Zack Eyes
Totem + Studio
Noise Impact Assessment

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Inhabit

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1.0 Introduction

Inhabit Europe Ltd. has been commissioned to provide a noise impact assessment for the planning design in relation to the proposed refurbishment at 15 Warren Mews, London W1T 6AZ.

The proposal includes the installation of 1No. Air Source Heat Pump (AHSP) on the pitched roof of the 2-storey property at 15 Warren Mews, London W1T 6AZ, in line with the Government's Net-Zero strategy.

This report provides information related to:

- Nearby noise sensitive receptor locations.
- Baseline environmental noise survey methodology and results.
- Noise emission limits ($L_{Aeq,1m}$ dB) to comply with the local planning policy.
- Sets expectation for mitigation measures to minimise potential adverse impacts in order to meet reasonable noise emission limits.

2.0 Legislation and Guidance

In deriving an assessment methodology, consideration has been given to the prevailing and relevant legislative framework, local policies, and best practice guidance documents.

2.1 National Planning Policy Framework

The National Planning Policy Framework (NPPF, 2021), makes reference to noise in paragraph 174(e), paragraph 185(a) and (b), and paragraph 210(g) as follows:

Paragraph 174

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

…

(e) 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. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans'

Paragraph 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:

a) 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.

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason'

Paragraph 210

'Planning policies should:

g) when developing noise limits, recognise that some noisy short-term activities, which may otherwise be regarded as unacceptable, are unavoidable to facilitate minerals extraction'

The NPPF refers to the Noise Policy Statement for England (NPSE, 2010), that assists in deriving adverse effect levels based the significance of impact of the new noise making development:

NOEL – No Observed Effect Level

The level below which no detectable effect on the health and quality of life due to noise can be detected.

LOAEL – Lowest Observed Adverse Effect Level

The level above which adverse effects on health and quality of life due to noise can be detected.

SOAEL – Significant Observed Adverse Effect Level

The level above which significant adverse effects on health and quality of life due to noise can be detected.

2.2 BS4142:2014+A12019 - Methods for Rating and Assessing Industrial and Commercial Sound

BS4142:2014+A1:2019 provides methods for rating and assessing industrial and commercial sound. The standard is used to rate sound from fixed installations. The standard requires a "Specific Sound Level", in terms of L_{Aeq}, is determined either by measurement or calculation at a receptor location. This Specific Sound Level may then be corrected for the character of sound and is then termed the "Rating Level".

Once the Rating Level has been determined, the background sound level is subtracted from it and the greater the difference, the greater the likelihood of an 'adverse impact'. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact. The standard advocates that each site and situation should take the context of the scenario into consideration and that "not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact".

The standard provides reference periods over which the assessment should take place which have been reproduced in the table below.

Period	Hours
Typical Daytime	07:00 – 23:00
Typical Night-time	23:00 – 07:00

Table 1 – Reference Periods

Based on the Joint Nordic Method, BS4142 sets out the following additional penalty to the noise emission limit for sound displaying tonal characteristics:

- 2 dB for a tone which is just perceptible at the noise receptor.
- 4 dB where it is clearly perceptible.
- 6 dB where it is highly perceptible.

Furthermore, the basis for assessing adverse impact as per BS4142 is as follows:

a) Typically, the greater this difference, the greater the magnitude of the impact.

b) A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.

c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.

d) The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact.

2.3 Local Authority's policy

2.3.1 Camden Local Plan

Policy A4 from 'Camden Local Plan', February 2022 by the London borough of Camden states the following in relation to noise emission and vibration:

Policy A4 Noise and Vibration

"The Council will seek to ensure that noise and vibration is controlled and managed. Development should have regard to Camden's Noise and Vibration Thresholds (Appendix 3). We will not grant planning permission for:

a. development likely to generate unacceptable noise and vibration impacts; or

b. development sensitive to noise in locations which experience high levels of noise, unless appropriate attenuation measures can be provided and will not harm the continued operation of existing uses.

We will only grant permission for noise generating development, including any plant and machinery, if it can be operated without causing harm to amenity. We will also seek to minimise the impact on local amenity from deliveries and from the demolition and construction phases of development.'

Industrial and Commercial Noise Sources

The London Borough of Camden's Local Plan (2017) states that the following in respect to noise from Industrial and Commercial Sources:

"A relevant standard or guidance document should be referenced when determining values for LOAEL and SOAEL for non-anonymous noise. Where appropriate and within the scope of the document it is expected that British Standard 4142:2014 'Methods for rating and assessing industrial and commercial sound' (BS 4142) will be used. For such cases a 'Rating Level' of 10 dB below background (15dB if tonal components are present) should be considered as the design criterion)."

