REPORT REFERENCE:

SA – 7555

ENVIRONMENTAL NOISE IMPACT ASSESSMENT

British Standard 8233: 2014

British Standard 4142: 2014 +A1:2019

CLIENT:

Acheson Construction

SITE:

85 – 89 Brighton Road

Lancing

West Sussex

BN15 8RA

SURVEY DATES:

24th – 29th August 2023

Report By

[redacted]

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1 EXECUTIVE SUMMARY 6
1.1 INSTRUCTION 6
1.2 SCOPE OF REPORT 6
1.3 SUMMARY OF RESULTS 6
1.3.1 Background Noise Levels 6
1.4 POTENTIAL FAÇADE NOISE LEVELS 7
1.4.1 Daytime (07:00-23:00) 7
1.4.2 Night Time (23:00-07:00) 7
1.5 RISK ASSESSMENT 7
1.5.1 Daytime (07:00-23:00) – Position 1 7
1.5.2 Night Time (23:00-07:00) – Position 1 7
1.6 GLAZING & VENTILATION SPECIFICATION 7
1.7 WHO GUIDELINES FOR COMMUNITY NOISE 8
1.8 PROPOSED PLANT CRITERIA 8
1.8.1 Assessments 9
1.9 CONCLUSION 10
2 INTRODUCTION 11
2.1 PLANNING PRACTICE GUIDANCE AND NOISE 11
2.1.1 Professional Practice Guidance on Planning & Noise. 12
2.2 BRITISH STANDARD 8233: 2014 13
2.3 BS 4142: 2014+A1:2019 13
2.4 NATIONAL PLANNING POLICY FRAMEWORK 2021 (NPPF) AND NOISE POLICY STATEMENT FOR ENGLAND 2010 (NPSE). 14
2.4.1 "Significant adverse" and "adverse" 14
2.4.2 NOEL – No Observed Effect Level 14
2.4.3 LOAEL – Lowest Observed Adverse Effect Level 14
2.4.4 SOAEL – Significant Observed Adverse Effect Level 14
2.5 WORLD HEALTH ORGANISATION 'GUIDELINES FOR COMMUNITY NOISE' 14
3 SITE LOCATION 15
3.1 PROPOSED DEVELOPMENT 15
4 PROCEDURE 18
5 APPARATUS 19
5.1 140 NOISE METER S/N 1403140 ENVIRONMENTAL TESTING - POSITION 1 19
5.2 140 NOISE METER S/N 1402941 ENVIRONMENTAL TESTING - POSITION 2 19
6 RESULTS 20
6.1 DOWNLOADED RESULTS, AND AVERAGES. 20
6.1.1 24th – 25th August 2023 - Position 1 20
6.1.2 25th – 26th August 2023 – Position 1 20
6.1.3 26th – 27th August 2023 - Position 1 20
6.1.4 27th – 28th August 2023 - Position 1 20

6.1.5 28th – 29th August 2023 - Position 1 20
6.1.6 24th – 25th August 2023 - Position 2 21
6.1.7 25th – 26th August 2023 – Position 2 21
6.1.8 26th – 27th August 2023 - Position 2 21
6.1.9 27th – 28th August 2023 - Position 2 21
6.1.10 28th – 29th August 2023 - Position 2 21

7 PROPG PLANNING & NOISE STAGE 1 23
7.1 STAGE 1: INITIAL SITE NOISE RISK ASSESSMENT 23
7.2 POTENTIAL FAÇADE NOISE LEVELS 24
7.2.1 Daytime (07:00-23:00) 24
7.2.2 Night Time (23:00-07:00) 24
7.3 RISK ASSESSMENT 24
7.3.1 Daytime (07:00-23:00) – Position 1 24
7.3.2 Night Time (23:00-07:00) – Position 1 24

8 PROPG PLANNING & NOISE STAGE 2 - ELEMENT 1 – GOOD ACOUSTIC DESIGN 25
9 ELEMENT 2 – INTERNAL NOISE LEVEL GUIDELINES 26
9.1 DISCUSSION OF RESULTS 26
9.2 EXISTING NOISE LEVELS – DAYTIME (07:00 – 23:00) 26
9.3 EXISTING NOISE LEVELS – NIGHT TIME (23:00 – 07:00) 26
9.4 PROPOSED NOISE LEVELS – DAYTIME (07:00 – 23:00) 27
9.5 PROPOSED NOISE LEVELS – DAYTIME (07:00 – 23:00) FRONT VIEW 27
9.6 PROPOSED NOISE LEVELS – NIGHT TIME (23:00 – 07:00) 28
9.7 PROPOSED NOISE LEVELS – NIGHT TIME (23:00 – 07:00) FRONT VIEW 28
9.8 RECOMMENDATIONS 29
9.9 CALCULATION PROCEDURE TO BS 8233: 2014 30
9.10 FIRST FLOOR TYPICAL BEDROOM FRONT FACADE 30
9.11 TYPICAL BEDROOM TOP FLOOR FRONT FAÇADE 31
9.12 TYPICAL BEDROOM FIRST FLOOR REAR FAÇADE 32
9.13 TYPICAL BEDROOM TOP FLOOR REAR FAÇADE 33
9.14 GLAZING (R_{WI}) 34
9.15 VENTILATION (DNE) 34
9.16 WALLS (NON-GLAZED ELEMENTS) (R_{EW}) 34
9.17 ROOF (R_{RR}) 34
9.18 GLAZING & VENTILATION ASSESSMENT 35

10 LAMAX DB NOISE LEVEL ASSESSMENT 36
10.1 CRITERIA 36
10.1.1 Night Noise Guidelines Europe 2009 36
10.1.2 Professional Practice Guidance on Planning & Noise. 36
10.1.3 World Health Organisations 'Guidelines for Community Noise'. 37
10.1.4 LAFmax dB Noise Levels – Night Time 23:00 – 07:00 (1 Minute Data) 37

11 ELEMENT 3 – EXTERNAL AMENITY AREA NOISE ASSESSMENT 38
11.1 OUTDOOR LIVING AREAS 38
12 ELEMENT 4 – ASSESSMENT OF OTHER RELEVANT ISSUES 40
12.1 THE NATIONAL PLANNING POLICY FRAMEWORK 2023 (NPPF) 40
13 PLANT CALCULATIONS 41
14 BS4142: 2014 +A1:2019 NOISE ASSESSMENT 43
14.1 SCOPE OF BRITISH STANDARD 4142: 2014 +A1:2019 43
14.2 TERMS AND DEFINITIONS 43
14.3 ASSESSMENT POSITION 43
14.4 CALCULATIONS 43
14.5 EQUIVALENT POSITION 43
14.6 RATING LEVELS (CHARACTER CORRECTION) 44
14.7 SUBJECTIVE METHOD 44
14.8 ASSESSMENT CRITERION 45
14.9 NOISE METER FLOOR 45
14.10 OCTAVE BAND FREQUENCY ANALYSIS 45
14.11 BS 4142: 2014 +A1:2019 PENALTIES 45
14.12 ASSESSMENTS 46
14.12.1 Daytime (07:00 – 23:00) 46
14.12.2 Night Time (23:00 – 07:00) 47
14.13 TONAL PENALTY 48
14.14 IMPULSIVITY PENALTY 48
14.15 ASSESSMENT CONCLUSION 48
15 ACOUSTIC DESIGN STATEMENT 49
16 RECOMMENDATION TO DECISION MAKER 50
17 CONCLUSION 51
17.1.1 Background Noise Levels 51
17.2 POTENTIAL FAÇADE NOISE LEVELS 51
17.2.1 Daytime (07:00-23:00) 51
17.2.2 Night Time (23:00-07:00) 51
17.3 RISK ASSESSMENT 51
17.3.1 Daytime (07:00-23:00) – Position 1 51
17.3.2 Night Time (23:00-07:00) – Position 1 52
17.4 GLAZING & VENTILATION SPECIFICATION 52
17.5 WHO GUIDELINES FOR COMMUNITY NOISE 52
17.6 PROPOSED PLANT CRITERIA 52
17.6.1 Assessments 53
17.7 CONCLUSION 54
18 APPENDIX A – UNCERTAINTY BUDGET 55

18.1 SCOPE 55
18.2 UNCERTAINTY OF MEASURED VALUES 55
18.3 UNCERTAINTY IN CALCULATIONS 56
18.4 UNCERTAINTY FROM OTHER FACTORS 56
18.5 COMBINED REPORTED EXPANDED UNCERTAINTY 56

19 APPENDIX B - RESULTS 57
19.1 24TH – 25TH AUGUST 2023 POSITION 1 57
19.2 25TH – 26TH AUGUST 2023 POSITION 1 58
19.3 26TH – 27TH AUGUST 2023 POSITION 1 59
19.4 27TH – 28TH AUGUST 2023 POSITION 1 60
19.5 28TH – 29TH AUGUST 2023 POSITION 1 61
19.6 24TH – 25TH AUGUST 2023 POSITION 2 62
19.7 25TH – 26TH AUGUST 2023 POSITION 2 63
19.8 26TH – 27TH AUGUST 2023 POSITION 2 64
19.9 27TH – 28TH AUGUST 2023 POSITION 2 65
19.10 28TH – 29TH AUGUST 2023 POSITION 2 66

20 APPENDIX B - LAMAX 1 MINUTE DATA 67
20.1.1 World Health Organisations 'Guidelines For Community Noise'. 67
20.2 RESULTS 67
20.2.1 Professional Practice Guidance on Planning & Noise. 67

21 APPENDIX C - ENVIRONMENTAL CONDITIONS 70

1 EXECUTIVE SUMMARY

1.1 Instruction

Sound Advice Acoustics Ltd have been instructed by Acheson Construction to undertake a background noise survey to British Standard 8233: 2014 and BS4142: 2014+A1:2019 to determine the impact of existing noise sources on the proposed accommodation scheme at 85 – 89 Brighton Road, Lancing, West Sussex, BN15 8RA where a proposal has been made for the erection of a new care home.

1.2 Scope of Report

The measurements will be undertaken in accordance with ISO 1996 – Part 2: 2017 to determine the existing background noise levels and British Standard 8233: 2014 will be used to determine the impact of existing traffic on the internal noise environment within the proposed residential dwellings. This report aims to establish the following:

- Existing background noise levels within the area;
- Assess the potential internal noise levels on the proposed rooms;
- Provide specifications for the ventilation and window glazing with the proposed rooms.
- Set a maximum plant criteria for any external plant.

1.3 Summary of Results

1.3.1 Background Noise Levels

A 120 hour background noise survey was undertaken from the 24th – 29th August 2023 at two positions at the site in order to establish the underlying background noise levels. Recorded levels as follows.

Assessment Position	Date Start	Date Finish	Daytime LAeq	Night Time LAeq
Position 1	24.08.2023	29.08.2023	74.1	67.5
Position 2	24.08.2023	29.08.2023	54.3	44.8

Assessment Position	Date Start	Date Finish	Daytime LA90	Night Time LA90
Position 1	24.08.2023	29.08.2023	60.0	33.0
Position 2	24.08.2023	29.08.2023	40.0	29.0

It should be noted that the site is currently active with a generator operational. Therefore, a representative position was chosen at 77 Brighton Road.

1.4 Potential Façade Noise Levels

1.4.1 Daytime (07:00-23:00)

Time Period	Highest Potential Façade Noise Level	Noise Risk Category 3 - High
Average Daytime (07:00-23:00)	$L_{Aeq,\ 16\ HOUR}$ 72.0 dB	>70 dB

1.4.2 Night Time (23:00-07:00)

Time Period	Highest Potential Façade Noise Level	Noise Risk Category 3 - High
Average Night Time (23:00-07:00)	$L_{Aeq,\ 16\ HOUR}$ 66.0 dB	>60 dB
	Maximum (10 Times) – L_{Amax} 82.3 dB	>80 dB (10 Times in 8 Hours)

1.5 Risk Assessment

1.5.1 Daytime (07:00-23:00) – Position 1

Risk Assessment Category	Risk Assessment
3 - High	High noise levels indicate that there is an increased risk that development may be refused on noise grounds. This risk may be reduced by following a good acoustic design process that is demonstrated in a detailed ADS. Applicants are strongly advised to seek expert advice.

1.5.2 Night Time (23:00-07:00) – Position 1

Risk Assessment Category	Risk Assessment
3 - High	High noise levels indicate that there is an increased risk that development may be refused on noise grounds. The risk may be reduced by following a good acoustic design process that is demonstrated in a detail ADS. Applicants are strongly advised to seek expert advice.

The above table demonstrates this site is located within Noise Risk Category 3 which suggests a high level of risk for daytime and night time levels. Therefore, further mitigation levels will be required at Stage 2.

1.6 Glazing & Ventilation Specification

The development should be designed with a 6mm glass / 16mm argon air gap / 6.8mm Pilkington Optiphon glass windows and a Titon V75 / C75 vent or similarly approved to all rooms facing onto the A259. The remainder of the development can be specified with a standard 4mm glass / 16mm air gap / 4mm glass and a Titon V25 standard canopy vent to ensure the internal noise levels are acceptable in terms of the assessment to British Standard 8233: 2014.

1.7 WHO Guidelines for Community Noise

The development proposes external living areas and therefore an assessment to the World Health Organisation's 'Guidelines for Community Noise' has been carried out. The guideline has been considered acceptable criteria for this assessment given the sites geographical location. The calculation demonstrates the external living spaces are likely to see noise levels just below the lower guideline of 50 dB in the rear garden areas.

1.8 Proposed Plant Criteria

Calculations and assessments are to be made within this report to generate a maximum noise level criteria to which all plant should be selected to. The maximum noise level calculated is to be achieved at 1.0m & 10m from the units in situ with all units operating under normal load.

The following calculations have been based on the recorded LA90 background noise level over a typical 24 hour period at the measurement position 2 and include the possibility of night time.

The above calculations have demonstrated that in order to meet the criteria of +/- 0 dB of the recorded background noise level, the following external noise level plant criteria should be achieved at 1.0m and 10m from all units operating at the same time under normal load.

DAYTIME 07:00 – 23:00

Octave Band Centre Frequency (Hz)									**dB(A)**	**Comments**
63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k		
31.3	27.5	25.5	26.6	24.9	20.5	16.3	6.9	-9.9	**29**	Calculated Noise Source Level @ 1.0m
11.3	7.5	5.5	6.6	4.9	0.5	-3.7	-13.1	-29.9	**9**	Calculated Noise Source Level @ 10.0m
Sound Pressure Level at 1.0m from plant (ref 2 x 10-5 Pa)										

NIGHT TIME 23:00 – 07:00

Octave Band Centre Frequency (Hz)									**dB(A)**	**Comments**
63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k		
24.6	18.8	16.2	13.0	12.6	11.3	8.7	-0.2	-9.5	**18**	Calculated Noise Source Level @ 1.0m
4.6	-1.2	-3.8	-7.0	-7.4	-8.7	-11.3	-20.2	-29.5	**-2**	Calculated Noise Source Level @ 10.0m
Sound Pressure Level at 1.0m from plant (ref 2 x 10-5 Pa)										

1.8.1 Assessments

1.8.1.1 Daytime (07:00 – 23:00)

Rating Level	40dB	9.1	The acoustic feature correction is added to the specific noise level
Background Noise Level $L_{A90,1\ hour}$	40 dB	8.1	Modal Background Noise Level (2300 – 0700)
Assessment Level	+/- 0 dB	11	The background level is subtracted from the rating level.
Conclusion BS 4142:2014[1]	+10 dB Significant Adverse Effects, +5 dB Adverse Effects, +0 dB Low Impact		
Assessment	**+/- 0 dB**		
Conclusion	**The assessment level is 'Low Impact'**		

1.8.1.2 Night Time (23:00 – 07:00)

Rating Level	29 dB	9.1	The acoustic feature correction is added to the specific noise level
Background Noise Level $L_{A90,1\ hour}$	29 dB	8.1	Modal Background Noise Level (2300 – 0700)
Assessment Level	+/- 0 dB	11	The background level is subtracted from the rating level.
Conclusion BS 4142:2014[1]	+10 dB Significant Adverse Effects, +5 dB Adverse Effects, +0 dB Low Impact		
Assessment	**+/- 0 dB**		
Conclusion	**The assessment level is 'Low Impact'**		

1.9 Conclusion

Levels have been recorded and assessments made in accordance with the relevant standards. Internal criteria's have been set and calculations made in order to determine the minimum construction details required in order to meet the desired level within the proposed residential dwellings and satisfy the local council's requirements.

The operation of any proposed plant has been assessed to establish if the development 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 site and the assessment of the impact of the site operation on nearby residential properties. The resulting emissions from the site running on a worst case scenario show no conflict with 'low impact' criteria and give a strong indication that complaint and impact on the local amenity is unlikely, provided the recommended maximum noise levels plant criteria is achieved as detailed within this report.

The plant criteria was set as the new plant is yet to be designed and it is recommended that this criteria be set as a planning condition.

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.

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

Sound Advice Acoustics Ltd have been instructed by Acheson Construction to undertake a background noise survey to British Standard 8233: 2014 and BS4142: 2014+A1:2019 to determine the impact of existing noise sources on the proposed accommodation scheme at 85 – 89 Brighton Road, Lancing, West Sussex, BN15 8RA where a proposal has been made for the erection of a new care home.

