



REPORT REFERENCE:

SA – 7502

NOISE IMPACT ASSESSMENT
INSTALLATION OF AIR SOURCE HEAT PUMPS

British Standard 4142:2014+A1:2019

CLIENT:

Reading Borough Council

SITES:

17 Cranbourne Gardens, Tilehurst, Reading, Berkshire, RG30 6TS

37 Lyndhurst Road, Tilehurst, Reading, Berkshire, RG30 6UH

28 Ripley Road, Tilehurst, Reading, Berkshire, RG30 6UD

12 Romsey Road, Tilehurst, Reading, Berkshire, RG30 6UP

SURVEY DATE:

14th – 16th July 2023

Report By

A handwritten signature in black ink, appearing to be 'B. J. Scrivener', written over a light blue grid background.

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1 EXECUTIVE SUMMARY

1.1 Instruction

Sound Advice Acoustics Ltd have been instructed by Reading Borough Council to undertake a sample background noise survey at the existing residential properties at 4 different sites in the Tilehurst area of Reading to understand the level of impact at the existing sites in relation to new Air Source Heat Pumps being installed at a number of council owned properties, and calculate the resultant noise level at the nearest affected windows at the development and carry out assessments to BS 4142:2014+A1:2019.

1.2 Scope of Report

The measurements have been undertaken in accordance with British Standard 4142:2014+A1:2019 and ISO 1996 – Part 2: 2017 to establish if the proposed site has a demonstrable adverse effect in terms of noise that outweigh the benefits of the development. This report aims to establish the following:

- Existing background noise levels at the residential façade (L_{A90});
- Noise levels from the Proposed Air Source Heat Pump (L_{Aeq});
- Impact on the nearest noise sensitive property.
- Mitigation Levels if Required

1.3 Measured Background Noise Levels

Continuous background noise measurements were undertaken between the 14th – 16th July 2023 at the Assessment Positions 1 - 4. The results are shown in the table below.

		Position 1 17 Cranbourne Road	Position 2 37 Lyndhurst Road	Position 3 28 Ripley Road	Position 4 12 Romsey Road
Daytime Equivalent Existing Background Noise Levels 2 days (07:00 – 23:00)	Measured Levels at Assessment Position 1	$L_{A90, t}$ 44 dB	$L_{A90, t}$ 39 dB	$L_{A90, t}$ 33 dB	$L_{A90, t}$ 41 dB
Night time Equivalent Existing Background Noise Levels 2 days (23:00 – 07:00)	Measured Levels at Assessment Position 1	$L_{A90, t}$ 32 dB	$L_{A90, t}$ 26 dB	$L_{A90, t}$ 27 dB	$L_{A90, t}$ 26 dB

The Planning Department of Reading Borough Council have agreed a background noise level of $L_{A90, t}$ 40 dB for both daytime and night time. Therefore, all calculations and assessments within this report will use this figure.

1.4 Proposed Plant

The following air source heat pumps are to be located externally, generally as detailed on the drawing within this report. The air source heat pumps has the following sound power data supplied by the manufacturer.

Make & Model	Sound Power Level SWL (dBA)
Mitsubishi PUZ-WM60VAA(-BS)	58.0

1.5 Assessment

1.5.1 Daytime (07:00 – 23:00) Assessment

	Position 1	Position 2	Position 3	Position 4
Rating Level	36 dB	35 dB	35 dB	38 dB
Background Noise Level $L_{A90,1 \text{ hour}}$	40 dB	40 dB	40 dB	40 dB
Assessment Level	-4 dB	-5 dB	-5 dB	-2 dB
Conclusion BS 4142:2014+A1:2019 [1]	+10 dB Significant Adverse Effects, +5 dB Adverse Effects, +0 dB Low Impact			
Assessment	-4 dB	-5 dB	-5 dB	-2 dB
Conclusion	The assessment level is 'Low Impact'			

1.5.2 Night time (23:00 – 07:00) Assessment

	Position 1	Position 2	Position 3	Position 4
Rating Level	36 dB	35 dB	35 dB	38 dB
Background Noise Level $L_{A90,1 \text{ hour}}$	40 dB	40 dB	40 dB	40 dB
Assessment Level	-4 dB	-5 dB	-5 dB	-2 dB
Conclusion BS 4142:2014+A1:2019 [1]	+10 dB Significant Adverse Effects, +5 dB Adverse Effects, +0 dB Low Impact			
Assessment	-4 dB	-5 dB	-5 dB	-2 dB
Conclusion	The assessment level is 'Low Impact'			

1.6 Conclusions

The operation of the proposed external air source heat pumps has been assessed to establish if the proposed units will have a demonstrable adverse effect in terms of noise that outweigh the benefits of the development. Measurements have been undertaken in accordance with British Standard 4142:2014+A1:2019 and ISO 1996 – Part 2: 2017. This report has established the existing background noise levels at the closest residential façade to the proposed air source heat pumps and the assessment of the impact of the operation on nearby residential properties directly adjacent. The resulting emissions from the site running on a worst-case scenario show no conflict with ‘low impact’ criteria during the daytime and the night time and give a strong indication that complaint and impact on the local amenity is possible during the night time period.

1.7 NPPF 2023

National Planning Policy Framework 2023 suggests that planning permission should be granted unless any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in the framework taken as a whole, or specific policies in the framework indicate the application should be restricted.

1.8 Planning Approval Recommendation

Based on the calculations and assessments made within this report it is the professional opinion of Sound Advice Acoustics Ltd that the proposed development can demonstrate compliance with the National Planning Policy Framework 2023, NPPF & NPSE and that, with regards to sound, planning permission can be granted.

2 INTRODUCTION

2.1 Instruction

Sound Advice Acoustics Ltd have been instructed by Reading Borough Council to undertake a sample background noise survey at the existing residential properties at 4 different sites in the Tilehurst area of Reading to understand the level of impact at the existing sites in relation to new Air Source Heat Pumps being installed at a number of council owned properties, and calculate the resultant noise level at the nearest affected windows at the development and carry out assessments to BS 4142:2014+A1:2019.

The purpose of this assessment is to ensure the acoustic protection of noise sensitive premises closest to the proposed new air source heat pumps. Noise sensitive premises are not restricted to residential dwellings as offices can be affected by unwanted external noise. However, the residential accommodation adjacent have been identified as the nearest noise sensitive and therefore all calculations and assessments are to be made to these positions.

2.2 Ambient and Background Measurements

External noise levels are to be recorded over, what has been considered for the site, an average / typical time period in order to assess the daytime noise levels. Levels have been recorded over more than one day in order to ensure the uncertainty of measurement aspects of BS 4142:2014+A1:2019 have been satisfied and that the data recorded is representative for the purpose of a robust assessment.

2.3 BS 4142: 2014+A1:2019

British Standard 4142:2014+A:2019 is to be adopted for the basis of this background noise level assessment. A BS 4142:2014+A1:2019 noise assessment will be carried out in order to demonstrate the proposed acoustic impact the proposed air source heat pumps could have on the nearest affected residential and make suitable recommendations in order to demonstrate that these units will not have a significant and demonstrable adverse impact on the nearest noise sensitive premises in accordance with the National Planning Policy Framework, once remedial works are completed. BS 4142:2014+A1:2019 supersedes the 2014 version and has been developed to move more in-line with The National Planning Policy Framework 2023 (NPPF) and the Noise Policy Statement for England 2010 (NPSE).

2.4 National Planning Policy Framework 2023 & Noise Policy Statement for England 2010

References and evaluations are to be made to the National Planning Policy Framework 2023 (NPPF) and the Noise Policy Statement for England 2010 (NPSE). The purpose of this document is to include all aspects of environmental noise within assessments i.e. environmental noise, neighbour noise and neighbourhood noise. Noise is to be considered alongside other relevant issues relating to the site and should not be considered in isolation, according to the NPSE.

There are several key phrases within the NPSE aims and these are discussed below.

2.5 “Significant adverse” and “adverse”

There are two established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organisation. They are:

2.6 NOEL – No Observed Effect Level

This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

2.7 LOAEL – Lowest Observed Adverse Effect Level

This is the level above which adverse effects on health and quality of life can be detected.

Extending these concepts for the purpose of this NPSE leads to the concept of a significant observed adverse effect level.

2.8 SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur.

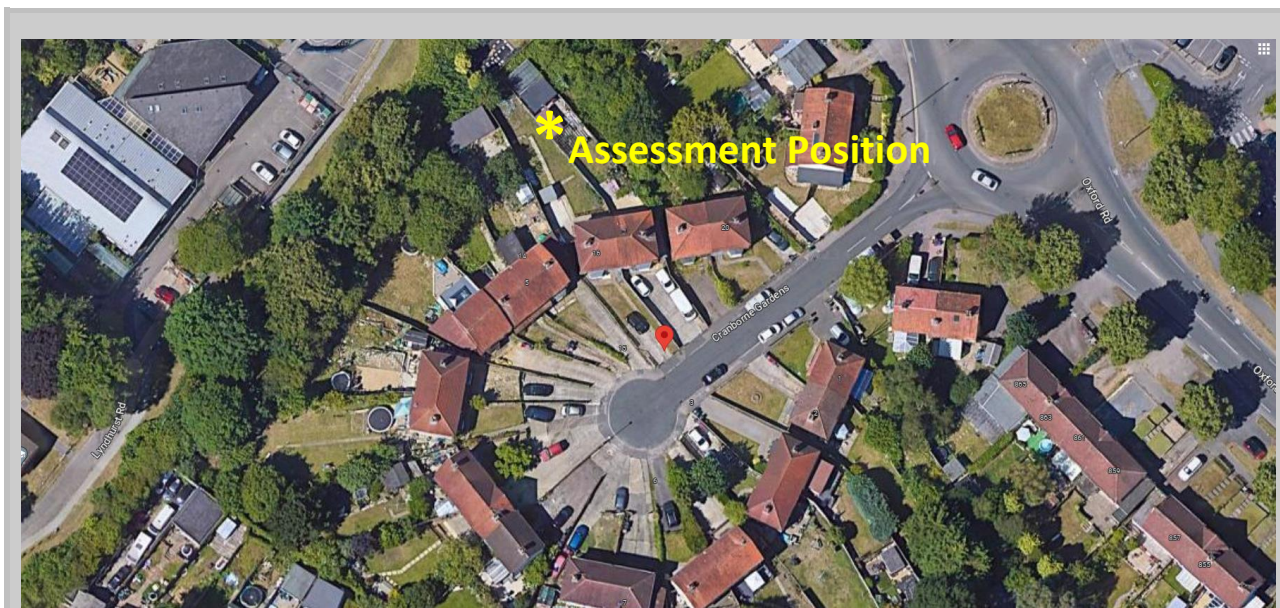
It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available.

3 SITE LOCATION

3.1 Assessment Position and Background Position

The sites are located in the Tilehurst area of Reading and continuous measurements were undertaken at the assessment position between the 14th July and the 16th July 2023. Measurement was undertaken at ground floor level at the representative nearest noise sensitive premises / receptor in accordance with ISO1996 part 2: 2017.

3.1.1 Position 1, 17 Cranbourne Gardens



3.1.2 Position 2, 37 Lyndhurst Road



3.1.3 Position 3, 28 Ripley Road



3.1.4 Position 4, 12 Romsey Road



4 RESULTS

4.1 Downloaded results, and averages

4.1.1 07:00 – 07:00 14th – 15th July 2023 Position 1, 17 Cranbourne Gardens

NOISE LEVEL SUMMARY ASSESSMENT			Octave Band Centre Frequency (Hz)									
Date / Time	LAeq	LAmaz	LA90	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LA90 1 HOUR & Corresponding LAeq 1 HOUR	47.7	71.9	44.0	55.6	49.4	44.1	42.5	42.6	39.6	39.7	34.1	20.3
NIGHT TIME 23:00 - 07:00 LA90 15 MIN & Corresponding LAeq 15 MIN	39.9	75.4	32.0	46.8	39.2	36.2	35.1	35.0	31.8	31.8	23.8	11.1

4.1.2 07:00 – 07:00 15th – 16th July 2023 Position 1, 17 Cranbourne Gardens

NOISE LEVEL SUMMARY ASSESSMENT			Octave Band Centre Frequency (Hz)									
Date / Time	LAeq	LAmaz	LA90	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LA90 1 HOUR & Corresponding LAeq 1 HOUR	48.9	76.3	45.0	56.5	48.5	46.8	44.0	43.8	40.9	40.6	32.3	14.5
NIGHT TIME 23:00 - 07:00 LA90 15 MIN & Corresponding LAeq 15 MIN	38.0	69.5	34.0	46.1	39.4	36.6	35.4	33.3	28.2	28.4	21.9	10.6

4.1.3 07:00 – 07:00 14th – 15th July 2023 Position 2, 37 Lyndhurst Road

NOISE LEVEL SUMMARY ASSESSMENT			Octave Band Centre Frequency (Hz)									
Date / Time	LAeq	LAmaz	LA90	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LA90 1 HOUR & Corresponding LAeq 1 HOUR	44.8	72.9	41.0	53.2	47.0	44.1	41.1	40.3	35.9	34.4	26.4	12.1
NIGHT TIME 23:00 - 07:00 LA90 15 MIN & Corresponding LAeq 15 MIN	37.0	67.7	27.0	45.2	38.6	35.4	34.3	33.0	26.2	26.5	20.8	10.7

4.1.4 07:00 – 07:00 15th – 16th July 2023 Position 2, 37 Lyndhurst Road

NOISE LEVEL SUMMARY ASSESSMENT			Octave Band Centre Frequency (Hz)									
Date / Time	LAeq	LAmaz	LA90	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LA90 1 HOUR & Corresponding LAeq 1 HOUR	43.4	66.1	39.0	54.1	49.5	42.7	40.0	38.6	33.6	32.9	27.1	13.3
NIGHT TIME 23:00 - 07:00 LA90 15 MIN & Corresponding LAeq 15 MIN	36.1	69.9	26.0	48.0	38.8	35.0	33.9	31.0	25.7	26.4	19.9	10.6

4.1.5 07:00 – 07:00 14th – 15th July 2023 Position 3, 28 Ripley Road

NOISE LEVEL SUMMARY ASSESSMENT			Octave Band Centre Frequency (Hz)									
Date / Time	LAeq	LAmaz	LA90	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LA90 1 HOUR & Corresponding LAeq 1 HOUR	42.9	75.1	35.0	53.3	47.7	42.4	39.7	38.1	34.0	30.4	22.9	11.0
NIGHT TIME 23:00 - 07:00 LA90 15 MIN & Corresponding LAeq 15 MIN	34.8	69.6	27.0	44.6	38.1	33.3	31.5	29.4	23.5	27.2	21.1	10.5

4.1.6 07:00 – 07:00 15th – 16th July 2023 Position 3, 28 Ripley Road

NOISE LEVEL SUMMARY ASSESSMENT			Octave Band Centre Frequency (Hz)									
Date / Time	LAeq	LAmaz	LA90	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LA90 1 HOUR & Corresponding LAeq 1 HOUR	46.3	81.1	33.0	53.4	49.7	45.0	43.0	41.1	38.6	35.2	26.9	12.1
NIGHT TIME 23:00 - 07:00 LA90 15 MIN & Corresponding LAeq 15 MIN	35.4	64.8	28.0	44.3	37.9	35.6	33.1	31.2	24.9	20.3	14.2	10.5

4.1.7 07:00 – 07:00 14th – 15th July 2023 Position 4, 12 Romsey Road

NOISE LEVEL SUMMARY ASSESSMENT			Octave Band Centre Frequency (Hz)									
Date / Time	LAeq	LAmaz	LA90	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LA90 1 HOUR & Corresponding LAeq 1 HOUR	48.5	76.3	44.0	54.0	47.0	45.6	44.8	43.0	40.3	40.2	33.6	18.5
NIGHT TIME 23:00 - 07:00 LA90 15 MIN & Corresponding LAeq 15 MIN	41.5	75.8	36.0	46.4	39.3	36.5	35.2	35.3	34.6	35.0	26.4	12.4

4.1.8 07:00 – 07:00 15th – 16th July 2023 Position 4, 12 Romsey Road

NOISE LEVEL SUMMARY ASSESSMENT			Octave Band Centre Frequency (Hz)									
Date / Time	LAeq	LAmaz	LA90	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LA90 1 HOUR & Corresponding LAeq 1 HOUR	46.3	79.3	41.0	53.1	45.6	43.2	42.0	40.1	36.5	39.5	36.5	23.2
NIGHT TIME 23:00 - 07:00 LA90 15 MIN & Corresponding LAeq 15 MIN	34.3	64.1	26.0	43.6	37.1	33.2	32.9	29.3	24.5	20.3	15.2	13.3

Continuous background noise measurements were undertaken between the 14th – 16th July 2023 at the Assessment Positions 1 - 4. The results are shown in the table below.

