

**TLC Groundworks
and Construction Ltd**

**Land North off
Half Moon Lane
Lakenheath**

**Proposed Residential
Development**

**Noise Impact
Assessment
Report**

August 2023

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1. INTRODUCTION

ATSPACE Ltd have been instructed by Groundworks and Construction Ltd to undertake an investigation into the environmental noise impact on Land Off Half Moon Lane, Lakenheath, as instructed by ShanRye Architectural and Surveying Services. It is proposed to locate eight plots for new dwellings on the site. An Acoustic Design Statement has therefore been carried out according to the requirements of the ProPG document 'Planning and Noise' 2017.

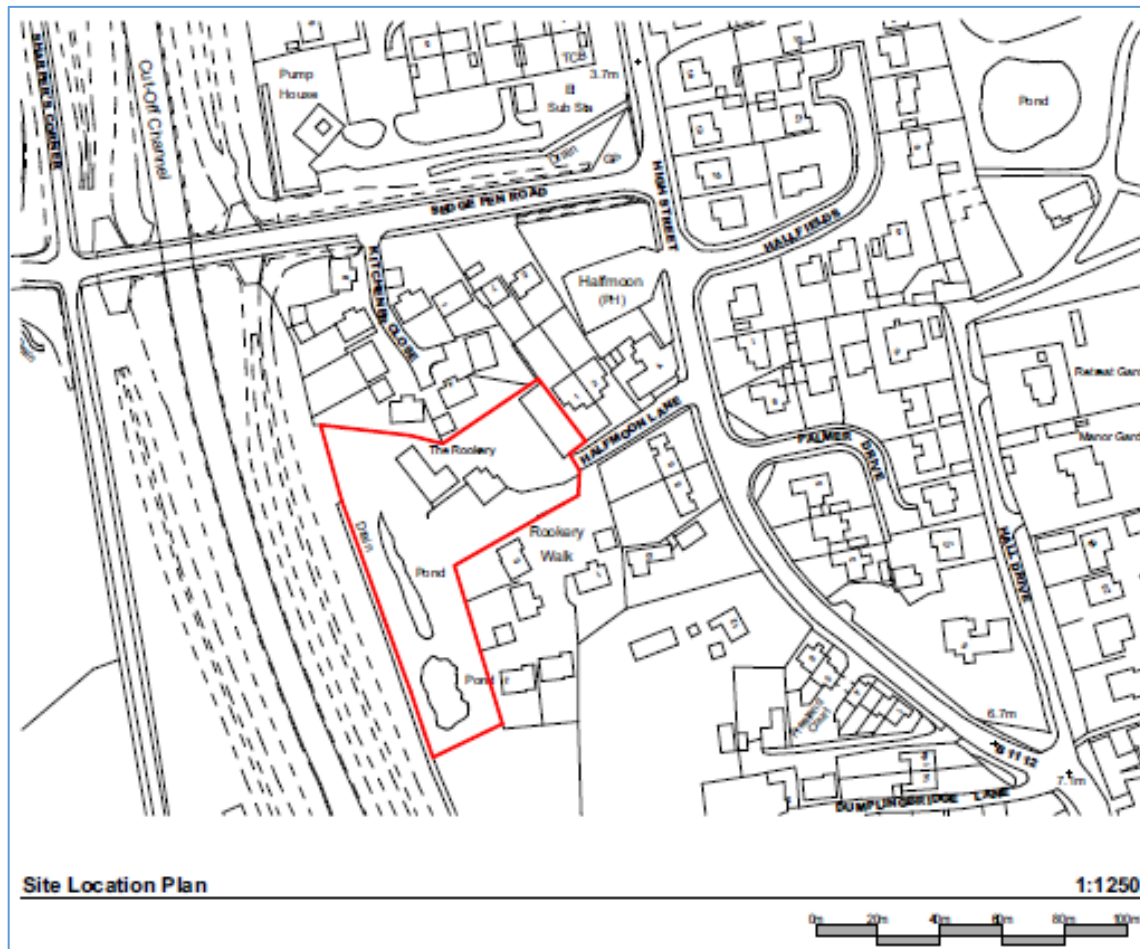
The primary source of ambient noise is due to military aircraft from the nearby RAF bases. A noise survey was carried out at 25 Back Street Lakenheath in April 2022 for the same client. This site was located at 2.33km from the nearest position on the runway at Lakenheath airbase. The proposed site is located at 2.73km and it is considered that this same data would be valid for the proposed site. The distance difference would make an insignificant change to noise levels.

This report details the results of the noise survey, assesses the potential impact and recommends appropriate sound insulation measures to meet the ProPG guidance. The measurements and assessment have been carried out by John Hyde, a Chartered Physicist and Corporate Member of the Institute of Acoustics who has over 30 years' experience as a noise and acoustics consultant.

2. SITE DESCRIPTION

The site is located off Half Moon Lane, Lakenheath, as shown in Figure 1.

Figure 1: Site location off Half Moon Lane



The noise survey was carried out from 11th to 19th April 2022 at the rear of 25 Back Lane, Lakenheath at the position shown in Figure 2.

Figure 2: Noise measurement position

3. ACOUSTIC DESIGN ASSESSMENT

The design assessment is carried out in two stages. The first stage is a noise risk assessment of the proposed site and the second is a systematic consideration of four key elements.

3.1 Stage 1 – Initial Site Noise Risk Assessment

The primary source of the highest noise levels affecting the site is from aircraft activity from RAF bases at Lakenheath and Mildenhall. This is an intermittent noise source with movements occurring on most weekdays during the daytime hours. Movements of high noise aircraft should not occur at night by agreement between the Local Authority and the Airbase, other than in the event of an emergency.

In order to determine the typical 24-hour noise exposure, a measurement survey was carried out at the location indicated in Figure 2. The microphone was positioned at ground level at a height of 1.5m. Levels were recorded in 15-minute samples from 11th to 19th

April 2022, to determine the equivalent continuous sound level, L_{Aeq} , the L_{Amax} values and the percentile L_{A90} (background noise level).

Weather conditions over the course of the survey period were checked on the 'Time and Date' website for the nearest weather station at Mildenhall. Throughout the measurement period, weather conditions were in accordance with BS7445 (Measurement and Description of Environmental Noise). Winds were light, mainly south-easterly with negligible precipitation.

Measurements were made with calibrated, precision grade sound level meter in accordance with BS EN 60651 and BS 7445:2003. Details of the equipment used are provided in Appendix 2 – List of Measurement Equipment. All equipment was calibration-checked before and after the survey; no significant drift was observed. The results of the survey are summarised in Table 1 and shown in detail in Appendix 3. Appendix 4 shows the graphical results.

Table 1: Summary of measured noise levels

Date	Time Period	$L_{Aeq,T}$	$L_{Amax\#}$
		[dB]	[dB]
11/04/2022	11:30 - 23:00	60.3	
11/04/2022	23:00 - 07:00	45.0	76.2
12/04/2022	07:00 - 23:00	66.1	
12/04/2022	23:00 - 07:00	44.0	76.8
13/04/2022	07:00 - 23:00	60.4	
13/04/2022	23:00 - 07:00	43.8	73.5
14/04/2022	07:00 - 23:00	62.4	
14/04/2022	23:00 - 07:00	44.6	74.9
15/04/2022	07:00 - 23:00	45.2	
15/04/2022	23:00 - 07:00	42.8	77.2
16/04/2022	07:00 - 23:00	46.2	
16/04/2022	23:00 - 07:00	42.4	75.8
17/04/2022	07:00 - 23:00	45.4	
17/04/2022	23:00 - 07:00	42.5	73.4
18/04/2022	07:00 - 23:00	44.5	
18/04/2022	23:00 - 07:00	42.8	68.5
19/04/2022	07:00 - 11:45	60.7	

Level exceeded no more than 5 times

The highest measured daytime level was $L_{Aeq,16hr}$ 66dB and the highest night time was $L_{Aeq,8hr}$ 45dB. The night time L_{Amax} was taken as 77dB, all to the nearest decibel.

This meant that the initial site noise risk assessment was assessed as low to medium, according to Figure 1 of ProPG Planning and Noise. Consequently, further consideration was undertaken in Stage 2 of the assessment process.

3.2 Stage 2 – Assessment of Four Key Elements

Element 1 – Good Acoustic Design Process

As the major noise source is from military aircraft the acoustic design options are severely limited. In order to reduce external noise levels at the dwellings and in amenity areas, it is not practicable to reduce or screen the noise source within the confines of the site. Alternative layout and orientation of the dwellings would not have any significant effect on noise impact at the building facades due to the overhead nature of the source.