Existing Noise sensitive receptor	Assessment Location	Design Period	LOAEL (Green)	LOAEL to SOAEL (Amber)	SOAEL (Red)
Dwellings**	Garden used. for main amenity (free field) and Outside living or dining or bedroom window (façade)	Day	'Rating level' 10dB* below background	'Rating level' between 9dB below and 5dB above background	'Rating level' greater than 5dB above background
Dwellings**	Outside bedroom window (façade)	Night	'Rating level' 10dB* below background and no events exceeding 57dBLAmax	'Rating level' between 9dB below and 5dB above background or noise events between 57dB and 88dB A_{max}	'Rating level' greater than 5dB above background and/or events exceeding 88dB l_{ama}

Table 2: Noise levels applicable to proposed industrial and commercial developments (including plant and machinery), reference Camden Local Plan, 2017

"*10dB should be increased to 15dB if the noise contains audible tonal elements. (Day and night). However, if it can be demonstrated that there is no significant difference in the character of the residual background noise and the specific noise from the proposed development then this reduction may not be required. In addition, a frequency analysis (to include the use of Noise Rating (NR) curves or other criteria curves) for the assessment of tonal or low frequency noise may be required.

**levels given are for dwellings, however, levels are use specific and different levels will apply dependent on the use of the premises.

The periods [in Table C] correspond to 0700 hours to 2300 hours for the day and 2300 hours to 0700 hours for the night. The Council will take into account the likely times of occupation for types of development and will be amended according to the times of operation of the establishment under consideration. There are certain smaller pieces of equipment on commercial premises, such as extract ventilation, air conditioning units and condensers, where achievement of the rating levels (ordinarily determined by a BS:4142 assessment) may not afford the necessary protection. In these cases, the Council will generally also require a NR curve specification of NR35 or below, dependant on the room (based upon measured or predicted Leq,5mins noise levels in octave bands) 1 metre from the façade of affected premises, where the noise sensitive premise is located in a quiet background area."

3.0 Background Information

3.1 Site Description

The 2-storey house is located at 15 Warren Mews, London W1T 6AZ. The site comprises predominantly residential and office properties. The refurbishment's proposal includes the installation of 1No. Air Source Heat Pump (ASHP) on the pitched roof of the property.

3.2 Proposals

The location of the ASHP is provided in Appendix A. The window of 126 Cleveland St, as per Figure 1 below, facing the pitched roof has been established as the closest Noise Sensitive Receptor (NSR), it is 3m away from the proposed unit location.

It is assumed that the unit will be operating during only daytime hours (0700-2300). The consistency of operation and the related duty requirements is unknown at the time of writing.

Figure 1 ASHP unit and nearest receptor locations

3.3 Background Noise Survey Details

An unattended continuous noise survey was undertaken by Jacopo Lozupone AMIOA at two locations between 15:30 28th September to 16::30 29th September 2023.

The location and photos of the unattended survey are shown in Appendix B.

3.3.1 Equipment Details

Table 3 below shows the equipment list and associated details.

Manufacturer	Model No.	Description	Serial Number	Calibration Date	Calibration Certificate number
Nor	1251	Calibrator	17266	6th January 2023	2023-0152
NTi	XL2	Sound Level Meter	a2a-08116-e0	8th August 2023	2023-0514
NTi	XL2	Sound Level Meter	a2a-12981-e0		2023-0507
NTi	MA220	Pre-amplifier	7148	5th May 2023	2023-0510
NTi	MA220	Pre-amplifier	3327	8th August 2023	2023-080
NTi	MC230	Microphone	7632	8th August 2023	2023-0801
B&K	4189	Microphone	2008903	5th May 2023	2023-0514

Table 3 – Equipment's list

The equipment was calibrated at the beginning and at the end of the unattended measurements, 0 dB drift was noted at the end of the survey. The drift considered not material to the accuracy of the results obtained.

Calibration certificates are available upon request.

3.3.2 Weather conditions

The Table 4 below shows the weather conditions during the measurements.

Weather Condition			
Date and Time	Condition	Degrees	Wind
28/09/2023 12:00 – 18:00	Partly Cloudy	19 °C	4 m/s
28/09/2023 18:00 – 24:00	Cloudy – Passing Showers	17 °C	5 m/s
29/09/2023 00:00 – 06:00	Cloudy – Passing Showers	17/18 °C	4/5 m/s
29/09/2023 06:00 – 09:00	Partly Cloudy	16/15 °C	3/4 m/s
29/09/2023 09:00 – 12:00	Partly Cloudy	17/19 °C	4/5 m/s
29/09/2023 12:00 – 16:00	Intermittent clouds	19 °C	5 m/s

Table 4 – Weather Conditions Summary

Wind speeds were noted equal to or below the recommended limit of 5 m/s.

3.3.3 Uncertainty

The weather conditions and the noted 0 dB calibration drift are acceptable and therefore the uncertainty of the acoustic survey is deemed to be insignificant.

4.0 Measured Results

4.1 Unattended Measurements

Table 5 shows the measured prevailing background sound levels (L_{A90}) during the survey period:

Location	Daytime (07:00-23:00hrs)	Night-time (23:00-07:00hrs)
Front – Location 1	49 dB	39 dB
Roof – Location 2	49 dB	40 dB

Table 5 – Summary of Lowest Background Sound Level from the unattained noise measurement L_{A90}

Full detailed results are available in Appendix C.