Ambient noise levels were measured between the 24th – 29th August 2023. This report by Sound Advice Acoustics Ltd gives the results of these measurements and an assessment in accordance with government planning guidelines and relevant standards together with mitigation measures as required.

With regards to external ambient noise, environmental noise levels are be monitored at the site in accordance with British Standard 7445: 2003 'Description and measurement of environmental noise assessments and assessments made in-line with PRoPG: Planning and Noise.

2.1 Planning Practice Guidance and Noise

March 2014 saw the publication of the Planning Practice Guidance for Noise (PPG-Noise) and this was subsequently updated in December 2014. The Planning Practice Guidance and Noise sets out details of how potential noise impacts should be evaluated.

'Local planning authorities' plan-making and decision taking should take account of the acoustic environment and in doing so consider:

- *whether or not a significant adverse effect is occurring or likely to occur;*
- *whether or not an adverse effect is occurring or likely to occur; and*
- *whether or not a good standard of amenity can be achieved.*

In line with the Explanatory Note of the Noise Policy Statement for England, this would include identifying whether the overall effect of the noise exposure (including the impact during the construction phase wherever applicable) is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation. As noise is a complex technical issue, it may be appropriate to seek experienced specialist assistance when applying this policy.'

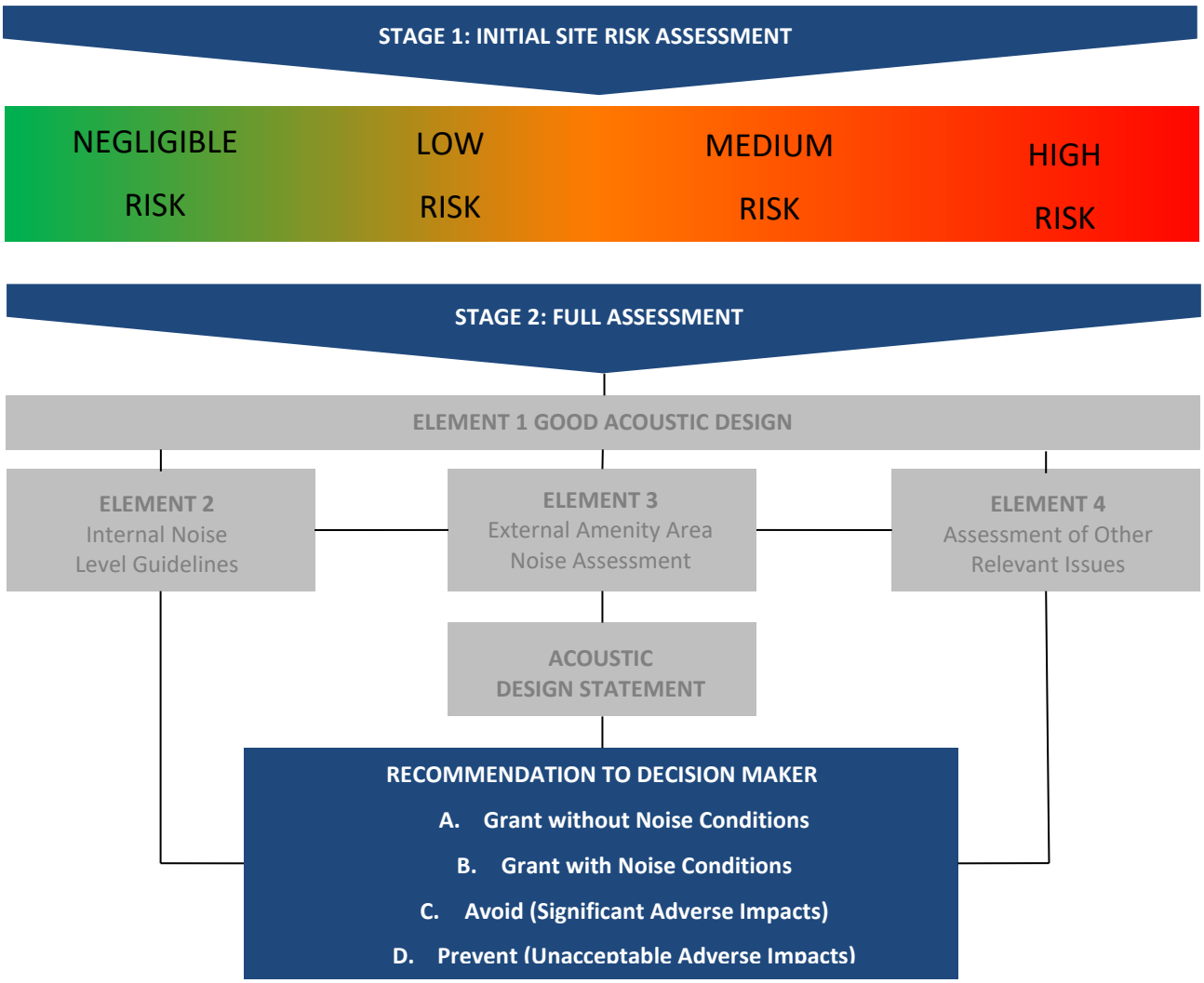
In accordance with Stage 2: Full Assessment, Other Noise Sources, detailed calculations and assessments should be carried out pertaining to these as PPG Noise does not provide advice and guidance when taking these elements into consideration.

2.1.1 Professional Practice Guidance on Planning & Noise.

The Professional Practice Guidance (PRoPG) on Planning and Noise for New Residential Development was published in May 2017 by the Association of Noise Consultants (ANC), Institute of Acoustics (IOA) and Chartered Institute of Environmental Health (CIEH). This document was developed in order to offer professional guidance on recommended strategies to the management of noise for use in the associated planning applications for specific sites. This furthermore, provides a numerical acoustic standard in accordance with the Government's planning and noise policies.

This document has been developed to ensure the developer adopts a good acoustic design process to ensure protection for future residents from the potential harmful effects from noise. The PRoPG denotes that it *'does not constitute an official government code of practice and neither replaces nor provides an authoritative interpretation of the law or government policy on which users should take their own advice as appropriate'.*

The PRoPG adopts a twin-stage approach, firstly providing an 'Initial Noise Risk Assessment' of the proposed development site before undertaking a detailed approach of a noise impact assessment. The results from the initial noise risk assessment are an indication of the general acoustic environment of the proposed development and demonstrate how detailed the noise impact assessment will need to be in order to mitigate any acoustic issues.



2.2 British Standard 8233: 2014

Calculations are to be made in accordance with BS 8233: 2014 Sound Insulation and Noise Reduction for Buildings Code of Practice.

BS 8233: 2014 set the following parameters as target levels that should be designed to within rooms such as Living Rooms and Bedrooms.

Indoor ambient noise levels in spaces when they are unoccupied and privacy is also important		
Objective	**Typical situations**	**Design Range $L_{Aeq,t}$ dB**
Typical noise levels for acoustic privacy in shared spaces	Living room	35 – 40
NOTE: See Noise control in building services [28] and BS EN ISO 3382.		

Indoor ambient noise levels for dwellings			
Activity	**Location**	**07:00 – 23:00**	**23:00 – 07:00**
Resting	Living Room	35 dB $L_{Aeq\ 16\ HOUR}$	--
Dining	Dining Room / Area	40 dB $L_{Aeq\ 16\ HOUR}$	--
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq\ 16\ HOUR}$	30 dB $L_{Aeq\ 8\ HOUR}$

Calculations and assessments are therefore to be carried out in order to satisfy the above requirements of BS 8233: 2014.

2.3 BS 4142: 2014+A1:2019

British Standard 4142: 2014 +A1:2019 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 existing acoustic impact the external plant 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.

2.4 National Planning Policy Framework 2023 (NPPF) and Noise Policy Statement for England 2010 (NPSE).

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.

2.4.1 "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:

2.4.2 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.

2.4.3 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.

2.4.4 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.

2.5 World Health Organisation 'Guidelines for Community Noise'

In addition, calculations are to be made for the predicted daytime noise levels within the outdoor living area and assessments made against the recommended levels within the World Health Organisation's 'Guidelines for Community Noise'. In order to evaluate these levels accurately, the 3D modelling software CADNA A is to be adopted for the purpose of this assessment.

Finally, assessments and references are to be made to the World Health Organisation Night Time Noise Guidance 2009.

3 SITE LOCATION

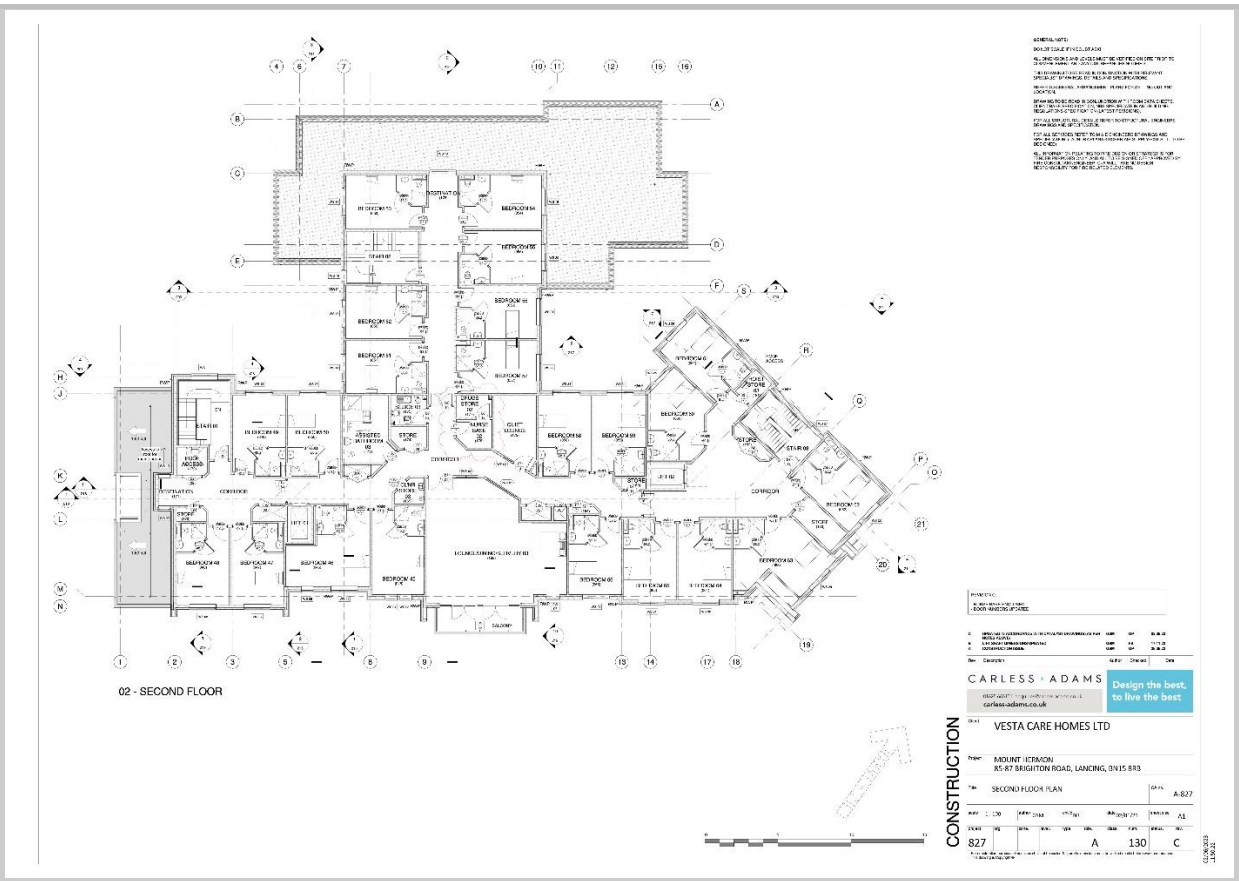
3.1 Proposed Development

The proposed development is shown below.

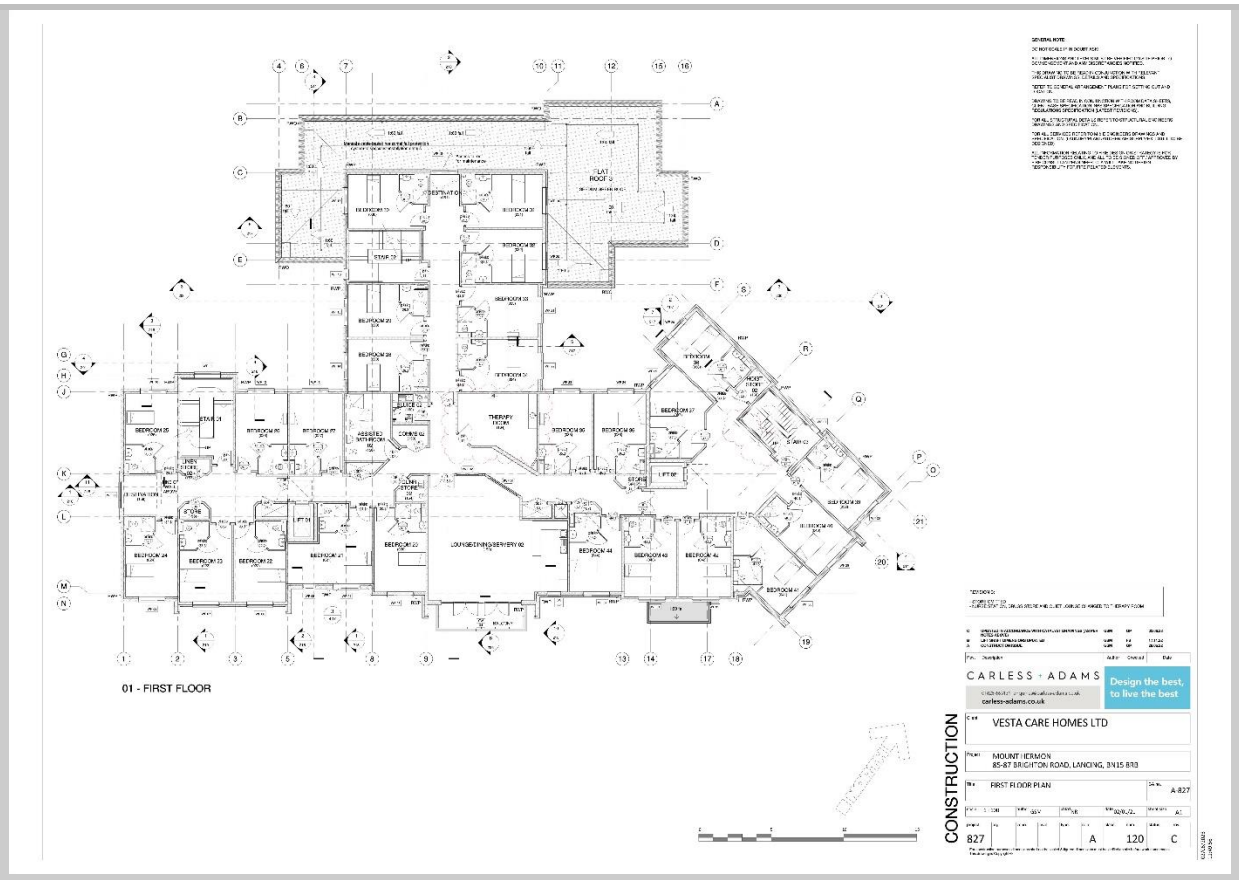




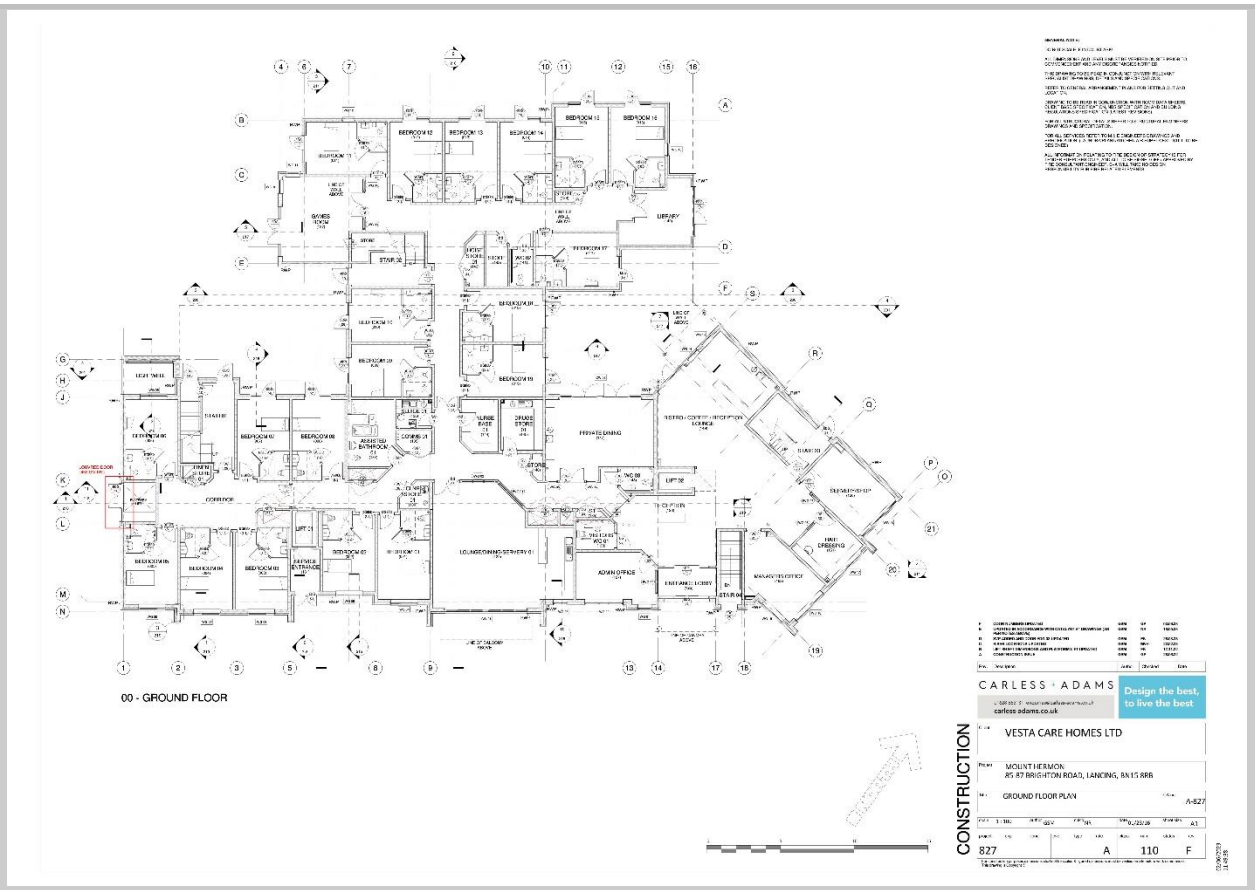
It should be noted that the site is currently active with a generator operational. Therefore, a representative position was chosen at 77 Brighton Road.