		Position 1 17 Cranbourne Road	Position 2 37 Lyndhurst Road	Position 3 28 Ripley Road	Position 4 12 Romsey Road
Daytime Equivalent Existing Background Noise Levels 2 days (07:00 – 23:00)	Measured Levels at Assessment Position 1	LA90, t 44 dB	LA90, t 39 dB	LA90, t 33 dB	LA90, t 41 dB
Night time Equivalent Existing Background Noise Levels 2 days (23:00 – 07:00)	Measured Levels at Assessment Position 1	LA90, t 32 dB	LA90, t 26 dB	LA90, t 27 dB	LA90, t 26 dB

For the purpose of all calculations, the lowest daytime level of LA90, t 33 dB and night time level of LA90, t 26 dB will be used.

5 APPARATUS

5.1 Equipment Calibration

The equipment was calibrated using a sound pressure level of 114.0 dB at an octave band centre frequency of 1000Hz with reference to $2 \times 10^{-5} \text{ Nm}^{-2}$ before and after the tests and the equipment set to have no inaccuracy greater than 0.2 dB.

All the following equipment was calibrated in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service (UKAS) on the following dates. Calibration schedules are implemented within Sound Advice Acoustics Ltd in accordance with UKAS directive LAB 23.

5.2 Position 1, 17 Cranbourne Gardens

Description	Make	Type	Serial No.	Calibration Intervals	Last Calibrated	Next Due Calibration
Integrated Sound Level Meter	Norsonic	118	31471	2 YEARS	02.11.2021	02.11.2023
12.5mm Microphone (with windshield)	Norsonic	1225	57535	2 YEARS	02.11.2021	02.11.2023
Microphone Pre – Amplifier	Norsonic	1206	30687	2 YEARS	02.11.2021	02.11.2023

5.3 Position 2, 37 Lyndhurst Road

Description	Make	Type	Serial No.	Calibration Intervals	Last Calibrated	Next Due Calibration
Integrated Sound Level Meter	Norsonic	118	31632	2 YEARS	25.07.2022	25.07.2024
12.5mm Microphone (with windshield)	Norsonic	1225	91720	2 YEARS	25.07.2022	25.07.2024
Microphone Pre – Amplifier	Norsonic	1201	29307	2 YEARS	25.07.2022	25.07.2024

5.4 Position 3, 28 Ripley Road

Description	Make	Type	Serial No.	Calibration Intervals	Last Calibrated	Next Due Calibration
Integrated Sound Level Meter	Norsonic	140	1403140	2 YEARS	12.04.2023	12.04.2025
12.5mm Microphone (with windshield)	Norsonic	1225	413206	2 YEARS	12.04.2023	12.04.2025
Microphone Pre – Amplifier	Norsonic	1209	12245	2 YEARS	12.04.2023	12.04.2025

5.5 Position 4, 12 Romsey Road

Description	Make	Type	Serial No.	Calibration Intervals	Last Calibrated	Next Due Calibration
Integrated Sound Level Meter	Norsonic	140	1402941	2 YEARS	25.07.2022	25.07.2024
12.5mm Microphone (with windshield)	GRAS	40AF	179711	2 YEARS	25.07.2022	25.07.2024
Microphone Pre – Amplifier	Norsonic	1209	30479	2 YEARS	25.07.2022	25.07.2024

The noise meters were calibrated before and after the assessment period and found to be within the tolerance of the manufacturer's guidance. Full Calibration certificates are available upon request.

6 CALCULATIONS

6.1 Proposed Plant

The following air source heat pumps are to be located externally, generally as detailed on the drawing within this report.

The air source heat pumps has the following sound power data supplied by the manufacturer.

Make & Model		Sound Power Level SWL (dBA)
Mitsubishi PUZ-WM60VAA(-BS)		58.0
OUTDOOR UNIT		PUZ-WM60VAA(-BS)
HEAT PUMP SPACE HEATER - 55°C	ErP Rating	A++
	η_s	142%
	SCOP (MCS)	3.57
HEAT PUMP SPACE HEATER - 35°C	ErP Rating	A+++
	η_s	190%
	SCOP (MCS)	4.81
HEAT PUMP COMBINATION HEATER - Large Profile ^{*1}	ErP Rating	A+
	η_{wh}	145%
HEATING ^{*2} (A-7/W35)	Capacity (kW)	6.0
	Power Input (kW)	1.88
	COP	3.20
OPERATING AMBIENT TEMPERATURE (°C DB)		-20 ~ +35
SOUND DATA ^{*3}	Pressure Level at 1m (dBA)	45
	Power Level (dBA) ^{*4}	58
WATER DATA	Pipework Size (mm)	22
	Flow Rate (l/min)	17
	Water Pressure Drop (kPa)	8.0
DIMENSIONS (mm)	Width	1050
	Depth	480
	Height	1020
WEIGHT (kg)		98
ELECTRICAL DATA	Electrical Supply	220-240V, 50Hz
	Phase	Single
	Nominal Running Current [MAX] (A) ^{*5}	5.68 [13]
	Fuse Rating - MCB Sizes (A) ^{*6}	16
REFRIGERANT CHARGE (kg) / CO ₂ EQUIVALENT (t)		R32 (GWP 675) 2.2 / 1.49

6.2 Inputted Noise Levels

Based on the above noise levels, the following values have been inputted into the CADNA A 3D modelling software.

Point Source

Close

Edit...

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Font...

Help

Name	M. ID	Result. PWL			Lw / Li		Correction				Sound Reduction	Attenuation	Operating Time			K0	Freq.	Direct.	Height
		Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night			
		(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(m²)		(min)	(min)	(min)	(dB)	(Hz)	(m)
Mitsubishi PUZ-WM60VAA(-BS)		58.0	58.0	58.0	Lw	58		0.0	0.0	0.0							0.0	1000 (none)	0.50 r

<

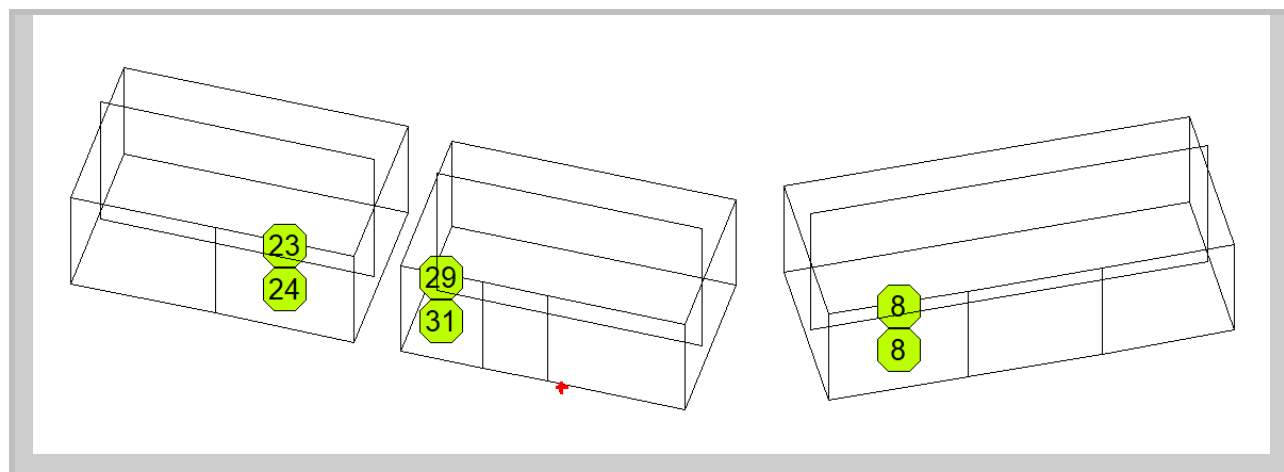
>

INPUTTED NOISE LEVELS

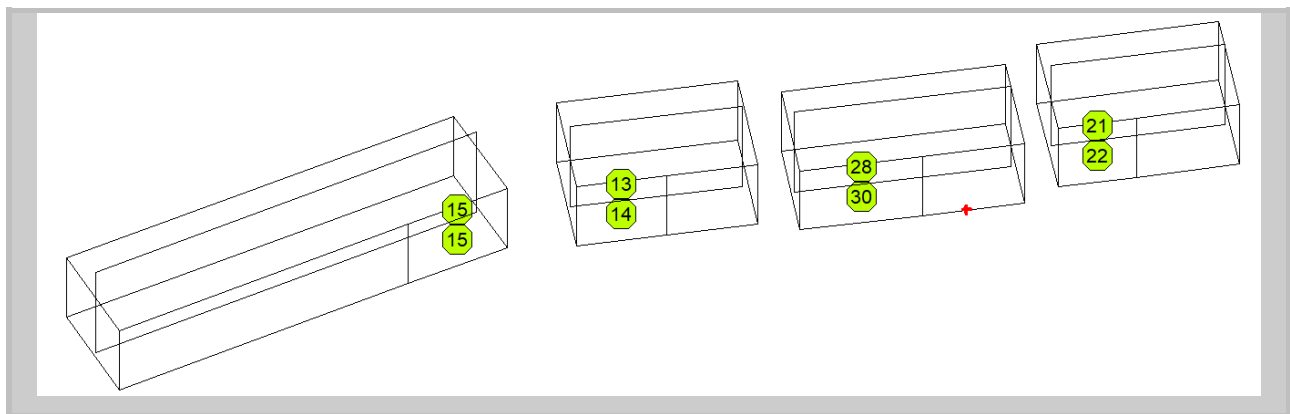
INPUTTED NOISE LEVELS

6.3 Calculated Façade Levels with ASHP

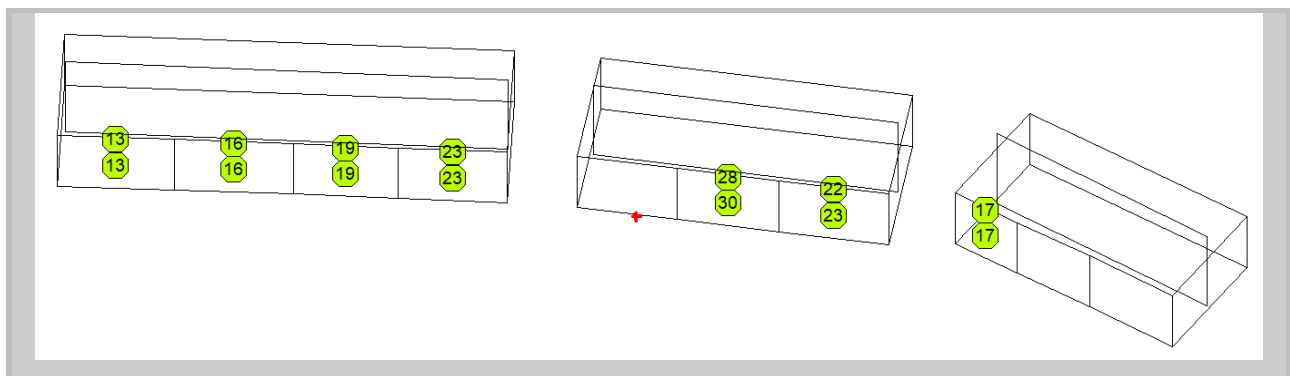
6.3.1 Position 1, 17 Cranbourne Gardens



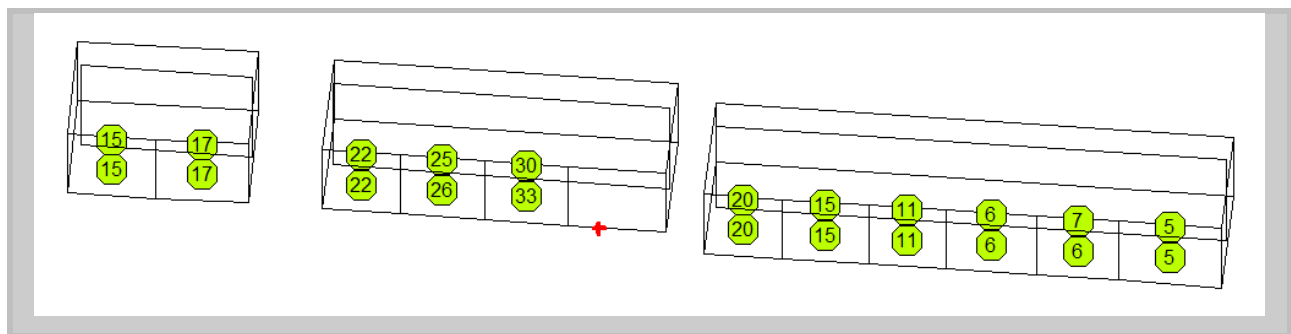
6.3.2 Position 2, 37 Lyndhurst Road



6.3.3 Position 3, 28 Ripley Road



6.3.4 Position 4, 12 Romsey Road



Based on the highest façade level of 33 dB, the following assessments can be made:-

7 BS 4142:2014+A1:2019 NOISE ASSESSMENT

7.1 Scope of British Standard 4142: 2014+A1:2019

In the assessment of the existing surrounding commercial premises, consideration has been given to the scope of British Standard 4142:2014+A1:2019, which in section 1, details applicability of this standard to rating assessing sound of an industrial and/or commercial nature. It is considered appropriate that both the background noise levels and the rating noise levels obtained fall within the scope of British Standard 4142:2014+A1:2019 by using outdoor sound levels to assess the effect of sound on local residents.

7.2 Terms and Definitions

Symbol	Term	Definition
AP	Assessment Position	Position externally at the façade property under investigation at which the assessment is undertaken which is usually 1m from the 1 st floor bedroom window.
EP	Equivalent Position	Position at which the background noise levels are measured if there is no access to the assessment position or if source under investigation is audible.
$L_s = L_{Aeq, T}$	Specific Level	The average continuous equivalent sound pressure level of the source at the assessment position.
$L_{Ar, Tr}$	Rating Level	The average continuous equivalent sound pressure level of the source at the assessment position with a correction to account for the characteristic features.
$L_r = L_{Aeq, T}$	Residual Level	The average continuous equivalent sound pressure level at the assessment position without the source operating.
$L_{A90, T}$	Background Level	The sound pressure level that is not exceeded 90% of the time at the assessment position.
$L_a = L_{Aeq, T}$	Ambient Level	The totally encompassing sound at the assessment position including the residual and specific noise.

7.3 Assessment Position

The assessment positions 1 - 4 were established as the residential accommodation premises adjacent to the proposed air source heat pumps.

7.4 Calculations

The specific noise levels are calculated at the assessment position located at the residential property adjacent using the calculations detailed within ISO 9613 Part 1 and 2: 1996. These calculations take the manufacturers sound power levels into account for a variety of factors including source directivity, distance, atmospheric absorption, ground absorption and the effects of any barriers and determine the resultant noise levels at the assessment position.

7.5 Equivalent Position

The background noise levels were measured at the equivalent position, chosen as it most represented the closest noise sensitive façade, located within the existing garden area between 07:00 on 14th July 2023 and 07:00 on 16th July 2023.

7.6 Rating Levels (Character Correction)

It is appropriate to add a character correction where there is a new source that cannot be measured in line with BS 4142:2014+A1:2019. There are 3 methods for approaching this.

- a) Subjective method
- b) Objective method (for tonality)
- c) Reference method

7.7 Subjective Method

The subjective method establishes a rating penalty that is added to the specific noise level if any of the following is present at the assessment position. If a tone is expected to be present a character correction of 0 dB to 6 dB is added depending on how perceptible it is at noise sensitive locations.

BS 4142:2014+A1:2019 – Section 9.2 Subjective Method	Perceptibility to noise sensitive facades	Correction
Tonality Ranging from not tonal to prominently tonal	Not tonal	+0
	Just perceptible	+2
	Clearly perceptible	+4
	Highly perceptible	+6

If the source is expected to be impulsive a character correction of 0 dB to 9 dB is added depending on how perceptible it is at noise sensitive locations.