It is assumed that the unit will be operating during only daytime hours (0700-2300). Therefore, the representative background sound level referenced for setting out noise emissions limits in line with the local authority policies will be L_{A90} 39 dB.

If tonality or other noise's characteristic may arise, the above limit needs to be reduced by a further 5 dB as per the London Borough of Camden's Local Plan (2017).

4.2 Subjective Assessment

Subjectively, the ambient noise climate consisted predominantly of traffic noise and neighbour activities predominantly offices. It was noted the presence of building services noise belonging to adjacent buildings, the microphones locations were chosen to not be influenced by the nearby ventilation units, location are shown on Appendix B.

5.0 Noise Emissions Limit

The unit has not been selected at the current design stage, therefore as mentioned in the London Borough of Camden's Local Plan (2017) in order to obtain a LOAEL *'Low Observed Adverse Effect Level'* at the nearest sensitive receptor the rating level must be 10 dB below background.

Section 4.1 shows that the operational hours of the new plant unit will be daytime (07:00 -23:00), during this timeframe, the measured prevailing background level L_{A90} from the unattended measurements is L_{A90} 49 dB during daytime.

It is recommended to apply the following noise emission limit for the equivalent sound pressure level at 1m from the unit L_{Aeq}, dB in free field condition, resulting in no increase to background noise levels at 1m from the window of the nearest noise sensitive receptor. This limit includes a 3 dB correction due to a potential 1 hard surface within 1m from the unit.

ASHP – Sound emission limit at 1m from the unit (L_{Aeq}, dB)
36 dB

Table 6 ASHP, Noise emission limit

5.1 Potential mitigation measures

A combination of the following mitigation measures is expected in order to prevent a significant adverse impact before the installation:

- Acoustic enclosure of the unit.
- Antivibration mounts installation.
- Variable speed.
- Selecting units for quiet operation.

6.0 Conclusion

Inhabit has been commissioned to perform a noise impact assessment for planning design in relation to the proposed refurbishment at 15 Warren Mews, London W1T 6AZ.

The results from the unattended measurements recorded a measured prevailing background level of L_{A90} 49 dB during daytime (07:00 – 23:00) at the nearest sensitive receptor.

It is recommended applying an equivalent sound pressure limit at 1m from the unit of L_{Aeq} 36 dB in order to achieve a *'Low Observed Adverse Impact Level'* noise sensitive receptor in order to comply with The London Borough of Camden's Local Plan (2017).