Proposed Second Floor Plan



Proposed First Floor Plan



Proposed Ground Floor Plan

4 PROCEDURE

External noise levels were recorded over a typical period and analysis date extrapolated between 07:00 hrs 24th August 2023 and 07:00 hrs on 29th August 2023 at 2 positions as detailed within this report.

Position 1 was located in the front garden of 77 Brighton Road in order to capture the noise levels associated with the Main Road (A259). Position 2 was located in the rear garden of 77 Brighton Road to capture the background levels on the site. Sample measurements were recorded over continuous 1 minute samples and from this data the hourly LAeq daytime values have been evaluated. Sound Pressure Levels were recorded on the following setting along with a full octave band frequency analysis measured simultaneously and between 31.5 Hz and 16.0 kHz.

It should be noted that the site is currently active with a generator operational. Therefore, a representative position was chosen at 77 Brighton Road.

Daytime 07:00 – 23:00		Night Time 23:00 – 07:00	
$L_{Aeq\ 1\ HOUR}$ dB	$L_{A10\ 1\ HOUR}$ dB	$L_{Aeq\ 15\ MINUTES}$ dB	$L_{A10\ 15\ MINUTES}$ dB
$L_{AMAX\ 1\ HOUR}$ dB	$L_{A50\ 1\ HOUR}$ dB	$L_{AMAX\ 15\ MINUTES}$ dB	$L_{A50\ 15\ MINUTES}$ dB
$L_{AMIN\ 1\ HOUR}$ dB	$L_{A90\ 1\ HOUR}$ dB	$L_{AMIN\ 15\ MINUTES}$ dB	$L_{A90\ 15\ MINUTES}$ dB

Calculations have been made in accordance with BS 8233: 2014 'Sound Insulation and Reduction of Buildings - Code of Practice'. Recommendations were made for any additional acoustics measures to conform to these standards.

From the downloaded recorded results, the daytime and night time periods were assessed and used within the above calculations as $L_{Aeq\ 16\ HOUR}$ dB levels for daytime and $L_{Aeq\ 8\ HOUR}$ dB levels for night time. These are detailed within this report. All data averaged throughout the day has been done so on a logarithmic basis to give accurate $L_{Aeq\ 16\ Hour}$ dB daytime and $L_{Aeq\ 8\ Hour}$ dB night time noise levels.

Finally, it should be noted that calculations are carried out with façade levels corrected from the recorded noise levels to the calculated façade levels.

5 APPARATUS

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 x 10^{-5} Nm^{-2} before and after the tests and the equipment set to have no inaccuracy greater than 0.2dB.

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.

5.1 140 noise meter s/n 1403140 environmental testing - Position 1

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)	Norsonic	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

5.2 140 noise meter s/n 1402941 environmental testing - Position 2

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

Full calibration certificates are available upon request.

6 RESULTS

6.1 Downloaded results, and averages.

6.1.1 24th – 25th August 2023 - Position 1

NOISE LEVEL SUMMARY ASSESSMENT				Octave Band Centre Frequency (Hz)									
Date / Time	LAeq	LAmax	LA90	31.5	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LAeq 16 HOUR & Corresponding LAmax 16 HOUR	74.1	108.0	66.0	72.0	67.7	65.2	64.2	68.1	67.2	68.9	60.2	45.4	74.1
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Corresponding LAmax 8 HOUR	66.1	89.6	33.0	63.7	59.8	59.3	59.0	62.4	59.8	55.8	45.2	29.2	66.1

6.1.2 25th – 26th August 2023 – Position 1

NOISE LEVEL SUMMARY ASSESSMENT				Octave Band Centre Frequency (Hz)									
Date / Time	LAeq	LAmax	LA90	31.5	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LAeq 16 HOUR & Corresponding LAmax 16 HOUR	72.1	111.4	64.0	74.0	69.2	66.4	64.5	67.4	65.4	64.5	54.0	42.5	72.1
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Corresponding LAmax 8 HOUR	67.5	93.3	45.0	62.4	58.7	58.8	57.9	62.3	60.6	61.8	52.7	36.4	67.5

6.1.3 26th – 27th August 2023 - Position 1

NOISE LEVEL SUMMARY ASSESSMENT				Octave Band Centre Frequency (Hz)									
Date / Time	LAeq	LAmax	LA90	31.5	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LAeq 16 HOUR & Corresponding LAmax 16 HOUR	73.5	107.2	61.0	73.2	69.6	67.0	64.6	68.3	66.5	67.5	58.3	43.9	73.5
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Corresponding LAmax 8 HOUR	64.4	87.7	43.0	61.6	59.0	56.5	56.3	61.0	58.2	53.7	42.5	26.8	64.4

6.1.4 27th – 28th August 2023 - Position 1

NOISE LEVEL SUMMARY ASSESSMENT				Octave Band Centre Frequency (Hz)									
Date / Time	LAeq	LAmax	LA90	31.5	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LAeq 16 HOUR & Corresponding LAmax 16 HOUR	71.1	106.9	62.0	71.4	68.9	66.1	63.7	66.9	64.2	62.6	53.3	39.4	71.1
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Corresponding LAmax 8 HOUR	64.0	88.7	45.0	61.9	57.7	55.8	56.3	60.6	57.7	53.4	42.7	27.3	64.0

6.1.5 28th – 29th August 2023 - Position 1

NOISE LEVEL SUMMARY ASSESSMENT				Octave Band Centre Frequency (Hz)									
Date / Time	LAeq	LAmax	LA90	31.5	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LAeq 16 HOUR & Corresponding LAmax 16 HOUR	70.4	105.1	60.0	71.5	68.5	65.4	63.0	65.9	63.7	62.2	52.4	41.9	70.4
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Corresponding LAmax 8 HOUR	64.9	95.5	34.0	62.8	59.3	58.5	57.7	61.4	58.4	54.5	44.3	34.2	64.9

6.1.6 24th – 25th August 2023 - Position 2

NOISE LEVEL SUMMARY ASSESSMENT				Octave Band Centre Frequency (Hz)									
Date / Time	LAeq	LAmax	LA90	31.5	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LAeq 16 HOUR & Corresponding LAmax 16 HOUR	50.2	78.0	43.0	56.8	53.4	49.9	45.3	44.0	41.6	42.3	36.6	21.2	50.2
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Corresponding LAmax 8 HOUR	43.2	67.3	36.0	47.9	43.1	41.7	38.8	37.4	33.1	36.8	26.1	13.6	43.2

6.1.7 25th – 26th August 2023 – Position 2

NOISE LEVEL SUMMARY ASSESSMENT				Octave Band Centre Frequency (Hz)									
Date / Time	LAeq	LAmax	LA90	31.5	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LAeq 16 HOUR & Corresponding LAmax 16 HOUR	50.4	70.6	44.0	57.1	52.5	49.6	46.4	45.3	41.8	40.2	36.0	18.4	50.4
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Corresponding LAmax 8 HOUR	44.8	68.2	38.0	47.3	43.8	42.4	39.5	38.9	36.1	38.6	30.5	15.7	44.8

6.1.8 26th – 27th August 2023 - Position 2

NOISE LEVEL SUMMARY ASSESSMENT				Octave Band Centre Frequency (Hz)									
Date / Time	LAeq	LAmax	LA90	31.5	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LAeq 16 HOUR & Corresponding LAmax 16 HOUR	50.3	75.8	46.0	56.7	53.1	48.9	45.6	45.5	42.2	40.4	35.6	19.2	50.3
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Corresponding LAmax 8 HOUR	42.9	74.2	37.0	45.4	41.1	39.8	37.3	37.1	34.2	36.4	30.3	11.8	42.9

6.1.9 27th – 28th August 2023 - Position 2

NOISE LEVEL SUMMARY ASSESSMENT				Octave Band Centre Frequency (Hz)									
Date / Time	LAeq	LAmax	LA90	31.5	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LAeq 16 HOUR & Corresponding LAmax 16 HOUR	49.7	73.7	42.0	55.2	51.7	49.2	45.1	44.1	41.3	40.6	36.9	16.4	49.7
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Corresponding LAmax 8 HOUR	41.9	78.7	33.0	46.0	41.4	39.7	37.0	35.7	36.1	32.6	26.1	12.0	41.9

6.1.10 28th – 29th August 2023 - Position 2

NOISE LEVEL SUMMARY ASSESSMENT				Octave Band Centre Frequency (Hz)									
Date / Time	LAeq	LAmax	LA90	31.5	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LAeq 16 HOUR & Corresponding LAmax 16 HOUR	54.3	82.0	40.0	56.6	52.8	50.8	51.9	50.2	45.8	41.6	32.2	15.4	54.3
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Corresponding LAmax 8 HOUR	40.2	76.1	29.0	46.8	41.0	38.4	35.2	34.8	33.5	30.9	22.0	12.7	40.2

The following noise levels have been corrected for the highest recorded façade levels and used within the BS 8233: 2014 calculations

Inputted Noise Levels - Position 1

NOISE LEVEL SUMMARY ASSESSMENT				Octave Band Centre Frequency (Hz)									
Date / Time	LAeq	LAmax	LA90	31.5	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LAeq 16 HOUR & Corresponding LAmax 16 HOUR	74.1	108.0	66.0	72.0	67.7	65.2	64.2	68.1	67.2	68.9	60.2	45.4	74.1
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Corresponding LAmax 8 HOUR	67.5	93.3	45.0	62.4	58.7	58.8	57.9	62.3	60.6	61.8	52.7	36.4	67.5

Inputted Noise Levels - Position 2

NOISE LEVEL SUMMARY ASSESSMENT				Octave Band Centre Frequency (Hz)									
Date / Time	LAeq	LAmax	LA90	31.5	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LAeq 16 HOUR & Corresponding LAmax 16 HOUR	54.3	82.0	40.0	56.6	52.8	50.8	51.9	50.2	45.8	41.6	32.2	15.4	54.3
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Corresponding LAmax 8 HOUR	44.8	68.2	38.0	47.3	43.8	42.4	39.5	38.9	36.1	38.6	30.5	15.7	44.8

7 PRoPG PLANNING & NOISE STAGE 1

7.1 Stage 1: Initial Site Noise Risk Assessment

The Stage 1, Initial Noise Risk Assessment, compares the recorded ambient noise levels obtained from the acoustic survey and correlates these against the risk scale within the PRoPG Document in order to evaluate any potential adverse effects the site is currently exposed to with regards to noise.

The outcome of the Stage 1 assessment will determine the level of detail required within Stage 2 in order to demonstrate suitable mitigations can be introduced to ensure continuing compliance with the relevant standards, local planning policies and PRoPG.

The following table demonstrates the Initial Risk Assessment Noise Levels as detailed within PRoPG Figure.1:-

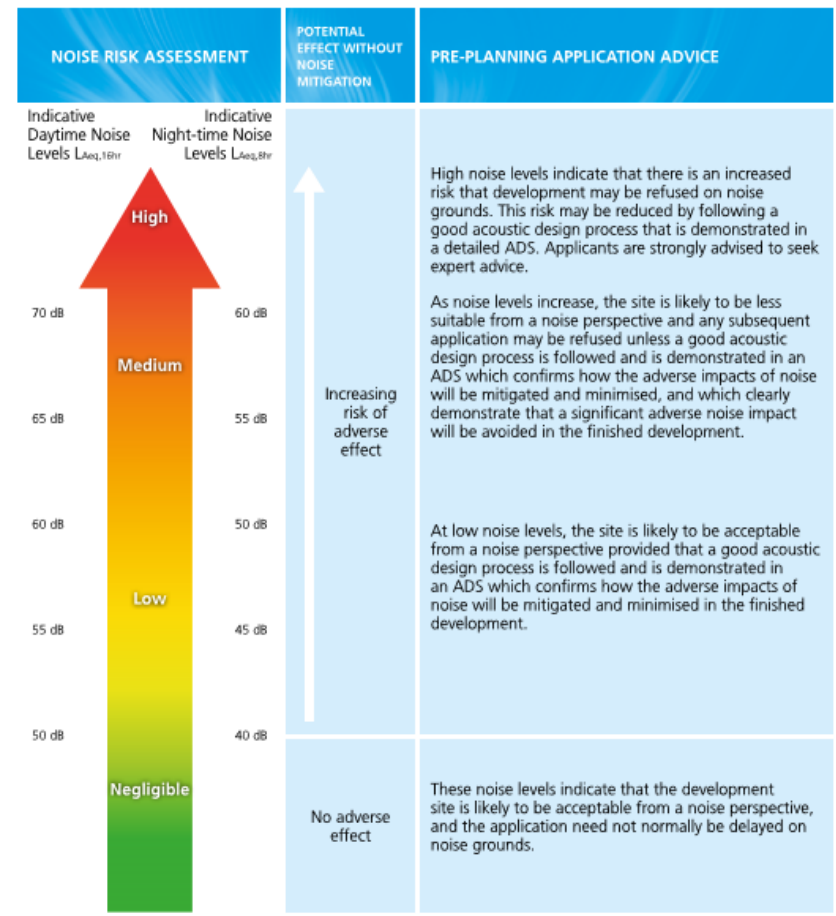


Figure 1. Stage 1– Initial Site Noise Risk Assessment

Noise Risk Category	0 – Negligible	1 – Low	2 – Medium	3 - High
Average Daytime	<50 dB	50 – 63 dB	63 – 70 dB	>70 dB
Average Night Time	<40 dB	40 – 55 dB	55 – 60 dB	>60 dB
Maximum Night Time			>80 dB (10 Times in 8 Hours)	

Based on the data collected from the aforementioned noise survey, the following PRoPG Stage 1 assessments can be made:-

7.2 Potential Façade Noise Levels

7.2.1 Daytime (07:00-23:00)

Time Period	Highest Potential Façade Noise Level	Noise Risk Category 3 - High
Average Daytime (07:00-23:00)	$L_{Aeq,\ 16\ HOUR}$ 72.0 dB	>70 dB

7.2.2 Night Time (23:00-07:00)

Time Period	Highest Potential Façade Noise Level	Noise Risk Category 3 - High
Average Night Time (23:00-07:00)	$L_{Aeq,\ 16\ HOUR}$ 66.0 dB	>60 dB
	Maximum (10 Times) – L_{Amax} 82.3 dB	>80 dB (10 Times in 8 Hours)

7.3 Risk Assessment

7.3.1 Daytime (07:00-23:00) – Position 1

Risk Assessment Category	Risk Assessment
3 - High	High noise levels indicate that there is an increased risk that development may be refused on noise grounds. This risk may be reduced by following a good acoustic design process that is demonstrated in a detailed ADS. Applicants are strongly advised to seek expert advice.

7.3.2 Night Time (23:00-07:00) – Position 1

Risk Assessment Category	Risk Assessment
3 - High	High noise levels indicate that there is an increased risk that development may be refused on noise grounds. The risk may be reduced by following a good acoustic design process that is demonstrated in a detail ADS. Applicants are strongly advised to seek expert advice.

The above table demonstrates this site is located within Noise Risk Category 3 which suggests a high level of risk for daytime and night time levels. Therefore, further mitigation levels will be required at Stage 2.

