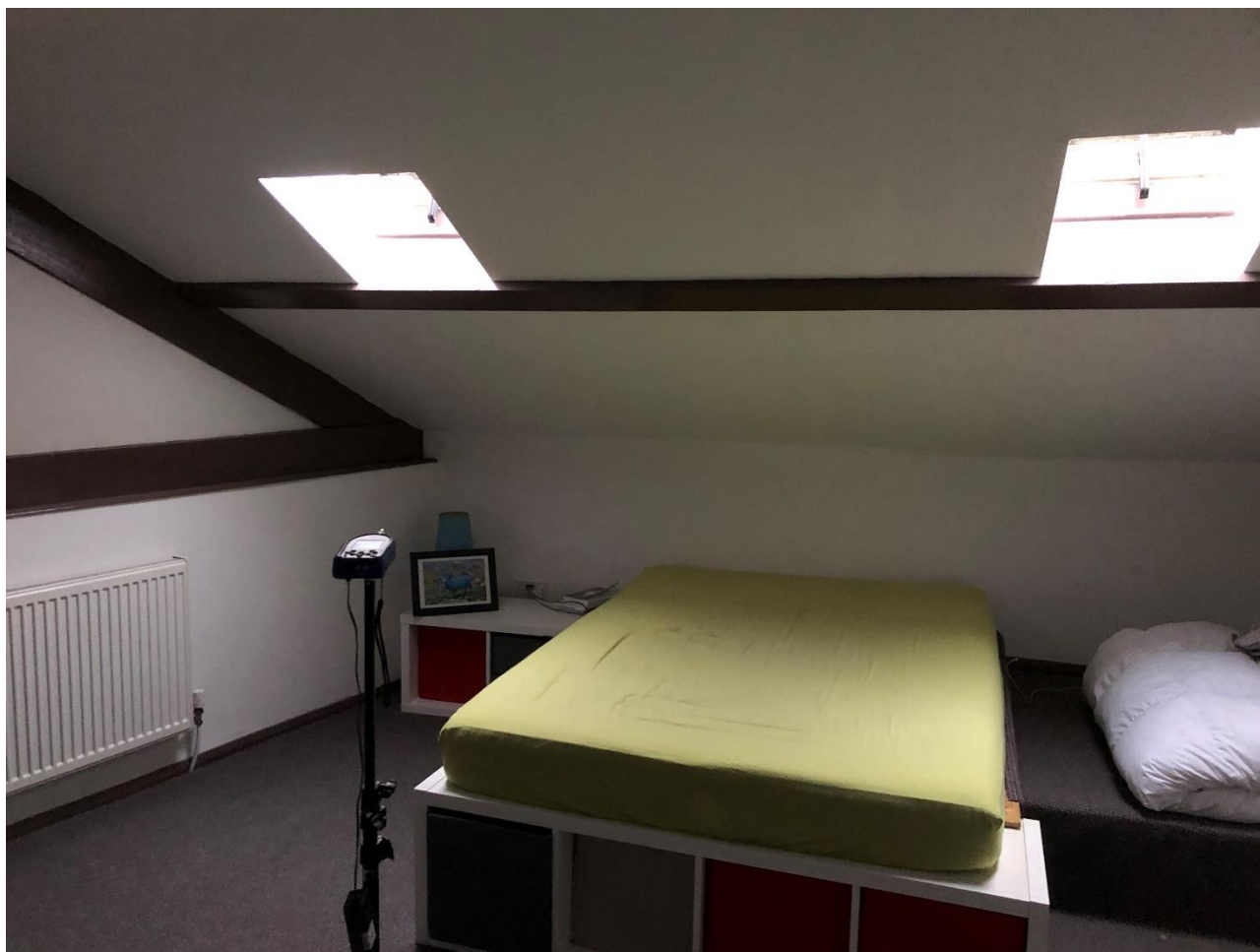


Figure 3: Picture Showing Partially Open Window