BS 4142:2014+A1:2019 – Section 9.2 Subjective Method	Perceptibility to noise sensitive facades	Correction
Impulsivity Considering both the rapidity and any overall change in sound levels	Not impulsive	+0
	Just perceptible	+3
	Clearly perceptible	+6
	Highly perceptible	+9

When the sound features are neither tonal nor impulsive, a character correction of +3 is added for the readily distinctive quality against the acoustic environment or for the intermittency of the source.

BS 4142:2014+A1:2019 – Section 9.2 Subjective Method	Perceptibility to noise sensitive facades	Correction
Readily Distinctive	Is not present	+0
	Is present	+3
Intermittency	Is not present	+0
	Is present	+3

7.8 Assessment Criterion

The significance of the resulting noise on the residential property depends on the margin by which it exceeds the background noise levels. British Standard 4142:2014+A1:2019 provides the following guidance within section 11.

Difference	Assessment of Impact
+10 dB	Indication of a significant adverse impact
+5 dB	Indication of an adverse impact
+0 dB	Indication of low impact

7.9 Noise Meter Floor

BS 4142:2014+A1:2019 suggests that Care is necessary in circumstances where background sound levels are low to ensure that self-generated and electrical noise within the measurement system does not unduly influence reported values, which might be the case if the measured background sound levels are less than 10 dB above the noise floor of the measuring system. The floor of a typical class 1 noise meter is in the region of 14 dB(A) and therefore measurements of less than 24 dB(A) should be assessed with care.

7.10 BS 4142:2014+A1:2019 Penalties

Whilst BS 4142:2014+A1:2019 allows receptor assessments to be made to achieve levels equal to prevailing background noise levels, it also ensures that appropriate and more stringent penalties are applied to the specific noise level to ensure the correct level of protection for the local residents.

7.11 Assessments

7.11.1 Daytime (07:00 – 23:00). Position 1, 17 Cranbourne Gardens.

Rating Industrial Noise affecting Mixed Industrial and Residential Areas			British Standard 4142:2014+A1:2019 Daytime (07:00 to 23:00)
Assessment Position			Accommodation Adjacent
Background Position			At the assessment position
Item	Calculation	Clause	Commentary
Specific Noise Level $L_{Aeq,1\text{ hour}}$	31 dB	7	Calculated using ISO 9613:1996 ^[3] .
Tonality	+2 dB	8.1	Tonality Characteristic
Impulsivity	+3 dB	8.1	Impulsive Characteristic
Rating Level	36 dB	9.1	The acoustic feature correction is added to the specific noise level
Background Noise Level $L_{A90,1\text{ hour}}$	40 dB	8.1	Modal Background Noise Level (07:00 – 23:00)
Assessment Level	-4 dB	11	The background level is subtracted from the rating level.
Conclusion BS 4142:2014+A1:2019 ^[1]	+10 dB Significant Adverse Effects, +5 dB Adverse Effects, +0 dB Low Impact		
Assessment	-4 dB		
Conclusion	The assessment level is 'Low Impact'		

7.11.2 Night time (07:00 – 23:00). Position 1, 17 Cranbourne Gardens.

Rating Industrial Noise affecting Mixed Industrial and Residential Areas			British Standard 4142:2014+A1:2019 Daytime (23:00 to 07:00)
Assessment Position			Accommodation Adjacent
Background Position			At the assessment position
Item	Calculation	Clause	Commentary
Specific Noise Level $L_{Aeq,1\text{ hour}}$	31 dB	7	Calculated using ISO 9613:1996 ^[3] .
Tonality	+2 dB	8.1	Tonality Characteristic
Impulsivity	+3 dB	8.1	Impulsive Characteristic
Rating Level	36 dB	9.1	The acoustic feature correction is added to the specific noise level
Background Noise Level $L_{A90,1\text{ hour}}$	40 dB	8.1	Modal Background Noise Level (23:00 – 07:00)
Assessment Level	-4 dB	11	The background level is subtracted from the rating level.
Conclusion BS 4142:2014+A1:2019 ^[1]	+10 dB Significant Adverse Effects, +5 dB Adverse Effects, +0 dB Low Impact		
Assessment	-4 dB		
Conclusion	The assessment level is 'Adverse Effect'		

7.11.3 Daytime (07:00 – 23:00). Position 2, 37 Lyndhurst Road.

Rating Industrial Noise affecting Mixed Industrial and Residential Areas			British Standard 4142:2014+A1:2019 Daytime (07:00 to 23:00)
Assessment Position			Accommodation Adjacent
Background Position			At the assessment position
Item	Calculation	Clause	Commentary
Specific Noise Level $L_{Aeq,1\text{ hour}}$	30 dB	7	Calculated using ISO 9613:1996 ^[3] .
Tonality	+2 dB	8.1	Tonality Characteristic
Impulsivity	+3 dB	8.1	Impulsive Characteristic
Rating Level	35 dB	9.1	The acoustic feature correction is added to the specific noise level
Background Noise Level $L_{A90,1\text{ hour}}$	40 dB	8.1	Modal Background Noise Level (07:00 – 23:00)
Assessment Level	-5 dB	11	The background level is subtracted from the rating level.
Conclusion BS 4142:2014+A1:2019 ^[1]	+10 dB Significant Adverse Effects, +5 dB Adverse Effects, +0 dB Low Impact		
Assessment	-5 dB		
Conclusion	The assessment level is 'Low Impact'		

7.11.4 Night time (07:00 – 23:00). Position 2, 37 Lyndhurst Road.

Rating Industrial Noise affecting Mixed Industrial and Residential Areas			British Standard 4142:2014+A1:2019 Daytime (23:00 to 07:00)
Assessment Position			Accommodation Adjacent
Background Position			At the assessment position
Item	Calculation	Clause	Commentary
Specific Noise Level $L_{Aeq,1\text{ hour}}$	30 dB	7	Calculated using ISO 9613:1996 ^[3] .
Tonality	+2 dB	8.1	Tonality Characteristic
Impulsivity	+3 dB	8.1	Impulsive Characteristic
Rating Level	35 dB	9.1	The acoustic feature correction is added to the specific noise level
Background Noise Level $L_{A90,1\text{ hour}}$	40 dB	8.1	Modal Background Noise Level (23:00 – 07:00)
Assessment Level	-5 dB	11	The background level is subtracted from the rating level.
Conclusion BS 4142:2014+A1:2019 ^[1]	+10 dB Significant Adverse Effects, +5 dB Adverse Effects, +0 dB Low Impact		
Assessment	-5 dB		
Conclusion	The assessment level is 'Adverse Effect'		

7.11.5 Daytime (07:00 – 23:00). Position 3, 28 Ripley Road.

Rating Industrial Noise affecting Mixed Industrial and Residential Areas			British Standard 4142:2014+A1:2019 Daytime (07:00 to 23:00)
Assessment Position			Accommodation Adjacent
Background Position			At the assessment position
Item	Calculation	Clause	Commentary
Specific Noise Level $L_{Aeq,1\text{ hour}}$	30 dB	7	Calculated using ISO 9613:1996 ^[3] .
Tonality	+2 dB	8.1	Tonality Characteristic
Impulsivity	+3 dB	8.1	Impulsive Characteristic
Rating Level	35 dB	9.1	The acoustic feature correction is added to the specific noise level
Background Noise Level $L_{A90,1\text{ hour}}$	40 dB	8.1	Modal Background Noise Level (07:00 – 23:00)
Assessment Level	-5 dB	11	The background level is subtracted from the rating level.
Conclusion BS 4142:2014+A1:2019 ^[1]	+10 dB Significant Adverse Effects, +5 dB Adverse Effects, +0 dB Low Impact		
Assessment	-5 dB		
Conclusion	The assessment level is 'Low Impact'		

7.11.6 Night time (07:00 – 23:00). Position 3, 28 Ripley Road.

Rating Industrial Noise affecting Mixed Industrial and Residential Areas			British Standard 4142:2014+A1:2019 Daytime (23:00 to 07:00)
Assessment Position			Accommodation Adjacent
Background Position			At the assessment position
Item	Calculation	Clause	Commentary
Specific Noise Level $L_{Aeq,1\text{ hour}}$	30 dB	7	Calculated using ISO 9613:1996 ^[3] .
Tonality	+2 dB	8.1	Tonality Characteristic
Impulsivity	+3 dB	8.1	Impulsive Characteristic
Rating Level	35 dB	9.1	The acoustic feature correction is added to the specific noise level
Background Noise Level $L_{A90,1\text{ hour}}$	40 dB	8.1	Modal Background Noise Level (23:00 – 07:00)
Assessment Level	-5 dB	11	The background level is subtracted from the rating level.
Conclusion BS 4142:2014+A1:2019 ^[1]	+10 dB Significant Adverse Effects, +5 dB Adverse Effects, +0 dB Low Impact		
Assessment	-5 dB		
Conclusion	The assessment level is 'Adverse Effect'		

7.11.7 Daytime (07:00 – 23:00). Position 4, 12 Romsey Road.

Rating Industrial Noise affecting Mixed Industrial and Residential Areas			British Standard 4142:2014+A1:2019 Daytime (07:00 to 23:00)
Assessment Position			Accommodation Adjacent
Background Position			At the assessment position
Item	Calculation	Clause	Commentary
Specific Noise Level $L_{Aeq,1\text{ hour}}$	33 dB	7	Calculated using ISO 9613:1996 ^[3] .
Tonality	+2 dB	8.1	Tonality Characteristic
Impulsivity	+3 dB	8.1	Impulsive Characteristic
Rating Level	38 dB	9.1	The acoustic feature correction is added to the specific noise level
Background Noise Level $L_{A90,1\text{ hour}}$	40 dB	8.1	Modal Background Noise Level (07:00 – 23:00)
Assessment Level	-2 dB	11	The background level is subtracted from the rating level.
Conclusion BS 4142:2014+A1:2019 ^[1]	+10 dB Significant Adverse Effects, +5 dB Adverse Effects, +0 dB Low Impact		
Assessment	-2 dB		
Conclusion	The assessment level is 'Low Impact'		

7.11.8 Night time (07:00 – 23:00). Position 4, 12 Romsey Road.

Rating Industrial Noise affecting Mixed Industrial and Residential Areas			British Standard 4142:2014+A1:2019 Daytime (23:00 to 07:00)
Assessment Position			Accommodation Adjacent
Background Position			At the assessment position
Item	Calculation	Clause	Commentary
Specific Noise Level $L_{Aeq,1\text{ hour}}$	33 dB	7	Calculated using ISO 9613:1996 ^[3] .
Tonality	+2 dB	8.1	Tonality Characteristic
Impulsivity	+3 dB	8.1	Impulsive Characteristic
Rating Level	38 dB	9.1	The acoustic feature correction is added to the specific noise level
Background Noise Level $L_{A90,1\text{ hour}}$	40 dB	8.1	Modal Background Noise Level (23:00 – 07:00)
Assessment Level	-2 dB	11	The background level is subtracted from the rating level.
Conclusion BS 4142:2014+A1:2019 ^[1]	+10 dB Significant Adverse Effects, +5 dB Adverse Effects, +0 dB Low Impact		
Assessment	-2 dB		
Conclusion	The assessment level is 'Adverse Effect'		

7.12 Tonal Penalty

A +2 dB penalty has been applied to the specific noise level to allow for any minor tonal elements that may be present from the proposed plant.

7.13 Intermittency Penalty

A +3 dB penalty has been applied to the specific noise level to allow for any intermittent elements that may be present from the proposed air source heat pumps.

7.14 Assessment Conclusion

It can be seen from the above assessments that with the proposed new air source heat pumps operational, an assessment conclusion of Low Impact could be expected during the daytime and the night time.

8 NPPF & NPSE

The National Planning Policy Framework 2023 (NPPF) and assessments to the Noise Policy Statement for England 2010 (NPSE) should be made in conjunction with each other. Paragraphs 185 - 188 of the National Planning Policy Framework 2023 (NPPF) states the following:

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 impacts 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 186 Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications.

Paragraph 187 Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or ‘agent of change’) should be required to provide suitable mitigation before the development has been completed.

Paragraph 188 The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities.

The Noise Policy Statement for England gives various levels of effect as detailed within this report.

With the specifications achieved within this report, the development can be implemented within the guidelines of the aforementioned documents and ensure a conclusion of **NOEL – No Observed Effect Level**. This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

9 CONCLUSIONS

9.1 Measured Background Noise Levels

Continuous background noise measurements were undertaken between the 14th – 16th July 2023 at the Assessment Positions 1 - 4. The results are shown in the table below.

		Position 1 17 Cranbourne Road	Position 2 37 Lyndhurst Road	Position 3 28 Ripley Road	Position 4 12 Romsey Road
Daytime Equivalent Existing Background Noise Levels 2 days (07:00 – 23:00)	Measured Levels at Assessment Position 1	L _{A90} , t 44 dB	L _{A90} , t 39 dB	L _{A90} , t 33 dB	L _{A90} , t 41 dB
Night time Equivalent Existing Background Noise Levels 2 days (23:00 – 07:00)	Measured Levels at Assessment Position 1	L _{A90} , t 32 dB	L _{A90} , t 26 dB	L _{A90} , t 27 dB	L _{A90} , t 26 dB

The Planning Department of Reading Borough Council have agreed a background noise level of L_{A90}, t 40 dB for both daytime and night time. Therefore, all calculations and assessments within this report will use this figure.

9.2 Proposed Plant

The following air source heat pumps are to be located externally, generally as detailed on the drawing within this report. The air source heat pumps have the following sound power data supplied by the manufacturer.

Make & Model	Sound Power Level SWL (dBA)
Mitsubishi PUZ-WM60VAA(-BS)	58.0

9.3 Assessment

9.3.1 Daytime (07:00 – 23:00) Assessment

	Position 1	Position 2	Position 3	Position 4
Rating Level	36 dB	35 dB	35 dB	38 dB
Background Noise Level $L_{A90,1 \text{ hour}}$	40 dB	40 dB	40 dB	40 dB
Assessment Level	-4 dB	-5 dB	-5 dB	-2 dB
Conclusion BS 4142:2014+A1:2019 [1]	+10 dB Significant Adverse Effects, +5 dB Adverse Effects, +0 dB Low Impact			
Assessment	-4 dB	-5 dB	-5 dB	-2 dB
Conclusion	The assessment level is 'Low Impact'			

9.3.2 Night time (23:00 – 07:00) Assessment

	Position 1	Position 2	Position 3	Position 4
Rating Level	36 dB	35 dB	35 dB	38 dB
Background Noise Level $L_{A90,1 \text{ hour}}$	40 dB	40 dB	40 dB	40 dB
Assessment Level	-4 dB	-5 dB	-5 dB	-2 dB
Conclusion BS 4142:2014+A1:2019 [1]	+10 dB Significant Adverse Effects, +5 dB Adverse Effects, +0 dB Low Impact			
Assessment	-4 dB	-5 dB	-5 dB	-2 dB
Conclusion	The assessment level is 'Low Impact'			

9.4 Conclusions

The operation of the proposed external air source heat pumps has been assessed to establish if the proposed units will have a demonstrable adverse effect in terms of noise that outweigh the benefits of the development. Measurements have been undertaken in accordance with British Standard 4142:2014+A1:2019 and ISO 1996 – Part 2: 2017. This report has established the existing background noise levels at the closest residential façade to the proposed air source heat pumps and the assessment of the impact of the operation on nearby residential properties directly adjacent. The resulting emissions from the site running on a worst-case scenario show no conflict with ‘low impact’ criteria during the daytime and the night time and give a strong indication that complaint and impact on the local amenity is possible during the night time period.

9.5 NPPF 2023

National Planning Policy Framework 2023 suggests that planning permission should be granted unless any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in the framework taken as a whole, or specific policies in the framework indicate the application should be restricted.

9.6 Planning Approval Recommendation

Based on the calculations and assessments made within this report it is the professional opinion of Sound Advice Acoustics Ltd that the proposed development can demonstrate compliance with the National Planning Policy Framework 2023, NPPF & NPSE and that, with regards to sound, planning permission can be granted.

10 APPENDIX A – UNCERTAINTY BUDGET

10.1 Scope

British Standard 4142:2014+A1:2019 entitled “*Uncertainty*” requires the following:

“Consider the level of uncertainty in the data and associated calculations. Where the level of uncertainty could affect the conclusion, take reasonably practicable steps to reduce the level of uncertainty. Report the level and potential effects of uncertainty.”