8 PRoPG PLANNING & NOISE STAGE 2 - ELEMENT 1 – GOOD ACOUSTIC DESIGN

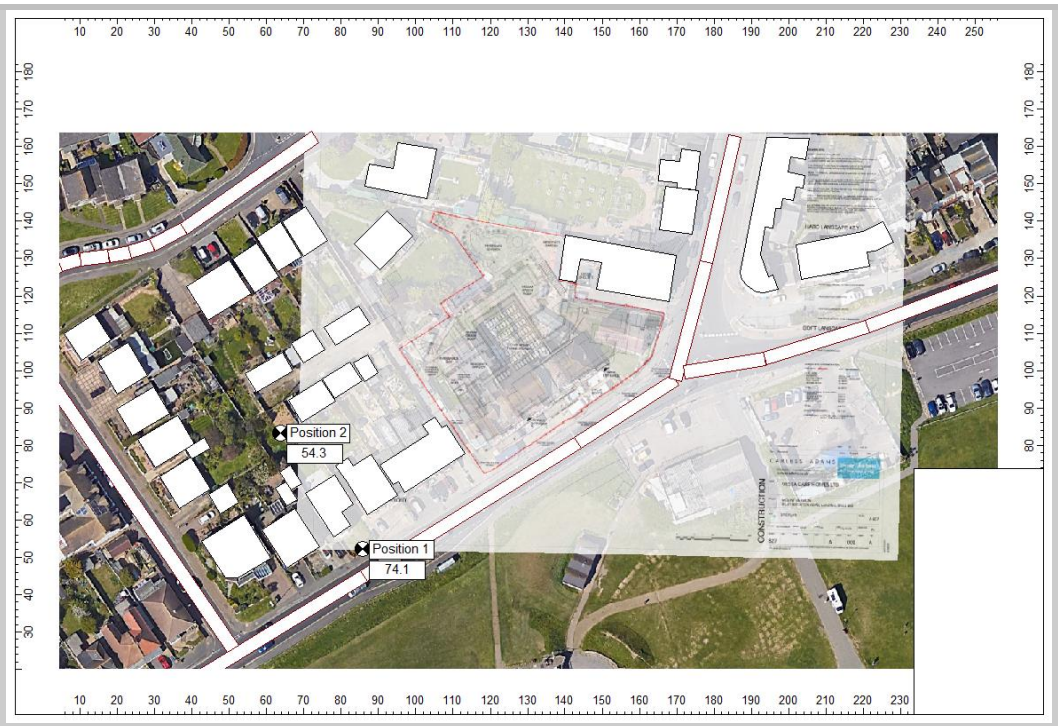
Given the size and orientation of the proposed site, it is recommended that the developer adopt, where practically possible, a good acoustic design which should include careful consideration of the positioning of the proposed properties together with thoughts being taken as to internal layouts to minimise noise sensitive rooms facing onto dominant noise sources within the local areas. Given the size of this development, every effort has already been made to minimise the acoustic impact from the surrounding areas.

9 ELEMENT 2 – INTERNAL NOISE LEVEL GUIDELINES

9.1 Discussion of Results

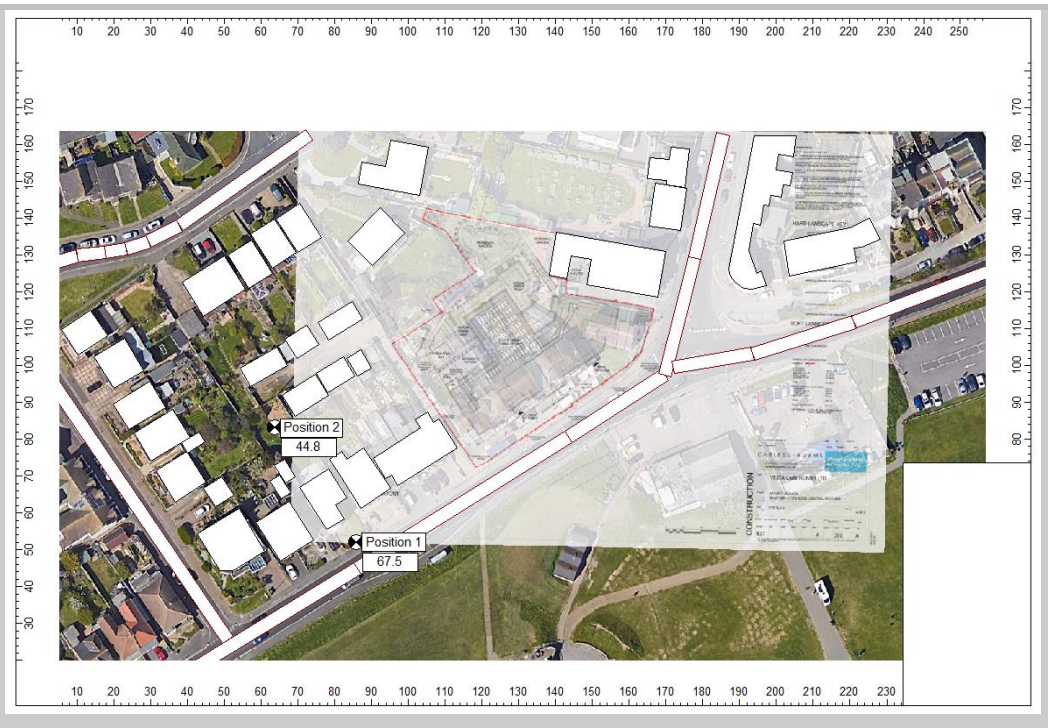
It can be seen from the attached graph and downloaded results that the external noise levels have followed the expected path and remained fairly constant throughout the day. The levels then gradually dropped off as the evening progressed and began to rise when morning traffic levels increased.

9.2 Existing Noise Levels – Daytime (07:00 – 23:00)



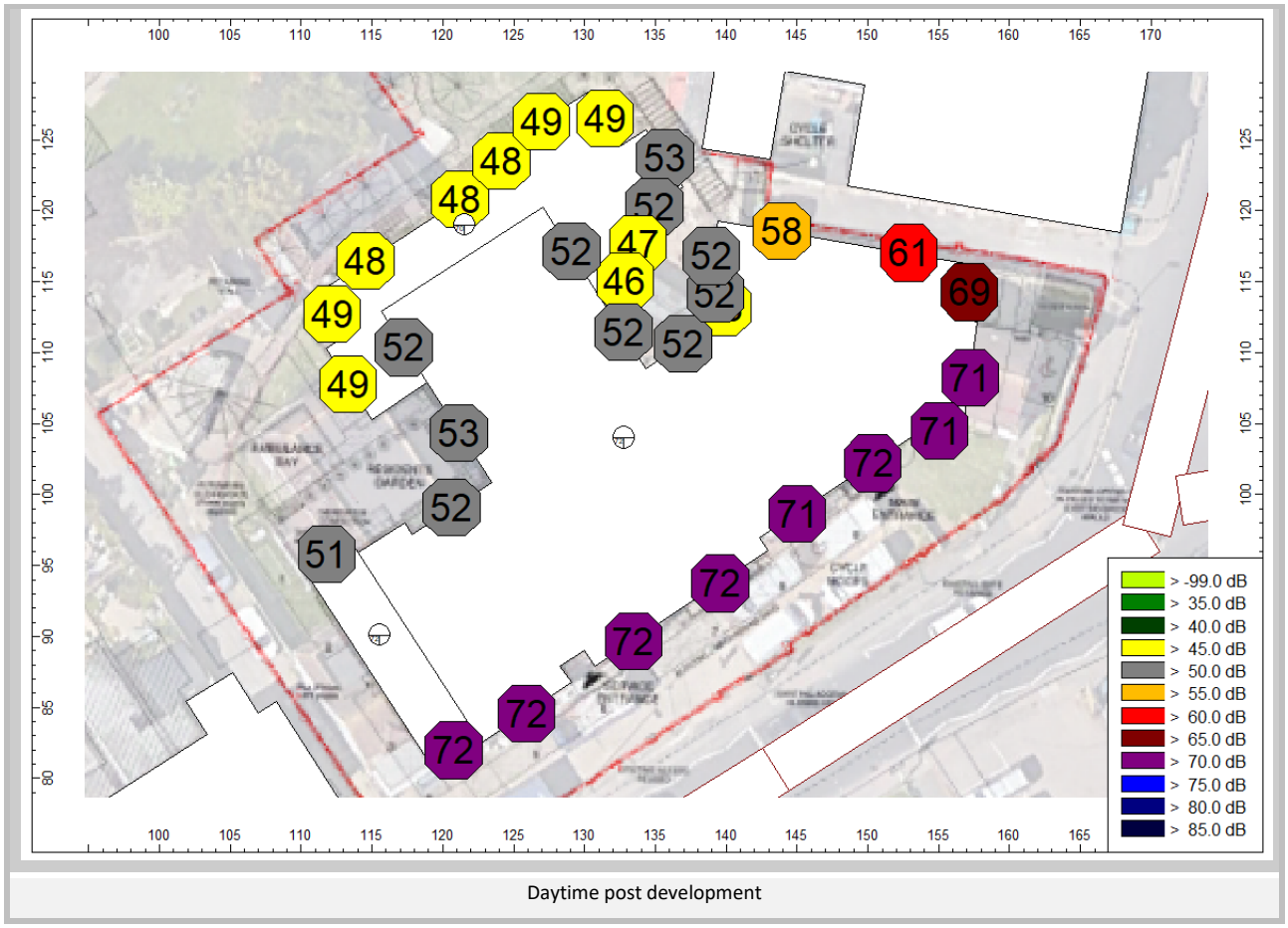
Daytime prior to development

9.3 Existing Noise Levels – Night Time (23:00 – 07:00)



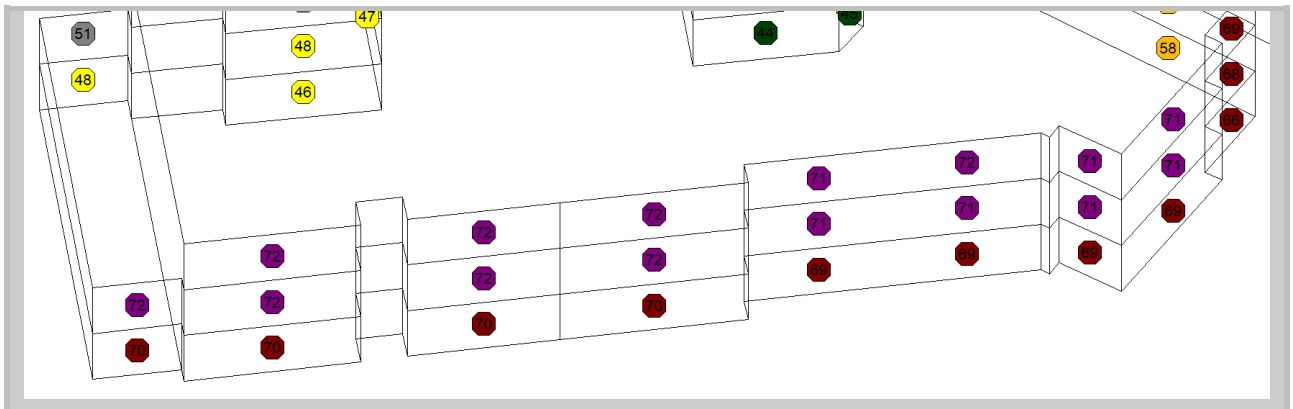
Night time prior to development

9.4 Proposed Noise levels – Daytime (07:00 – 23:00)



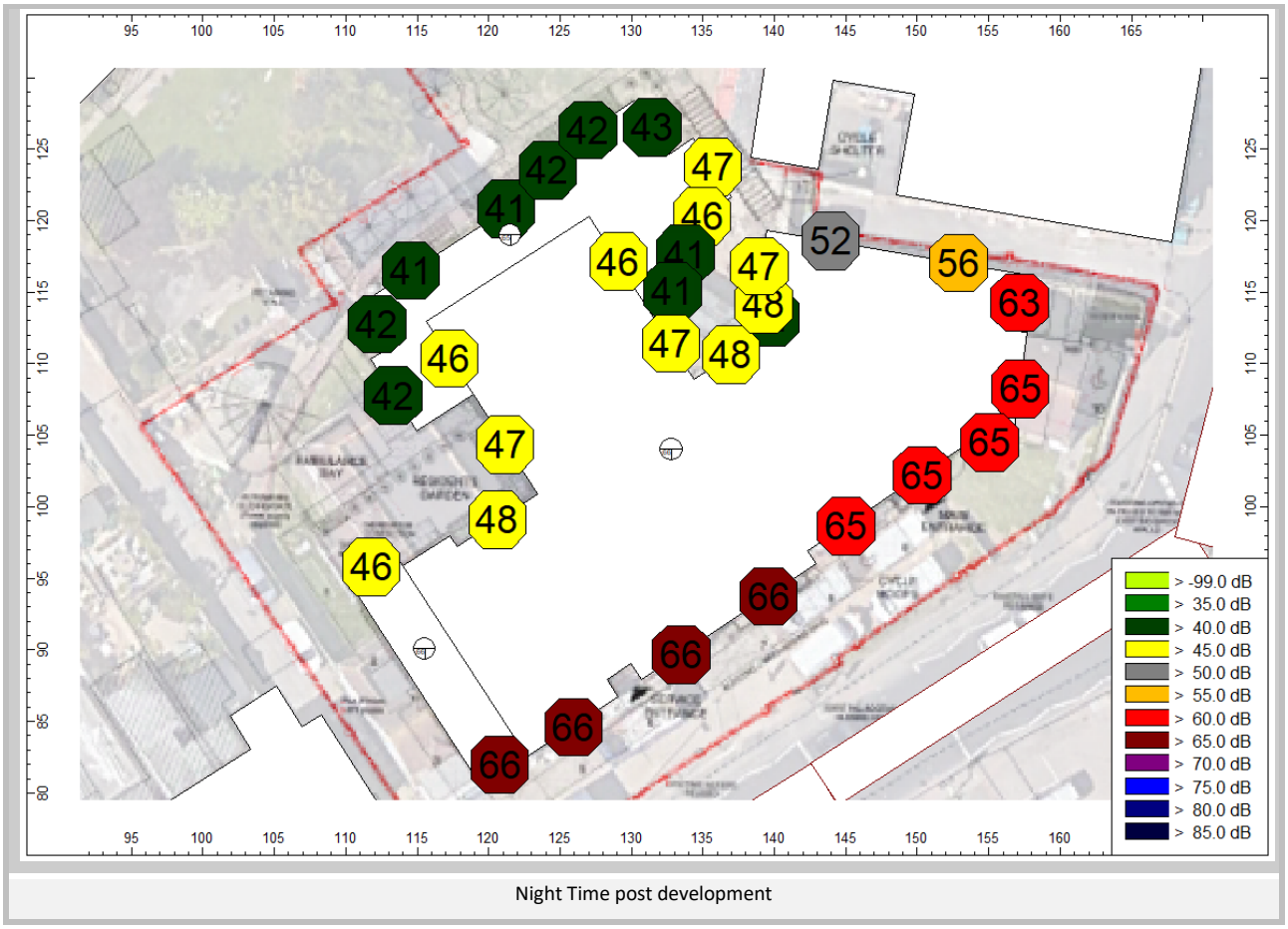
Daytime post development

9.5 Proposed Noise levels – Daytime (07:00 – 23:00) Front View



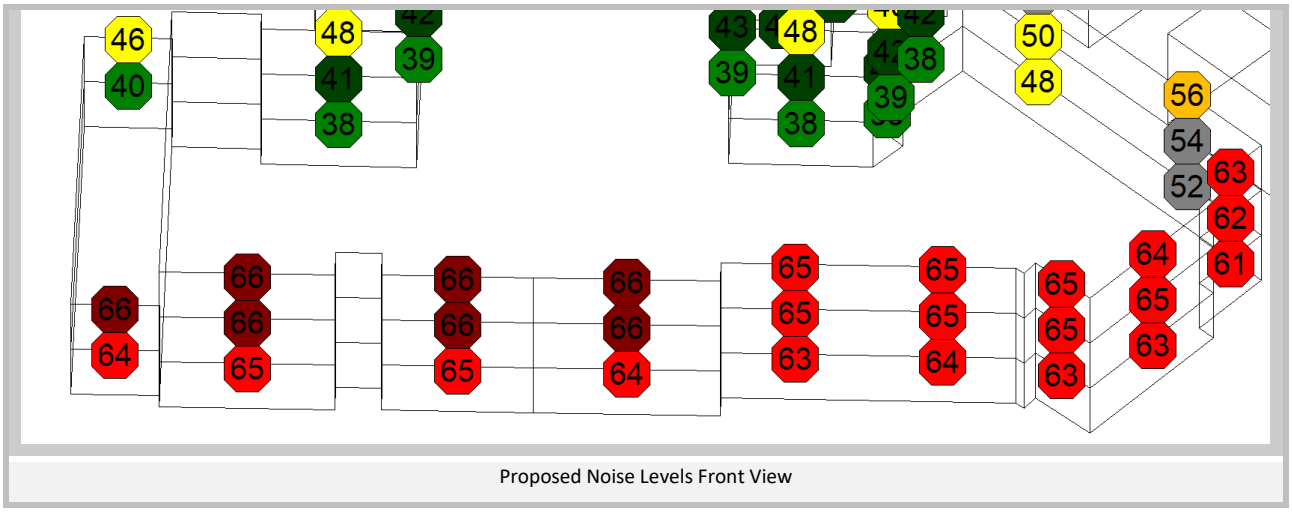
Proposed Noise Levels Front View

9.6 Proposed Noise levels – Night Time (23:00 – 07:00)



Night Time post development

9.7 Proposed Noise levels – Night Time (23:00 – 07:00) Front View



Proposed Noise Levels Front View

9.8 Recommendations

For the purpose of this assessment, the corresponding façade levels will be used within the BS 8233: 2014 calculations in order evaluate the worst case scenario and select the correct window specification.