The only practicable acoustic design measure would be through building construction to minimise window areas and to ensure a high standard of internal noise levels through sound insulation measures, as considered in Element 2.

Element 2 – Internal Noise Level Guidelines

It would not be possible to achieve the ProPG Noise Level Guidelines using standard openable windows as means of ventilation. It would be necessary for windows to remain closed with alternative ventilation measures provided.

From the noise measurement data, taking the highest day/night time levels, façade sound insulation requirements were determined, in order to achieve the recommended internal noise criteria.

Table 2: Summary of Façade Sound Attenuation needed to meet BS8233 criteria

Room/period	External	BS8233/WHO Guideline	Facade reduction needed
	[dB]	[dB]	[dB]
Living Room $L_{Aeq,T}$ (0700-2300)	66	35	31
Bedroom $L_{Aeq,T}$ (2300-0700)	45	30	15
Bedroom L_{Amax} (2300-0700)	77	45	32

Façades of the proposed dwelling containing windows to living rooms, should provide a minimum composite sound reduction of at least 31dB(A) in order to meet the recommendations of the ProPG Guidelines, while façades of the dwellings containing windows to bedrooms should provide a minimum composite sound reduction of at least 32dB(A). The proposed layout of the dwellings is shown in Figure 3.

Figure 3: Proposed layout of dwellings



The façade construction of the new buildings would be cavity masonry providing a typical attenuation of R_w 55dB. The overall façade sound attenuation has been calculated according to BS8233:2014 Annexe G2. This method includes a 3dB correction for façade reflection. The free-field spectrum of the noise source was taken from a short period on 12th April when regular high noise aircraft activity took place.

The dwelling room dimensions were estimated as typical. An enhanced sound insulation of the roof was assumed in the calculations, consisting of a ceiling construction of 2 x 12.5mm layers of acoustic plasterboard (such as Gyproc Soundbloc) and 50mm acoustic insulation (such as Rockwool RWA45) above the ceiling. The façade calculations are shown in Appendix 4.

For living rooms, a façade attenuation of 33dB would be achieved using 6-16-8.8 laminated acoustic double-glazed units together with, either, the AWW39 acoustic ventilator from Greenwood Airvac or the AAB acoustic air-brick, also from Greenwood Airvac, thus meeting the 31dB required minimum attenuation.

For the bedrooms, a façade attenuation of 34dB would be achieved using 6-16-8.8 acoustic double-glazed units together with the either of the acoustic ventilators as recommended for living rooms. The façade insulation is slightly higher for the bedrooms using the same acoustic measures, as the window area relative to the façade area, would be smaller. This would also meet the 32dB minimum attenuation required to reduce L_{Amax} .

Through wall ventilators giving a minimum sound attenuation $D_{ne,w}$ 39dB from other manufacturers would also be appropriate. Alternatively, acoustic trickle vents could be installed in the windows. For example, a façade sound attenuation of 35dB would be achieved by $D_{ne,w}$ 42dB trickle vents, such as the GAV2500EAW.AC1

This assumes that background ventilation will be provided according to Building Regs Part F, System 1, where intermittent mechanical extraction is provided by kitchen and bathroom ventilators. However, it would be preferable if whole-house MVHR is installed, as windows could remain closed and there would be no need for acoustic ventilators in the living and bedrooms.

Satisfactory internal noise levels can therefore be achieved according to ProPG Guidelines by incorporating the recommended glazing and ventilation measures within the building design.

Element 3 – External Amenity Area Noise

BS8233:2014 states that the acoustic environment of external amenity areas should always be assessed as part of the overall design and noise levels should ideally not be above 50-55dB $L_{Aeq,16hr}$. It is recognised that these guideline values may not be achievable in all circumstances thus the development should be designed to achieve the lowest practicable noise levels in amenity spaces but should not be prohibited.

The gardens of the proposed dwelling would be exposed to a daytime $L_{Aeq,16hr}$ 60dB, as averaged over the seven daytime periods. This exceeds the recommended range of 50-55dB but due to the overhead nature of the noise source, further attenuation measures are not practicable. The disturbance would be intermittent during weekday daytime hours with little activity at weekends.

Element 4 – Assessment of other relevant issues

The proposed development would comply with national and local planning policy and meet the general requirements of ProPG Noise Guidelines. External noise levels in amenity areas exceed the guideline recommendations, however, it is considered that future occupants of the dwelling would be well aware of high maximum noise levels from military aircraft affecting the site during the daytime and would take this into account in their decision as to whether to live there.

4. ACOUSTIC DESIGN STATEMENT

The acoustic design statement has taken account of the findings of the Acoustic Design Assessment. The following issues have been considered:

- Relevant noise sources have been identified as arising from military aircraft from RAF Lakenheath
- Based on measured noise data the site was assessed as between low and medium risk according to ProPG criteria.
- Due to the overhead nature of the noise source, mitigation measures are severely limited. Source separation, use of buildings as screens, noise barriers, use of quiet facades for noise sensitive rooms and site layout options were not practicable measures to reduce the impact of aircraft noise.
- Window sizes can be minimised for bedrooms on the proposed dwellings in order to maximise the composite sound attenuation of the facades.
- Calculations of façade sound attenuation have been carried out according to BS8233:2014 Annexe G2 and appropriate glazing measures recommended to meet the ProPG Internal Noise Guidelines.
- Enhanced sound insulation of the roofs has been recommended.
- As windows would need to remain closed, acoustic ventilation measures have been recommended and taken into account in the façade attenuation calculations.
- Whole house MVHR ventilation is recommended as this would enable windows to remain closed and there would be no need for acoustic ventilators.

5. CONCLUSION

The noise survey carried out for this assessment, indicates that the overall noise climate is dominated by intermittent noise from military aircraft at RAF Lakenheath.

The site has been assessed as between a low and medium site noise risk according to ProPG Planning and Noise and the ProPG internal noise guidelines can be met using the recommended glazing and ventilation measures.

It is recommended that planning consent should be granted with suitable conditions relating to meeting internal noise guidelines.

APPENDIX 1 – GLOSSARY OF TERMS

Decibel (dB)

The decibel is the unit used to quantify sound pressure levels. The human ear has an approximately logarithmic response to acoustic pressure over a very large dynamic range (typically 20 micro-Pascals to 100 Pascals). Therefore, a logarithmic scale is used to describe sound pressure levels and also sound intensity and power levels. The logarithms are taken to base 10. Hence an increase of 10 dB in sound pressure level is equivalent to an increase by a factor of 10 in the sound pressure level (measured in Pascals). Subjectively, this increase would correspond to a doubling of the perceived loudness of sound.

A-Weighting

The 'A' weighting is a correction term applied to the frequency range in order to mimic the sensitivity of the human ear to noise. It is generally used to obtain an overall noise level from octave or third octave band frequencies. An 'A' weighted value would be written as dB(A).

$L_{Aeq,T}$

The A-Weighted equivalent continuous sound level – the sound level of a notionally steady sound having the same energy as a fluctuating sound over a specified measurement period (T). $L_{Aeq,T}$ is used to describe many types of noise and can be measured directly with an integrating sound level meter.

$L_{A90,T}$

The A-Weighted noise level exceeded for 90% of the specified measurement period (T). This is generally taken to indicate the prevailing background noise level.

L_{Amax}

The highest A-Weighted noise level recorded during a noise event.

APPENDIX 2 – LIST OF MEASUREMENT EQUIPMENT

Measurements

SVAN 955 Sound Level Meter S/N 27330

Additional Equipment

Rion NC-74 Calibrator S/N 34167512

The above equipment fulfils IEC 61672 Class 1 and is traceable to calibration under BS7580: Part 1:1997.

The equipment was calibration-checked before and after measurement – no adverse deviation was observed.