A APPENDIX: New Development Layout

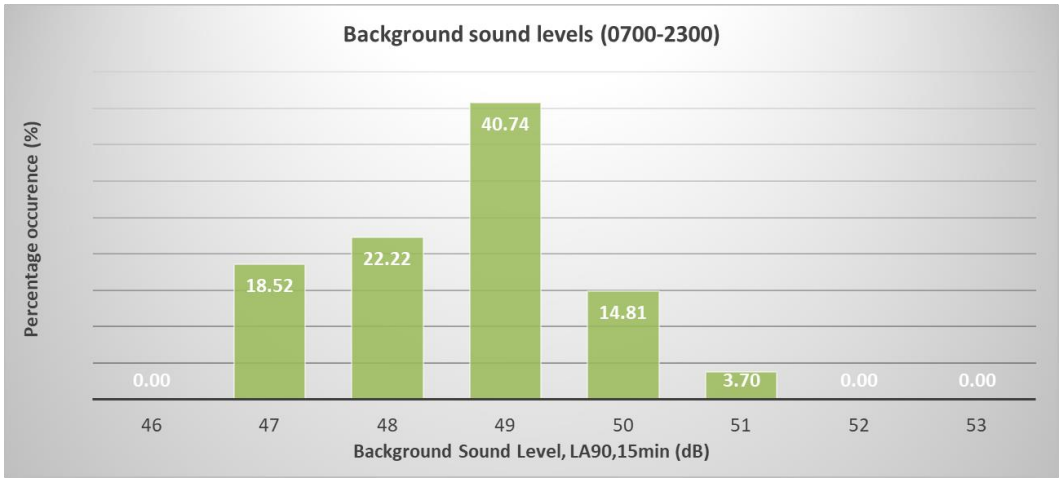
B APPENDIX: Measurement Position

Long Term Measurements Position

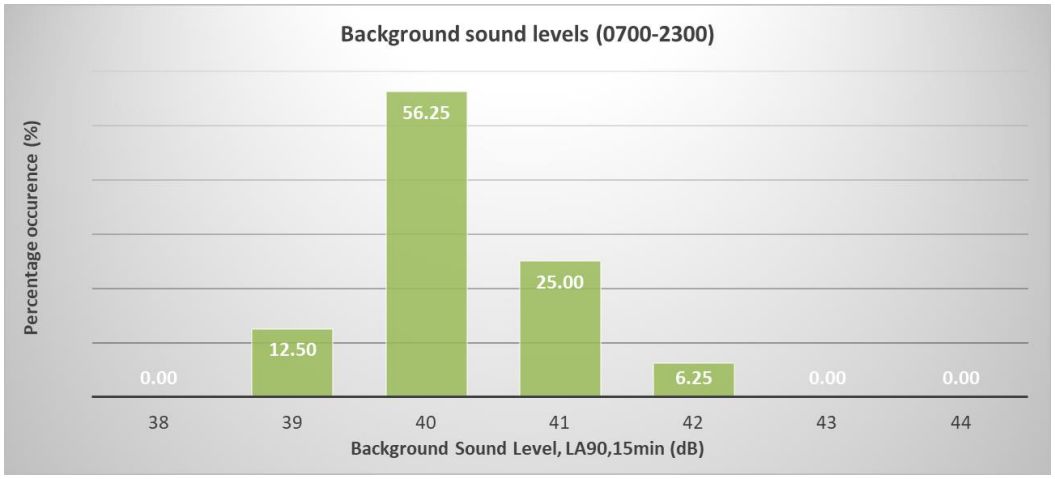
C APPENDIX: Time Graph and Statistical Graphs