Annex B of British Standard 4142:2014+A1:2019 entitled “consideration of uncertainty and good practice for reducing uncertainty” makes reference to the University of Salford publication entitled “A Good Practice Guide on the Source and Magnitude of Uncertainty arising in the Practical Measurement of Environmental Noise” edition 1a dated May 2007.

10.2 Uncertainty of Measured Values

Ref	Source of Uncertainty Section 10.2 British Standard 4142:2014+A1:2019	Value dB(A)	Distribution (Divisor)	Uncertainty dB(A)
a	Variability and complexity of sound source	0.50	$\sqrt{2}$	0.35
b	Variability and complexity of residual sound	0.00	$\sqrt{3}$	0.00
c	Residual sound present in specific sound	0.00	$\sqrt{3}$	0.00
d	Background noise position selection	0.10	$\sqrt{3}$	0.06
e	Distance between source and receiver	0.15	$\sqrt{2}$	0.11
f	Number of measurements taken (5 Days)	0.10	$\sqrt{3}$	0.06
g	Measurement time interval variation	0.00	$\sqrt{2}$	0.00
h	Range of times measurements taken	0.10	$\sqrt{3}$	0.06
i	Suitable weather conditions during measurements	0.20	$\sqrt{3}$	0.12
j	Application of British Standard 4142:2014+A1:2019	0.10	$\sqrt{2}$	0.07
k	Rounding of each measurement	0.05	$\sqrt{3}$	0.03
l	Instrumentation – Calibration	1.20	$\sqrt{3}$	0.69
Reported Expanded Uncertainty (95% confidence, convergence k = 2)				1.61

10.3 Uncertainty in Calculations

Ref	Source of Uncertainty Section 10.2 British Standard 4142:2014+A1:2019	Value dB(A)	Distribution (Divisor)	Uncertainty dB(A)
a	Impact of measured sound level on calculations	0.00	$\sqrt{2}$	0.00
b	Assumption on sound power level of source	0.00	$\sqrt{3}$	0.00
c	Uncertainty of calculation method (ISO 9613)	0.20	$\sqrt{3}$	0.12
d	Model fit against real world conditions	0.10	$\sqrt{3}$	0.06
e	Error in the calculation process	0.15	$\sqrt{2}$	0.11
Reported Expanded Uncertainty (95% confidence, convergence k = 2)				0.33

10.4 Uncertainty from Other Factors

Ref	Source of Uncertainty Section 10.2 British Standard 4142:2014+A1:2019	Value dB(A)	Distribution (Divisor)	Uncertainty dB(A)
a	Standing waves or interference patterns	0.15	$\sqrt{3}$	0.09
b	Approximation of sound source to a point source	0.10	$\sqrt{3}$	0.06
c	Maintenance and repair of source over 15 years	0.50	$\sqrt{3}$	0.29
Reported Expanded Uncertainty (95% confidence, convergence k = 2)				0.61

10.5 Combined Reported Expanded Uncertainty

Ref	Source of Uncertainty Section 10.2 British Standard 4142:2014+A1:2019	Value dB(A)	Distribution (Divisor)	Uncertainty dB(A)
a	Section 7.1.2. Uncertainty of measured values	2.7	$\sqrt{2}$	1.14
b	Section 7.1.3. Uncertainty of calculations	2.7	$\sqrt{2}$	0.23
c	Section 7.1.4. Uncertainty from other factors	2.7	$\sqrt{2}$	0.43
Combined Reported Expanded Uncertainty (95% confidence, convergence k = 2)				2.55

It should be noted that the uncertainty calculations have assumed a Type B uncertainty.

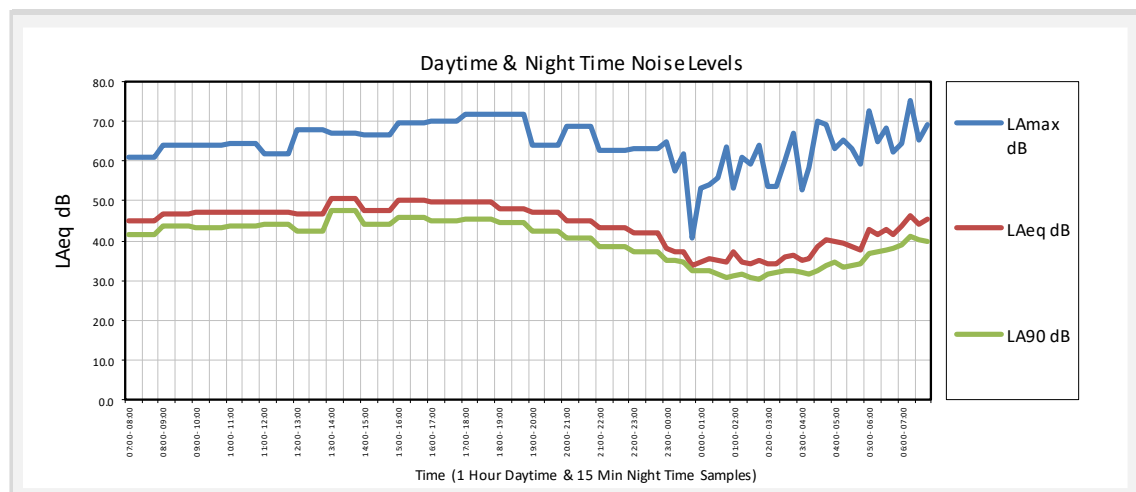
11 APPENDIX B – RESULTS

11.1 14th – 15th July 2023 Position 1

Date / Time	LAeq	LAmx	LA90	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LAeq 16 HOUR & Cor r esponding LAmx 16 HOUR	47.7	71.9	44.0	55.6	49.4	44.1	42.5	42.6	39.6	39.7	34.1	20.3
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Cor r esponding LAmx 8 HOUR	39.9	75.4	32.0	46.8	39.2	36.2	35.1	35.0	31.8	31.8	23.8	11.1

DAYTIME NOISE LEVELS 07:00 - 23:00 1 HOUR SAMPLES												
Date / Time	LAeq	LAmx	LA90	Octave Band Centre Frequency (Hz)								
				63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
07:00 - 08:00	45.0	61.1	41.0	55.7	56.8	42.8	39.1	40.3	33.9	32.9	27.3	13.7
08:00 - 09:00	46.9	63.9	44.0	55.9	47.3	43.5	42.1	42.9	38.0	37.8	32.3	18.5
09:00 - 10:00	47.2	64.0	43.0	55.9	47.9	44.9	43.6	43.0	38.1	36.6	29.7	14.9
10:00 - 11:00	47.4	64.3	44.0	55.9	48.4	45.4	43.6	42.7	38.3	38.0	32.6	18.3
11:00 - 12:00	47.2	61.7	44.0	57.1	46.2	42.8	41.0	42.0	39.4	40.1	34.5	19.9
12:00 - 13:00	46.9	68.1	43.0	56.4	46.3	43.8	42.4	42.7	38.1	37.7	32.4	18.6
13:00 - 14:00	50.8	67.2	48.0	56.7	48.4	45.5	43.8	44.3	43.8	44.5	39.3	26.4
14:00 - 15:00	47.4	66.5	44.0	54.9	46.5	42.9	41.1	42.9	39.5	39.4	34.2	20.8
15:00 - 16:00	50.3	69.8	46.0	56.7	46.6	44.3	42.7	44.2	43.4	44.0	38.9	25.0
16:00 - 17:00	49.6	70.0	45.0	58.3	47.0	44.0	42.3	43.9	42.5	42.9	37.3	23.5
17:00 - 18:00	49.7	71.7	45.0	57.1	52.9	45.9	44.0	44.5	41.9	41.6	35.3	22.0
18:00 - 19:00	47.9	71.9	45.0	54.2	46.9	44.3	43.1	44.0	39.8	38.3	30.5	13.2
19:00 - 20:00	47.1	64.1	42.0	54.0	48.5	44.7	43.3	41.7	37.9	39.2	33.2	16.8
20:00 - 21:00	45.1	68.9	41.0	52.8	46.7	43.6	42.5	40.5	35.5	33.6	26.0	11.2
21:00 - 22:00	43.2	62.7	39.0	51.7	46.4	42.9	41.8	38.2	32.0	29.1	22.9	10.5
22:00 - 23:00	42.0	63.3	37.0	50.1	45.6	41.9	40.6	37.2	30.4	27.1	21.2	10.4

NIGHT TIME NOISE LEVELS 23:00 - 07:00 15 MINUTE SAMPLES												
Date / Time	LAeq	LAmx	LA90	Octave Band Centre Frequency (Hz)								
				63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
23:00 - 23:15	38.2	64.7	35.0	49.4	40.5	35.3	34.5	35.3	27.8	22.5	16.3	10.3
23:15 - 23:30	37.3	57.4	35.0	46.3	38.6	34.7	32.9	34.5	27.0	23.2	17.1	10.2
23:30 - 23:45	37.2	62.0	35.0	46.8	38.9	34.9	32.4	34.3	27.8	23.7	18.2	10.2
23:45 - 00:00	34.0	40.9	32.0	45.0	37.5	31.6	28.8	31.6	23.4	15.7	11.9	10.1
00:00 - 00:15	34.6	53.4	33.0	44.2	36.8	31.7	30.1	31.9	24.2	21.2	15.7	10.1
00:15 - 00:30	35.4	54.1	33.0	46.7	37.8	33.1	31.1	32.1	25.9	22.9	16.3	10.2
00:30 - 00:45	35.0	55.6	32.0	46.4	38.3	33.3	30.5	31.5	26.1	21.5	15.4	10.1
00:45 - 01:00	34.6	63.6	31.0	45.7	37.4	31.9	30.0	31.1	25.2	23.3	15.7	10.2
01:00 - 01:15	37.1	53.1	31.0	45.6	38.5	35.2	32.9	33.4	28.5	25.4	19.2	10.2
01:15 - 01:30	34.8	60.9	32.0	43.7	36.3	32.0	31.1	31.3	25.3	23.2	15.8	10.2
01:30 - 01:45	34.3	59.3	31.0	43.5	35.8	31.8	30.7	30.8	24.4	22.4	15.7	10.2
01:45 - 02:00	35.0	64.0	30.0	44.2	36.1	32.0	30.3	31.4	26.2	24.0	16.0	10.2
02:00 - 02:15	34.2	53.5	32.0	43.4	35.8	31.7	30.3	30.7	24.3	22.8	16.5	10.2
02:15 - 02:30	34.1	53.8	32.0	44.1	36.1	31.6	30.3	30.1	24.5	23.9	17.8	10.2
02:30 - 02:45	35.9	60.1	32.0	45.7	37.7	32.8	31.3	31.2	27.2	27.4	20.8	10.4
02:45 - 03:00	36.3	67.1	32.0	44.5	37.3	32.9	31.6	31.5	28.1	28.1	20.4	10.4
03:00 - 03:15	35.2	52.7	32.0	44.2	37.5	33.1	31.3	30.8	25.8	26.2	20.0	10.3
03:15 - 03:30	35.4	58.3	32.0	43.1	36.2	32.5	31.3	31.3	26.6	25.7	18.9	10.3
03:30 - 03:45	38.7	70.2	33.0	45.2	37.9	34.8	34.1	33.6	31.1	30.2	21.8	10.7
03:45 - 04:00	40.1	69.0	34.0	45.4	38.8	36.5	35.3	34.7	32.7	32.4	24.7	11.0
04:00 - 04:15	39.8	63.0	35.0	47.8	39.8	36.5	35.0	34.3	32.1	32.1	25.1	11.2
04:15 - 04:30	39.4	65.5	34.0	45.2	37.9	34.8	33.8	33.9	32.2	32.0	24.2	10.8
04:30 - 04:45	38.6	63.0	34.0	44.5	37.6	34.6	33.3	33.3	30.8	31.2	24.5	12.4
04:45 - 05:00	37.6	59.4	34.0	44.4	37.1	33.7	32.9	33.0	29.4	29.1	22.4	10.7
05:00 - 05:15	43.0	72.7	37.0	46.3	39.0	36.7	36.7	36.8	36.4	36.3	28.3	14.0
05:15 - 05:30	41.5	64.9	37.0	46.4	39.0	36.6	37.4	36.6	33.6	33.2	26.1	12.0
05:30 - 05:45	42.8	68.1	38.0	48.2	41.4	39.9	39.0	37.6	34.7	34.3	26.7	11.6
05:45 - 06:00	41.6	62.3	38.0	49.2	40.1	37.4	36.8	37.3	33.5	32.9	24.9	10.8
06:00 - 06:15	43.8	64.6	39.0	48.0	40.6	38.7	38.4	38.5	35.1	38.0	26.4	11.1
06:15 - 06:30	46.5	75.4	41.0	52.4	43.7	41.0	40.2	40.7	39.5	40.0	30.2	14.3
06:30 - 06:45	44.1	65.4	40.0	49.1	41.9	40.4	39.3	39.6	35.9	35.8	28.4	12.3
06:45 - 07:00	45.3	69.2	40.0	50.7	45.5	43.5	41.6	39.8	36.4	37.0	30.6	13.8

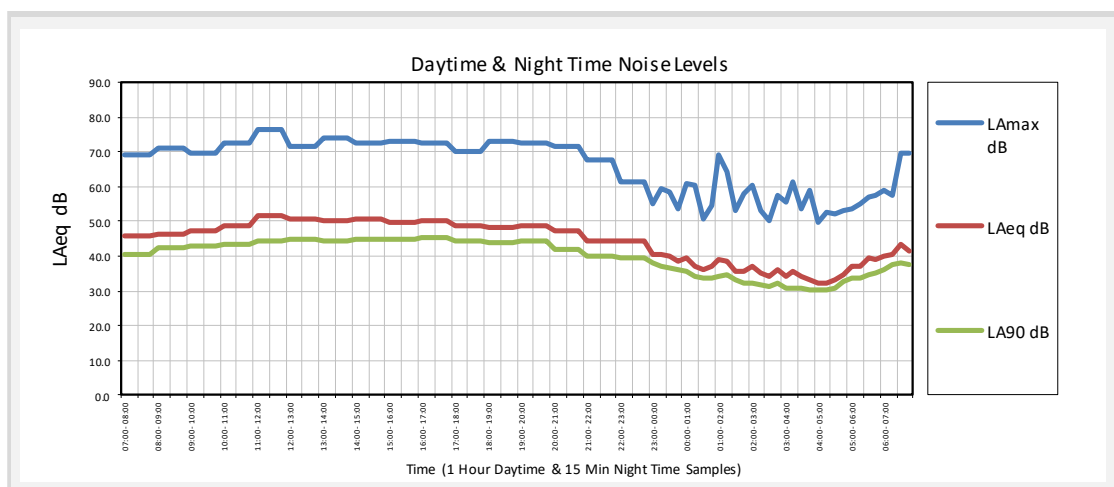


11.2 15th – 16th July 2023 Position 1

NOISE LEVEL SUMMARY ASSESSMENT				Octave Band Centre Frequency (Hz)								
Date / Time	L _{Aeq}	L _{Amax}	L _{A90}	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 L_{Aeq} 16 HOUR & Corresponding L_{Amax} 16 HOUR	48.9	76.3	45.0	56.5	48.5	46.8	44.0	43.8	40.9	40.6	32.3	14.5
NIGHTTIME 23:00 - 07:00 L_{Aeq} 8 HOUR & Corresponding L_{Amax} 8 HOUR	38.0	69.5	34.0	46.1	39.4	36.6	35.4	33.3	28.2	28.4	21.9	10.6