APPENDIX 3 – RESULTS OF NOISE MEASUREMENTS

Date & time	LAFmax [dB]	LAeq [dB]	LA90 [dB]
11/04/2022 12:15	68.6	47.5	42.4
11/04/2022 12:30	62.0	47.1	42.1
11/04/2022 12:45	62.7	49.0	44.5
11/04/2022 13:00	60.8	49.4	45.2
11/04/2022 13:15	92.6	75.8	44.3
11/04/2022 13:30	61.3	46.1	40.9
11/04/2022 13:45	65.4	46.2	41.0
11/04/2022 14:00	60.7	46.2	40.8
11/04/2022 14:15	60.7	47.1	41.3
11/04/2022 14:30	80.6	58.0	43.4
11/04/2022 14:45	86.9	67.8	43.3
11/04/2022 15:00	62.0	45.8	41.8
11/04/2022 15:15	69.8	46.9	42.0
11/04/2022 15:30	76.3	52.5	44.9
11/04/2022 15:45	60.9	46.6	42.7
11/04/2022 16:00	63.9	49.0	43.0
11/04/2022 16:15	86.0	61.9	45.3
11/04/2022 16:30	68.3	47.8	43.3
11/04/2022 16:45	60.9	47.2	42.9
11/04/2022 17:00	68.5	50.1	44.4
11/04/2022 17:15	67.5	48.6	44.0
11/04/2022 17:30	60.4	47.4	42.7
11/04/2022 17:45	68.0	48.2	43.2
11/04/2022 18:00	62.5	48.3	41.8
11/04/2022 18:15	60.3	45.9	41.0
11/04/2022 18:30	60.7	46.2	41.3
11/04/2022 18:45	67.6	46.6	40.8
11/04/2022 19:00	58.1	43.6	40.4
11/04/2022 19:15	57.8	42.9	39.6
11/04/2022 19:30	60.1	43.7	37.8
11/04/2022 19:45	60.0	43.8	37.3
11/04/2022 20:00	63.5	45.7	36.4
11/04/2022 20:15	65.6	51.3	38.0
11/04/2022 20:30	67.7	46.5	37.9
11/04/2022 21:00	48.8	40.9	38.0
11/04/2022 21:15	57.7	41.6	36.0
11/04/2022 21:30	57.9	40.0	36.9
11/04/2022 21:45	51.8	41.2	37.6
11/04/2022 22:00	50.7	38.0	33.8
11/04/2022 22:15	48.1	36.3	32.7
11/04/2022 22:30	45.0	35.4	32.3
11/04/2022 22:45	61.3	39.2	32.9
11/04/2022 23:00	47.1	36.6	33.0
11/04/2022 23:15	46.6	35.5	32.0
11/04/2022 23:30	46.1	35.9	32.7
11/04/2022 23:45	45.2	37.1	34.0
12/04/2022 00:00	47.2	35.4	32.0
12/04/2022 00:30	62.5	41.8	33.4
12/04/2022 00:45	56.0	41.3	31.7
12/04/2022 01:00	52.5	41.5	31.4

Date & time	LAFmax [dB]	LAeq [dB]	LA90 [dB]
12/04/2022 01:15	54.1	41.3	35.1
12/04/2022 01:30	55.4	36.7	29.6
12/04/2022 01:45	49.4	37.4	27.8
12/04/2022 02:00	48.7	38.4	28.4
12/04/2022 02:15	46.9	34.8	27.1
12/04/2022 02:30	45.4	30.5	26.1
12/04/2022 02:45	49.0	35.3	27.5
12/04/2022 03:00	49.2	40.0	26.5
12/04/2022 03:15	50.5	38.6	33.4
12/04/2022 03:30	54.9	30.3	26.0
12/04/2022 03:45	47.0	33.7	26.2
12/04/2022 04:00	52.8	31.6	26.3
12/04/2022 04:15	46.4	32.7	27.0
12/04/2022 04:30	45.5	32.8	27.9
12/04/2022 04:45	46.3	33.7	27.3
12/04/2022 05:00	48.5	37.5	31.6
12/04/2022 05:15	67.1	50.2	37.7
12/04/2022 05:30	69.0	55.4	44.3
12/04/2022 05:45	63.0	50.3	41.0
12/04/2022 06:00	60.7	49.4	39.7
12/04/2022 06:15	62.1	47.3	39.3
12/04/2022 06:30	62.4	47.4	40.3
12/04/2022 06:45	62.4	47.7	41.9
12/04/2022 07:00	63.0	48.3	41.6
12/04/2022 07:15	62.0	47.6	42.4
12/04/2022 07:30	63.2	50.8	44.8
12/04/2022 07:45	65.2	53.1	48.1
12/04/2022 08:00	67.3	54.0	49.1
12/04/2022 08:15	105.7	75.6	51.3
12/04/2022 08:30	68.8	54.1	45.4
12/04/2022 08:45	67.5	53.9	49.4
12/04/2022 09:00	98.9	77.8	51.2
12/04/2022 09:15	91.8	75.3	47.6
12/04/2022 09:30	93.8	76.3	47.3
12/04/2022 09:45	93.4	69.7	44.3
12/04/2022 10:00	85.7	65.6	41.3
12/04/2022 10:15	85.2	67.2	43.3
12/04/2022 10:30	61.5	47.8	39.2
12/04/2022 10:45	80.2	59.9	38.7
12/04/2022 11:00	93.2	68.2	38.5
12/04/2022 11:15	88.5	65.7	38.2
12/04/2022 11:30	79.4	57.8	38.8
12/04/2022 11:45	90.7	72.6	40.6
12/04/2022 12:00	83.6	59.4	41.7
12/04/2022 12:15	69.6	52.2	40.3
12/04/2022 12:30	85.2	64.6	38.3
12/04/2022 12:45	74.1	53.8	41.6
12/04/2022 13:00	67.5	49.2	39.0
12/04/2022 13:15	91.3	70.0	36.9
12/04/2022 13:30	82.0	60.6	38.3

Date & time	LAFmax [dB]	LAeq [dB]	LA90 [dB]
12/04/2022 13:45	60.1	44.9	37.3
12/04/2022 14:00	60.3	44.5	38.0
12/04/2022 14:15	83.2	60.4	39.5
12/04/2022 14:30	83.9	59.4	36.9
12/04/2022 14:45	70.3	45.8	37.1
12/04/2022 15:00	63.0	44.8	36.6
12/04/2022 15:15	64.1	50.5	38.9
12/04/2022 15:30	78.3	60.0	40.6
12/04/2022 15:45	63.5	42.9	37.7
12/04/2022 16:00	67.0	46.4	36.9
12/04/2022 16:15	66.2	47.8	38.3
12/04/2022 16:30	64.0	46.7	40.3
12/04/2022 16:45	86.5	65.2	39.4
12/04/2022 17:00	90.9	69.9	40.2
12/04/2022 17:15	67.3	45.6	39.4
12/04/2022 17:30	57.5	42.7	38.8
12/04/2022 17:45	63.8	46.4	39.3
12/04/2022 18:00	78.3	55.2	39.9
12/04/2022 18:15	88.3	61.0	38.4
12/04/2022 18:30	67.4	47.3	37.7
12/04/2022 18:45	62.1	45.3	38.7
12/04/2022 19:00	62.5	47.1	37.4
12/04/2022 19:15	68.5	45.0	36.6
12/04/2022 19:30	60.7	45.8	36.0
12/04/2022 19:45	61.2	43.4	36.3
12/04/2022 20:00	62.1	42.5	36.7
12/04/2022 20:15	69.3	45.9	33.6
12/04/2022 20:30	67.3	48.3	33.3
12/04/2022 20:45	46.2	34.9	30.5
12/04/2022 21:00	47.2	35.5	30.9
12/04/2022 21:15	42.7	32.9	26.5
12/04/2022 21:30	45.5	33.7	28.0
12/04/2022 21:45	51.7	35.8	30.9
12/04/2022 22:00	54.0	35.0	27.9
12/04/2022 22:15	46.0	32.9	25.9
12/04/2022 22:30	44.7	34.0	27.5
12/04/2022 22:45	55.1	37.5	26.6
12/04/2022 23:00	47.5	33.2	25.8
12/04/2022 23:15	40.7	31.4	23.7
12/04/2022 23:30	42.5	31.9	23.9
12/04/2022 23:45	51.8	30.5	23.2
13/04/2022 00:00	55.0	32.7	24.2
13/04/2022 00:15	42.1	29.3	22.3
13/04/2022 00:30	40.2	28.1	22.2
13/04/2022 00:45	43.3	31.2	25.5
13/04/2022 01:00	44.4	32.1	26.0
13/04/2022 01:15	40.2	27.4	22.1
13/04/2022 01:30	40.1	27.3	22.6
13/04/2022 01:45	52.0	31.8	24.0
13/04/2022 02:00	39.8	29.4	24.4
13/04/2022 02:15	42.6	28.3	24.1
13/04/2022 02:30	56.7	34.4	23.2