Location 1 – Front

Daytime Statistical Analysis

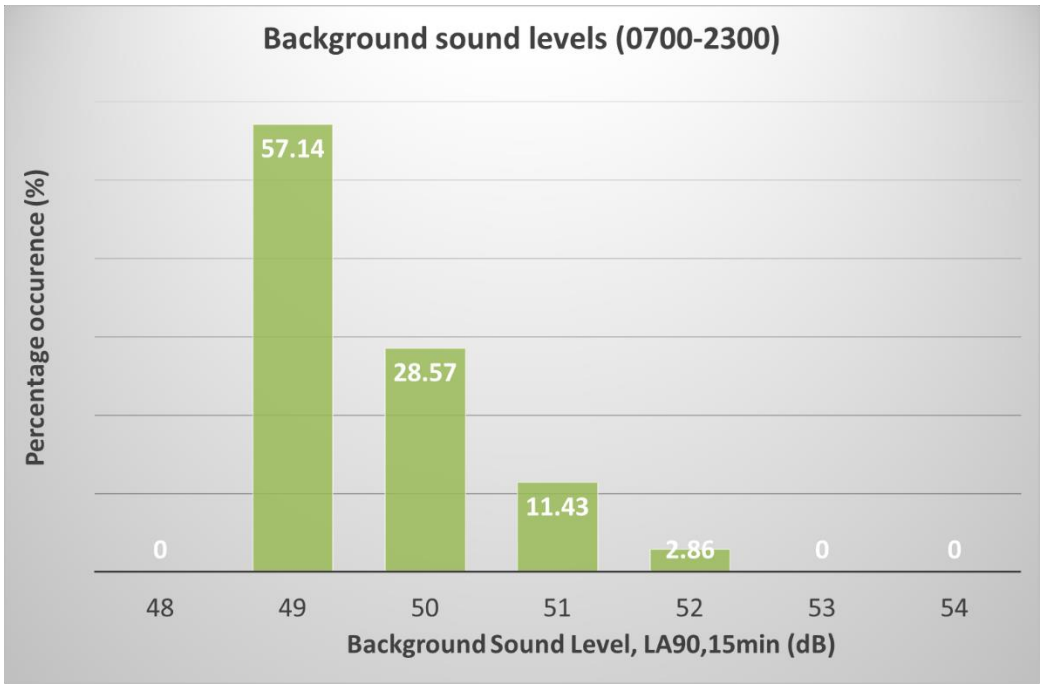


Night-time Statistical Analysis

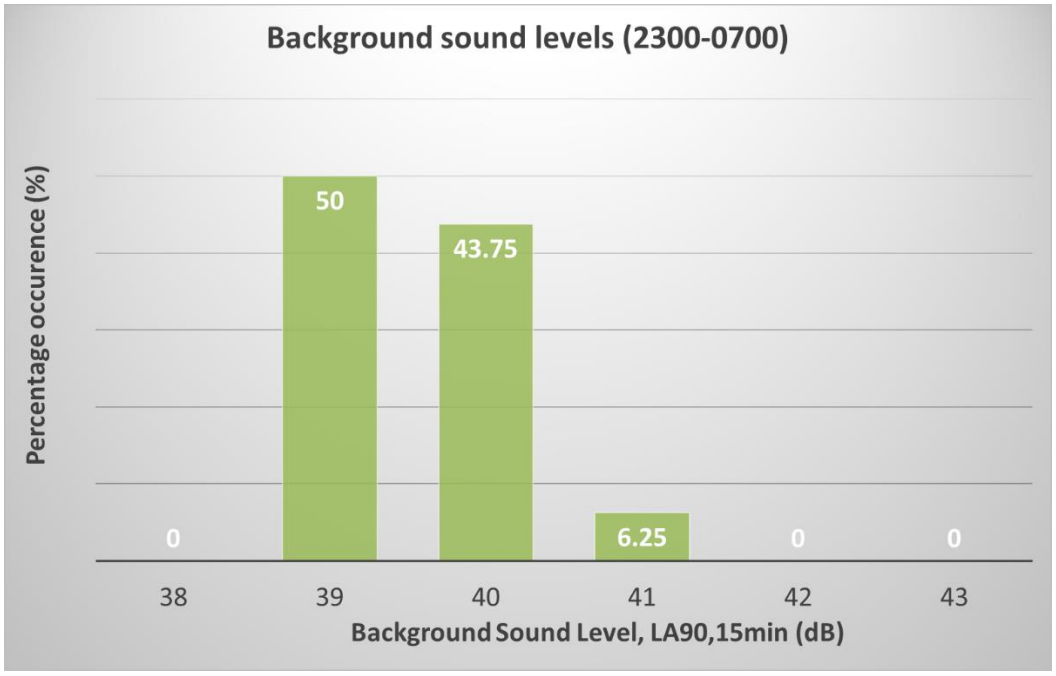


Location 2 – Roof

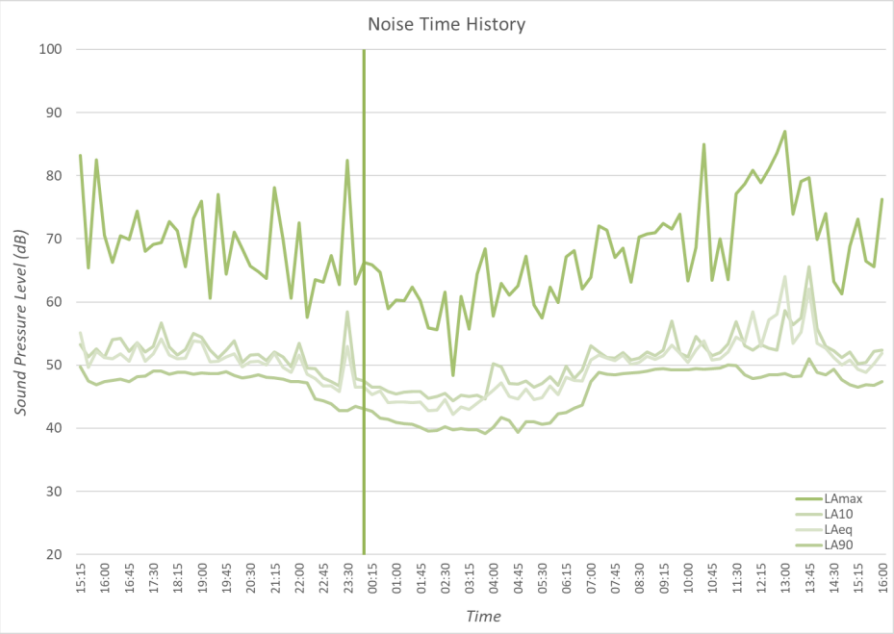
Daytime Statistical Analysis



Night-time Statistical Analysis

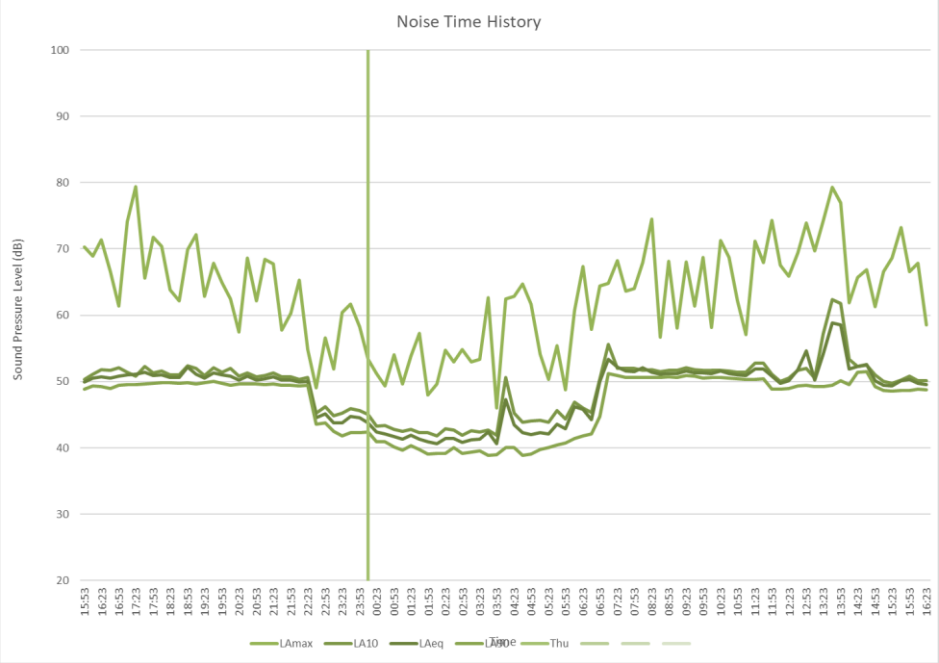


Location 1 – Front



Time Analysis Graph

Location 2 – Roof



Time Analysis Graph

D APPENDIX: Unattended Measurements Details

Location 1 – Front

Date	Time	L_{Aeq}	LAmax	L_{A10}	L_{A90}
28/09/2023	15:15	55.1	83.2	53.3	49.7
28/09/2023	15:30	49.6	65.4	51.3	47.5
28/09/2023	15:45	52.2	82.5	52.6	46.9
28/09/2023	16:00	51.2	70.6	51.2	47.4
28/09/2023	16:15	51	66.3	54	47.6
28/09/2023	16:30	51.8	70.5	54.2	47.8
28/09/2023	16:45	50.6	69.9	52.2	47.4
28/09/2023	17:00	53.6	74.4	53.6	48.2
28/09/2023	17:15	50.6	68	52.1	48.3
28/09/2023	17:30	51.8	69.1	53	49.1
28/09/2023	17:45	54.1	69.4	56.7	49.1
28/09/2023	18:00	51.6	72.7	52.9	48.6
28/09/2023	18:15	51	71.3	51.6	48.9
28/09/2023	18:30	51.1	65.6	52.5	48.9
28/09/2023	18:45	53.8	73.2	55	48.6
28/09/2023	19:00	53.7	76	54.4	48.8
28/09/2023	19:15	50.5	60.6	52.4	48.7
28/09/2023	19:30	50.6	77	51.1	48.7
28/09/2023	19:45	51.3	64.4	52.4	49
28/09/2023	20:00	51.8	71.1	53.8	48.4
28/09/2023	20:15	49.7	68.4	50.4	48
28/09/2023	20:30	50.5	65.7	51.6	48.2
28/09/2023	20:45	50.6	64.8	51.7	48.5
28/09/2023	21:00	50	63.7	50.7	48.1
28/09/2023	21:15	51.9	78.1	52.1	48
28/09/2023	21:30	49.6	69.9	51.3	47.8
28/09/2023	21:45	48.9	60.6	49.7	47.4
28/09/2023	22:00	51.6	72.5	53.5	47.4
28/09/2023	22:15	48.6	57.6	49.5	47.2
28/09/2023	22:30	47.9	63.5	49.4	44.6
28/09/2023	22:45	46.7	63.1	48	44.4
28/09/2023	23:00	46.7	67.4	47.4	43.9