DAYTIME NOISE LEVELS 07:00 - 23:00 1 HOUR SAMPLES												
Date / Time	L _{Aeq}	L _{Amax}	L _{A90}	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
07:00 - 08:00	45.7	68.9	41.0	53.0	45.6	44.9	42.6	40.9	36.8	35.6	27.6	12.4
08:00 - 09:00	46.4	70.8	42.0	52.7	44.9	42.7	41.1	418	38.7	38.0	29.6	12.6
09:00 - 10:00	47.4	69.7	43.0	56.2	48.0	46.3	43.9	42.9	38.4	37.6	28.9	13.2
10:00 - 11:00	48.9	72.6	43.0	55.4	48.3	46.7	44.2	43.8	40.9	40.6	31.9	14.0
11:00 - 12:00	51.8	76.3	44.0	58.5	51.8	48.4	46.2	46.4	44.2	44.1	34.3	15.3
12:00 - 13:00	50.6	71.4	45.0	56.8	48.4	47.0	44.9	45.5	43.1	43.2	32.8	14.1
13:00 - 14:00	50.2	73.8	45.0	57.7	51.0	47.7	45.2	44.7	42.3	42.5	33.8	15.3
14:00 - 15:00	50.6	72.6	45.0	59.3	49.8	49.4	46.2	45.1	42.4	42.6	33.7	14.7
15:00 - 16:00	49.9	73.0	45.0	57.1	49.0	48.0	45.4	45.1	41.8	41.1	32.9	14.4
16:00 - 17:00	49.9	72.4	45.0	57.6	49.8	48.7	44.9	45.0	41.9	41.0	34.0	14.9
17:00 - 18:00	48.9	70.0	44.0	56.1	48.7	47.9	44.0	44.1	40.5	40.0	33.3	14.2
18:00 - 19:00	48.2	72.8	44.0	56.6	48.1	46.3	43.4	43.6	40.0	39.2	32.2	13.4
19:00 - 20:00	48.9	72.6	44.0	56.6	48.7	47.1	44.0	44.1	40.9	40.3	33.1	14.1
20:00 - 21:00	47.4	71.7	42.0	55.3	47.6	45.0	42.3	42.5	39.5	39.3	32.2	15.4
21:00 - 22:00	44.5	67.5	40.0	55.0	44.8	42.2	40.3	40.1	36.0	35.0	28.2	11.8
22:00 - 23:00	44.4	61.3	40.0	53.5	44.0	42.1	38.6	38.2	36.6	37.7	31.8	18.0

NIGHT TIME NOISE LEVELS 23:00 - 07:00 15 MINUTE SAMPLES												
Date / Time	L _{Aeq}	L _{Amax}	L _{A90}	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
23:00 - 23:15	40.6	55.0	38.0	50.6	43.3	39.5	35.9	36.5	31.6	30.4	24.0	11.4
23:15 - 23:30	40.6	59.5	37.0	51.4	45.2	40.5	35.6	36.2	31.2	29.8	23.6	11.7
23:30 - 23:45	39.8	58.2	37.0	49.1	41.2	37.7	34.9	36.2	30.9	28.8	22.1	10.5
23:45 - 00:00	38.6	53.6	36.0	46.7	39.9	36.5	33.5	34.6	29.6	29.1	22.8	10.5
00:00 - 00:15	39.4	61.0	36.0	49.6	44.1	40.6	35.6	34.8	29.0	27.9	21.5	10.4
00:15 - 00:30	37.1	60.5	34.0	46.4	37.9	35.6	32.6	33.5	27.9	26.2	19.9	10.3
00:30 - 00:45	36.3	50.6	34.0	46.2	37.6	33.3	31.0	32.7	27.3	26.7	20.3	10.3
00:45 - 01:00	37.1	54.3	34.0	45.3	40.0	36.9	32.3	33.0	28.4	26.2	19.5	10.2
01:00 - 01:15	38.9	68.9	34.0	45.4	39.6	38.0	34.3	34.1	30.5	29.9	22.9	10.6
01:15 - 01:30	38.5	64.4	35.0	47.3	40.1	37.9	34.4	33.5	29.4	29.5	23.1	10.6
01:30 - 01:45	35.8	53.3	33.0	43.1	37.0	34.3	31.1	31.3	26.9	26.7	20.2	10.2
01:45 - 02:00	35.5	57.8	32.0	44.4	36.3	34.2	31.3	31.3	26.2	25.4	19.1	10.2
02:00 - 02:15	37.2	60.4	32.0	44.9	37.7	36.6	33.1	32.7	27.8	27.5	21.5	10.5
02:15 - 02:30	35.0	53.3	32.0	43.4	36.1	32.0	30.6	30.7	26.1	25.9	19.6	10.2
02:30 - 02:45	34.0	50.0	31.0	42.8	36.4	32.7	29.6	29.5	24.7	24.6	18.3	10.2
02:45 - 03:00	36.3	57.4	32.0	44.1	37.2	35.7	31.9	31.9	27.0	26.9	20.5	10.3
03:00 - 03:15	33.9	55.7	31.0	42.4	35.4	32.1	29.0	29.4	25.1	25.2	18.8	10.2
03:15 - 03:30	35.6	61.2	31.0	43.3	36.3	34.5	31.1	31.0	26.7	26.5	19.6	10.3
03:30 - 03:45	34.0	53.6	31.0	43.7	36.6	32.6	29.8	29.8	24.5	24.2	17.9	10.1
03:45 - 04:00	33.4	58.8	30.0	42.5	35.2	31.7	29.1	29.3	24.1	23.8	17.4	10.2
04:00 - 04:15	32.1	49.6	30.0	42.3	34.9	29.9	27.9	27.9	22.3	22.6	16.8	10.1
04:15 - 04:30	32.1	52.8	30.0	42.7	35.9	30.1	27.8	28.3	22.1	21.4	15.0	10.1
04:30 - 04:45	33.1	52.0	31.0	44.1	36.0	31.4	29.5	29.0	23.0	23.1	17.1	10.2
04:45 - 05:00	34.8	53.3	33.0	43.3	36.7	31.7	33.6	30.3	23.2	23.7	17.6	10.1
05:00 - 05:15	36.9	53.4	34.0	42.9	35.9	32.0	37.6	31.3	24.0	23.8	17.8	10.2
05:15 - 05:30	37.0	54.8	34.0	43.7	36.1	32.3	37.5	31.7	24.0	23.5	16.9	10.2
05:30 - 05:45	39.7	57.1	35.0	44.4	37.8	35.5	41.5	33.3	25.8	26.3	20.6	10.6
05:45 - 06:00	39.0	57.5	35.0	44.4	37.7	35.3	39.1	33.5	26.1	30.2	22.8	10.6
06:00 - 06:15	40.1	58.9	36.0	45.4	39.1	37.0	38.2	35.1	29.3	31.9	25.0	11.1
06:15 - 06:30	40.5	57.5	38.0	46.5	41.4	42.3	36.8	36.0	29.1	29.7	23.2	11.0
06:30 - 06:45	43.3	69.5	38.0	48.4	42.2	39.5	42.5	36.7	33.4	34.8	30.0	14.3
06:45 - 07:00	41.6	69.4	37.0	47.8	42.4	39.9	36.5	37.1	32.0	34.1	25.2	10.6

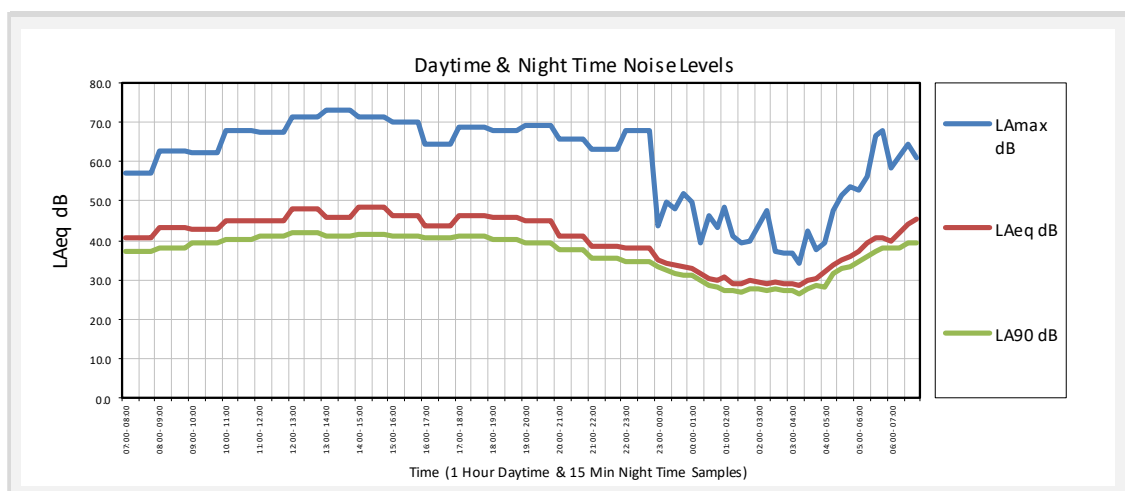


11.3 14th – 15th July 2023 Position 2

NOISE LEVEL SUMMARY ASSESSMENT				Octave Band Centre Frequency (Hz)								
Date / Time	LAeq	LAmx	LA90	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LAeq 16 HOUR & Corresponding LAmx 16 HOUR	44.8	72.9	41.0	53.2	47.0	44.1	41.1	40.3	35.9	34.4	26.4	12.1
NIGHTTIME 23:00 - 07:00 LAeq 8 HOUR & Corresponding LAmx 8 HOUR	37.0	67.7	27.0	45.2	38.6	35.4	34.3	33.0	26.2	26.5	20.8	10.7

DAYTIME NOISE LEVELS 07:00 - 23:00 1 HOUR SAMPLES												
Date / Time	LAeq	LAmx	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
07:00 - 08:00	40.8	57.3	37.0	48.5	43.7	40.7	38.4	36.1	29.3	30.9	24.0	10.8
08:00 - 09:00	43.1	62.7	38.0	50.1	44.8	44.5	41.6	38.0	30.8	31.0	23.9	11.4
09:00 - 10:00	42.8	62.4	39.0	51.0	44.4	41.7	39.7	38.8	32.3	32.0	26.2	11.6
10:00 - 11:00	44.8	68.0	40.0	52.5	44.4	41.9	38.8	39.7	39.6	33.2	27.0	11.8
11:00 - 12:00	45.2	67.4	41.0	54.7	45.6	43.4	41.1	41.0	36.2	34.9	26.9	12.3
12:00 - 13:00	47.9	71.3	42.0	55.3	49.3	45.2	43.7	43.4	39.8	38.6	29.5	12.2
13:00 - 14:00	46.0	72.9	41.0	53.8	45.9	43.4	40.8	41.7	37.8	37.2	27.6	12.1
14:00 - 15:00	48.5	71.5	42.0	56.0	49.8	47.8	44.7	43.6	39.9	38.9	29.5	12.3
15:00 - 16:00	46.2	69.9	41.0	56.7	50.1	45.9	42.2	41.4	36.9	35.6	27.8	11.9
16:00 - 17:00	43.6	64.3	41.0	55.3	47.9	42.3	39.4	39.9	33.7	31.3	24.3	11.1
17:00 - 18:00	46.1	68.9	41.0	53.7	49.4	46.7	42.3	41.4	36.1	35.8	29.0	13.8
18:00 - 19:00	45.7	67.7	40.0	53.2	48.6	45.1	42.9	41.1	35.7	33.8	27.5	16.1
19:00 - 20:00	44.9	69.2	39.0	52.6	47.8	46.4	41.9	40.3	34.5	32.1	24.0	10.9
20:00 - 21:00	40.9	65.9	38.0	49.1	44.0	41.6	37.4	37.2	30.1	26.9	18.9	10.3
21:00 - 22:00	38.6	63.0	36.0	47.3	41.9	38.9	35.0	35.1	27.6	24.7	18.0	10.3
22:00 - 23:00	38.2	67.7	35.0	47.3	40.6	36.8	33.9	34.6	28.7	26.8	15.4	10.1

NIGHT TIME NOISE LEVELS 23:00 - 07:00 15 MINUTE SAMPLES												
Date / Time	LAeq	LAmx	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
23:00 - 23:15	35.0	43.8	33.0	45.8	38.1	33.5	31.2	32.5	22.7	15.6	12.0	10.0
23:15 - 23:30	34.1	49.8	33.0	43.1	36.8	32.9	31.0	31.5	21.4	14.7	11.6	10.0
23:30 - 23:45	34.0	48.1	32.0	45.2	38.1	34.2	30.6	30.8	21.4	15.6	12.2	10.1
23:45 - 00:00	33.5	52.0	31.0	43.6	38.1	33.8	31.0	30.1	20.6	13.5	11.2	10.0
00:00 - 00:15	33.0	49.6	31.0	45.0	38.6	32.5	29.0	29.9	21.0	14.6	11.6	10.0
00:15 - 00:30	31.6	39.6	30.0	43.0	35.8	30.5	28.7	28.7	18.1	13.0	11.1	10.0
00:30 - 00:45	30.2	46.2	29.0	41.9	34.6	29.6	26.7	27.1	17.5	13.7	11.3	10.1
00:45 - 01:00	29.7	43.2	28.0	41.5	34.2	30.5	26.1	26.4	16.7	12.8	11.0	10.0
01:00 - 01:15	30.8	48.4	27.0	42.0	36.0	31.8	27.0	27.2	18.7	13.3	11.0	10.1
01:15 - 01:30	29.1	41.0	27.0	41.1	34.4	29.0	25.2	25.9	16.5	12.6	11.0	10.4
01:30 - 01:45	29.2	39.5	27.0	40.5	34.3	29.9	26.2	25.6	16.2	13.0	11.1	10.1
01:45 - 02:00	29.9	40.0	28.0	40.6	33.7	29.2	27.5	26.5	17.1	13.6	11.2	10.3
02:00 - 02:15	29.5	43.8	28.0	41.7	34.5	29.5	26.5	25.6	16.8	14.9	11.9	10.0
02:15 - 02:30	29.1	47.5	27.0	40.3	33.7	29.0	25.6	25.5	17.4	14.9	11.9	10.3
02:30 - 02:45	29.6	37.2	28.0	41.7	34.2	29.3	26.6	26.1	16.6	13.2	11.2	11.1
02:45 - 03:00	29.0	37.0	27.0	41.1	33.7	29.1	25.6	25.7	16.0	13.1	11.0	10.3
03:00 - 03:15	29.0	37.0	27.0	40.9	34.0	28.9	25.2	25.9	16.1	12.3	11.0	10.0
03:15 - 03:30	28.4	34.1	27.0	41.8	34.4	28.9	24.7	24.9	14.9	11.7	10.8	10.0
03:30 - 03:45	30.1	42.3	28.0	42.1	36.0	30.8	26.7	26.6	17.2	12.5	10.9	10.3
03:45 - 04:00	30.3	37.7	29.0	41.2	34.2	29.9	27.2	27.4	17.2	12.1	11.1	10.0
04:00 - 04:15	32.0	39.3	28.0	42.1	34.4	30.3	29.2	29.5	18.7	11.9	10.7	10.0
04:15 - 04:30	33.8	47.8	32.0	42.5	35.6	32.8	30.8	31.0	21.3	15.1	11.4	10.0
04:30 - 04:45	34.9	51.4	33.0	42.4	35.8	32.4	31.7	32.1	23.3	19.1	13.5	14.7
04:45 - 05:00	36.1	53.5	33.0	42.5	36.5	32.2	31.9	33.3	27.7	20.3	15.5	10.0
05:00 - 05:15	37.1	52.9	35.0	44.2	37.3	33.2	35.2	33.7	27.1	19.7	14.4	10.2
05:15 - 05:30	39.2	56.3	36.0	44.1	38.3	36.8	38.3	35.0	26.9	26.3	21.6	10.5
05:30 - 05:45	40.9	66.7	37.0	45.0	39.3	37.0	36.9	36.5	32.5	32.1	27.2	13.0
05:45 - 06:00	40.9	67.7	38.0	48.6	40.9	37.5	37.9	36.7	28.9	32.6	28.4	12.8
06:00 - 06:15	39.7	58.2	38.0	46.0	39.0	35.9	36.1	37.0	28.0	29.0	21.7	10.4
06:15 - 06:30	42.0	61.6	38.0	49.3	43.9	40.2	39.3	37.6	32.0	30.9	25.0	11.5
06:30 - 06:45	44.2	64.6	40.0	52.7	44.0	41.0	40.2	38.8	35.1	37.2	30.5	11.6
06:45 - 07:00	45.4	61.0	40.0	52.3	47.0	45.3	44.0	40.7	32.9	33.5	27.0	10.5