Date & time	LAFmax [dB]	LAeq [dB]	LA90 [dB]
13/04/2022 02:45	38.9	28.8	23.5
13/04/2022 03:00	42.6	30.1	23.9
13/04/2022 03:15	48.4	31.5	23.7
13/04/2022 03:30	52.0	33.4	24.1
13/04/2022 03:45	44.1	29.1	20.9
13/04/2022 04:00	54.2	32.4	20.5
13/04/2022 04:15	43.8	26.2	20.3
13/04/2022 04:30	45.5	30.8	23.8
13/04/2022 04:45	47.1	33.2	22.4
13/04/2022 05:00	51.5	36.9	24.4
13/04/2022 05:15	59.5	44.9	31.0
13/04/2022 05:30	68.2	54.2	40.4
13/04/2022 06:00	62.3	47.3	36.1
13/04/2022 06:15	62.2	46.4	35.9
13/04/2022 06:30	68.2	51.5	36.3
13/04/2022 06:45	70.0	51.9	39.7
13/04/2022 07:00	66.8	47.0	39.1
13/04/2022 07:15	64.8	48.8	40.6
13/04/2022 07:30	61.0	47.3	41.7
13/04/2022 07:45	66.8	48.6	41.4
13/04/2022 08:00	62.6	47.1	38.7
13/04/2022 08:15	87.8	72.0	38.7
13/04/2022 08:30	87.8	70.4	38.5
13/04/2022 09:00	84.4	63.5	37.8
13/04/2022 09:15	83.8	58.8	36.9
13/04/2022 09:30	66.6	48.9	36.4
13/04/2022 09:45	68.5	47.2	35.9
13/04/2022 10:00	85.0	56.0	36.8
13/04/2022 10:15	78.3	53.8	35.6
13/04/2022 10:30	67.6	47.0	35.7
13/04/2022 10:45	65.3	44.7	35.0
13/04/2022 11:00	85.8	68.6	38.1
13/04/2022 11:15	88.4	67.4	35.7
13/04/2022 11:45	63.2	46.5	35.5
13/04/2022 12:00	75.9	51.3	36.4
13/04/2022 12:15	61.3	43.5	37.0
13/04/2022 12:30	92.7	61.4	37.5
13/04/2022 12:45	58.9	41.3	36.0
13/04/2022 13:00	56.1	41.1	36.7
13/04/2022 13:15	91.9	69.5	35.9
13/04/2022 13:30	86.0	65.7	35.3
13/04/2022 13:45	60.0	46.2	35.3
13/04/2022 14:00	56.6	43.8	37.5
13/04/2022 14:15	89.3	65.8	33.9
13/04/2022 14:30	86.2	64.7	34.2
13/04/2022 14:45	83.6	59.5	34.6
13/04/2022 15:00	84.4	59.3	32.9
13/04/2022 15:15	64.1	45.6	36.0
13/04/2022 15:30	60.8	45.7	35.0
13/04/2022 15:45	62.5	43.8	33.7
13/04/2022 16:00	70.3	51.8	35.0
13/04/2022 16:15	70.9	48.1	35.1

Date & time	LAFmax [dB]	LAeq [dB]	LA90 [dB]
13/04/2022 16:30	61.3	48.4	34.5
13/04/2022 16:45	62.6	49.1	40.1
13/04/2022 17:00	67.0	47.9	38.4
13/04/2022 17:15	69.1	50.3	37.4
13/04/2022 17:30	62.4	42.1	32.2
13/04/2022 17:45	63.1	47.3	34.5
13/04/2022 18:00	60.7	46.9	34.3
13/04/2022 18:15	86.6	52.4	33.5
13/04/2022 18:30	60.6	45.2	33.4
13/04/2022 18:45	68.3	46.0	32.5
13/04/2022 19:00	64.7	47.8	32.8
13/04/2022 19:15	62.9	49.8	33.0
13/04/2022 19:30	60.4	45.7	32.3
13/04/2022 19:45	60.7	46.0	32.0
13/04/2022 20:00	61.9	46.6	31.0
13/04/2022 20:15	63.7	46.5	31.8
13/04/2022 20:30	65.3	42.9	27.2
13/04/2022 20:45	53.2	30.5	26.0
13/04/2022 21:00	58.0	36.1	25.7
13/04/2022 21:15	51.9	30.7	24.7
13/04/2022 21:30	54.8	35.4	26.2
13/04/2022 21:45	52.7	30.8	24.8
13/04/2022 22:00	45.3	30.5	24.9
13/04/2022 22:15	51.7	35.5	28.6
13/04/2022 22:30	53.3	35.2	28.1
13/04/2022 22:45	50.9	32.2	24.3
13/04/2022 23:00	45.2	31.2	23.4
13/04/2022 23:15	44.5	30.1	23.1
13/04/2022 23:30	55.1	38.0	25.5
13/04/2022 23:45	44.4	30.7	22.7
14/04/2022 00:00	44.3	29.8	23.0
14/04/2022 00:15	47.2	29.3	20.5
14/04/2022 00:30	52.8	35.8	20.9
14/04/2022 00:45	51.2	26.9	19.6
14/04/2022 01:00	46.6	27.0	20.0
14/04/2022 01:15	44.8	25.4	20.6
14/04/2022 01:30	45.7	27.1	20.5
14/04/2022 01:45	47.4	27.1	21.2
14/04/2022 02:00	46.8	29.6	21.5
14/04/2022 02:15	46.5	26.2	20.0
14/04/2022 02:30	47.3	29.6	20.4
14/04/2022 02:45	52.0	35.6	21.4
14/04/2022 03:00	45.1	27.8	19.8
14/04/2022 03:15	47.5	26.4	20.0
14/04/2022 03:30	49.5	25.8	21.9
14/04/2022 03:45	49.5	31.3	23.3
14/04/2022 04:00	44.1	29.1	21.2
14/04/2022 04:15	45.3	25.4	20.1
14/04/2022 04:30	44.5	28.1	21.0
14/04/2022 04:45	45.3	30.1	25.2
14/04/2022 05:00	44.8	31.3	25.3
14/04/2022 05:15	68.8	48.6	33.2

Date & time	LAFmax [dB]	LAeq [dB]	LA90 [dB]
14/04/2022 05:30	66.2	54.3	42.1
14/04/2022 05:45	62.0	48.5	38.1
14/04/2022 06:00	65.4	46.9	37.9
14/04/2022 06:15	62.6	47.6	38.7
14/04/2022 06:30	62.1	48.6	39.8
14/04/2022 06:45	64.6	46.0	40.8
14/04/2022 07:00	62.4	47.8	40.0
14/04/2022 07:15	61.4	48.6	40.8
14/04/2022 07:30	61.3	47.8	40.7
14/04/2022 07:45	62.0	48.7	41.0
14/04/2022 08:00	88.4	68.2	38.2
14/04/2022 08:15	90.2	69.7	36.0
14/04/2022 08:30	88.3	67.0	37.0
14/04/2022 08:45	64.1	45.7	34.4
14/04/2022 09:00	64.3	48.2	38.4
14/04/2022 09:15	95.8	75.5	43.2
14/04/2022 09:30	60.5	45.7	29.3
14/04/2022 09:45	92.8	69.5	31.4
14/04/2022 10:00	60.1	45.2	30.8
14/04/2022 10:15	60.5	44.4	29.5
14/04/2022 10:30	59.0	44.6	28.8
14/04/2022 10:45	83.7	58.6	30.4
14/04/2022 11:00	91.3	66.2	30.7
14/04/2022 11:15	95.0	75.3	32.0
14/04/2022 11:30	91.3	66.0	31.1
14/04/2022 11:45	76.2	52.1	31.2
14/04/2022 12:00	61.8	47.0	32.0
14/04/2022 12:15	80.7	57.8	33.4
14/04/2022 12:30	83.6	57.5	30.4
14/04/2022 12:45	60.9	43.6	31.2
14/04/2022 13:00	59.4	44.0	29.9
14/04/2022 13:15	60.2	43.2	27.9
14/04/2022 13:30	63.7	47.8	29.1
14/04/2022 13:45	61.7	45.0	28.1
14/04/2022 14:00	66.6	45.5	29.4
14/04/2022 14:15	53.7	38.1	29.3
14/04/2022 14:30	64.5	45.3	30.2
14/04/2022 14:45	77.6	51.5	32.2
14/04/2022 15:00	75.8	47.3	30.4
14/04/2022 15:15	58.8	40.8	28.6
14/04/2022 15:30	81.9	53.0	30.6
14/04/2022 15:45	74.8	49.4	30.6
14/04/2022 16:15	72.5	48.1	31.7
14/04/2022 16:30	60.2	45.2	30.9
14/04/2022 16:45	60.1	43.4	30.3
14/04/2022 17:00	63.9	46.0	32.9
14/04/2022 17:15	62.2	41.0	30.3
14/04/2022 17:30	81.7	54.6	30.2
14/04/2022 17:45	59.7	43.3	31.8
14/04/2022 18:00	62.2	44.7	31.9
14/04/2022 18:15	59.1	44.3	29.8
14/04/2022 18:30	63.3	43.6	30.1