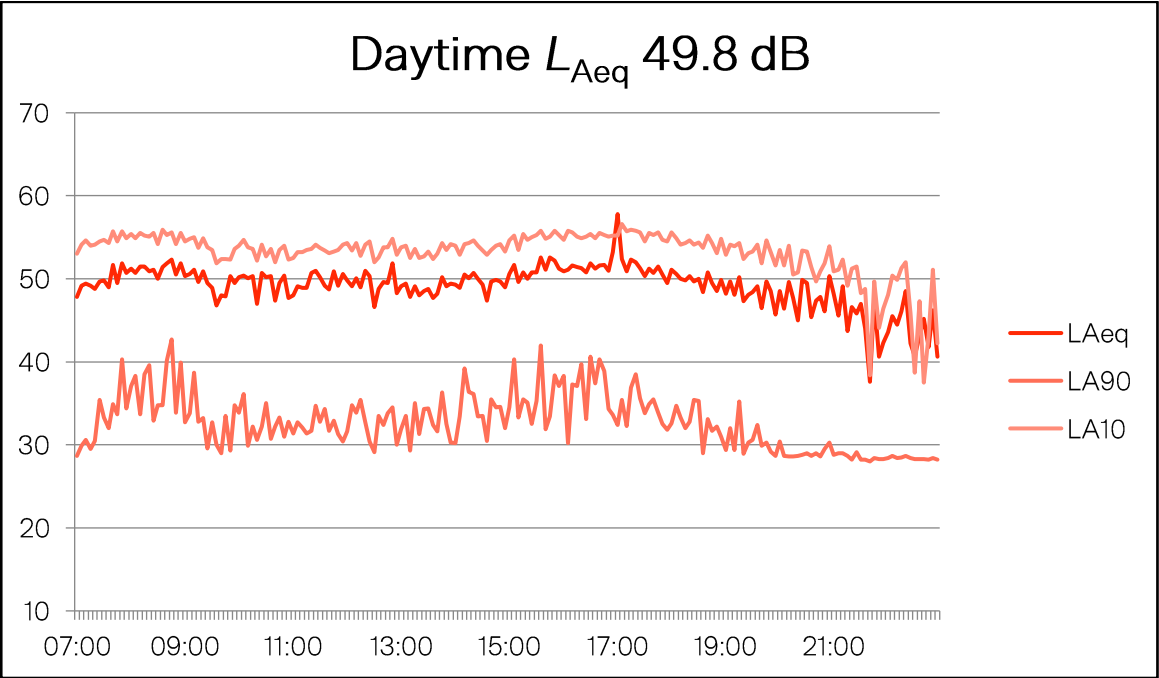


Figure 3: Picture Showing Partially Open Skylight