28/09/2023	23:15	45.8	62.8	46.7	42.8
28/09/2023	23:30	53	82.4	58.4	42.8
28/09/2023	23:45	46.5	62.9	47.9	43.5
29/09/2023	00:00	46.5	66.3	47.5	43.1
29/09/2023	00:15	45.3	65.9	46.5	42.7
29/09/2023	00:30	45.9	64.7	46.5	41.6
29/09/2023	00:45	44.1	58.9	45.8	41.4
29/09/2023	01:00	44.2	60.3	45.4	40.9
29/09/2023	01:15	44.2	60.2	45.7	40.7
29/09/2023	01:30	44.1	62.4	45.8	40.6
29/09/2023	01:45	44.2	60.2	45.8	40.1
29/09/2023	02:00	42.8	55.9	44.7	39.6
29/09/2023	02:15	42.9	55.6	45	39.7
29/09/2023	02:30	44.5	61.6	45.5	40.2
29/09/2023	02:45	42.2	48.4	44.4	39.8
29/09/2023	03:00	43.4	60.9	45.2	39.9
29/09/2023	03:15	43	55.7	45	39.8
29/09/2023	03:30	44	64.4	45.2	39.8
29/09/2023	03:45	44.9	68.4	44.6	39.2
29/09/2023	04:00	46	57.8	50.2	40.1
29/09/2023	04:15	47.2	63	49.7	41.7
29/09/2023	04:30	45	61.1	47.1	41.2
29/09/2023	04:45	44.6	62.6	47	39.4
29/09/2023	05:00	46.2	67.3	47.5	41
29/09/2023	05:15	44.5	59.5	46.5	41
29/09/2023	05:30	44.8	57.5	47.1	40.6
29/09/2023	05:45	46.7	62.4	48.2	40.8
29/09/2023	06:00	45.3	59.9	46.8	42.3
29/09/2023	06:15	48.1	67.2	49.8	42.5
29/09/2023	06:30	47.6	68.1	47.9	43.2
29/09/2023	06:45	47.5	62.1	49.2	43.7
29/09/2023	07:00	50.8	63.9	53.1	47.4
29/09/2023	07:15	51.6	72.1	52.1	48.9
29/09/2023	07:30	51.1	71.4	51.2	48.6
29/09/2023	07:45	50.7	67.1	51.1	48.5
29/09/2023	08:00	51.6	68.5	52	48.7
29/09/2023	08:15	50.1	63.1	50.8	48.8
29/09/2023	08:30	50.4	70.3	51.1	48.9
29/09/2023	08:45	51.4	70.8	52.1	49.1
29/09/2023	09:00	50.9	71	51.5	49.3
29/09/2023	09:15	51.5	72.4	52.4	49.4
29/09/2023	09:30	53.2	71.6	57	49.2
29/09/2023	09:45	51.9	73.9	51.9	49.2
29/09/2023	10:00	50.4	63.3	51.3	49.2
29/09/2023	10:15	52.4	68.6	54.5	49.4
29/09/2023	10:30	53.8	85	53	49.3