Therefore, in order to achieve the required noise levels of $L_{Aeq\ 16\ HOUR}$ 35 dB for habitable rooms daytime and $L_{Aeq\ 8\ HOUR}$ 30 dB for Bedroom at night within the proposed, the following additional acoustic measures have been calculated.

It should be noted that the calculations have been made with the proposed windows closed. Additional calculations were made for the top floor due to the influence of sound transmission into the various rooms via the roof / ceiling i.e. an increased impeding façade. Inputted levels into the calculation sheets have been corrected for distance attenuation and free field in accordance with the aforementioned British Standard.

9.9 Calculation Procedure to BS 8233: 2014

The following calculations have been carried out in order to determine the required window and ventilation specification in order to meet the requirements of BS 8233: 2014.

9.10 First Floor Typical Bedroom Front Facade

Recorded Site Data (Corrected for Free Field)	Octave Band Centre Frequency (Hz)					
	125	250	500	1000	2000	4000
Daytime Leqff	65.6	63.1	62.1	66.0	65.1	66.8
Night time Leqff	57.2	57.3	56.4	60.8	59.1	60.3

Room Data	Sf	Sr	Swi	Sew	Srr	Volume
Area m^2	9	0	3	6	0	38

Specification Summary	Site Specific Specification	Attenuation Required	
Glazing Specification	6mm / (16mm Argon) / 6.8mm Pilkington Optiphon	Rw(C; Ctr)	40(-2,-6) dB
Ventilation Strategy	Titon V75 / C75	Dne'w	44 dB
Wall Specification	Brick & Block Cavity Wall	Rw	54 dB
Roof Specification	Standard Pitched Roof	Rw	57 dB

Detailed Specification	Octave Band Centre Frequency (Hz)					
	125	250	500	1000	2000	4000
Glazing Specification (Rwi)	21.0	28.0	37.0	48.0	48.0	54.0
Ventilation Strategy (Dne)	37.0	37.0	36.0	47.0	49.0	55.0
Wall Specification (Rew)	40.0	44.0	45.0	51.0	56.0	56.0
Roof Specification (Rrr)	39.0	48.0	55.0	60.0	59.0	61.0

Calculation Results			
Daytime Hours (07:00-23:00)	$L_{Aeq\ 16\ HOUR}$	31.2	dB(A)
Night Time Hours (23:00-07:00)	$L_{Aeq\ 8\ HOUR}$	24.8	dB(A)

Formula	Leq2=Leqff+10log[A0/S*10^(-Dne/10)+Swi/S*10^(-Rwi/10)+Sew/10*10^(-Rew/10)+Srr/S*10^(-Rrr/10)] +10log(S/A) +3
Note	The expected precision of this calculation is ±2 dB.

9.11 Typical Bedroom Top Floor Front Façade

Recorded Site Data (Corrected for Free Field)	Octave Band Centre Frequency (Hz)					
	125	250	500	1000	2000	4000
Daytime Leqff	65.6	63.1	62.1	66.0	65.1	66.8
Night time Leqff	57.2	57.3	56.4	60.8	59.1	60.3

Room Data	Sf	Sr	Swi	Sew	Srr	Volume
Area m^2	9	15	3	6	15	38

Specification Summary	Site Specific Specification	Attenuation Required	
Glazing Specification	6mm / 16mm Argon / 6.8mm Pilkington Optiphon	Rw(C; Ctr)	40(-2,-6) dB
Ventilation Strategy	Titon V75 / C75	Dne'w	44 dB
Wall Specification	Brick & Block Cavity Wall	Rw	54 dB
Roof Specification	Standard Pitched Roof	Rw	57 dB

Detailed Specification	Octave Band Centre Frequency (Hz)					
	125	250	500	1000	2000	4000
Glazing Specification (Rwi)	21.0	28.0	37.0	48.0	48.0	54.0
Ventilation Strategy (Dne)	37.0	37.0	36.1	46.9	49.2	55.2
Wall Specification (Rew)	40.0	44.0	45.0	51.0	56.0	56.0
Roof Specification (Rrr)	39.0	48.0	55.0	60.0	59.0	61.0

Calculation Results			
Daytime Hours (07:00-23:00)	$L_{Aeq\ 16\ HOUR}$	31.4	dB(A)
Night Time Hours (23:00-07:00)	$L_{Aeq\ 8\ HOUR}$	25.0	dB(A)

Formula	Leq2=Leqff+10log[A0/S*10^(-Dne/10)+Swi/S*10^(-Rwi/10)+Sew/10*10^(-Rew/10)+Srr/S*10^(-Rrr/10)] +10log(S/A) +3
Note	The expected precision of this calculation is ±2 dB.

9.12 Typical Bedroom First Floor Rear Façade

Recorded Site Data (Corrected for Free Field)	Octave Band Centre Frequency (Hz)					
	125	250	500	1000	2000	4000
Daytime Leqff	46.6	44.1	43.1	47.0	46.1	47.8
Night time Leqff	39.2	39.3	38.4	42.8	41.1	42.3

Room Data	Sf	Sr	Swi	Sew	Srr	Volume
Area m^2	9	0	3	6	0	38

Specification Summary	Site Specific Specification	Attenuation Required	
Glazing Specification	4mm / (6-16mm) / 4mm	Rw(C; Ctr)	29(-1,-4) dB
Ventilation Strategy	Titon V25 / Std. Canopy	Dne'w	35 dB
Wall Specification	Brick & Block Cavity Wall	Rw	54 dB
Roof Specification	Standard Pitched Roof	Rw	57 dB

Detailed Specification	Octave Band Centre Frequency (Hz)					
	125	250	500	1000	2000	4000
Glazing Specification (Rwi)	21.0	17.0	25.0	35.0	37.0	31.0
Ventilation Strategy (Dne)	35.9	37.6	36.3	31.8	36.8	40.4
Wall Specification (Rew)	40.0	44.0	45.0	51.0	56.0	56.0
Roof Specification (Rrr)	39.0	48.0	55.0	60.0	59.0	61.0

Calculation Results			
Daytime Hours (07:00-23:00)	$L_{Aeq\ 16\ HOUR}$	21.8	dB(A)
Night Time Hours (23:00-07:00)	$L_{Aeq\ 8\ HOUR}$	17.0	dB(A)

Formula	Leq2=Leqff+10log[A0/S*10^(-Dne/10)+Swi/S*10^(-Rwi/10)+Sew/10*10^(-Rew/10)+Srr/S*10^(-Rrr/10)] +10log(S/A) +3
Note	The expected precision of this calculation is ±2 dB.

9.13 Typical Bedroom Top Floor Rear Façade

Recorded Site Data (Corrected for Free Field)	Octave Band Centre Frequency (Hz)					
	125	250	500	1000	2000	4000
Daytime Leqff	46.6	44.1	43.1	47.0	46.1	47.8
Night time Leqff	39.2	39.3	38.4	42.8	41.1	42.3

Room Data	Sf	Sr	Swi	Sew	Srr	Volume
Area m^2	9	15	3	6	15	38

Specification Summary	Site Specific Specification	Attenuation Required	
Glazing Specification	4mm / (6-16mm) / 4mm	Rw(C; Ctr)	29(-1,-4) dB
Ventilation Strategy	Titon V25 / Std. Canopy	Dne'w	35 dB
Wall Specification	Brick & Block Cavity Wall	Rw	54 dB
Roof Specification	Standard Pitched Roof	Rw	57 dB

Detailed Specification	Octave Band Centre Frequency (Hz)					
	125	250	500	1000	2000	4000
Glazing Specification (Rwi)	21.0	17.0	25.0	35.0	37.0	31.0
Ventilation Strategy (Dne)	35.9	37.6	36.3	31.8	36.8	40.4
Wall Specification (Rew)	40.0	44.0	45.0	51.0	56.0	56.0
Roof Specification (Rrr)	39.0	48.0	55.0	60.0	59.0	61.0

Calculation Results			
Daytime Hours (07:00-23:00)	$L_{Aeq\ 16\ HOUR}$	21.8	dB(A)
Night Time Hours (23:00-07:00)	$L_{Aeq\ 8\ HOUR}$	17.0	dB(A)

Formula	Leq2=Leqff+10log[A0/S*10^(-Dne/10)+Swi/S*10^(-Rwi/10)+Sew/10*10^(-Rew/10)+Srr/S*10^(-Rrr/10)] +10log(S/A) +3
Note	The expected precision of this calculation is ±2 dB.

9.14 Glazing (R_{wi})

Octave Band Frequency	125	250	500	1000	2000	4000	$R_{w\ (C:Ctr)}$
6mm glass / 16mm Argon air gap / 6.8mm Optiphon Pilkington Glass	21.0	28.0	37.0	48.0	48.0	54.0	40(-2,-6)
4mm glass / 6 -16mm air gap / 4mm glass	21.0	17.0	25.0	35.0	37.0	31.0	29 (-1,-4)

9.15 Ventilation (Dne)

Octave Band Frequency	125	250	500	1000	2000	4000	Dn,e,w
Titon V75 /C75	37.0	37.0	36.1	46.9	49.2	55.2	44
Titon V25 Standard Canopy Vent	35.9	37.6	36.3	31.8	36.8	40.4	35

9.16 Walls (Non-Glazed Elements) (R_{ew})

Octave Band Frequency	125	250	500	1000	2000	4000	R_w
Minimum External Wall Attenuation	40.0	44.0	45.0	51.0	56.0	61.0	50

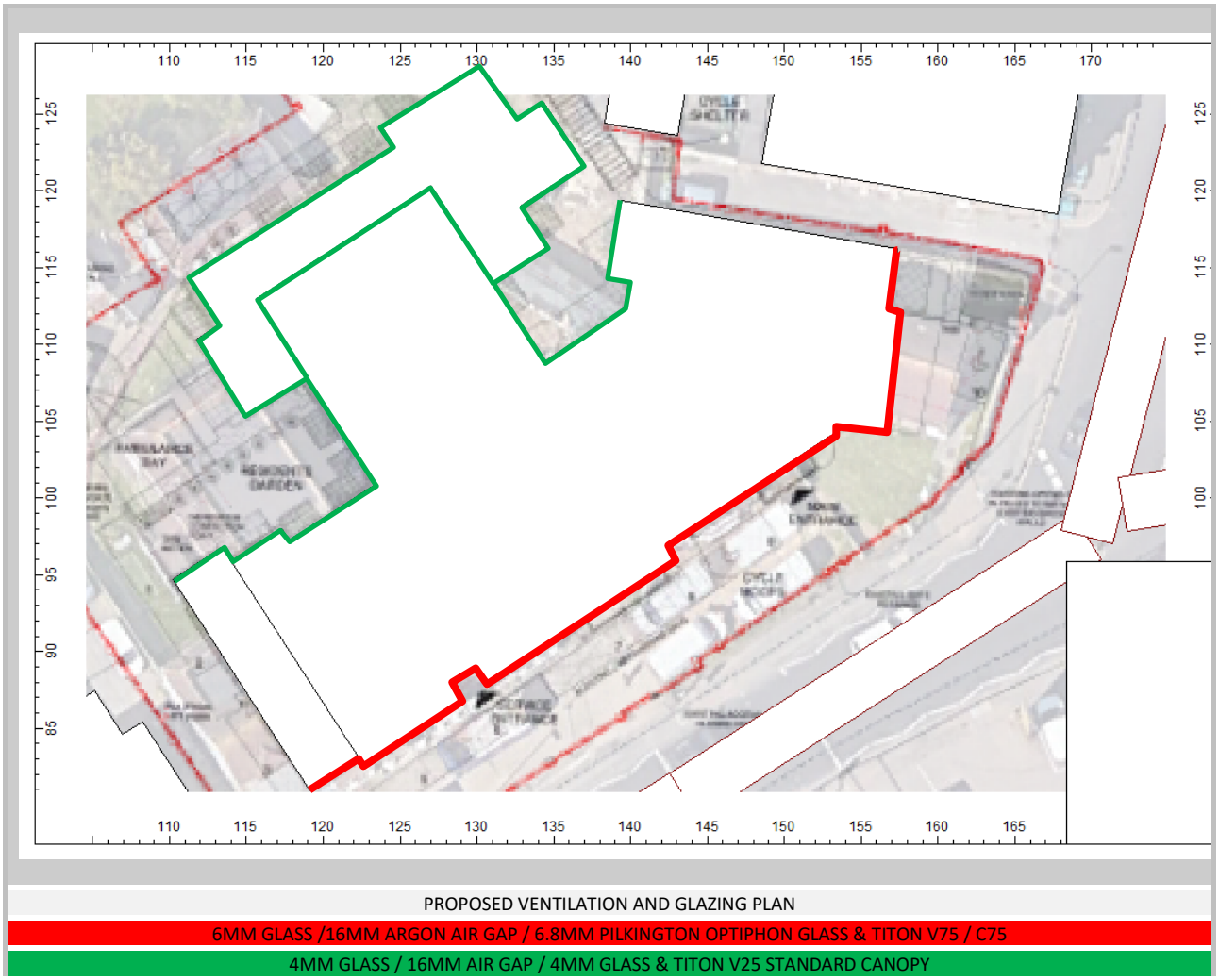
9.17 Roof (R_{rr})

Octave Band Frequency	125	250	500	1000	2000	4000	R_w
Minimum Value	39.0	48.0	55.0	60.0	59.0	61.0	57

NOTE:

The above are minimum construction attenuation values and should alternative methods be selected; these should be equal to or greater than the above corresponding values. Calculations carried out have indicated the following specifications should be installed for this site.

9.18 Glazing & Ventilation Assessment



PROPOSED VENTILATION AND GLAZING PLAN

6MM GLASS /16MM ARGON AIR GAP / 6.8MM PILKINGTON OPTIPHON GLASS & TITON V75 / C75

4MM GLASS / 16MM AIR GAP / 4MM GLASS & TITON V25 STANDARD CANOPY

The development should be designed with a 6mm glass / 16mm argon air gap / 6.8mm Pilkington Optiphon glass windows and a Titon V75 / C75 vent or similarly approved to all rooms facing onto the A259. The remainder of the development can be specified with a standard 4mm glass / 16mm air gap / 4mm glass and a Titon V25 standard canopy vent to ensure the internal noise levels are acceptable in terms of the assessment to British Standard 8233: 2014.

10 LAmax dB NOISE LEVEL ASSESSMENT

10.1 Criteria

10.1.1 Night Noise Guidelines Europe 2009

The Night Noise Guidelines 2009 make direct reference to the World Health Organisations Guidelines for Community Noise 1999 with recommended guideline criteria of L_{Aeq} 30 dB indoors for continuous noise. The document goes on to explain that sleep disturbance correlates best with L_{Amax} and effects have been observed at 45 dB or less. This is particularly true if the background noise level is low. Noise events exceeding 45 dB(A) should therefore be limited.

10.1.2 Professional Practice Guidance on Planning & Noise.

PRoPG: Planning and Noise Appendix A 'Dealing with Noise Events' A.17 states that:-

Various studies have linked the L_{Amax} from individual noise events to behavioural awakenings. For example one study found that the "Probability of sleep stage changes to wake/S1 from railway noise increased significantly from 6.5% at 35 dB(A) to 20.5% at 80 dB(A) $L_{Amax,F}$ whilst another study concluded that "noise disturbance of sleep may be expected to become significant once the outdoor L_{Aeq} exceeds 55 dB provided peak noise levels do not exceed 75 to 80 dB. Higher L_{Aeq} values up to 60 dB may be allowed providing the peak levels do not exceed 85 dB, and the number of such events is less than about 20 per night". Based on these studies it can be concluded that at night (2300 - 0700 hrs) a significant effect on sleep disturbance e.g. behavioural awakening, is likely to occur where the maximum sound level at the façade of a building with partially open windows is above:

85 dB $L_{Amax,F}$ (where the number of events exceeding this value is ≤ 20); or
80 dB $L_{Amax,F}$ (where the number of events exceeding this value is > 20).

Pro PG: Planning and Noise Appendix A 'Dealing with Noise Events' A.18 goes on to explain that the main body of sleep research is consistent with a careful interpretation of the viewpoint set out in the World Health Organisation Guidelines which for the ordinary population is that:

- ✓ *Impacts on sleep can be detected from relatively low level maximum noise events, however the degree of resulting harm may not be significant.*
- ✓ *'Effects' on sleep (such as EEG awakenings and sleep stage changes) occur spontaneously in the general population many times per night regardless of any impacts due to noise.*
- ✓ *The smaller the number of noise events, the louder the maximum noise level that can be tolerated without adverse effects upon sleep; subject to an upper limit.*
- ✓ *At relatively low levels e.g. around 45 dB $L_{Amax,F}$ when sufficient number of such events take place during the night the adverse effects of individual noise events are likely to be limited to sleep disturbance in the form of changes in sleep state or perhaps some EEG awakenings.*
- ✓ *It normally requires noise levels higher than 45 dB $L_{Amax,F}$ before significant adverse effects such as behavioural awakenings, difficulty getting to sleep, premature awakening or difficulty getting back to sleep generally occur and the latest field research on and aircraft noise suggest that it requires internal L_{Amax} noise levels of around 65 dB before noise induced awakenings become distinguishable from spontaneous awakenings).*

10.1.3 World Health Organisations 'Guidelines for Community Noise'.

The WHO Guideline for Community Noise suggests that levels of L_{AFmax} 45 dB should not exceed more than 10 events within any one night time period 23:00 – 07:00. Therefore, calculations and assessments are to be made against these criteria to ascertain if the proposed glazing and ventilation specification will be suitable to achieve that of the assessed 11th highest recorded L_{AFmax} dB level.