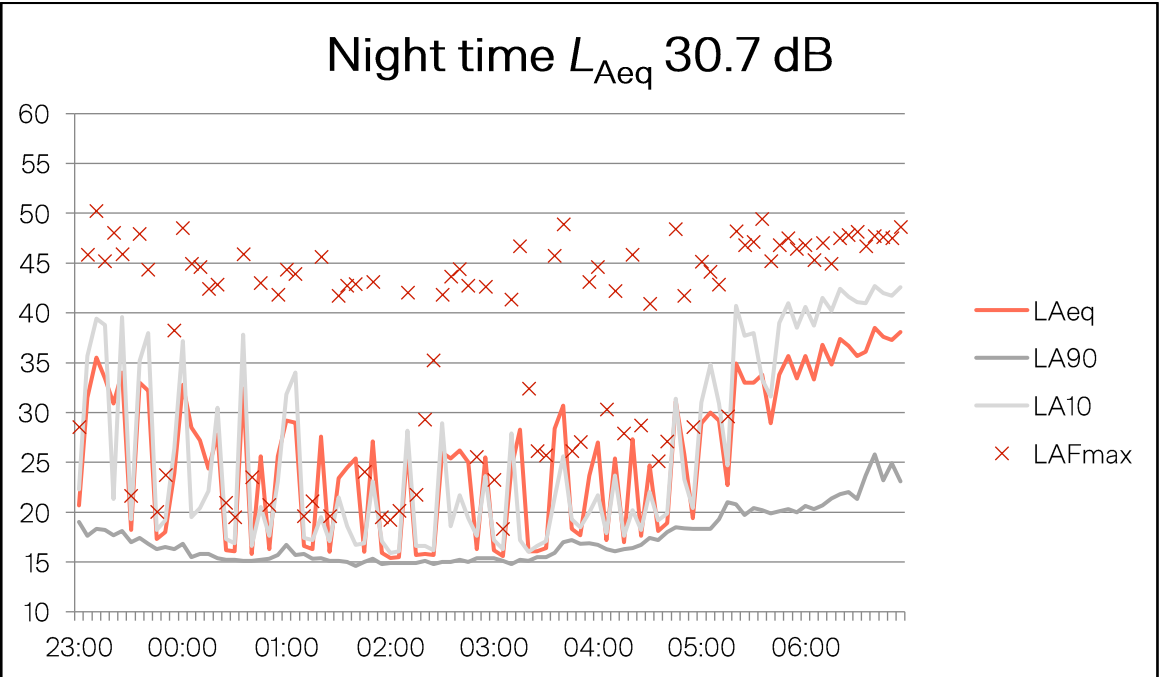
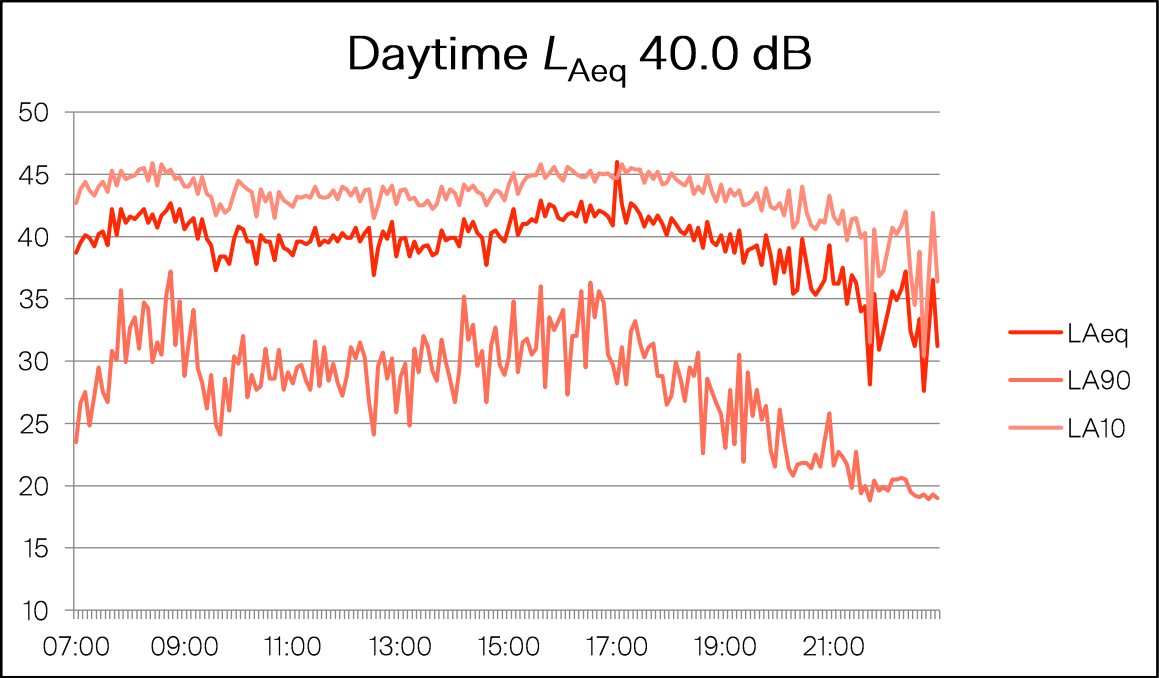