Date	Time	L_{Aeq}	LAmax	L_{A10}	L_{A90}
29/09/2023	10:45	50.8	63.4	51.5	49.4
29/09/2023	11:00	51	70	52	49.5
29/09/2023	11:15	52.1	63.5	53.4	50
29/09/2023	11:30	54.4	77.1	56.9	49.9
29/09/2023	11:45	53.7	78.7	53.1	48.5
29/09/2023	12:00	58.4	80.9	52.4	47.9
29/09/2023	12:15	53	78.9	53.3	48.1
29/09/2023	12:30	57.2	81.1	52.7	48.5
29/09/2023	12:45	58.1	83.6	52.4	48.5
29/09/2023	13:00	64	87	58.6	48.7
29/09/2023	13:15	53.5	73.9	56.4	48.2
29/09/2023	13:30	55.2	79.1	57.5	48.3
29/09/2023	13:45	62.1	79.7	65.6	51
29/09/2023	14:00	53.5	69.9	55.8	48.9
29/09/2023	14:15	52.7	74	53	48.5
29/09/2023	14:30	51.2	63.2	52.3	49.3
29/09/2023	14:45	50	61.3	51.2	47.7
29/09/2023	15:00	50.8	68.8	52.1	46.9
29/09/2023	15:15	49.3	73.1	50.2	46.5
29/09/2023	15:30	48.9	66.5	50.4	46.9
29/09/2023	15:45	50.2	65.6	52.2	46.8
29/09/2023	16:00	51.9	76.3	52.4	47.4

Location 2 – Roof

Date	Time	L_{Aeq}	L_{Amax}	L_{A10}	L_{A90}
28/09/2023	15:53	49.9	70.3	50.3	48.9
28/09/2023	16:08	50.5	68.9	51.1	49.3
28/09/2023	16:23	50.7	71.4	51.8	49.2
28/09/2023	16:38	50.5	66.6	51.7	49
28/09/2023	16:53	50.8	61.4	52.1	49.4
28/09/2023	17:08	51	74.1	51.4	49.5
28/09/2023	17:23	51.1	79.4	50.8	49.5
28/09/2023	17:38	51.4	65.6	52.3	49.6
28/09/2023	17:53	50.9	71.8	51.3	49.7
28/09/2023	18:08	51	70.4	51.6	49.8
28/09/2023	18:23	50.6	63.8	51	49.8
28/09/2023	18:38	50.6	62.2	51	49.7
28/09/2023	18:53	52.2	69.9	52.4	49.8
28/09/2023	19:08	51.1	72.2	52	49.6
28/09/2023	19:23	50.5	62.9	50.9	49.8
28/09/2023	19:38	51.3	67.8	52.1	50
28/09/2023	19:53	51	64.9	51.4	49.7
28/09/2023	20:08	50.8	62.5	52	49.4
28/09/2023	20:23	50.2	57.5	50.8	49.6
28/09/2023	20:38	50.8	68.6	51.3	49.6
28/09/2023	20:53	50.2	62.2	50.7	49.6
28/09/2023	21:08	50.4	68.4	50.9	49.5
28/09/2023	21:23	50.7	67.7	51.3	49.6
28/09/2023	21:38	50.2	57.8	50.7	49.4
28/09/2023	21:53	50.2	60.3	50.7	49.4
28/09/2023	22:08	49.9	65.3	50.3	49.3
28/09/2023	22:23	50	54.8	50.6	49.4
28/09/2023	22:38	44.5	49.1	45.2	43.6
28/09/2023	22:53	45.1	56.6	46.2	43.8
28/09/2023	23:08	43.8	51.9	44.8	42.5
28/09/2023	23:23	43.8	60.4	45.2	41.8
28/09/2023	23:38	44.7	61.7	45.9	42.3
28/09/2023	23:53	44.5	58.3	45.6	42.3
29/09/2023	00:08	43.8	53.4	45	42.4
29/09/2023	00:23	42.4	51.2	43.3	40.9
29/09/2023	00:38	42.1	49.3	43.4	40.9
29/09/2023	00:53	41.7	54	42.8	40.1
29/09/2023	01:08	41.3	49.6	42.5	39.7
29/09/2023	01:23	41.9	53.8	42.8	40.3
29/09/2023	01:38	41.3	57.3	42.3	39.8
29/09/2023	01:53	40.9	48	42.3	39.1
29/09/2023	02:08	40.6	49.6	41.8	39.2
29/09/2023	02:23	41.4	54.7	42.9	39.2
29/09/2023	02:38	41.4	53	42.7	40
29/09/2023	02:53	40.8	54.8	41.9	39.2
29/09/2023	03:08	41.2	53	42.6	39.4
29/09/2023	03:23	41.3	53.4	42.4	39.6
29/09/2023	03:38	42.4	62.7	42.7	38.9
29/09/2023	03:53	40.6	46	41.9	39