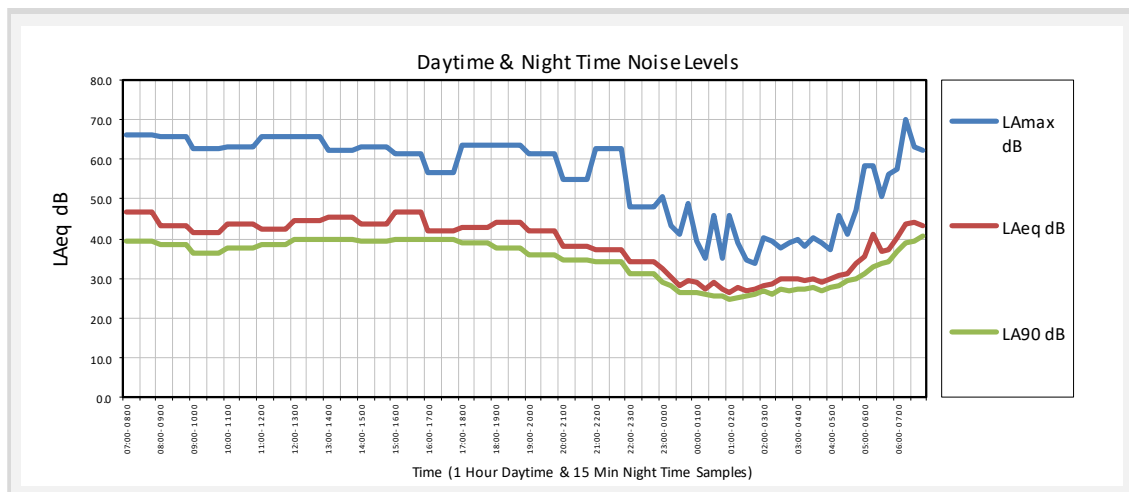


11.4 15th – 16th July 2023 Position 2

NOISE LEVEL SUMMARY ASSESSMENT						Octave Band Centre Frequency (Hz)						
Date / Time	LAeq	LAmaz	LA90	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LAeq 16 HOUR & Cor r esponding LAmaz 16 HOUR	43.4	66.1	39.0	54.1	49.5	42.7	40.0	38.6	33.6	32.9	27.1	13.3
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Cor r esponding LAmaz 8 HOUR	36.1	69.9	26.0	48.0	38.8	35.0	33.9	31.0	25.7	26.4	19.9	10.6

DAYTIME NOISE LEVELS 07:00 - 23:00 1 HOUR SAMPLES												
Date / Time	LAeq	LAmaz	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
07:00 - 08:00	46.6	66.1	39.0	56.9	59.0	44.9	40.7	40.5	35.7	36.4	31.5	10.9
08:00 - 09:00	43.5	65.8	39.0	55.3	45.1	42.4	40.3	38.7	33.6	34.0	26.9	11.2
09:00 - 10:00	41.5	62.8	36.0	53.2	44.7	41.7	39.0	37.1	30.9	28.4	21.3	11.0
10:00 - 11:00	43.7	63.1	38.0	53.4	45.9	45.5	41.2	39.3	31.6	29.2	22.0	11.1
11:00 - 12:00	42.5	65.9	39.0	53.3	44.4	40.8	38.6	38.4	33.1	31.4	24.6	12.6
12:00 - 13:00	44.8	65.7	40.0	54.4	47.2	43.2	40.5	40.1	36.0	35.1	28.9	15.7
13:00 - 14:00	45.6	62.3	40.0	55.5	50.1	46.2	42.5	40.5	36.1	34.3	28.2	14.6
14:00 - 15:00	43.8	63.3	39.0	54.9	47.4	43.3	41.8	39.1	33.3	30.6	24.2	11.4
15:00 - 16:00	46.9	61.4	40.0	54.6	46.9	43.6	41.9	40.5	38.4	40.6	35.3	20.6
16:00 - 17:00	42.1	56.8	40.0	53.8	43.6	40.1	38.5	38.8	31.7	29.2	22.9	11.3
17:00 - 18:00	42.7	63.8	39.0	56.9	50.6	41.5	38.4	38.7	31.6	28.1	21.5	10.8
18:00 - 19:00	44.2	63.7	38.0	53.4	46.4	45.2	43.0	39.6	31.4	25.9	19.5	10.7
19:00 - 20:00	42.1	61.3	36.0	53.8	44.1	39.0	39.7	36.9	34.9	27.0	21.3	10.5
20:00 - 21:00	38.1	55.1	34.0	51.3	42.0	38.7	35.3	34.1	26.8	23.5	17.3	10.2
21:00 - 22:00	37.1	62.6	34.0	49.2	43.3	37.0	32.7	33.6	25.7	21.4	16.6	10.1
22:00 - 23:00	34.2	47.9	31.0	44.4	39.2	36.1	29.8	30.9	22.1	14.1	11.2	10.0

NIGHT TIME NOISE LEVELS 23:00 - 07:00 15 MINUTE SAMPLES												
Date / Time	LAeq	LAmaz	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
23:00 - 23:15	32.3	50.7	29.0	44.5	37.2	33.4	27.7	28.8	20.6	17.1	11.5	10.2
23:15 - 23:30	30.2	43.3	28.0	39.4	33.5	30.6	26.7	27.1	19.5	12.7	10.9	10.0
23:30 - 23:45	28.3	41.1	26.0	39.1	32.9	29.5	24.2	24.7	16.6	12.6	11.1	11.9
23:45 - 00:00	29.6	49.0	27.0	39.1	33.1	30.4	28.2	25.0	16.3	13.6	11.7	10.3
00:00 - 00:15	28.9	39.5	27.0	40.7	35.3	31.7	25.5	24.6	14.3	12.2	10.8	10.3
00:15 - 00:30	27.3	35.0	26.0	43.2	33.2	29.4	23.4	23.0	14.1	11.8	10.7	10.3
00:30 - 00:45	28.9	45.8	26.0	46.3	34.3	31.5	24.4	24.4	16.3	14.0	11.3	10.2
00:45 - 01:00	27.2	35.0	26.0	45.3	33.8	30.0	23.2	22.2	12.9	11.9	10.8	10.8
01:00 - 01:15	26.6	46.0	25.0	43.3	32.8	28.9	22.5	21.8	13.1	11.8	10.7	10.3
01:15 - 01:30	27.6	39.1	25.0	43.3	35.4	31.2	23.8	22.0	12.8	11.8	10.7	10.5
01:30 - 01:45	26.8	34.7	26.0	44.3	34.6	29.2	22.4	21.7	13.1	11.7	10.7	10.0
01:45 - 02:00	27.4	33.9	26.0	46.2	36.1	29.8	22.6	22.0	13.5	11.9	10.7	10.2
02:00 - 02:15	28.1	40.4	27.0	46.9	36.2	29.9	24.4	22.9	13.2	11.8	10.7	10.5
02:15 - 02:30	28.7	39.2	26.0	46.7	36.2	29.6	25.3	24.6	13.1	11.8	10.7	10.1
02:30 - 02:45	29.8	37.5	27.0	48.1	35.5	29.7	26.2	26.5	13.7	11.9	10.7	10.0
02:45 - 03:00	30.1	39.1	27.0	49.1	36.1	30.0	26.4	26.7	14.2	11.8	10.7	11.9
03:00 - 03:15	29.8	39.7	28.0	47.8	36.5	30.2	26.4	26.1	13.8	11.7	10.7	10.0
03:15 - 03:30	29.4	38.2	27.0	47.9	36.2	29.8	25.6	25.7	13.9	12.0	10.7	10.5
03:30 - 03:45	29.8	40.2	28.0	48.2	36.0	31.1	26.5	25.9	14.1	12.1	10.8	10.0
03:45 - 04:00	29.1	39.1	27.0	47.2	36.4	29.8	25.5	25.0	14.2	12.2	10.8	10.0
04:00 - 04:15	30.1	37.2	28.0	47.3	36.0	30.2	26.5	26.7	15.3	11.9	10.7	10.0
04:15 - 04:30	30.9	45.7	28.0	47.7	36.8	32.2	27.0	26.4	19.2	16.8	13.9	10.0
04:30 - 04:45	31.1	41.1	29.0	49.9	36.1	30.7	26.7	26.2	17.8	20.6	18.8	10.0
04:45 - 05:00	33.6	47.2	30.0	49.8	37.9	37.1	30.8	28.4	19.9	17.7	13.8	10.0
05:00 - 05:15	35.6	58.5	31.0	49.6	38.0	32.7	34.0	30.8	25.3	23.2	17.1	10.3
05:15 - 05:30	41.2	58.3	33.0	47.9	37.5	33.7	44.0	30.8	20.3	19.5	14.6	10.1
05:30 - 05:45	36.7	50.7	34.0	48.3	39.8	36.1	34.1	31.7	21.7	28.3	22.1	10.1
05:45 - 06:00	37.2	56.3	34.0	49.5	41.8	35.4	33.8	33.4	26.4	25.0	18.5	10.3
06:00 - 06:15	40.4	57.7	37.0	49.4	41.8	38.5	37.4	35.4	27.8	33.4	22.8	10.9
06:15 - 06:30	43.9	69.9	39.0	50.8	44.8	42.5	40.2	38.5	33.9	36.7	30.0	13.6
06:30 - 06:45	44.3	63.2	39.0	52.2	44.5	41.1	40.0	38.7	37.6	35.7	29.5	12.4
06:45 - 07:00	43.1	62.4	41.0	54.2	46.4	43.0	39.9	38.8	30.9	32.1	25.2	11.1

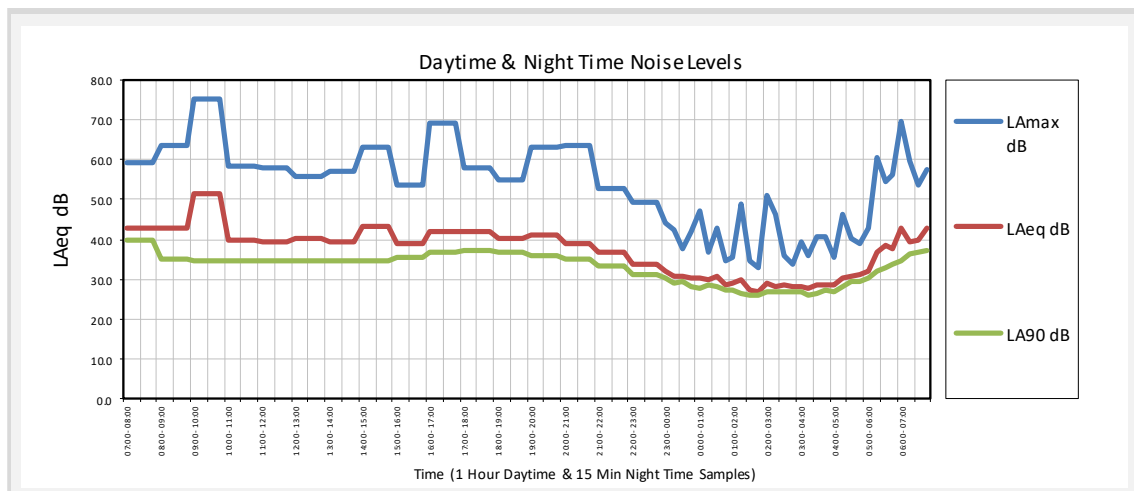


11.5 14th – 15th July 2023 Position 3

NOISE LEVEL SUMMARY ASSESSMENT				Octave Band Centre Frequency (Hz)								
Date / Time	LAeq	LAmx	LA90	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LAeq 16 HOUR & Corresponding LAmx 16 HOUR	42.9	75.1	35.0	53.3	47.7	42.4	39.7	38.1	34.0	30.4	22.9	11.0
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Corresponding LAmx 8 HOUR	34.8	69.6	27.0	44.6	38.1	33.3	31.5	29.4	23.5	27.2	21.1	10.5

DAYTIME NOISE LEVELS 07:00 - 23:00 1 HOUR SAMPLES												
Date / Time	LAeq	LAmx	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
07:00 - 08:00	42.8	59.1	40.0	53.1	45.4	42.2	39.4	39.1	31.7	30.1	22.6	10.6
08:00 - 09:00	43.1	63.7	35.0	58.1	54.1	43.9	38.9	36.3	30.7	29.4	22.6	11.2
09:00 - 10:00	51.3	75.1	35.0	54.5	53.3	49.3	47.5	46.6	44.3	40.0	31.7	12.5
10:00 - 11:00	39.7	58.3	35.0	54.0	43.7	39.2	36.1	34.8	30.2	28.8	21.8	11.2
11:00 - 12:00	39.6	57.9	35.0	52.9	43.5	40.3	37.0	34.7	28.3	26.7	19.9	11.1
12:00 - 13:00	40.2	55.7	35.0	52.5	44.6	41.4	38.2	34.8	28.5	27.2	21.0	10.9
13:00 - 14:00	39.5	57.2	35.0	53.5	43.7	39.7	36.5	34.9	29.1	26.0	19.7	11.0
14:00 - 15:00	43.1	63.0	35.0	51.8	47.1	45.4	42.1	36.8	31.2	26.4	20.2	11.1
15:00 - 16:00	39.1	53.7	36.0	54.0	43.2	39.3	35.9	34.9	27.9	24.4	18.0	10.8
16:00 - 17:00	41.9	69.0	37.0	53.3	47.1	42.1	39.1	37.2	30.5	29.2	22.0	11.0
17:00 - 18:00	42.0	57.8	37.0	53.2	49.4	41.8	39.4	37.5	29.8	26.8	19.7	10.9
18:00 - 19:00	40.5	55.1	37.0	53.5	46.6	39.1	36.7	36.8	29.5	26.4	19.5	10.6
19:00 - 20:00	41.1	63.3	36.0	52.1	46.1	40.5	39.6	35.7	31.4	27.0	22.9	10.5
20:00 - 21:00	38.9	63.7	35.0	50.4	41.8	37.7	35.0	35.6	27.9	26.4	20.0	11.1
21:00 - 22:00	36.8	52.6	33.0	49.1	40.8	36.6	33.2	33.4	25.8	19.9	13.9	10.1
22:00 - 23:00	33.6	49.2	31.0	47.2	37.8	33.3	29.5	30.5	22.4	17.4	12.9	10.1

NIGHT TIME NOISE LEVELS 23:00 - 07:00 15 MINUTE SAMPLES												
Date / Time	LAeq	LAmx	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
23:00 - 23:15	32.2	44.1	30.0	43.9	36.7	32.5	28.2	29.0	20.2	15.1	11.9	10.1
23:15 - 23:30	30.9	42.3	29.0	40.9	35.1	31.4	26.9	27.4	19.6	17.9	13.6	10.1
23:30 - 23:45	30.9	37.8	29.0	41.0	35.3	31.5	27.3	27.4	18.8	16.9	12.9	10.1
23:45 - 00:00	30.2	41.9	28.0	43.0	36.4	31.2	26.3	26.3	17.7	15.3	12.1	10.1
00:00 - 00:15	30.4	47.2	28.0	44.3	36.1	31.1	26.5	26.4	18.1	15.4	12.5	10.1
00:15 - 00:30	30.1	36.7	29.0	41.2	34.8	30.7	26.6	26.5	17.6	15.3	12.1	10.1
00:30 - 00:45	30.7	43.0	28.0	43.1	36.0	32.0	27.0	26.4	20.0	16.8	12.5	10.1
00:45 - 01:00	28.7	34.8	27.0	41.1	34.2	30.3	25.5	24.6	15.6	13.6	11.3	10.3
01:00 - 01:15	28.9	35.6	27.0	40.6	34.8	30.7	25.7	24.5	15.4	13.6	11.3	10.2
01:15 - 01:30	29.8	49.1	27.0	39.9	33.9	30.2	26.7	25.7	18.5	15.7	12.1	11.0
01:30 - 01:45	27.5	34.7	26.0	38.4	33.0	29.6	24.0	23.0	14.7	12.6	10.9	10.7
01:45 - 02:00	27.0	32.8	26.0	39.5	33.2	28.9	23.7	22.4	13.4	12.9	11.1	10.8
02:00 - 02:15	29.0	50.9	27.0	40.7	33.9	30.0	27.3	24.3	14.9	13.0	11.0	10.5
02:15 - 02:30	28.3	46.1	27.0	40.4	33.9	29.6	25.6	24.1	14.8	13.5	11.3	10.3
02:30 - 02:45	28.5	35.8	27.0	39.9	34.1	30.5	25.8	24.0	14.6	13.1	11.1	10.1
02:45 - 03:00	28.2	34.0	27.0	40.3	34.0	30.0	25.2	23.9	14.3	13.3	11.2	10.4
03:00 - 03:15	28.2	39.3	27.0	39.8	33.7	29.9	25.1	24.1	14.5	13.4	11.3	10.2
03:15 - 03:30	27.7	35.8	26.0	39.6	33.7	29.7	24.7	23.1	13.8	12.5	11.0	11.6
03:30 - 03:45	28.5	40.6	27.0	40.8	34.3	29.9	25.1	24.4	15.7	13.5	11.3	10.1
03:45 - 04:00	28.8	40.8	27.0	40.9	33.9	30.0	25.9	24.9	14.6	12.6	11.3	10.3
04:00 - 04:15	28.4	35.4	27.0	41.4	34.4	29.9	25.0	24.2	14.9	13.7	11.4	10.1
04:15 - 04:30	30.3	46.5	28.0	41.3	35.0	32.0	27.0	26.3	17.7	15.4	12.1	10.1
04:30 - 04:45	30.7	40.1	29.0	43.9	36.0	31.5	27.2	27.1	17.9	14.8	12.1	10.1
04:45 - 05:00	31.1	38.9	29.0	42.0	35.1	31.0	28.0	27.7	18.1	16.2	12.8	10.1
05:00 - 05:15	32.1	42.8	31.0	42.5	35.1	31.4	29.8	28.8	18.7	16.0	12.4	10.1
05:15 - 05:30	36.6	60.6	32.0	42.1	35.4	31.8	36.5	29.7	25.0	27.8	20.5	10.1
05:30 - 05:45	38.4	54.3	33.0	45.3	38.0	34.3	37.2	32.0	27.8	30.6	23.9	10.3
05:45 - 06:00	37.5	56.2	34.0	44.7	38.3	35.1	34.6	32.5	29.3	27.2	21.3	10.3
06:00 - 06:15	42.9	69.6	35.0	47.0	39.6	35.3	35.8	33.4	31.2	39.3	34.0	12.1
06:15 - 06:30	39.6	59.5	36.0	49.2	42.9	38.6	36.2	34.9	27.1	31.6	23.6	10.6
06:30 - 06:45	39.8	53.8	37.0	51.7	43.0	37.9	35.5	36.0	30.5	28.8	22.0	12.0
06:45 - 07:00	42.7	57.4	37.0	53.4	48.2	41.7	39.8	37.0	30.8	34.9	25.8	10.3