L_{AFmax} dB Noise Levels >80 dB					
L_{AFmax} dB	79.7	80.0	80.1	79.1	74.9
Time	Fig 1	Fig 2	Fig 3	Fig 4	Fig 5
	108	170	42	57	69

L_{AFmax} dB Noise Levels >85 dB					
L_{AFmax} dB	79.7	80.0	80.1	79.1	74.9
Time	Fig 1	Fig 2	Fig 3	Fig 4	Fig 5
	9	28	6	4	6

10.1.4 LAFmax dB Noise Levels – Night Time 23:00 – 07:00 (1 Minute Data)

1 Minute Event No.	Recorded L_{AFmax} dB Noise Levels	Façade Corrected L_{AFmax} dB Noise Levels
1	95.5	93.4
2	90.1	88.0
3	88.3	86.2
4	88.0	85.9
5	87.6	85.5
6	85.2	83.1
7	84.9	82.8
8	84.6	82.5
9	84.4	82.3
10	84.4	82.3
11	84.4	82.3

The following table demonstrate the results and the evaluated 11th highest L_{Amax} dB level. With the proposed glazing and ventilation strategies implemented on this site, the following calculated internal levels have been evaluated accordingly:-

Item		Night Time (23:00-07:00)	Description
1	Recorded External Noise Level	67.5	Recorded Noise Level at the Monitoring Position
2	Calculated Highest Façade Level	66.0	Highest recorded façade level of the proposed development closest to the above associated monitoring position.
3	Façade Correction	-1.5	Difference between Recorded and Calculated (Item 1 and 2)
4	Calculated Façade Attenuation	-41.0	Calculated façade attenuation taken from the highest recorded LAeq 8 HOUR dB night time noise level, minus the highest calculated internal noise level taken from the BS 8233 calculations.
5	LAmax 45 dB Criteria	45.0	LAmax 45 dB Criteria taken from WHO Guidelines. BS 8233 does not reference LAmax dB noise level criteria.
6	Calculated Façade Level Outside	86.0	Addition of Items 4 and 5 to give a resultant target level for the 11th Recorded LAmax
7	11th Recorded LAmax	82.3	11th Recorded LAmax
8	LAmax Criteria Achieved	YES	If Item 7 is less than 6, then the site is likely to be compliant. If not, further calculations are required

The above table demonstrates that the upgraded glazing and ventilation will result in the internal LAmax 45 dB criteria being achieved.

11 ELEMENT 3 – EXTERNAL AMENITY AREA NOISE ASSESSMENT

11.1 Outdoor Living Areas

The World Health Organisation 'Guidelines for Community Noise gives guidance as to desirable noise levels that should be achieved within outdoor living areas such as gardens, patios and verandas etc.

Table 1: Guideline values for community noise in specific environments, details the desirable target noise levels within various areas.

Outdoor Living Area	
Serious Annoyance, daytime and evening	$L_{Aeq\ 16\ HOUR}$ 55 dB
Moderate Annoyance, daytime and evening	$L_{Aeq\ 16\ HOUR}$ 50 dB

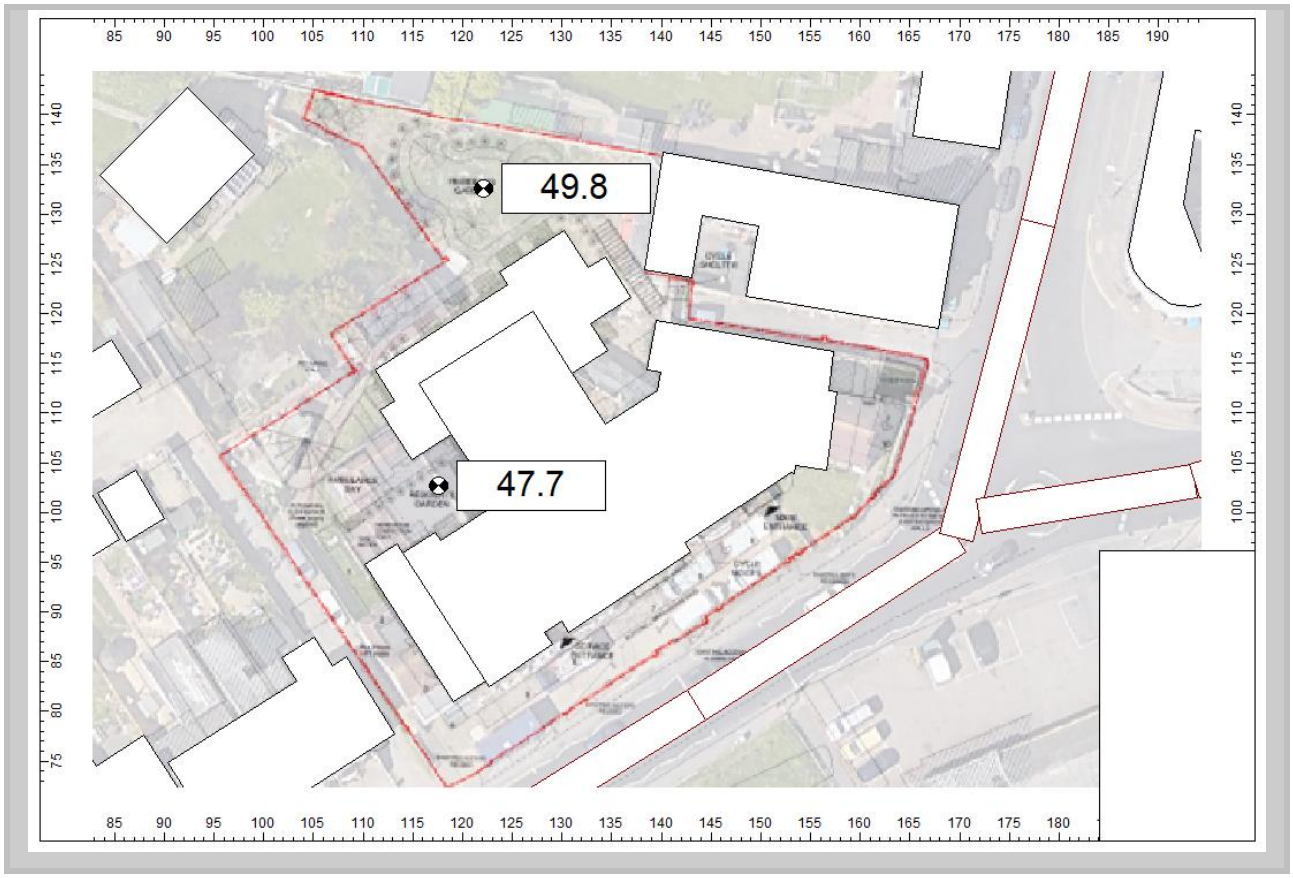
In order to evaluate the external noise levels within the proposed development, and to correctly and accurately select the precise required minimum screen heights, the 3D modelling software CADNA A is to be used. Initially, the site plan is to be overlaid onto Google Earth and then imported directly into CADNA A using the geometric co-ordinates.

From this, the monitoring positions and noise sources such as roads are added. The output noise levels from the roads are then increased until the monitored noise levels are achieved at the monitoring position. This model is then saved and used as a working 3D acoustic model of the site. The proposed buildings are then constructed on a 3D bases and receptors placed within the terrace garden areas. The calculation software is then run to evaluate the garden levels within sample plots across the development. The following CADNA A screen shots demonstrate the existing sites working 3D model. The levels at the measurement position correlate with the measured daytime average levels detailed within this report.



3D View

The development proposes external living areas and therefore an assessment to the World Health Organisation's 'Guidelines for Community Noise' has been carried out. The guideline has been considered acceptable criteria for this assessment given the sites geographical location. The calculation demonstrates the external living spaces are likely to see noise levels below the lower guideline of 50 dB in the garden areas.



12 ELEMENT 4 – ASSESSMENT OF OTHER RELEVANT ISSUES

12.1 The National Planning Policy Framework 2023 (NPPF)

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 glazing / ventilation 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.

13 PLANT CALCULATIONS

The following calculations have been based on the recorded LA90 background noise level over a typical 24 hour period at the measurement position 2 and include the possibility of night time operations.

DAYTIME 07:00 – 23:00

Octave Band Centre Frequency (Hz)									dB(A)	Comments
63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k		
56.6	52.8	50.8	51.9	50.2	45.8	41.6	32.2	15.4		Recorded Background Noise Levels
3	3	3	3	3	3	3	3	3		Reflection at Residential
5	5	5	5	5	5	5	5	5		BS 4142 : 2014 Corrections
14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3	14.3		LAeq - LA90
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		Distance Correction
0	0	0	0	0	0	0	0	0		Barrier Attenuation
3	3	3	3	3	3	3	3	3		Reflection at Source
37.3	33.5	31.5	32.6	30.9	26.5	22.3	12.9	-3.9	**35**	Target Level at Residential
6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		Reflections
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		Distance and Barriers
31.3	27.5	25.5	26.6	24.9	20.5	16.3	6.9	-9.9	**29**	Calculated Noise Source Level @ 1.0m
11.3	7.5	5.5	6.6	4.9	0.5	-3.7	-13.1	-29.9	**9**	Calculated Noise Source Level @ 10.0m

NIGHT TIME 23:00 – 07:00

Octave Band Centre Frequency (Hz)									dB(A)	Comments
63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k		
46.8	41.0	38.4	35.2	34.8	33.5	30.9	22.0	12.7		Recorded Background Noise Levels
3	3	3	3	3	3	3	3	3		Reflection at Residential
5	5	5	5	5	5	5	5	5		BS 4142 : 2014 Corrections
11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2		LAeq - LA90
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		Distance Correction
0	0	0	0	0	0	0	0	0		Barrier Attenuation
3	3	3	3	3	3	3	3	3		Reflection at Source
30.6	24.8	22.2	19.0	18.6	17.3	14.7	5.8	-3.5	**24.0**	Target Level at Residential
6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		Reflections
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		Distance and Barriers
24.6	18.8	16.2	13.0	12.6	11.3	8.7	-0.2	-9.5	**18**	Calculated Noise Source Level @ 1.0m
4.6	-1.2	-3.8	-7.0	-7.4	-8.7	-11.3	-20.2	-29.5	**-2**	Calculated Noise Source Level @ 10.0m

The above calculations have demonstrated that in order to meet the criteria of the background noise level, the following external noise level plant criteria should be achieved at 1.0m and 10.0m from all units operating at the same time under normal load.

DAYTIME 07:00 – 23:00

Octave Band Centre Frequency (Hz)									**dB(A)**	**Comments**
63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k		
31.3	27.5	25.5	26.6	24.9	20.5	16.3	6.9	-9.9	**29**	Calculated Noise Source Level @ 1.0m
11.3	7.5	5.5	6.6	4.9	0.5	-3.7	-13.1	-29.9	**9**	Calculated Noise Source Level @ 10.0m
Sound Pressure Level (ref 2 x 10-5 Pa)										

NIGHT TIME 23:00 – 07:00

Octave Band Centre Frequency (Hz)									**dB(A)**	**Comments**
63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k		
24.6	18.8	16.2	13.0	12.6	11.3	8.7	-0.2	-9.5	**18**	Calculated Noise Source Level @ 1.0m
4.6	-1.2	-3.8	-7.0	-7.4	-8.7	-11.3	-20.2	-29.5	**-2**	Calculated Noise Source Level @ 10.0m
Sound Pressure Level (ref 2 x 10-5 Pa)										

The above calculations have been made on the worst case scenario with the plant being positioned no closer than 1.0m (linear) to the nearest affected window.

Based on the above being achieved, the following noise assessment can be concluded.

14 BS4142: 2014 +A1:2019 NOISE ASSESSMENT

14.1 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, 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.

14.2 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 1st 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.

14.3 Assessment Position

The assessment position was established any noise sensitive premise within 1m from any and all proposed plant.

14.4 Calculations

The specific noise levels are calculated at the assessment position located at the residential property above the site 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.

14.5 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 site between 07:00 on 24th and 07:00 on 29th August 2023.

14.6 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 BS4142: 2014. There are 3 methods for approaching this.

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

14.7 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.

BS4142: 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.

BS4142: 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.

BS4142: 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

14.8 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

14.9 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.

14.10 Octave Band Frequency Analysis

All calculations carried out are done so on an octave band centre frequency basis and not an overall dB(A) level. This ensures that the tonal element from any proposed plant is minimised. A large majority of manufacturer's data is supplied in the octave band centre frequency (Hz) format.

14.11 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.

14.12 Assessments

14.12.1 Daytime (07:00 – 23:00)

Rating Industrial Noise affecting Mixed Industrial and Residential Areas British Standard 4142: 2014 +A1:2019 Daytime (07:00 to 23:00)			
Source	Operating Times		Source Position
Case Breakout Outlet	23:00 to 07:00 7 days per week Worst case scenario		See Plans
Assessment Position	77 Brighton Road, Lancing		
Background Position	At the assessment position		
Item	Calculation	Clause	Commentary
Specific Noise Level $L_{Aeq,1\ hour}$	35 dB	7	Calculated using ISO 9613:1996[3].
Tonality	+2 dB	8.1	Tonality Characteristic
Impulsivity	+3 dB	8.1	Impulsivity Characteristic
Rating Level	40 dB	9.1	The acoustic feature correction is added to the specific noise level
Background Noise Level $L_{A90,1\ hour}$	40 dB	8.1	Modal Background Noise Level (07:00 – 23:00)
Assessment Level	+/- 0 dB	11	The background level is subtracted from the rating level.
Conclusion BS 4142:2014[1]	+10 dB Significant Adverse Effects, +5 dB Adverse Effects, +0 dB Low Impact		
Assessment	**+/- 0 dB**		
Conclusion	**The assessment level is 'Low Impact'**		

14.12.2 Night Time (23:00 – 07:00)

Rating Industrial Noise affecting Mixed Industrial and Residential Areas British Standard 4142: 2014 +A1:2019 Night Time (23:00 to 07:00)			
Source	Operating Times		Source Position
Case Breakout Outlet	23:00 to 07:00 7 days per week Worst case scenario		See Plans
Assessment Position	77 Brighton Road, Lancing		
Background Position	At the assessment position		
Item	Calculation	Clause	Commentary
Specific Noise Level $L_{Aeq,1\ hour}$	24 dB	7	Calculated using ISO 9613:1996[3].
Tonality	+2 dB	8.1	Tonality Characteristic
Impulsivity	+3 dB	8.1	Impulsivity Characteristic
Rating Level	29 dB	9.1	The acoustic feature correction is added to the specific noise level
Background Noise Level $L_{A90,1\ hour}$	29 dB	8.1	Modal Background Noise Level (23:00 – 07:00)
Assessment Level	+/- 0 dB	11	The background level is subtracted from the rating level.
Conclusion BS 4142:2014[1]	+10 dB Significant Adverse Effects, +5 dB Adverse Effects, +0 dB Low Impact		
Assessment	**+/- 0 dB**		
Conclusion	**The assessment level is 'Low Impact'**		

14.13 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. It should be noted that the calculations made within this report have been done so in octave band centre frequency levels in order to minimise tonal element and therefore applying any more than +2 dB would not be appropriate to this assessment. To safeguard the residents from any possible unwanted noise, this penalty has been applied as an extra layer of acoustic protection.

14.14 Impulsivity Penalty

A +3 dB penalty has been applied to the specific noise level to allow for any minor impulsive elements that may be present from the proposed plant. It should be noted that the calculations made within this report have been done so with the assessment conclusion of +/- 0 dB below the background noise levels and therefore, the impulsive nature of the plant should not be audible at the nearest associated noise sensitive preceptors. To safeguard the residents from any possible unwanted noise, this penalty has been applied as an extra layer of acoustic protection.

14.15 Assessment Conclusion

It can be seen from the above assessments that with any new plant achieving the proposed maximum noise level plant criteria detailed within this report, an assessment conclusion of Low Impact could be expected. Therefore, no further mitigation measures would be required if the design criteria is adhered to.

15 ACOUSTIC DESIGN STATEMENT

Good Acoustic Design	Given the size and orientation of the proposed site, it is recommended that the developer adopted, where practically possible, a good acoustic design which should include careful consideration of the positioning of the proposed properties together with thoughts being taken as to internal layouts to minimise noise sensitive rooms facing onto dominant noise sources within the local areas. Given the size of this development, every effort has already been made to minimise the acoustic impact from the surrounding areas.
Internal Noise Levels	Calculations have been carried out and assessments made to BS 8233: 2014 together with design specifications supplied for the required glazing and ventilation specifications required across the development to ensure compliance.
L_{Amax} dB Noise Levels	Assessments and calculations demonstrate that the L_{Amax} dB Levels are below the recommended criteria set out within PRoPG
External Living Areas	The guideline has been considered acceptable criteria for this assessment given the sites geographical location. The layout has been designed in order to allow for acoustics and minimise the noise levels within these outdoor living spaces. The calculation demonstrates the external living spaces are likely to see noise levels just below the lower guideline of 50 dB in the rear garden areas.
NPPF & NPSE	With the glazing / ventilation 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.
BS 4142: 2014	It can be seen from the BS 4142: 2014 +A1:2019 noise assessments that the existing extract fans from the kitchen of the neighbouring commercial premises are unlikely to adversely affect the proposed accommodation scheme and an assessment conclusion of Low Impact could be expected.
OVERALL OUTCOME	**NOEL – No Observed Effect Level**

16 RECOMMENDATION TO DECISION MAKER

Levels have been recorded and assessments made in accordance with the relevant standards. Internal criteria's have been set and calculations made in order to determine the minimum construction details required in order to meet the desired level within the proposed residential dwellings and satisfy the local council's requirements.