Measurement Results

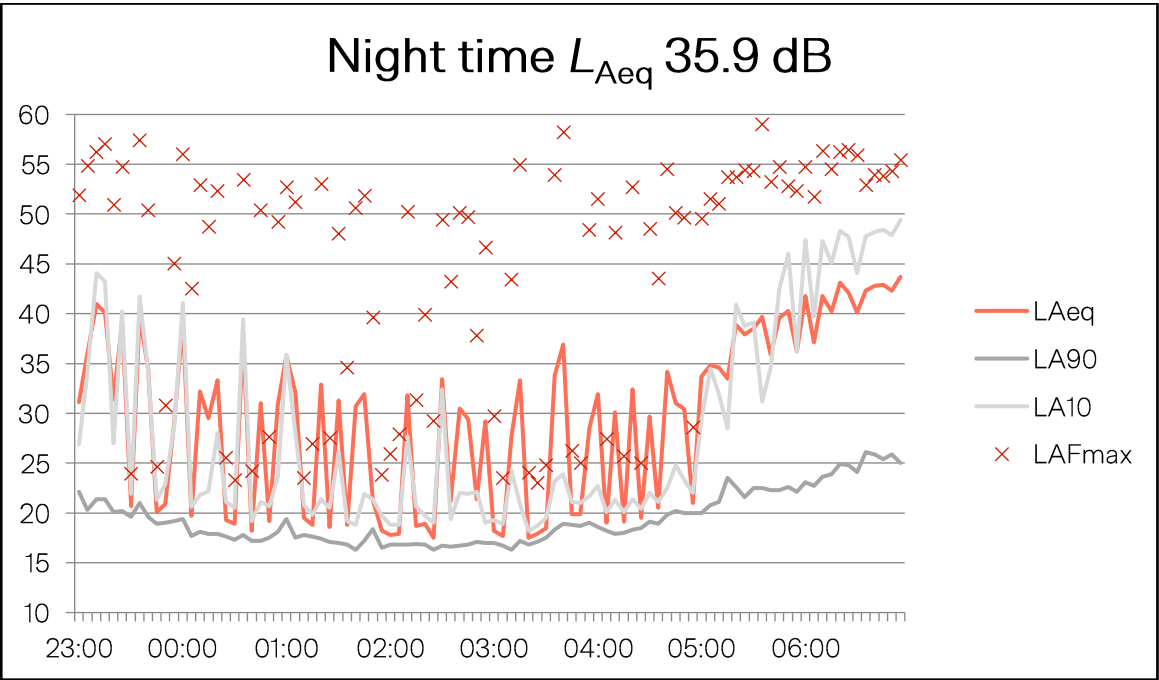
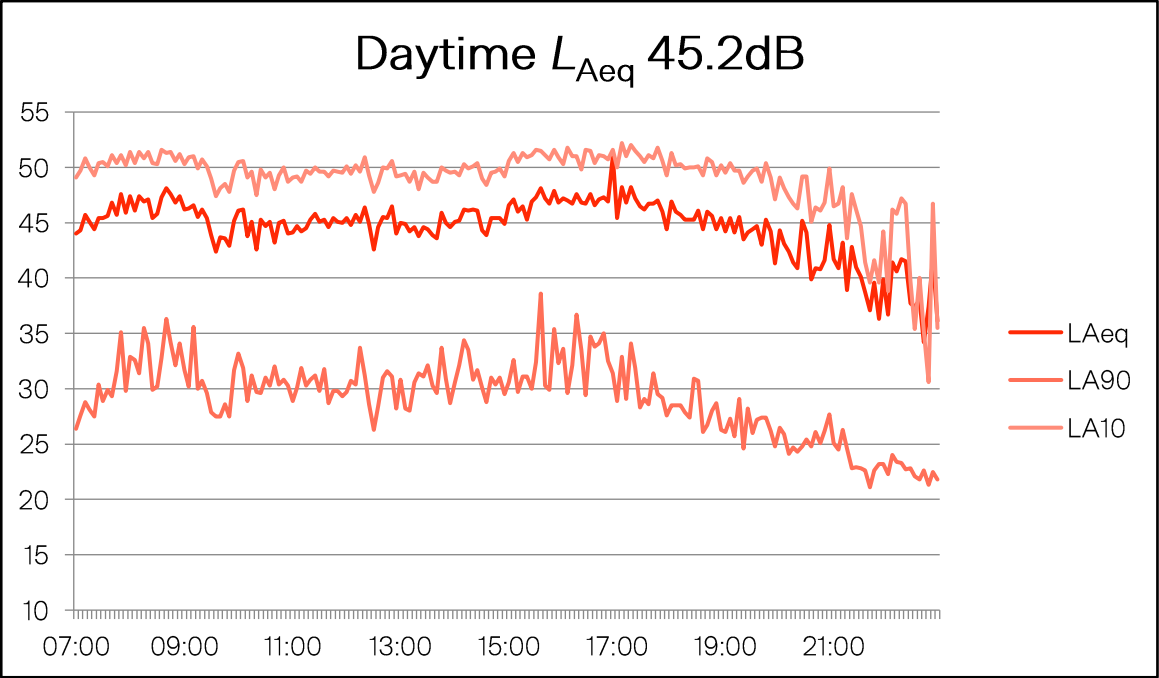
Monitoring Position 1