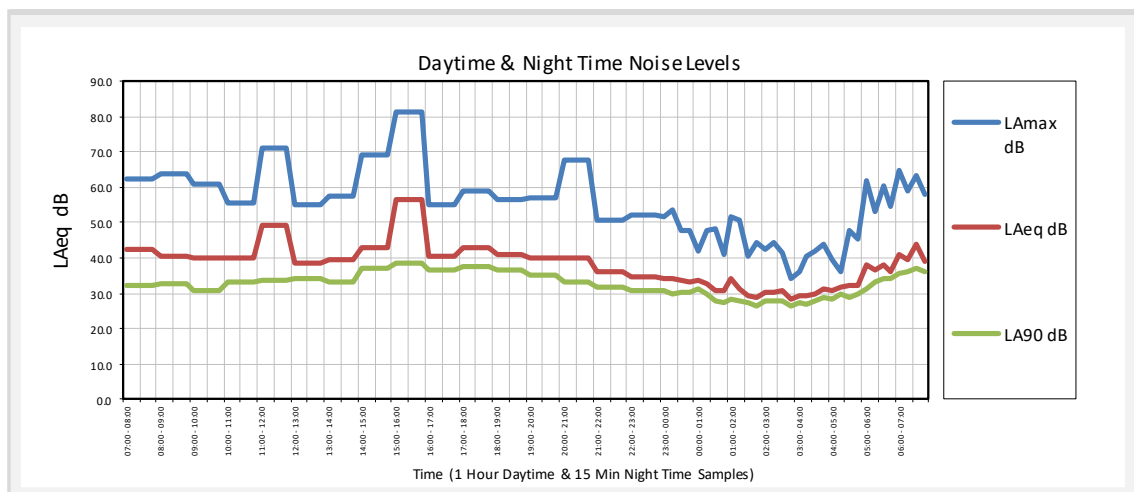


11.6 15th – 16th July 2023 Position 3

NOISE LEVEL SUMMARY ASSESSMENT				Octave Band Centre Frequency (Hz)								
Date / Time	LAeq	LAmx	LA90	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LAeq 16 HOUR & Corresponding LAmx 16 HOUR	46.3	81.1	33.0	53.4	49.7	45.0	43.0	41.1	38.6	35.2	26.9	12.1
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Corresponding LAmx 8 HOUR	35.4	64.8	28.0	44.3	37.9	35.6	33.1	31.2	24.9	20.3	14.2	10.5

DAYTIME NOISE LEVELS 07:00 - 23:00 1 HOUR SAMPLES												
Date / Time	LAeq	LAmx	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
07:00 - 08:00	42.3	62.2	32.0	56.2	56.6	410	37.5	33.4	29.2	29.6	23.3	10.8
08:00 - 09:00	40.3	63.8	33.0	52.1	44.1	415	38.7	34.4	29.0	27.1	21.3	10.7
09:00 - 10:00	39.9	60.8	31.0	52.1	45.2	40.5	39.3	33.0	27.9	25.1	19.7	11.2
10:00 - 11:00	40.1	55.7	33.0	50.5	45.4	39.9	39.4	34.0	28.8	27.4	19.7	10.8
11:00 - 12:00	49.0	71.2	34.0	58.5	53.2	50.6	48.7	42.4	35.6	30.3	23.8	11.0
12:00 - 13:00	38.6	54.9	34.0	51.2	41.5	38.0	36.7	34.1	27.7	23.8	17.4	11.0
13:00 - 14:00	39.3	57.4	33.0	54.0	42.9	39.9	36.8	34.7	28.6	25.4	18.9	10.7
14:00 - 15:00	43.1	69.0	37.0	52.9	47.4	43.7	40.5	37.8	32.0	31.8	28.5	17.5
15:00 - 16:00	56.5	81.1	38.0	56.2	56.0	53.5	52.0	51.6	50.0	46.5	37.5	16.1
16:00 - 17:00	40.6	55.0	36.0	52.8	45.4	414	38.2	36.2	29.4	25.0	18.7	10.8
17:00 - 18:00	42.7	59.0	38.0	53.8	50.3	43.1	40.3	38.0	30.7	26.2	19.5	10.9
18:00 - 19:00	40.8	56.4	36.0	51.7	46.1	42.4	37.6	36.4	29.5	25.5	19.6	10.8
19:00 - 20:00	39.7	57.1	35.0	51.4	43.5	39.4	37.8	35.2	29.2	23.7	17.6	10.4
20:00 - 21:00	40.1	67.7	33.0	48.9	44.2	40.4	36.6	34.5	31.4	29.5	23.5	10.7
21:00 - 22:00	36.0	50.7	32.0	47.9	41.1	37.6	33.1	31.8	24.1	17.4	12.3	10.1
22:00 - 23:00	34.7	52.3	31.0	48.9	38.8	34.8	30.8	31.1	23.8	18.0	13.9	10.1

NIGHT TIME NOISE LEVELS 23:00 - 07:00 15 MINUTE SAMPLES												
Date / Time	LAeq	LAmx	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
23:00 - 23:15	34.1	51.7	31.0	47.4	37.8	33.3	30.8	30.7	23.3	17.0	12.3	10.0
23:15 - 23:30	33.9	53.6	30.0	51.8	38.6	33.1	30.3	30.2	22.2	16.2	12.0	10.0
23:30 - 23:45	33.8	47.9	30.0	43.9	37.9	37.7	30.1	29.3	19.8	12.9	11.0	10.0
23:45 - 00:00	33.2	47.9	30.0	44.4	37.8	35.2	30.0	29.4	20.2	15.2	11.5	10.0
00:00 - 00:15	33.5	41.7	31.0	45.1	37.9	33.6	31.0	30.4	18.8	13.4	10.9	10.1
00:15 - 00:30	32.7	47.6	30.0	44.0	37.1	33.8	29.7	29.4	18.9	12.9	10.9	10.1
00:30 - 00:45	30.7	48.3	28.0	40.3	35.0	31.0	28.1	27.2	17.0	12.4	10.8	10.7
00:45 - 01:00	30.5	40.9	27.0	41.8	36.6	34.1	27.5	25.2	15.8	12.2	10.9	10.0
01:00 - 01:15	34.1	51.8	28.0	43.5	39.6	40.0	30.1	26.3	17.3	12.1	10.7	12.4
01:15 - 01:30	31.2	50.5	28.0	43.3	37.7	30.8	27.7	27.4	19.9	14.9	11.3	10.0
01:30 - 01:45	29.2	40.2	27.0	39.0	33.4	29.4	26.3	25.8	16.0	12.2	10.7	10.0
01:45 - 02:00	28.8	44.4	27.0	39.3	33.1	29.6	25.5	25.1	16.6	12.8	10.9	10.0
02:00 - 02:15	30.3	42.3	28.0	39.7	33.8	30.0	27.7	27.0	17.1	12.3	10.8	10.0
02:15 - 02:30	30.1	44.2	28.0	38.7	33.2	29.7	27.1	27.1	16.7	12.4	10.8	10.0
02:30 - 02:45	30.5	41.5	28.0	40.0	34.1	30.0	27.5	27.3	18.3	13.1	10.9	10.0
02:45 - 03:00	28.1	34.1	26.0	37.5	32.4	28.8	25.0	24.6	15.0	12.0	10.8	10.0
03:00 - 03:15	29.2	35.9	27.0	37.9	33.3	29.2	26.0	26.2	15.6	12.0	10.7	10.0
03:15 - 03:30	29.2	40.6	27.0	38.3	33.2	31.2	26.1	25.5	15.7	12.1	10.9	10.1
03:30 - 03:45	30.0	41.7	28.0	38.5	33.1	29.6	27.2	27.0	16.3	12.2	10.8	10.0
03:45 - 04:00	31.0	43.9	29.0	41.2	34.9	32.5	29.0	27.1	16.5	12.3	10.9	10.2
04:00 - 04:15	30.5	39.3	28.0	39.6	33.6	29.8	27.7	27.6	17.0	12.1	10.9	14.6
04:15 - 04:30	31.6	36.1	30.0	40.7	34.5	31.0	28.9	28.9	17.0	12.0	10.7	10.1
04:30 - 04:45	32.1	47.5	29.0	40.0	36.2	36.3	29.4	27.3	16.1	12.2	10.8	10.0
04:45 - 05:00	32.4	45.2	30.0	40.6	35.9	35.1	29.5	28.5	17.7	14.7	12.0	10.0
05:00 - 05:15	38.1	61.6	31.0	41.6	37.1	34.1	31.6	35.0	28.9	28.5	16.5	10.1
05:15 - 05:30	36.8	53.0	33.0	41.1	34.8	32.4	38.1	31.3	21.1	19.8	13.8	10.2
05:30 - 05:45	38.0	60.5	34.0	45.0	40.7	37.4	35.6	34.1	27.5	24.3	17.3	10.3
05:45 - 06:00	36.3	54.3	34.0	44.5	37.9	34.4	36.0	32.1	22.4	21.2	16.0	10.2
06:00 - 06:15	40.8	64.8	35.0	49.8	40.5	36.4	36.1	35.3	36.2	26.1	21.1	10.5
06:15 - 06:30	39.6	59.0	36.0	46.7	40.3	37.9	35.8	36.4	29.9	26.9	19.3	10.4
06:30 - 06:45	43.7	63.1	37.0	48.9	46.0	44.9	43.1	38.8	29.3	24.2	17.0	10.2
06:45 - 07:00	39.2	57.8	36.0	47.3	42.1	39.6	36.3	35.2	27.3	27.3	20.7	10.6

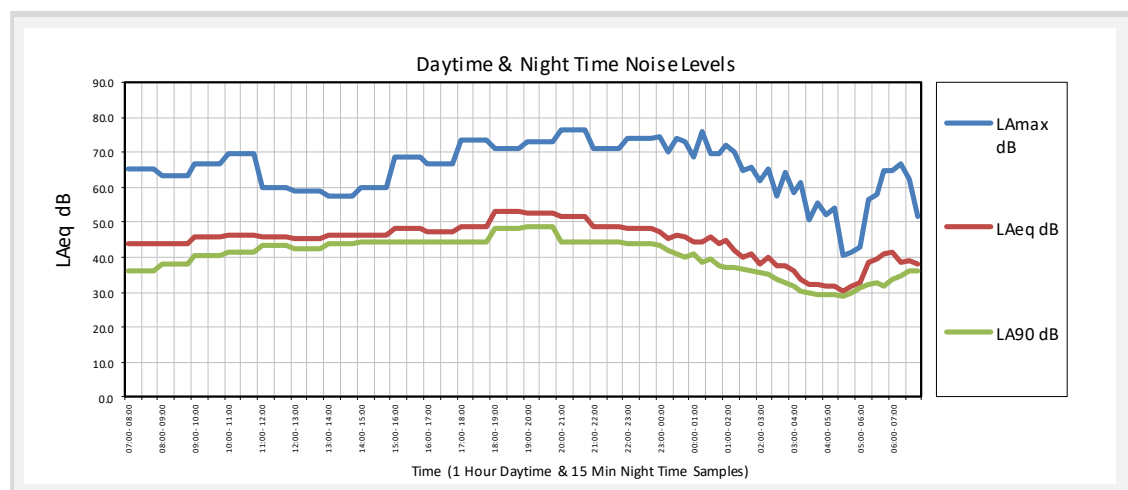


11.7 14th – 15th July 2023 Position 4

NOISE LEVEL SUMMARY ASSESSMENT						Octave Band Centre Frequency (Hz)						
Date / Time	LAeq	LAMax	LA90	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LAeq 16 HOUR & Cor r espondi ng LAMax 16 HOUR	48.5	76.3	44.0	54.0	47.0	45.6	44.8	43.0	40.3	40.2	33.6	18.5
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Cor r espondi ng LAMax 8 HOUR	41.5	75.8	36.0	46.4	39.3	36.5	35.2	35.3	34.6	35.0	26.4	12.4

DAYTIME NOISE LEVELS 07:00 - 23:00 1 HOUR SAMPLES												
Date / Time	L _{Aeq}	L _{Amax}	L _{A90}	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
07:00 - 08:00	43.9	65.3	36.0	50.5	46.1	46.3	43.5	37.5	29.5	29.4	21.7	10.7
08:00 - 09:00	43.9	63.3	38.0	55.7	45.8	42.4	40.3	39.0	34.9	33.5	27.5	11.7
09:00 - 10:00	45.6	66.9	41.0	53.0	45.6	43.6	42.6	40.8	35.7	36.4	30.9	11.8
10:00 - 11:00	46.4	69.8	41.0	54.0	45.9	43.9	41.8	41.8	38.0	37.4	31.2	13.4
11:00 - 12:00	45.8	59.9	43.0	54.2	45.6	42.7	40.4	41.5	37.4	37.1	31.8	17.3
12:00 - 13:00	45.2	58.7	43.0	53.7	45.7	43.1	40.3	41.4	36.2	35.5	29.6	14.7
13:00 - 14:00	46.4	57.7	44.0	54.2	45.4	43.5	40.9	42.4	38.0	37.2	31.1	17.0
14:00 - 15:00	46.4	60.0	44.0	54.2	44.5	41.6	40.0	42.2	38.6	38.1	32.3	17.6
15:00 - 16:00	48.0	68.5	45.0	54.1	46.8	46.9	44.1	42.9	39.6	39.3	33.4	18.7
16:00 - 17:00	47.2	66.5	44.0	53.8	45.3	43.4	41.5	42.7	39.2	39.1	33.1	18.0
17:00 - 18:00	48.5	73.3	44.0	54.4	47.5	46.4	44.5	43.7	40.5	39.2	32.0	15.3
18:00 - 19:00	53.0	71.1	48.0	55.8	51.3	49.9	50.1	47.3	44.8	44.1	37.3	21.1
19:00 - 20:00	52.5	72.9	49.0	53.4	49.2	47.9	48.7	45.7	44.8	45.4	39.4	25.6
20:00 - 21:00	51.5	76.3	44.0	53.9	48.9	48.8	49.8	45.9	42.6	41.8	33.1	16.7
21:00 - 22:00	48.6	70.9	44.0	53.1	47.4	45.7	43.7	41.9	41.1	41.9	35.1	19.0
22:00 - 23:00	48.3	74.1	44.0	53.1	44.2	41.6	40.2	40.9	41.8	42.6	34.7	19.3