Date & time	LAFmax [dB]	LAeq [dB]	LA90 [dB]
14/04/2022 18:45	60.9	45.4	30.0
14/04/2022 19:00	58.3	42.6	30.1
14/04/2022 19:15	62.0	47.3	30.6
14/04/2022 19:30	65.4	43.6	28.1
14/04/2022 19:45	63.1	45.4	28.1
14/04/2022 20:00	60.4	44.0	27.8
14/04/2022 20:15	61.6	47.0	29.7
14/04/2022 20:30	62.4	43.5	29.5
14/04/2022 20:45	59.3	40.7	28.0
14/04/2022 21:00	57.6	35.5	26.1
14/04/2022 21:15	49.3	38.8	32.5
14/04/2022 21:30	67.1	47.9	41.4
14/04/2022 21:45	59.9	47.7	32.2
14/04/2022 22:00	60.1	38.0	27.3
14/04/2022 22:15	46.2	32.1	25.9
14/04/2022 22:30	55.1	36.7	27.7
14/04/2022 22:45	62.5	38.3	28.1
14/04/2022 23:00	42.2	31.3	26.9
14/04/2022 23:15	40.7	30.9	25.4
14/04/2022 23:30	44.8	32.5	23.6
14/04/2022 23:45	54.4	33.2	22.9
15/04/2022 00:00	44.9	31.3	23.2
15/04/2022 00:15	46.1	31.5	23.3
15/04/2022 00:30	46.6	32.6	23.3
15/04/2022 00:45	51.3	31.4	23.4
15/04/2022 01:00	45.1	31.8	23.2
15/04/2022 01:15	50.0	34.7	24.0
15/04/2022 01:30	44.0	29.5	21.4
15/04/2022 01:45	45.9	29.4	21.0
15/04/2022 02:00	48.7	31.3	22.4
15/04/2022 02:15	47.3	31.5	22.3
15/04/2022 02:30	57.3	39.7	22.7
15/04/2022 02:45	49.0	30.3	21.3
15/04/2022 03:00	40.3	27.0	21.3
15/04/2022 03:15	38.5	26.3	21.3
15/04/2022 03:30	42.6	28.9	22.2
15/04/2022 03:45	47.4	31.7	22.0
15/04/2022 04:00	45.0	28.3	21.9
15/04/2022 04:15	45.4	29.9	21.2
15/04/2022 04:30	45.3	28.1	21.5
15/04/2022 04:45	45.5	30.7	24.2
15/04/2022 05:00	44.3	31.1	24.2
15/04/2022 05:15	70.9	53.0	29.0
15/04/2022 05:30	68.0	55.1	40.4
15/04/2022 05:45	63.8	49.4	35.0
15/04/2022 06:00	67.3	49.9	33.4
15/04/2022 06:15	66.0	45.7	33.9
15/04/2022 06:45	61.0	44.5	34.1
15/04/2022 07:00	62.9	44.6	33.8
15/04/2022 07:15	64.8	46.1	34.3
15/04/2022 07:30	61.1	45.5	35.4
15/04/2022 07:45	62.1	46.7	36.9

Date & time	LAFmax [dB]	LAeq [dB]	LA90 [dB]
15/04/2022 08:00	59.8	45.5	36.8
15/04/2022 08:15	59.6	44.6	35.4
15/04/2022 08:30	68.0	45.4	34.0
15/04/2022 08:45	59.9	46.8	35.3
15/04/2022 09:00	60.5	45.9	35.0
15/04/2022 09:15	60.6	47.3	33.6
15/04/2022 09:30	57.7	44.5	32.1
15/04/2022 09:45	60.9	46.3	33.6
15/04/2022 10:00	62.5	47.6	35.0
15/04/2022 10:15	66.4	46.1	32.4
15/04/2022 10:30	61.4	46.5	33.8
15/04/2022 10:45	61.9	44.0	33.5
15/04/2022 11:00	61.5	44.5	33.6
15/04/2022 11:15	65.4	44.7	34.3
15/04/2022 11:30	62.6	44.9	34.0
15/04/2022 11:45	60.9	44.6	33.9
15/04/2022 12:00	64.6	42.7	33.0
15/04/2022 12:15	61.8	46.5	32.4
15/04/2022 12:30	54.2	37.3	31.9
15/04/2022 12:45	59.6	42.5	33.6
15/04/2022 13:00	60.8	45.3	33.7
15/04/2022 13:15	57.3	40.2	32.1
15/04/2022 13:30	59.9	43.9	31.9
15/04/2022 13:45	63.5	45.5	33.2
15/04/2022 14:00	61.3	46.1	34.5
15/04/2022 14:15	61.4	47.1	35.0
15/04/2022 14:45	64.5	45.0	34.0
15/04/2022 15:00	59.6	45.1	33.7
15/04/2022 15:15	52.8	39.6	34.6
15/04/2022 15:30	57.8	43.8	34.5
15/04/2022 15:45	68.2	44.9	38.1
15/04/2022 16:00	60.7	44.1	38.5
15/04/2022 16:15	64.5	43.0	36.4
15/04/2022 16:30	64.8	41.7	35.0
15/04/2022 16:45	62.0	45.5	36.5
15/04/2022 17:00	59.4	41.7	36.5
15/04/2022 17:15	60.7	41.9	36.1
15/04/2022 17:30	68.0	46.2	37.0
15/04/2022 17:45	78.6	54.3	38.4
15/04/2022 18:00	61.5	45.4	37.6
15/04/2022 18:15	59.5	42.9	36.7
15/04/2022 18:30	63.8	45.8	38.0
15/04/2022 18:45	64.2	46.3	37.4
15/04/2022 19:00	61.1	46.5	38.9
15/04/2022 19:15	66.4	45.1	37.2
15/04/2022 19:30	63.0	47.2	37.3
15/04/2022 19:45	72.3	46.9	36.2
15/04/2022 20:00	61.2	46.8	36.0
15/04/2022 20:15	62.6	47.4	36.4
15/04/2022 20:30	65.0	47.2	35.3
15/04/2022 20:45	63.1	44.8	34.8
15/04/2022 21:00	49.3	38.0	33.6

Date & time	LAFmax [dB]	LAeq [dB]	LA90 [dB]
15/04/2022 21:15	56.7	39.4	34.3
15/04/2022 21:30	52.5	38.6	33.5
15/04/2022 21:45	60.4	40.1	34.6
15/04/2022 22:00	50.5	37.4	33.5
15/04/2022 22:15	49.3	37.8	33.3
15/04/2022 22:30	47.8	36.6	33.2
15/04/2022 22:45	47.1	36.4	31.8
15/04/2022 23:00	48.8	36.4	31.5
15/04/2022 23:15	59.8	36.8	31.0
15/04/2022 23:30	47.3	36.1	32.2
15/04/2022 23:45	49.7	36.2	32.3
16/04/2022 00:00	45.7	35.4	30.8
16/04/2022 00:15	46.0	35.9	31.0
16/04/2022 00:30	52.5	35.2	29.0
16/04/2022 00:45	46.7	33.1	28.2
16/04/2022 01:00	45.0	33.8	30.1
16/04/2022 01:15	46.0	33.7	29.1
16/04/2022 01:30	47.8	31.1	27.8
16/04/2022 01:45	44.0	31.6	27.7
16/04/2022 02:00	48.0	31.2	27.0
16/04/2022 02:15	57.7	31.8	26.3
16/04/2022 02:30	41.8	28.2	25.0
16/04/2022 02:45	47.0	30.6	25.1
16/04/2022 03:00	47.3	31.2	25.7
16/04/2022 03:15	44.6	30.8	26.6
16/04/2022 03:30	39.8	29.5	26.3
16/04/2022 03:45	46.0	29.9	25.1
16/04/2022 04:00	49.4	31.4	24.2
16/04/2022 04:15	49.8	31.5	25.2
16/04/2022 04:30	41.7	30.8	25.6
16/04/2022 04:45	51.1	32.7	26.4
16/04/2022 05:00	56.3	36.1	26.3
16/04/2022 05:15	66.7	51.2	37.3
16/04/2022 05:30	64.5	50.3	38.3
16/04/2022 05:45	65.3	48.2	34.8
16/04/2022 06:00	63.4	46.1	34.5
16/04/2022 06:15	61.1	47.4	35.0
16/04/2022 06:30	65.8	46.2	35.0
16/04/2022 06:45	67.6	46.0	34.2
16/04/2022 07:00	62.7	47.9	35.3
16/04/2022 07:15	64.8	43.8	35.2
16/04/2022 07:30	60.2	44.2	33.9
16/04/2022 07:45	63.9	48.1	36.1
16/04/2022 08:00	62.2	50.0	36.0
16/04/2022 08:15	64.5	47.0	34.7
16/04/2022 08:30	61.4	46.3	35.0
16/04/2022 08:45	65.2	48.3	34.6
16/04/2022 09:00	60.7	45.6	34.8
16/04/2022 09:15	59.0	42.8	34.6
16/04/2022 09:30	60.9	45.9	36.0
16/04/2022 09:45	61.3	47.4	36.3
16/04/2022 10:00	61.6	48.8	36.5