Monitoring Position 2



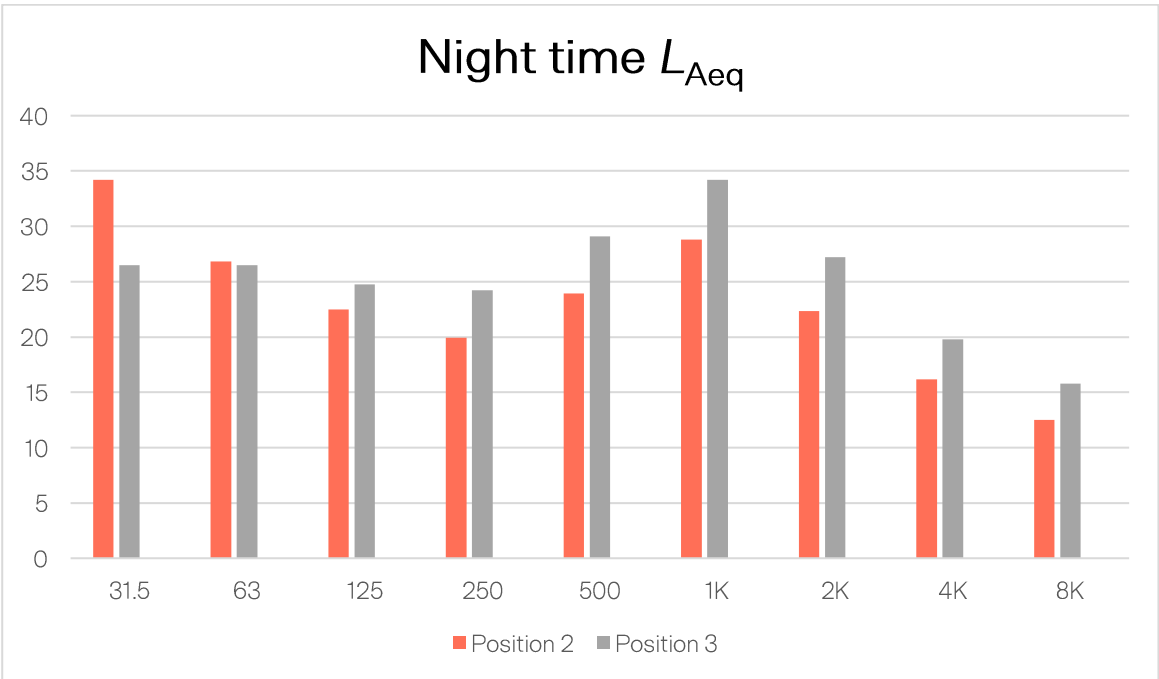
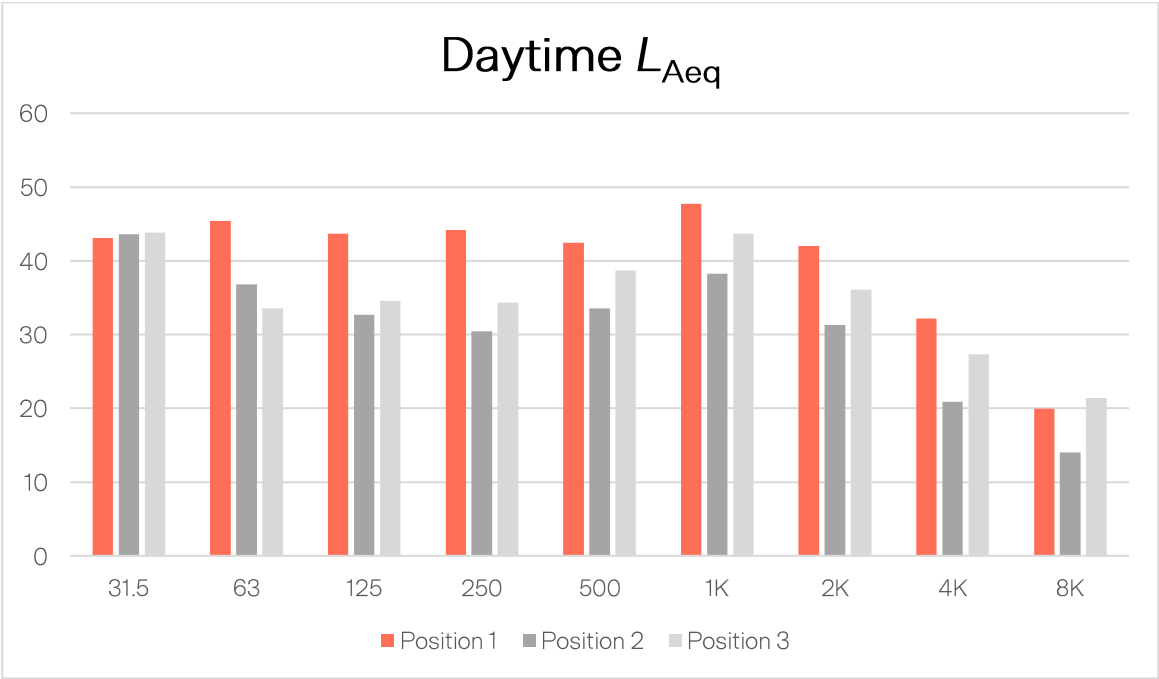
Monitoring Position 3



SPRATT+HAMER

Un-weighted 1:1 Octave Results

Positions 1,2 and 3





SPRATT+HAMER

Online

sprattandhamer.co.uk

Email

info@sprattandhamer.co.uk

Birmingham

Lewis Building, Bull Street
Birmingham, B4 6AF
0121 828 3120

London

100 Borough High Street,
London, SE1 1LB
0203 286 2019

Liverpool

23 Roscoe Street, Liverpool
L1 2SX
0151 933 6186

Manchester

Peter House, Oxford Street
Manchester, M1 5AN
0161 521 9383