29/09/2023	04:08	47.3	62.5	50.6	40
29/09/2023	04:23	43.5	62.9	45.2	40
29/09/2023	04:38	42.3	64.7	43.9	38.9
29/09/2023	04:53	42	61.7	44.1	39.1
29/09/2023	05:08	42.3	54.1	44.2	39.8
29/09/2023	05:23	42.1	50.3	43.9	40
29/09/2023	05:38	43.6	55.4	45.6	40.4
29/09/2023	05:53	42.9	48.8	44.4	40.7
29/09/2023	06:08	46.2	60.7	46.9	41.4
29/09/2023	06:23	45.8	67.4	46	41.8
29/09/2023	06:38	44.3	57.9	45.3	42.1
29/09/2023	06:53	50	64.4	50.4	44.7
29/09/2023	07:08	53.4	64.8	55.6	51.2
29/09/2023	07:23	52.2	68.2	52	50.9
29/09/2023	07:38	51.6	63.6	52	50.6
29/09/2023	07:53	51.5	64	52	50.6
29/09/2023	08:08	52.1	67.9	51.7	50.6
29/09/2023	08:23	51.4	74.5	51.8	50.6
29/09/2023	08:38	51.1	56.7	51.5	50.6
29/09/2023	08:53	51.2	68.1	51.7	50.7
29/09/2023	09:08	51.2	58.1	51.7	50.6
29/09/2023	09:23	51.6	68	52.1	50.9
29/09/2023	09:38	51.3	61.4	51.8	50.8
29/09/2023	09:53	51.3	68.7	51.7	50.5
29/09/2023	10:08	51.2	58.2	51.7	50.6
29/09/2023	10:23	51.6	71.3	51.7	50.6
29/09/2023	10:38	51.2	68.7	51.6	50.5
29/09/2023	10:53	51	62.2	51.4	50.4
29/09/2023	11:08	50.9	57.1	51.4	50.3
29/09/2023	11:23	51.9	71.2	52.8	50.3
29/09/2023	11:38	51.9	67.9	52.8	50.4
29/09/2023	11:53	50.8	74.3	51.1	48.9
29/09/2023	12:08	49.7	67.6	50	48.9
29/09/2023	12:23	50.1	65.9	50.5	49
29/09/2023	12:38	51.8	69.4	51.7	49.3
29/09/2023	12:53	54.6	73.9	52	49.4
29/09/2023	13:08	50.2	69.7	50.5	49.2
29/09/2023	13:23	54.1	74.2	57.2	49.2
29/09/2023	13:38	58.8	79.3	62.4	49.4
29/09/2023	13:53	58.5	76.9	61.8	50.1
29/09/2023	14:08	51.9	61.9	53.4	49.5
29/09/2023	14:23	52.3	65.7	52.3	51.4
29/09/2023	14:38	52.6	66.9	52.5	51.5
29/09/2023	14:53	50.1	61.3	51	49.2
29/09/2023	15:08	49.4	66.6	50	48.7
29/09/2023	15:23	49.3	68.6	49.7	48.6
29/09/2023	15:38	50.1	73.2	50.2	48.7
29/09/2023	15:53	50.3	66.6	50.8	48.7
29/09/2023	16:08	49.7	67.8	50.1	48.9
29/09/2023	16:23	49.5	58.5	50.1	48.8

E APPENDIX: Glossary

DECIBEL (dB) - A unit of sound pressure measurement

Sound Pressure Level in dB (L_p) = 20 log (Measured sound pressure/Reference sound pressure = 20 µPa)

dB(A) - The A -weighted sound pressure level, the weighting network reduces low frequency sound in a similar way to the human ear.

$L_{10/90}$ LEVEL (dB) - The level in dB of a time varying sound pressured level (e.g. traffic) exceeded for 10%/90% of the time of measurement.

L_{90} is usually called the BACKGROUND NOISE LEVEL.

L_{eq} AVERAGE SOUND PRESSURE LEVEL – level dB of a time varying sound pressure level with equal amounts of energy above and below it, for the time of measurement.

TONAL NOISE – noise of a single frequency (or a narrow band of frequencies that can be perceived as a tone), audible above the broad band noise background. Noise which is at least 5dB above the average of the 1/3 octave band sound pressure levels immediately on either side of it.