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.

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 using the following parameters.

As indicated in Section 2 of PRoPG, following the PRoPG approach will lead to the choice of one of four possible recommendations from the noise practitioner to the decision maker:

A. Planning consent may be granted without any need for noise conditions;
B. Planning consent may be granted subject to the inclusion of suitable noise conditions;
C. Planning consent should be refused on noise grounds in order to avoid significant adverse effects ("avoid"); or
D. Planning consent should be refused on noise grounds in order to prevent unacceptable adverse effects ("prevent").

RECOMMENDATION TO DECISION MAKER

Grant with Noise Conditions

17 CONCLUSION

17.1.1 Background Noise Levels

A 120 hour background noise survey was undertaken from the 24th – 29th August 2023 at two positions at the site in order to establish the underlying background noise levels. Recorded levels as follows.

Assessment Position	Date Start	Date Finish	Daytime LAeq	Night Time LAeq
Position 1	24.08.2023	29.08.2023	74.1	67.5
Position 2	24.08.2023	29.08.2023	54.3	44.8

Assessment Position	Date Start	Date Finish	Daytime LA90	Night Time LA90
Position 1	24.08.2023	29.08.2023	60.0	33.0
Position 2	24.08.2023	29.08.2023	40.0	29.0

It should be noted that the site is currently active with a generator operational. Therefore, a representative position was chosen at 77 Brighton Road.

17.2 Potential Façade Noise Levels

17.2.1 Daytime (07:00-23:00)

Time Period	Highest Potential Façade Noise Level	Noise Risk Category 3 - High
Average Daytime (07:00-23:00)	$L_{Aeq,\ 16\ HOUR}$ 72.0 dB	>70 dB

17.2.2 Night Time (23:00-07:00)

Time Period	Highest Potential Façade Noise Level	Noise Risk Category 3 - High
Average Night Time (23:00-07:00)	$L_{Aeq,\ 16\ HOUR}$ 66.0 dB	>60 dB
	Maximum (10 Times) – L_{Amax} 82.3 dB	>80 dB (10 Times in 8 Hours)

17.3 Risk Assessment

17.3.1 Daytime (07:00-23:00) – Position 1

Risk Assessment Category	Risk Assessment
3 - High	High noise levels indicate that there is an increased risk that development may be refused on noise grounds. This risk may be reduced by following a good acoustic design process that is demonstrated in a detailed ADS. Applicants are strongly advised to seek expert advice.

17.3.2 Night Time (23:00-07:00) – Position 1

Risk Assessment Category	Risk Assessment
3 - High	High noise levels indicate that there is an increased risk that development may be refused on noise grounds. The risk may be reduced by following a good acoustic design process that is demonstrated in a detail ADS. Applicants are strongly advised to seek expert advice.

The above table demonstrates this site is located within Noise Risk Category 3 which suggests a high level of risk for daytime and night time levels. Therefore, further mitigation levels will be required at Stage 2.

17.4 Glazing & Ventilation Specification

The development should be designed with a 6mm glass / 16mm argon air gap / 6.8mm Pilkington Optiphon glass windows and a Titon V75 / C75 vent or similarly approved to all rooms facing onto the A259. The remainder of the development can be specified with a standard 4mm glass / 16mm air gap / 4mm glass and a Titon V25 standard canopy vent to ensure the internal noise levels are acceptable in terms of the assessment to British Standard 8233: 2014.

17.5 WHO Guidelines for Community Noise

The development proposes external living areas and therefore an assessment to the World Health Organisation's 'Guidelines for Community Noise' has been carried out. The guideline has been considered acceptable criteria for this assessment given the sites geographical location. The calculation demonstrates the external living spaces are likely to see noise levels just below the lower guideline of 50 dB in the rear garden areas.

17.6 Proposed Plant Criteria

Calculations and assessments are to be made within this report to generate a maximum noise level criteria to which all plant should be selected to. The maximum noise level calculated is to be achieved at 1.0m & 10m from the units in situ with all units operating under normal load.

The following calculations have been based on the recorded LA90 background noise level over a typical 24 hour period at the measurement position 2 and include the possibility of night time.

The above calculations have demonstrated that in order to meet the criteria of +/- 0 dB of the recorded background noise level, the following external noise level plant criteria should be achieved at 1.0m and 10m from all units operating at the same time under normal load.

DAYTIME 07:00 – 23:00

Octave Band Centre Frequency (Hz)									dB(A)	Comments
63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k		
31.3	27.5	25.5	26.6	24.9	20.5	16.3	6.9	-9.9	**29**	Calculated Noise Source Level @ 1.0m
11.3	7.5	5.5	6.6	4.9	0.5	-3.7	-13.1	-29.9	**9**	Calculated Noise Source Level @ 10.0m
Sound Pressure Level at 1.0m from plant (ref 2 x 10-5 Pa)										

NIGHT TIME 23:00 – 07:00

Octave Band Centre Frequency (Hz)									dB(A)	Comments
63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k		
24.6	18.8	16.2	13.0	12.6	11.3	8.7	-0.2	-9.5	**18**	Calculated Noise Source Level @ 1.0m
4.6	-1.2	-3.8	-7.0	-7.4	-8.7	-11.3	-20.2	-29.5	**-2**	Calculated Noise Source Level @ 10.0m
Sound Pressure Level at 1.0m from plant (ref 2 x 10-5 Pa)										

17.6.1 Assessments

17.6.1.1 Daytime (07:00 – 23:00)

Rating Level	40dB	9.1	The acoustic feature correction is added to the specific noise level
Background Noise Level $L_{A90,1\ hour}$	40 dB	8.1	Modal Background Noise Level (2300 – 0700)
Assessment Level	+/- 0 dB	11	The background level is subtracted from the rating level.
Conclusion BS 4142:2014[1]	+10 dB Significant Adverse Effects, +5 dB Adverse Effects, +0 dB Low Impact		
Assessment	**+/- 0 dB**		
Conclusion	**The assessment level is 'Low Impact'**		

17.6.1.2 Night Time (23:00 – 07:00)

Rating Level	29 dB	9.1	The acoustic feature correction is added to the specific noise level
Background Noise Level $L_{A90,1\ hour}$	29 dB	8.1	Modal Background Noise Level (2300 – 0700)
Assessment Level	+/- 0 dB	11	The background level is subtracted from the rating level.
Conclusion BS 4142:2014[1]	+10 dB Significant Adverse Effects, +5 dB Adverse Effects, +0 dB Low Impact		
Assessment	**+/- 0 dB**		
Conclusion	**The assessment level is 'Low Impact'**		

17.7 Conclusion

Levels have been recorded and assessments made in accordance with the relevant standards. Internal criteria's have been set and calculations made in order to determine the minimum construction details required in order to meet the desired level within the proposed residential dwellings and satisfy the local council's requirements.

The operation of any proposed plant has been assessed to establish if the development 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 site and the assessment of the impact of the site operation on nearby residential properties. The resulting emissions from the site running on a worst case scenario show no conflict with 'low impact' criteria and give a strong indication that complaint and impact on the local amenity is unlikely, provided the recommended maximum noise levels plant criteria is achieved as detailed within this report.

The plant criteria was set as the new plant is yet to be designed and it is recommended that this criteria be set as a planning condition.

National Planning Policy Framework 2021 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.

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.

18 APPENDIX A – UNCERTAINTY BUDGET

18.1 Scope

Section 10 of 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.

18.2 Uncertainty of Measured Values

Ref	Source of Uncertainty Section 10.2 British Standard 4142: 2014	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	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

18.3 Uncertainty in Calculations

Ref	Source of Uncertainty Section 10.2 British Standard 4142: 2014	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

18.4 Uncertainty from Other Factors

Ref	Source of Uncertainty Section 10.2 British Standard 4142: 2014	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

18.5 Combined Reported Expanded Uncertainty

Ref	Source of Uncertainty Section 10.2 British Standard 4142: 2014	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.

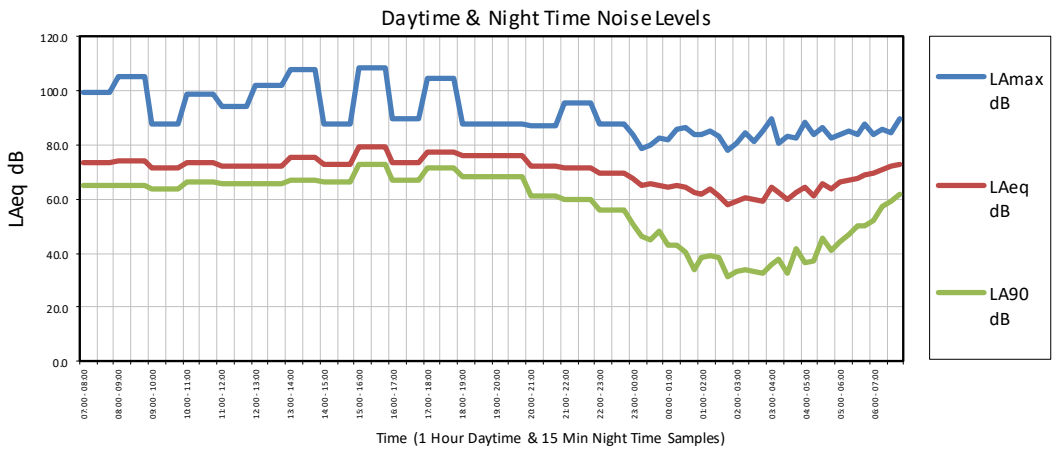
19 APPENDIX B - RESULTS

19.1 24th – 25th August 2023 Position 1

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 & Corresponding LAmax 16 HOUR	74.1	108.0	66.0	72.0	67.7	65.2	64.2	68.1	67.2	68.9	60.2	45.4
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Corresponding LAmax 8 HOUR	66.1	89.6	33.0	63.7	59.8	59.3	59.0	62.4	59.8	55.8	45.2	29.2

DAYTIME NOISE LEVELS 07:00 - 23:00 1 HOUR SAMPLES				Octave Band Centre Frequency (Hz)								
Date / Time	LAeq	LAmax	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
07:00 - 08:00	73.1	69.1	65.1	71.8	67.1	65.7	64.8	68.5	66.7	65.5	56.8	41.5
08:00 - 09:00	73.8	105.2	65.0	73.8	69.9	67.6	67.3	69.0	67.6	65.3	55.0	43.5
09:00 - 10:00	71.3	87.8	63.7	72.1	67.9	65.1	63.9	67.4	64.8	62.1	52.8	42.1
10:00 - 11:00	73.5	98.3	66.3	72.8	67.6	65.3	64.6	68.5	66.7	66.9	58.5	43.0
11:00 - 12:00	71.8	94.0	65.8	73.0	67.6	65.7	64.6	67.9	65.2	62.6	53.2	41.6
12:00 - 13:00	71.8	101.5	65.6	72.8	68.4	65.3	64.1	67.7	65.1	63.0	54.6	38.2
13:00 - 14:00	75.4	107.7	66.6	73.3	67.4	64.8	64.3	68.7	68.8	70.5	61.6	46.7
14:00 - 15:00	72.7	87.3	66.3	72.9	67.5	66.0	64.3	67.8	65.8	65.9	57.5	48.8
15:00 - 16:00	79.4	108.0	72.6	73.4	69.0	66.1	64.9	69.5	71.6	76.2	67.5	52.2
16:00 - 17:00	73.1	89.2	66.9	72.9	69.2	67.1	64.3	67.5	66.0	67.1	59.7	43.2
17:00 - 18:00	77.3	104.4	71.7	72.6	69.3	64.9	64.5	69.8	70.1	73.2	64.7	48.8
18:00 - 19:00	76.2	87.8	68.1	71.8	69.3	64.5	64.2	69.2	68.7	72.0	63.5	46.9
19:00 - 20:00	72.4	87.1	60.9	69.7	62.7	61.7	62.6	67.7	65.9	65.6	57.0	41.3
20:00 - 21:00	71.3	95.6	60.0	67.8	61.7	60.9	61.9	67.6	65.2	62.5	52.9	38.0
21:00 - 22:00	69.3	87.7	56.1	67.4	65.4	63.5	60.6	65.5	63.1	59.7	49.9	33.6
22:00 - 23:00	68.3	88.6	52.8	66.8	65.9	63.4	61.5	64.4	61.9	57.8	47.6	31.2

NIGHT TIME NOISE LEVELS 23:00 - 07:00 15 MINUTE SAMPLES				Octave Band Centre Frequency (Hz)								
Date / Time	LAeq	LAmax	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
23:00 - 23:15	67.5	83.4	50.7	62.9	57.4	56.7	58.5	64.1	61.7	56.9	45.9	29.6
23:15 - 23:30	64.8	78.4	46.3	62.1	57.0	55.7	55.8	61.4	58.9	54.2	43.1	28.0
23:30 - 23:45	65.5	79.9	45.1	62.8	61.9	59.5	56.6	62.1	59.5	54.2	43.0	27.7
23:45 - 00:00	65.0	82.6	48.4	62.7	55.8	55.5	56.8	61.3	58.9	55.7	45.7	29.2
00:00 - 00:15	64.1	81.9	43.2	60.5	57.3	56.3	56.3	60.5	57.6	54.2	44.0	26.2
00:15 - 00:30	65.1	85.6	42.8	61.8	61.4	62.4	58.2	60.8	58.6	55.8	45.3	28.9
00:30 - 00:45	64.1	86.5	40.6	61.6	61.1	62.4	57.1	60.0	57.4	54.0	43.9	30.7
00:45 - 01:00	62.3	83.4	33.7	59.5	68.4	57.2	55.1	58.0	55.5	52.0	42.2	24.0
01:00 - 01:15	61.6	84.0	38.6	62.5	54.8	54.2	53.6	57.9	55.4	51.9	41.5	26.6
01:15 - 01:30	63.3	84.7	39.0	58.7	55.6	53.9	57.0	59.5	56.8	53.8	43.7	29.2
01:30 - 01:45	61.0	83.3	38.3	55.8	51.9	51.5	53.0	57.6	54.7	50.9	40.0	25.1
01:45 - 02:00	57.5	77.9	31.0	53.9	45.4	46.3	48.3	54.5	51.5	45.6	34.1	16.7
02:00 - 02:15	58.8	80.5	33.3	56.4	51.6	49.4	51.6	55.3	52.3	49.1	39.1	21.2
02:15 - 02:30	60.3	84.6	33.6	55.7	49.9	50.8	53.2	56.6	54.1	50.6	39.9	24.4
02:30 - 02:45	59.9	81.4	33.4	59.8	59.8	56.0	53.3	56.1	53.2	49.3	38.6	27.0
02:45 - 03:00	59.3	84.7	32.5	56.0	51.8	53.6	52.8	55.1	52.9	50.2	38.5	22.5
03:00 - 03:15	64.3	89.6	36.1	59.5	57.4	64.2	61.0	59.8	56.2	51.7	41.1	24.7
03:15 - 03:30	62.1	80.6	38.0	56.3	50.8	52.1	55.3	58.8	56.2	49.8	38.0	19.4
03:30 - 03:45	59.6	83.1	32.8	59.0	51.9	51.0	52.9	55.7	53.3	49.8	39.1	25.3
03:45 - 04:00	62.4	82.3	41.8	58.5	52.4	52.9	54.2	59.0	56.3	51.6	40.5	23.1
04:00 - 04:15	64.5	88.4	36.4	61.9	56.0	60.5	59.3	60.0	57.6	55.3	44.9	31.2
04:15 - 04:30	61.1	83.6	37.2	57.2	48.5	50.5	52.9	57.8	55.1	49.5	38.2	19.7
04:30 - 04:45	65.8	86.0	45.4	63.7	58.9	58.8	60.8	61.8	59.2	55.8	44.8	25.8
04:45 - 05:00	63.8	82.5	40.9	59.6	57.7	56.0	56.2	60.2	57.8	53.3	42.0	26.9
05:00 - 05:15	66.3	83.9	44.2	64.7	57.9	57.2	58.3	62.6	60.3	56.4	45.4	28.7
05:15 - 05:30	66.8	84.7	46.5	63.8	57.3	59.5	60.5	63.0	60.3	56.5	48.1	30.5
05:30 - 05:45	67.6	83.8	50.3	63.0	56.8	58.3	59.5	64.1	61.8	56.8	46.1	27.5
05:45 - 06:00	68.7	87.8	49.8	67.1	61.4	62.5	61.9	65.0	62.1	59.2	48.3	34.1
06:00 - 06:15	69.5	83.7	52.2	68.0	61.8	61.8	62.1	66.0	63.2	58.9	47.9	32.1
06:15 - 06:30	70.8	85.4	56.9	66.8	61.8	62.1	63.4	67.1	64.7	61.1	51.0	35.2
06:30 - 06:45	72.0	84.2	58.9	69.0	64.9	65.7	65.2	68.3	65.7	61.4	50.5	33.7
06:45 - 07:00	72.6	89.6	61.4	72.4	65.3	64.7	65.4	69.2	66.3	61.8	50.9	34.7