Date & time	LAFmax [dB]	LAeq [dB]	LA90 [dB]
16/04/2022 10:15	62.3	45.8	36.3
16/04/2022 10:30	62.2	44.3	36.0
16/04/2022 10:45	60.2	45.1	37.0
16/04/2022 11:00	60.1	46.5	37.5
16/04/2022 11:15	62.1	47.9	37.1
16/04/2022 11:30	61.8	46.2	36.1
16/04/2022 11:45	65.0	46.1	37.8
16/04/2022 12:00	58.7	44.9	37.7
16/04/2022 12:15	64.0	46.5	36.3
16/04/2022 12:30	60.7	46.0	36.7
16/04/2022 12:45	62.8	46.4	38.0
16/04/2022 13:00	65.6	46.6	35.5
16/04/2022 13:15	65.5	46.0	36.2
16/04/2022 13:30	60.5	44.8	35.2
16/04/2022 13:45	78.4	54.1	35.0
16/04/2022 14:00	68.3	46.7	35.1
16/04/2022 14:15	65.3	46.9	33.8
16/04/2022 14:30	60.0	45.3	34.7
16/04/2022 14:45	61.1	45.5	33.9
16/04/2022 15:00	62.0	46.7	33.1
16/04/2022 15:15	63.6	48.3	34.5
16/04/2022 15:30	64.2	43.8	33.6
16/04/2022 15:45	64.5	44.9	33.1
16/04/2022 16:00	61.6	45.7	35.1
16/04/2022 16:15	63.7	48.5	33.4
16/04/2022 16:30	62.1	45.8	32.8
16/04/2022 16:45	60.3	44.4	33.9
16/04/2022 17:00	59.9	44.0	33.4
16/04/2022 17:15	64.6	46.3	34.4
16/04/2022 17:30	64.9	45.4	35.2
16/04/2022 17:45	61.5	46.4	34.5
16/04/2022 18:00	61.3	45.8	34.6
16/04/2022 18:15	64.4	43.4	34.6
16/04/2022 18:30	63.5	47.8	36.1
16/04/2022 18:45	62.0	45.3	36.3
16/04/2022 19:00	64.2	47.3	36.5
16/04/2022 19:15	63.0	45.9	34.4
16/04/2022 19:30	63.3	47.8	34.8
16/04/2022 19:45	61.9	46.6	34.3
16/04/2022 20:00	63.5	47.8	35.5
16/04/2022 20:15	67.0	47.8	36.3
16/04/2022 20:30	66.8	46.7	34.0
16/04/2022 20:45	61.7	44.0	33.0
16/04/2022 21:00	50.1	37.0	33.1
16/04/2022 21:15	49.2	37.5	33.5
16/04/2022 21:30	59.2	39.7	33.4
16/04/2022 21:45	54.2	39.0	33.4
16/04/2022 22:00	47.4	36.8	32.0
16/04/2022 22:15	52.1	37.9	32.5
16/04/2022 22:30	54.7	36.1	32.0
16/04/2022 22:45	47.5	36.3	31.8
16/04/2022 23:00	44.6	36.5	33.4

Date & time	LAFmax [dB]	LAeq [dB]	LA90 [dB]
16/04/2022 23:15	44.6	35.4	31.5
16/04/2022 23:30	43.2	33.2	29.6
16/04/2022 23:45	45.5	33.4	29.5
17/04/2022 00:00	52.6	34.7	27.2
17/04/2022 00:15	42.4	32.8	26.6
17/04/2022 00:30	45.2	31.8	26.1
17/04/2022 00:45	45.7	31.5	25.3
17/04/2022 01:00	47.3	32.4	24.1
17/04/2022 01:15	54.2	33.4	24.3
17/04/2022 01:30	46.4	34.7	26.1
17/04/2022 01:45	48.5	34.4	25.5
17/04/2022 02:00	44.0	30.2	24.3
17/04/2022 02:15	45.8	32.5	24.3
17/04/2022 02:30	46.1	32.1	23.9
17/04/2022 02:45	45.8	32.5	24.8
17/04/2022 03:00	47.3	30.9	23.5
17/04/2022 03:15	48.0	32.8	24.8
17/04/2022 03:30	46.4	30.3	23.6
17/04/2022 03:45	46.1	31.4	23.7
17/04/2022 04:00	41.4	28.7	23.3
17/04/2022 04:15	52.3	35.5	24.3
17/04/2022 04:30	50.7	31.1	23.3
17/04/2022 04:45	57.2	31.4	23.2
17/04/2022 05:00	61.6	39.3	24.7
17/04/2022 05:15	64.6	49.2	39.2
17/04/2022 05:30	68.2	51.9	38.1
17/04/2022 05:45	63.2	47.2	35.2
17/04/2022 06:00	60.1	47.7	34.3
17/04/2022 06:15	60.9	45.8	33.4
17/04/2022 06:30	62.9	47.2	33.0
17/04/2022 06:45	62.4	45.5	34.5
17/04/2022 07:00	60.9	45.0	34.0
17/04/2022 07:15	58.2	45.4	33.7
17/04/2022 07:30	60.6	44.0	31.5
17/04/2022 07:45	64.3	47.4	34.4
17/04/2022 08:00	60.7	45.9	33.2
17/04/2022 08:15	63.3	46.3	33.2
17/04/2022 08:30	61.0	46.6	33.1
17/04/2022 08:45	57.8	38.9	32.0
17/04/2022 09:00	71.3	41.5	32.6
17/04/2022 09:15	66.7	44.6	33.7
17/04/2022 09:30	58.7	43.8	34.2
17/04/2022 09:45	62.5	44.2	34.8
17/04/2022 10:00	60.9	46.9	35.5
17/04/2022 10:15	60.6	46.0	34.8
17/04/2022 10:30	61.5	45.2	35.4
17/04/2022 10:45	62.3	48.0	38.1
17/04/2022 11:00	61.6	46.8	35.1
17/04/2022 11:15	58.3	44.4	34.1
17/04/2022 11:30	58.0	40.5	33.2
17/04/2022 11:45	71.4	47.5	34.3
17/04/2022 12:00	60.7	44.2	34.8