NIGHT TIME NOISE LEVELS 23:00 - 07:00 15 MINUTE SAMPLES												
Date / Time	L _{Aeq}	L _{Amax}	L _{A90}	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
23:00 - 23:15	47.1	74.3	43.0	50.6	43.8	41.8	39.8	40.1	40.4	41.2	33.1	17.3
23:15 - 23:30	45.1	69.9	42.0	48.7	41.3	39.1	37.8	38.8	38.1	38.9	31.5	16.4
23:30 - 23:45	46.5	73.8	41.0	50.8	42.2	40.6	38.4	39.7	40.0	40.7	30.9	14.7
23:45 - 00:00	45.7	73.1	40.0	48.3	41.4	39.8	37.8	38.6	39.1	40.0	30.9	15.4
00:00 - 00:15	44.2	68.5	41.0	48.0	42.0	40.6	37.3	37.7	37.1	38.0	31.0	16.2
00:15 - 00:30	44.2	75.8	38.0	47.2	40.0	37.5	36.3	37.3	37.8	38.4	27.2	12.6
00:30 - 00:45	45.7	69.5	39.0	49.2	41.9	39.9	38.5	39.1	39.1	39.6	29.7	13.4
00:45 - 01:00	43.6	69.6	38.0	47.2	40.4	38.1	36.5	37.3	36.9	37.4	26.6	12.3
01:00 - 01:15	45.0	71.9	37.0	49.8	42.2	39.3	37.8	38.3	38.4	39.0	27.7	12.5
01:15 - 01:30	41.8	69.9	37.0	50.8	40.6	37.9	35.0	35.4	34.7	35.4	26.1	12.0
01:30 - 01:45	39.8	64.6	37.0	44.3	37.7	35.3	34.0	34.2	32.2	32.9	25.8	11.9
01:45 - 02:00	40.7	65.8	36.0	46.4	38.6	36.1	34.6	35.0	33.4	34.0	26.3	12.1
02:00 - 02:15	37.8	61.6	36.0	43.4	37.2	34.0	32.6	32.5	29.9	30.2	23.6	11.4
02:15 - 02:30	39.8	65.3	35.0	44.0	38.0	35.1	33.8	34.1	32.5	32.9	24.5	11.7
02:30 - 02:45	37.7	57.3	34.0	43.7	41.0	35.2	32.4	32.0	29.7	30.2	22.9	11.0
02:45 - 03:00	37.5	64.3	33.0	41.7	35.6	33.1	31.7	32.1	30.2	30.4	21.2	10.9
03:00 - 03:15	35.9	58.6	32.0	44.1	36.1	33.6	30.9	31.0	28.1	27.4	20.0	10.6
03:15 - 03:30	33.5	61.1	30.0	42.2	34.7	30.5	28.4	29.1	25.2	24.8	18.0	10.6
03:30 - 03:45	32.3	50.7	30.0	41.1	36.0	30.5	27.5	28.0	23.1	22.9	17.2	10.4
03:45 - 04:00	32.2	55.3	30.0	40.9	34.3	30.1	27.5	27.7	23.3	23.4	17.4	10.3
04:00 - 04:15	31.6	52.0	29.0	40.4	34.3	30.3	27.3	27.4	22.2	21.9	16.4	10.3
04:15 - 04:30	31.7	54.1	29.0	40.9	34.8	30.3	27.2	27.9	22.2	21.0	15.6	10.2
04:30 - 04:45	30.4	40.6	29.0	41.7	35.7	29.9	26.1	26.5	20.1	19.8	13.5	10.2
04:45 - 05:00	31.6	41.4	30.0	43.1	36.1	30.2	26.8	27.6	22.0	20.5	15.4	10.2
05:00 - 05:15	32.9	42.9	31.0	43.4	36.5	30.9	30.3	29.1	21.9	20.1	15.3	10.2
05:15 - 05:30	38.3	56.3	32.0	42.5	35.3	30.7	38.8	30.8	28.9	27.7	21.2	10.3
05:30 - 05:45	39.5	57.9	33.0	44.7	36.5	33.1	37.8	31.0	27.5	34.3	29.4	10.6
05:45 - 06:00	40.8	64.7	32.0	43.1	36.4	32.4	33.7	35.9	36.1	28.6	22.6	10.5
06:00 - 06:15	41.3	64.7	34.0	47.2	40.3	36.3	34.2	36.6	36.1	29.2	23.0	11.1
06:15 - 06:30	38.4	66.7	35.0	46.1	38.5	35.4	34.3	34.2	29.3	29.4	23.8	10.6
06:30 - 06:45	39.1	62.4	36.0	45.7	40.5	36.5	35.1	35.2	29.3	29.7	23.1	10.6
06:45 - 07:00	37.9	51.5	36.0	46.5	39.8	34.8	34.6	34.6	27.0	25.9	20.9	10.3

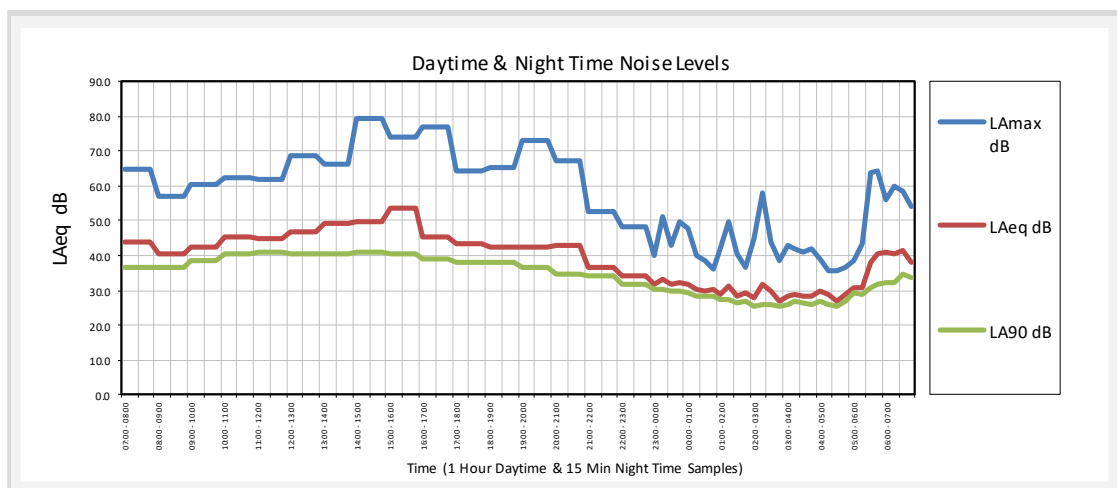


11.8 15th – 16th July 2023 Position 4

NOISE LEVEL SUMMARY ASSESSMENT				Octave Band Centre Frequency (Hz)								
Date / Time	L _{Aeq}	L _{Amax}	L _{A90}	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 L_{Aeq} 16 HOUR & Corresponding L_{Amax} 16 HOUR	46.3	79.3	41.0	53.1	45.6	43.2	42.0	40.1	36.5	39.5	36.5	23.2
NIGHTTIME 23:00 - 07:00 L_{Aeq} 8 HOUR & Corresponding L_{Amax} 8 HOUR	34.3	64.1	26.0	43.6	37.1	33.2	32.9	29.3	24.5	20.3	15.2	13.3

DAYTIME NOISE LEVELS 07:00 - 23:00 1 HOUR SAMPLES												
Date / Time	L _{Aeq}	L _{Amax}	L _{A90}	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
07:00 - 08:00	44.0	64.7	36.0	50.0	44.3	44.7	44.5	38.0	31.1	27.7	21.7	10.7
08:00 - 09:00	40.4	57.1	37.0	48.9	45.4	39.4	37.2	35.9	29.9	28.7	23.1	11.6
09:00 - 10:00	42.5	60.5	39.0	52.7	43.3	41.4	39.9	38.3	32.7	29.5	23.0	11.2
10:00 - 11:00	45.3	62.3	41.0	54.6	45.7	43.8	43.6	40.7	34.8	32.5	26.0	12.3
11:00 - 12:00	44.6	61.6	41.0	54.0	44.8	44.1	42.9	40.2	33.9	30.9	24.9	12.3
12:00 - 13:00	47.0	68.8	41.0	54.2	46.0	44.9	44.8	42.4	37.3	36.3	30.5	12.5
13:00 - 14:00	49.0	66.2	40.0	57.3	51.2	47.9	44.4	43.1	40.7	40.7	35.9	15.9
14:00 - 15:00	49.6	79.3	41.0	54.5	46.4	44.8	43.4	44.3	41.0	42.7	39.0	26.1
15:00 - 16:00	53.6	73.8	41.0	53.7	47.0	44.3	42.9	42.6	42.7	49.8	47.5	34.4
16:00 - 17:00	45.5	76.7	39.0	51.8	44.2	42.2	45.2	40.0	33.2	31.0	22.5	11.2
17:00 - 18:00	43.3	64.4	38.0	52.7	44.5	41.5	39.7	39.6	34.5	30.6	21.6	10.7
18:00 - 19:00	42.6	65.0	38.0	51.3	45.3	41.5	39.0	38.5	33.1	31.1	24.2	11.1
19:00 - 20:00	42.4	72.8	37.0	52.7	44.7	42.3	38.4	37.2	33.4	32.2	24.6	11.1
20:00 - 21:00	42.7	67.1	35.0	53.7	44.8	40.3	38.8	38.1	35.2	29.8	21.3	10.5
21:00 - 22:00	36.4	52.3	34.0	49.3	40.2	36.7	32.5	33.2	25.2	20.0	14.6	10.2
22:00 - 23:00	34.2	48.1	32.0	46.5	38.3	33.6	29.7	31.3	23.3	17.3	12.7	10.1

NIGHT TIME NOISE LEVELS 23:00 - 07:00 15 MINUTE SAMPLES												
Date / Time	L _{Aeq}	L _{Amax}	L _{A90}	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
23:00 - 23:15	31.8	39.8	30.0	43.7	36.2	31.2	27.5	29.1	19.7	12.6	11.0	10.1
23:15 - 23:30	33.1	51.3	30.0	44.1	36.8	33.2	29.3	29.8	21.8	16.7	12.8	10.1
23:30 - 23:45	31.8	43.1	30.0	42.4	35.9	32.2	28.2	28.8	19.1	12.9	11.0	10.1
23:45 - 00:00	32.2	49.6	30.0	44.8	35.9	30.6	28.1	29.4	20.8	14.3	11.4	10.1
00:00 - 00:15	31.7	47.5	29.0	42.0	37.3	33.8	28.4	27.8	18.8	12.6	11.0	10.1
00:15 - 00:30	30.1	39.9	29.0	41.8	35.1	30.0	26.3	27.1	17.4	12.7	11.1	10.4
00:30 - 00:45	29.6	38.4	28.0	40.6	34.7	28.9	26.3	26.6	16.8	12.2	11.0	12.0
00:45 - 01:00	30.1	36.3	28.0	42.4	35.8	31.4	26.4	26.6	16.3	11.9	10.8	10.4
01:00 - 01:15	29.0	41.8	27.0	39.9	34.1	29.2	25.4	25.7	15.7	11.7	10.8	16.3
01:15 - 01:30	31.2	49.8	27.0	42.7	36.6	31.1	28.4	27.3	19.0	14.9	11.6	15.8
01:30 - 01:45	28.4	40.3	26.0	40.2	34.0	28.2	25.1	25.0	14.4	11.8	10.9	13.7
01:45 - 02:00	29.4	36.7	27.0	40.1	34.4	29.6	27.1	25.7	14.9	11.9	11.0	10.8
02:00 - 02:15	27.8	44.8	25.0	39.6	33.0	27.4	25.0	23.8	15.5	11.9	11.0	19.6
02:15 - 02:30	31.7	57.7	26.0	42.5	36.6	32.2	29.1	27.1	21.0	16.2	12.4	18.2
02:30 - 02:45	29.8	43.6	26.0	43.3	39.0	33.9	25.6	23.4	13.3	11.7	10.9	15.1
02:45 - 03:00	27.0	38.5	25.0	40.8	33.8	26.9	22.9	23.4	14.2	11.8	10.9	15.0
03:00 - 03:15	28.3	42.7	26.0	40.5	34.2	27.5	24.9	25.1	14.5	11.8	11.0	17.8
03:15 - 03:30	29.0	41.7	27.0	40.0	33.3	27.9	25.8	26.1	14.8	12.0	11.1	16.7
03:30 - 03:45	28.1	40.8	26.0	40.2	33.9	27.6	24.7	24.8	15.3	12.8	11.2	10.5
03:45 - 04:00	28.2	41.8	26.0	39.4	33.2	27.7	25.2	25.0	14.3	12.3	11.4	10.2
04:00 - 04:15	29.6	39.0	27.0	41.2	34.6	30.0	26.5	26.4	14.7	11.8	10.9	10.1
04:15 - 04:30	28.7	35.6	26.0	39.9	33.5	27.7	25.4	25.8	14.4	11.9	10.9	10.1
04:30 - 04:45	26.7	35.6	26.0	39.0	33.1	27.9	23.1	22.3	14.7	12.6	11.2	10.1
04:45 - 05:00	28.7	36.6	27.0	39.2	34.1	28.9	25.3	24.9	15.5	16.0	12.3	10.1
05:00 - 05:15	30.8	38.6	30.0	42.5	35.8	29.9	27.6	27.5	17.7	15.3	12.6	10.1
05:15 - 05:30	30.9	43.3	29.0	37.3	33.7	28.0	30.1	26.6	17.3	18.8	14.1	10.1
05:30 - 05:45	37.9	63.8	31.0	43.9	35.2	32.3	32.4	32.5	33.2	25.8	19.9	10.5
05:45 - 06:00	40.3	64.1	32.0	43.0	35.7	30.5	39.2	32.2	34.6	29.0	23.6	12.1
06:00 - 06:15	40.8	55.9	32.0	41.2	35.8	33.6	43.1	30.9	21.5	21.8	15.5	10.3
06:15 - 06:30	40.3	59.7	32.0	48.3	40.8	39.2	37.6	35.7	31.1	29.0	23.3	11.3
06:30 - 06:45	41.5	58.5	35.0	51.7	45.9	42.7	40.1	36.7	28.3	23.2	16.3	10.1
06:45 - 07:00	38.1	54.0	34.0	49.2	42.1	38.3	34.4	33.6	27.9	26.8	19.4	10.3



13 APPENDIX D – BS 4142:2019+A1:2019 INFORMATION

In accordance with BS 4142:2014:A1:2019, section 12, the following information is provided.

13.1 Professional Competence

Acoustic Consultant	Mr Brian Scrivener MIOA
Qualifications	Member of the Institute of Acoustics (MIOA)
Date Certified	June 2003
Time Operating as an active Noise Consultant	Permanently Since June 2003
Professional Position	Owner of Sound Advice Acoustics Ltd & Sound Advice Engineering Managing Director & Share Holder
Professional Status	Noise Consultant
Professional Statement	
I have been active within the field of noise consultancy and noise control engineering since I joined the company in April 1997. Working my way through the company and gaining experience in this specialist field, I qualified as a noise consultant in June 2003 when I passed my Diploma in Noise Control & Engineering from Epsom College under the tutor of Dr Latha Vesudevan. Subsequently I was awarded the status of 'Member of the Institute of Acoustics (MIOA)'. Since then I have taken over the company and continued to work and develop my professional competence within the field of acoustic consultancy, engineering and noise control.	

13.2 Site Status

Site Attended By	Mr Brian Scrivener MIOA
Baseline Measurements Conducted by	Mr Brian Scrivener MIOA
Site Source Measurements Conducted By	Mr Brian Scrivener MIOA

13.3 Measurement Information – Location 1

Details & Justification	Measurement position 1 was located at the rear of the existing premises, representative of the Nearest Noise Sensitive Premises
Height from Ground	1.5m
Reflective Surfaces	None (Free Field)
Distance to NSP	2m
Distance to Source	2m
Topographical Change (m)	None
Ground between Source and Receiver	100% Hard surface
Windshield Information	Norsonic Outdoor Microphone Protection Kit Model No: 1212
Distance from Proposed Source to Receiver	2m
NSP* - Noise Sensitive Premises	

END OF REPORT