Date & time	LAFmax [dB]	LAeq [dB]	LA90 [dB]
17/04/2022 12:15	68.9	50.5	35.3
17/04/2022 12:30	60.6	45.0	35.2
17/04/2022 12:45	64.7	45.8	37.3
17/04/2022 13:00	60.8	46.1	37.3
17/04/2022 13:15	62.4	44.8	37.9
17/04/2022 13:30	59.7	44.0	36.7
17/04/2022 13:45	60.3	44.2	35.4
17/04/2022 14:00	67.6	47.4	37.0
17/04/2022 14:15	59.9	42.0	36.8
17/04/2022 14:30	58.2	40.1	35.3
17/04/2022 14:45	60.9	45.0	35.9
17/04/2022 15:00	57.5	43.0	36.0
17/04/2022 15:15	58.9	42.6	35.8
17/04/2022 15:30	67.9	47.0	36.4
17/04/2022 16:00	60.3	44.8	37.4
17/04/2022 16:15	57.0	42.5	36.1
17/04/2022 16:30	59.7	44.0	36.1
17/04/2022 16:45	59.1	44.0	36.0
17/04/2022 17:00	65.1	45.9	36.1
17/04/2022 17:15	62.5	47.4	35.8
17/04/2022 17:30	58.7	46.1	36.1
17/04/2022 17:45	63.2	46.5	35.4
17/04/2022 18:00	60.3	43.4	34.5
17/04/2022 18:15	63.9	42.8	34.4
17/04/2022 18:30	61.9	45.9	35.6
17/04/2022 18:45	58.9	44.6	35.6
17/04/2022 19:00	85.4	54.8	34.8
17/04/2022 19:15	66.1	45.8	35.5
17/04/2022 19:30	65.3	47.1	35.3
17/04/2022 19:45	63.4	45.5	34.2
17/04/2022 20:00	62.6	45.9	33.4
17/04/2022 20:15	62.5	45.1	33.5
17/04/2022 20:30	59.9	45.0	34.5
17/04/2022 20:45	59.6	39.8	33.8
17/04/2022 21:00	60.0	38.9	33.3
17/04/2022 21:15	49.8	37.4	32.6
17/04/2022 21:30	60.1	39.7	33.0
17/04/2022 21:45	58.0	40.1	33.2
17/04/2022 22:00	54.8	39.8	32.5
17/04/2022 22:15	46.2	37.3	31.2
17/04/2022 22:30	45.0	35.1	27.8
17/04/2022 22:45	45.5	33.4	26.4
17/04/2022 23:00	53.8	36.6	27.9
17/04/2022 23:15	46.8	35.1	28.1
17/04/2022 23:30	47.8	34.0	24.4
17/04/2022 23:45	62.1	39.5	24.4
18/04/2022 00:00	47.8	32.2	23.6
18/04/2022 00:15	42.7	30.9	22.8
18/04/2022 00:30	46.3	33.7	22.3
18/04/2022 00:45	42.1	29.7	21.5
18/04/2022 01:00	42.8	28.2	22.0
18/04/2022 01:15	47.1	32.3	22.8

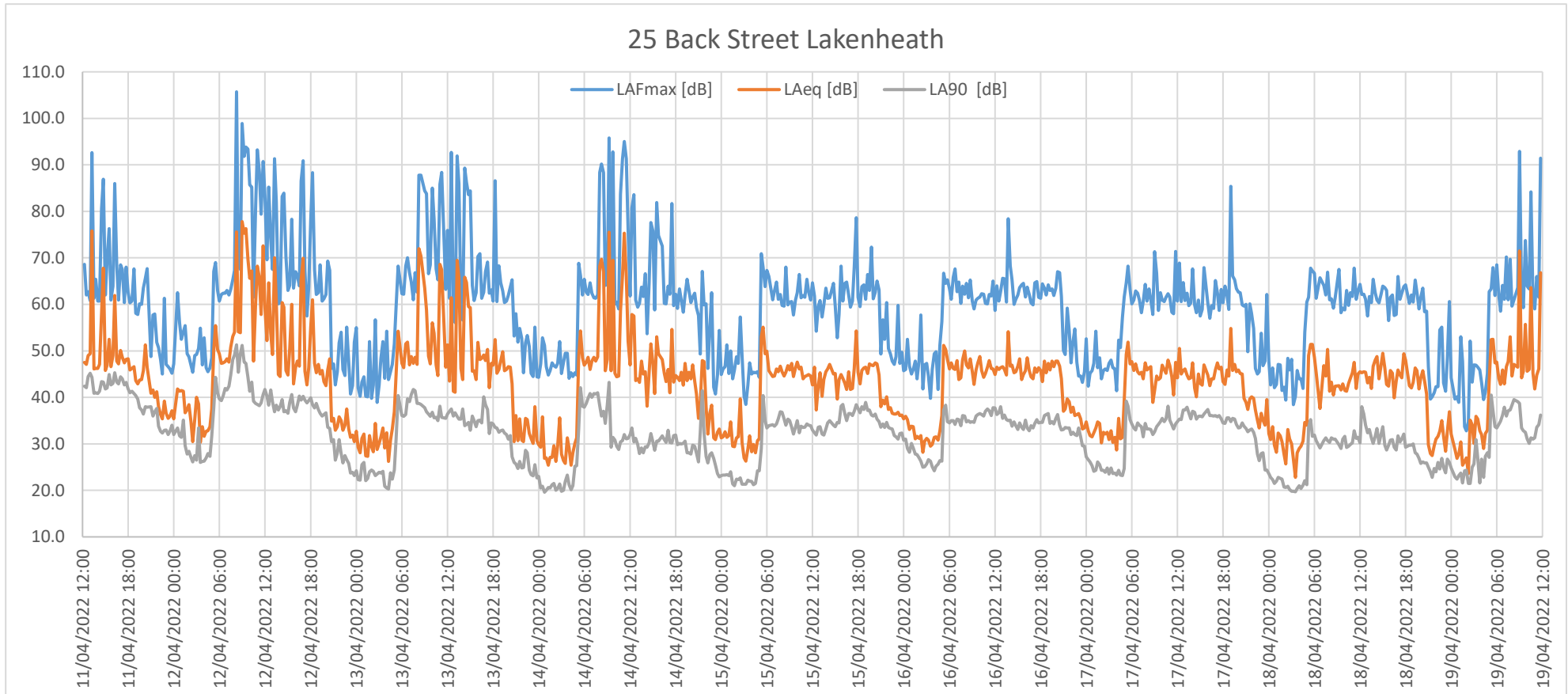
Date & time	LAFmax [dB]	LAeq [dB]	LA90 [dB]
18/04/2022 01:30	47.0	31.7	22.6
18/04/2022 01:45	41.5	30.5	22.4
18/04/2022 02:00	42.2	27.8	20.7
18/04/2022 02:15	39.4	25.7	20.6
18/04/2022 02:30	48.4	33.1	20.9
18/04/2022 02:45	45.9	31.1	20.2
18/04/2022 03:00	48.2	30.0	19.8
18/04/2022 03:15	38.4	26.7	19.8
18/04/2022 03:30	40.2	22.8	19.7
18/04/2022 03:45	45.8	28.1	20.4
18/04/2022 04:00	44.0	29.0	21.0
18/04/2022 04:15	44.0	29.5	20.4
18/04/2022 04:30	41.9	30.6	21.1
18/04/2022 04:45	54.0	34.6	22.1
18/04/2022 05:00	60.5	34.0	21.2
18/04/2022 05:15	61.5	49.0	33.5
18/04/2022 05:30	67.8	51.4	35.2
18/04/2022 05:45	67.2	51.4	31.6
18/04/2022 06:00	66.7	48.6	31.9
18/04/2022 06:15	61.3	45.3	30.7
18/04/2022 06:45	65.7	37.6	29.1
18/04/2022 07:15	64.1	46.8	30.7
18/04/2022 07:30	62.0	44.6	31.3
18/04/2022 07:45	66.9	50.3	30.7
18/04/2022 08:00	61.0	41.3	30.3
18/04/2022 08:15	61.2	43.3	31.3
18/04/2022 08:30	59.2	40.5	31.0
18/04/2022 08:45	61.4	42.4	31.0
18/04/2022 09:15	67.5	42.5	29.8
18/04/2022 09:30	58.2	41.6	29.0
18/04/2022 09:45	59.2	42.9	31.0
18/04/2022 10:00	58.8	41.5	31.6
18/04/2022 10:15	63.0	41.3	29.2
18/04/2022 10:30	59.8	43.0	29.5
18/04/2022 10:45	62.5	44.1	29.9
18/04/2022 11:00	61.7	45.3	30.2
18/04/2022 11:15	67.8	47.5	32.8
18/04/2022 11:30	61.1	41.9	31.2
18/04/2022 11:45	62.8	45.0	31.4
18/04/2022 12:00	64.3	45.5	30.2
18/04/2022 12:15	62.1	45.3	38.0
18/04/2022 12:30	62.2	45.5	36.4
18/04/2022 12:45	61.1	45.4	34.0
18/04/2022 13:00	57.5	43.1	32.4
18/04/2022 13:15	61.7	44.3	33.1
18/04/2022 13:30	60.4	41.9	31.3
18/04/2022 13:45	65.4	46.7	30.1
18/04/2022 14:00	62.5	48.0	31.6
18/04/2022 14:15	60.9	48.8	33.3
18/04/2022 14:30	60.3	44.0	30.1
18/04/2022 14:45	62.1	46.8	32.0
18/04/2022 15:00	63.9	49.5	33.7

Date & time	LAFmax [dB]	LAeq [dB]	LA90 [dB]
18/04/2022 15:15	63.6	46.3	29.7
18/04/2022 15:30	63.0	42.8	28.7
18/04/2022 15:45	56.5	42.4	29.7
18/04/2022 16:00	61.5	45.8	30.8
18/04/2022 16:15	62.0	45.2	30.9
18/04/2022 16:30	57.6	39.9	29.3
18/04/2022 16:45	57.8	43.5	28.7
18/04/2022 17:00	66.0	45.9	31.7
18/04/2022 17:15	61.1	44.8	30.4
18/04/2022 17:30	62.4	44.2	31.1
18/04/2022 17:45	63.8	49.4	32.1
18/04/2022 18:00	64.2	48.0	29.3
18/04/2022 18:30	60.2	42.5	29.7
18/04/2022 18:45	62.0	42.0	29.7
18/04/2022 19:00	60.5	43.2	30.0
18/04/2022 19:15	65.2	46.3	28.1
18/04/2022 19:30	62.5	45.7	27.8
18/04/2022 19:45	59.0	41.8	26.9
18/04/2022 20:00	61.5	44.2	25.8
18/04/2022 20:15	63.5	45.7	26.1
18/04/2022 20:30	58.4	43.5	25.9
18/04/2022 20:45	58.5	40.7	25.9
18/04/2022 21:00	46.6	29.8	25.0
18/04/2022 21:15	39.6	27.9	24.0
18/04/2022 21:30	40.1	27.5	22.8
18/04/2022 21:45	41.0	29.6	24.7
18/04/2022 22:00	42.3	31.0	24.0
18/04/2022 22:15	42.3	31.6	26.0
18/04/2022 22:30	54.5	32.7	24.6
18/04/2022 22:45	55.1	35.0	26.9
18/04/2022 23:00	43.1	31.6	24.9
18/04/2022 23:15	41.3	28.4	23.8
18/04/2022 23:30	48.5	32.7	26.7
18/04/2022 23:45	60.6	36.9	26.0
19/04/2022 00:00	44.2	32.1	24.8
19/04/2022 00:30	39.6	28.8	22.9
19/04/2022 00:45	40.1	26.9	22.4
19/04/2022 01:00	38.9	27.7	23.2
19/04/2022 01:15	53.0	30.4	23.7
19/04/2022 01:30	47.7	25.4	21.6
19/04/2022 01:45	33.7	26.2	24.2
19/04/2022 02:00	32.8	27.0	24.3
19/04/2022 02:15	34.7	23.6	21.5
19/04/2022 02:30	52.1	35.1	21.5
19/04/2022 02:45	43.3	34.1	25.0
19/04/2022 03:00	47.0	30.1	25.7
19/04/2022 03:15	46.9	35.9	30.9
19/04/2022 03:30	46.5	35.3	26.9
19/04/2022 03:45	45.9	32.8	21.6
19/04/2022 04:00	43.2	32.0	26.7
19/04/2022 04:15	39.5	29.0	22.8
19/04/2022 04:30	41.1	32.2	27.3

Date & time	LAFmax [dB]	LAeq [dB]	LA90 [dB]
19/04/2022 04:45	45.1	32.9	28.1
19/04/2022 05:00	62.7	43.2	27.1
19/04/2022 05:15	63.3	52.4	40.5
19/04/2022 05:30	67.9	52.5	37.2
19/04/2022 05:45	61.9	47.4	33.7
19/04/2022 06:00	68.5	47.6	33.4
19/04/2022 06:15	62.0	44.1	34.2
19/04/2022 06:30	58.5	42.8	34.9
19/04/2022 06:45	64.1	45.9	36.2
19/04/2022 07:00	61.1	42.9	37.9
19/04/2022 07:15	70.2	46.6	36.0
19/04/2022 07:30	61.0	47.7	37.1
19/04/2022 07:45	69.7	53.0	37.3
19/04/2022 08:00	59.6	44.6	38.3
19/04/2022 08:15	61.0	47.1	39.5
19/04/2022 08:45	63.6	46.5	39.1

Date & time	LAFmax [dB]	LAeq [dB]	LA90 [dB]
19/04/2022 09:00	92.9	71.5	38.7
19/04/2022 09:15	62.1	44.2	33.4
19/04/2022 09:30	59.3	45.6	32.8
19/04/2022 09:45	73.7	55.7	32.5
19/04/2022 10:00	63.9	45.6	31.1
19/04/2022 10:15	63.3	46.0	30.1
19/04/2022 10:30	84.2	63.6	31.3
19/04/2022 10:45	61.0	45.2	31.0
19/04/2022 11:00	59.0	41.8	31.3
19/04/2022 11:15	66.0	44.8	33.6
19/04/2022 11:30	61.5	46.1	34.1
19/04/2022 11:45	91.4	66.8	36.2

APPENDIX 4 – GRAPHICAL RESULTS OF NOISE MEASUREMENT



APPENDIX 5 – FAÇADE SOUND INSULATION CALCULATIONS

BS8233:2014 Annexe G2 - Rigorous Calculation of Façade Sound Insulation							
Living Room							
Wall area		23.8					
Window Area		7.5					
Ceiling/Roof		0.0					
Room Vol.		49					
Frequency (Hz)		125	250	500	1000	2000	LAeq
Measured Façade Leq		67.2	64.8	66.1	63.6	53.9	67.1
Ventilator Dne	GAV AWV39	38	37	38	39	47	
Window R	6/16/8.8	25	27	38	48	47	
Wall R	Masonry Cavity	40	44	45	51	56	
Ceiling/Roof R	Roof	33	39	45	50	54	
Absorption		11	14	16	16	15	
Vent		0.000067	0.000084	0.000067	0.000053	0.000008	
		-41.8	-40.8	-41.8	-42.8	-50.8	
Windows		0.000996	0.000628	0.000050	0.000005	0.000006	
		-30.0	-32.0	-43.0	-53.0	-52.0	
Ext. Wall		0.000068	0.000027	0.000022	0.000005	0.000002	
		-41.6	-45.6	-46.6	-52.6	-57.6	
Ceiling/roof		0.000000	0.000000	0.000000	0.000000	0.000000	
		-66.8	-72.8	-78.8	-83.8	-87.8	
Composite R		-29.5	-31.3	-38.6	-42.0	-47.9	
Abs. Correction		3.4	2.3	1.7	1.7	2.0	
Leq (int)		44.1	38.8	32.2	26.3	11.0	
A-Weighting		-16.1	-8.6	-3.2	0	1.2	
LAeq (internal)		28.0	30.2	29.0	26.3	12.2	34.7
Façade Atten.		32.5 dB					

BS8233:2014 Annexe G2 - Rigorous Calculation of Façade Sound Insulation							
Typical Bedroom							
Wall area		10.8					
Window Area		2.4					
Ceiling/Roof		12.5					
Room Vol.		31					
Frequency (Hz)		125	250	500	1000	2000	LAeq
Measured Façade Leq		67.2	64.8	66.1	63.6	53.9	67.1
Ventilator Dne	GAV AWV39	38	37	38	39	47	
Window R	6/16/8.8	25	27	38	48	47	
Wall R	Masonry Cavity	40	44	45	51	56	
Ceiling/Roof R	Roof	33	39	45	50	54	
Absorption		11	14	16	16	15	
Vent		0.000068	0.000086	0.000068	0.000054	0.000009	
		-41.7	-40.7	-41.7	-42.7	-50.7	
Windows		0.000326	0.000206	0.000016	0.000002	0.000002	
		-34.9	-36.9	-47.9	-57.9	-56.9	
Ext. Wall		0.000036	0.000014	0.000011	0.000003	0.000001	
		-44.4	-48.4	-49.4	-55.4	-60.4	
Ceiling/roof		0.000269	0.000068	0.000017	0.000005	0.000002	
		-35.7	-41.7	-47.7	-52.7	-56.7	
Composite R		-31.6	-34.3	-39.5	-41.9	-48.6	
Abs. Correction		3.3	2.2	1.6	1.6	1.9	
Leq (int)		41.9	35.7	31.3	26.3	10.1	
A-Weighting		-16.1	-8.6	-3.2	0	1.2	
LAeq (internal)		25.8	27.1	28.1	26.3	11.3	33.0
Façade Atten.		34.2 dB					