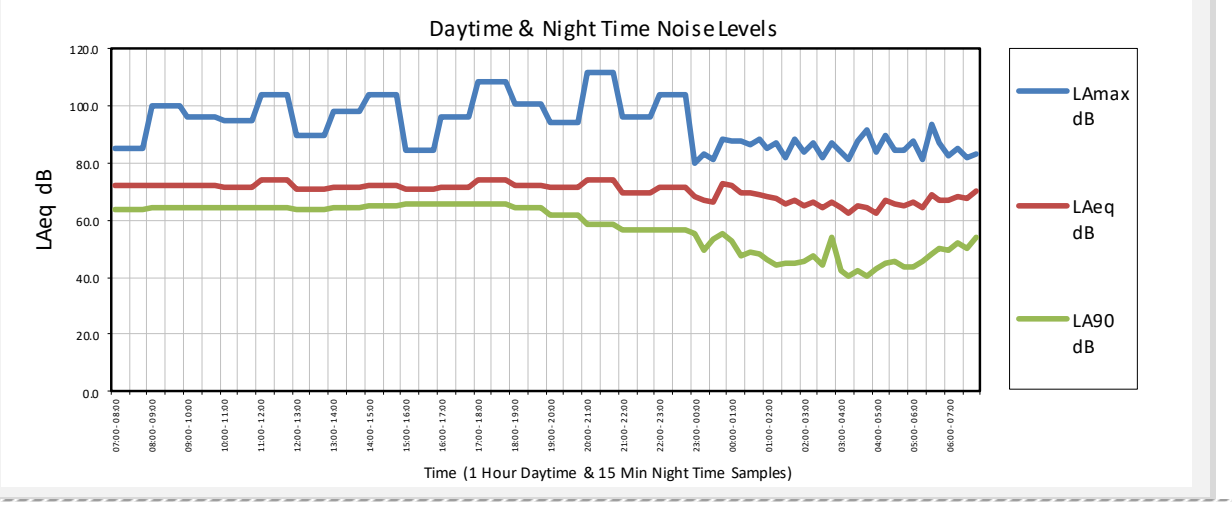


19.2 25th – 26th August 2023 Position 1

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 & Corresponding LAmax 16 HOUR	72.1	111.4	64.0	74.0	69.2	66.4	64.5	67.4	65.4	64.5	54.0	42.5
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Corresponding LAmax 8 HOUR	67.5	93.3	45.0	62.4	58.7	58.8	57.9	62.3	60.6	61.8	52.7	36.4

DAYTIME NOISE LEVELS 07:00 - 23:00 1 HOUR SAMPLES				Octave Band Centre Frequency (Hz)								
Date / Time	LAeq	LAmax	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
07:00 - 08:00	72.3	84.9	63.8	72.4	68.1	66.1	65.0	68.5	66.0	62.2	51.7	36.6
08:00 - 09:00	72.2	99.6	64.4	73.1	68.8	64.9	64.7	68.2	66.0	63.1	52.4	38.2
09:00 - 10:00	71.9	96.2	64.2	72.6	66.9	67.0	65.0	68.0	65.4	62.1	52.1	37.6
10:00 - 11:00	71.2	94.9	64.2	72.4	66.2	64.5	64.2	67.4	64.7	61.3	51.4	36.4
11:00 - 12:00	74.1	103.5	64.4	72.3	67.9	66.2	64.0	67.8	68.5	68.0	57.7	42.0
12:00 - 13:00	70.6	89.2	63.8	73.7	70.8	67.8	64.5	66.4	63.4	61.0	51.5	40.5
13:00 - 14:00	71.1	97.8	64.5	74.7	70.0	67.0	64.8	66.6	63.9	62.9	52.7	44.1
14:00 - 15:00	71.8	103.5	64.9	76.4	69.3	65.5	64.6	67.1	65.3	63.7	54.2	44.4
15:00 - 16:00	70.8	84.5	65.7	77.2	70.4	65.7	64.1	66.8	63.7	62.0	53.2	45.1
16:00 - 17:00	71.6	96.0	65.6	76.9	71.2	67.1	65.0	66.7	64.3	64.0	55.5	47.3
17:00 - 18:00	74.0	108.6	65.7	75.6	70.6	66.6	66.5	68.0	67.0	68.5	57.9	43.5
18:00 - 19:00	71.9	100.2	64.4	76.1	70.3	66.7	64.8	67.9	65.4	62.3	52.7	39.5
19:00 - 20:00	71.1	93.8	61.9	71.1	68.1	68.8	64.1	67.6	64.3	59.9	49.5	42.2
20:00 - 21:00	74.3	111.4	58.4	69.0	68.5	66.1	62.9	66.8	66.8	70.2	57.0	45.6
21:00 - 22:00	69.8	95.8	56.5	70.0	70.0	66.0	62.7	65.8	63.0	59.8	50.2	40.0
22:00 - 23:00	71.1	103.6	56.2	69.0	66.4	64.8	64.1	67.2	64.3	62.0	51.2	36.0

NIGHT TIME NOISE LEVELS 23:00 - 07:00 15 MINUTE SAMPLES				Octave Band Centre Frequency (Hz)								
Date / Time	LAeq	LAmax	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
23:00 - 23:15	68.2	79.7	55.0	65.3	59.8	59.2	60.1	64.8	61.9	57.6	46.9	28.7
23:15 - 23:30	66.8	82.9	49.7	64.3	58.8	58.6	59.1	63.7	60.6	55.2	43.9	26.4
23:30 - 23:45	66.4	80.8	53.5	62.8	55.9	56.6	58.0	63.1	60.2	55.5	44.4	30.7
23:45 - 00:00	72.6	88.1	55.2	62.9	57.9	58.6	59.4	64.4	64.7	69.1	60.3	44.4
00:00 - 00:15	72.2	87.6	52.8	62.6	55.8	56.2	58.4	63.8	64.3	68.8	59.8	43.2
00:15 - 00:30	69.8	87.7	47.3	63.0	63.4	63.6	59.3	62.6	61.6	65.7	56.7	39.5
00:30 - 00:45	69.2	86.2	48.7	60.2	54.6	53.9	56.6	63.1	62.0	64.5	55.6	38.1
00:45 - 01:00	69.0	88.1	47.9	63.1	54.8	55.4	57.6	62.8	61.8	64.4	55.6	38.9
01:00 - 01:15	68.2	85.2	46.1	60.0	57.1	57.9	57.4	62.2	60.7	63.6	54.9	37.7
01:15 - 01:30	67.5	87.0	44.2	59.7	56.0	55.9	56.6	62.6	60.9	61.4	52.5	36.0
01:30 - 01:45	65.6	81.6	44.7	58.5	50.5	52.7	54.6	60.7	59.0	59.6	50.9	34.1
01:45 - 02:00	66.9	88.0	44.8	55.0	50.7	52.5	55.4	60.6	59.5	62.4	53.9	37.4
02:00 - 02:15	64.7	83.7	45.7	58.3	53.3	52.6	53.3	59.3	57.6	59.4	50.8	35.3
02:15 - 02:30	66.1	87.2	47.6	64.3	61.6	56.5	56.3	60.9	58.8	60.5	51.8	35.3
02:30 - 02:45	64.3	81.5	44.3	60.8	60.5	57.9	54.3	59.3	57.8	57.8	49.0	33.4
02:45 - 03:00	66.3	87.0	53.8	60.3	54.1	54.8	55.1	60.5	59.1	61.4	52.4	36.5
03:00 - 03:15	64.5	83.8	42.2	55.8	53.9	53.9	54.2	58.6	57.2	59.6	51.1	34.8
03:15 - 03:30	62.6	81.0	40.0	56.7	51.0	50.4	52.2	58.6	56.7	54.4	45.2	29.9
03:30 - 03:45	64.6	87.3	42.5	61.4	60.7	60.8	57.5	60.2	57.5	56.8	47.4	31.3
03:45 - 04:00	64.0	91.4	40.6	54.3	49.9	58.7	53.8	57.9	57.3	58.4	49.4	33.2
04:00 - 04:15	62.2	83.7	42.8	60.0	52.0	50.8	52.1	57.3	56.0	55.5	46.4	29.6
04:15 - 04:30	66.9	89.6	44.7	63.0	57.8	59.5	58.9	62.2	59.9	60.4	51.6	37.1
04:30 - 04:45	65.6	84.6	45.5	61.4	60.2	62.3	58.3	60.8	58.6	58.2	49.2	32.5
04:45 - 05:00	64.9	84.4	43.5	60.5	53.8	53.9	55.5	60.3	58.8	57.7	48.7	33.6
05:00 - 05:15	66.4	87.3	43.3	60.9	57.6	57.8	58.0	62.3	59.6	58.7	49.6	34.5
05:15 - 05:30	64.3	81.1	45.4	59.9	56.2	53.0	54.5	59.9	58.3	56.3	46.9	30.7
05:30 - 05:45	68.7	93.3	48.0	65.3	66.0	67.2	63.7	63.7	61.0	60.3	51.2	37.1
05:45 - 06:00	66.9	86.8	50.3	63.2	56.2	56.6	58.0	62.9	60.6	59.0	49.4	33.0
06:00 - 06:15	67.0	82.1	49.5	61.9	55.4	56.2	57.7	63.1	61.3	58.0	47.6	30.9
06:15 - 06:30	68.2	84.9	52.0	63.8	58.2	60.2	60.1	64.2	61.9	59.4	49.5	33.7
06:30 - 06:45	67.6	81.7	50.2	67.2	63.0	58.4	59.3	63.7	61.5	58.4	48.1	32.7
06:45 - 07:00	70.1	83.1	54.2	67.6	62.0	60.4	61.7	66.5	64.1	60.4	49.5	32.3

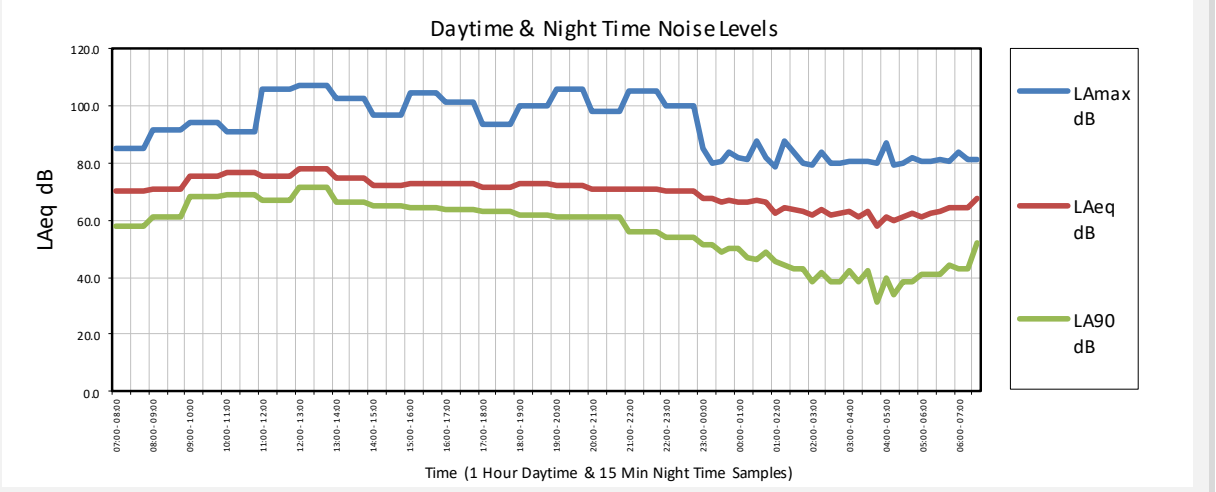


19.3 26th – 27th August 2023 Position 1

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 & Corresponding LAmax 16 HOUR	73.5	107.2	61.0	73.2	69.6	67.0	64.6	68.3	66.5	67.5	58.3	43.9
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Corresponding LAmax 8 HOUR	64.4	87.7	43.0	61.6	59.0	56.5	56.3	61.0	58.2	53.7	42.5	26.8

DAYTIME NOISE LEVELS 07:00 - 23:00 1 HOUR SAMPLES				Octave Band Centre Frequency (Hz)								
Date / Time	LAeq	LAmax	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
07:00 - 08:00	70.4	84.7	57.6	69.5	62.8	61.6	61.9	66.8	64.4	60.1	49.5	33.0
08:00 - 09:00	71.0	91.2	60.9	70.6	67.7	65.0	63.7	67.4	64.8	60.3	49.9	44.9
09:00 - 10:00	75.6	94.1	68.1	72.2	68.3	66.4	65.5	68.3	68.2	71.2	62.5	46.8
10:00 - 11:00	76.4	90.8	68.5	72.1	69.3	65.5	64.5	69.0	68.9	72.4	63.6	47.5
11:00 - 12:00	75.0	105.9	67.2	74.3	68.6	64.5	64.0	68.9	68.2	70.0	60.1	44.4
12:00 - 13:00	77.9	107.2	71.2	73.0	68.6	65.1	64.8	70.0	70.7	74.1	65.0	49.7
13:00 - 14:00	74.3	102.6	66.5	74.4	69.0	65.5	64.9	69.5	67.2	68.3	59.3	44.4
14:00 - 15:00	72.1	96.8	64.8	74.3	69.9	70.2	65.5	68.2	65.2	62.2	52.3	41.9
15:00 - 16:00	73.0	104.7	64.3	75.7	68.6	64.8	64.2	67.8	66.7	66.8	56.5	46.7
16:00 - 17:00	72.9	100.9	63.6	74.5	70.3	67.1	65.2	69.8	65.6	62.2	52.7	38.3
17:00 - 18:00	71.4	93.7	62.7	75.4	72.8	67.5	65.2	67.5	64.2	60.9	51.1	37.1
18:00 - 19:00	72.6	99.6	61.9	73.6	73.5	70.3	66.7	68.5	65.5	61.6	51.7	38.6
19:00 - 20:00	71.9	105.7	61.0	72.5	69.2	69.7	64.3	67.9	65.1	62.5	52.0	35.8
20:00 - 21:00	71.0	97.7	61.3	74.1	69.5	66.2	63.4	67.2	64.8	60.7	49.3	34.1
21:00 - 22:00	70.9	105.3	56.1	69.8	69.6	67.9	63.6	66.9	64.0	61.2	52.1	41.4
22:00 - 23:00	69.9	99.9	53.9	67.5	65.4	66.3	64.4	66.5	62.6	58.2	47.6	35.7

NIGHT TIME NOISE LEVELS 23:00 - 07:00 15 MINUTE SAMPLES				Octave Band Centre Frequency (Hz)								
Date / Time	LAeq	LAmax	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
23:00 - 23:15	67.4	85.1	51.5	64.7	61.5	63.3	60.1	64.0	60.8	55.9	44.4	26.3
23:15 - 23:30	67.3	79.9	51.6	66.6	59.4	57.9	59.0	64.1	61.3	55.7	44.0	26.4
23:30 - 23:45	66.4	80.4	48.8	63.2	62.3	59.6	58.0	63.2	60.2	55.1	43.5	25.1
23:45 - 00:00	66.7	83.5	50.1	62.8	58.4	58.2	58.4	63.2	60.5	56.6	45.7	30.0
00:00 - 00:15	66.1	81.8	50.3	70.0	64.2	57.0	58.1	62.7	59.7	55.4	44.9	29.1
00:15 - 00:30	66.0	80.9	46.5	63.3	61.0	58.7	58.1	62.6	59.7	55.0	44.4	27.5
00:30 - 00:45	66.8	87.4	45.9	62.4	63.0	58.2	58.3	63.3	60.7	56.4	45.4	26.8
00:45 - 01:00	66.1	81.6	48.8	63.0	60.5	56.7	57.7	62.9	60.1	54.8	42.8	25.0
01:00 - 01:15	62.6	78.6	45.4	56.6	50.7	52.5	54.0	59.5	56.4	51.4	39.9	22.6
01:15 - 01:30	64.2	87.7	44.3	58.3	56.2	61.3	57.5	60.6	57.6	53.5	42.4	24.0
01:30 - 01:45	63.5	83.4	43.1	59.0	53.2	53.7	55.1	60.2	57.3	53.4	43.3	33.4
01:45 - 02:00	63.2	79.8	43.0	58.4	51.0	52.6	54.9	59.9	57.2	52.6	40.6	21.9
02:00 - 02:15	62.0	79.4	38.1	60.3	53.0	51.7	53.4	58.7	55.7	51.6	40.6	25.1
02:15 - 02:30	63.7	84.0	41.8	59.0	64.8	54.1	55.6	60.0	57.3	54.0	42.7	26.7
02:30 - 02:45	61.8	79.8	38.6	57.4	48.7	50.1	53.0	58.8	55.6	50.2	38.5	20.1
02:45 - 03:00	62.3	80.0	38.7	54.8	49.7	51.2	53.5	59.2	56.2	50.9	38.8	19.6
03:00 - 03:15	62.7	80.5	42.4	59.3	58.4	52.9	54.4	59.4	56.6	52.0	40.4	21.9
03:15 - 03:30	61.0	80.3	38.3	53.7	46.3	49.2	51.8	57.9	54.9	49.7	38.3	21.7
03:30 - 03:45	63.0	80.7	42.2	57.1	53.4	53.0	54.4	59.6	56.9	52.6	41.1	24.7
03:45 - 04:00	57.9	80.1	31.5	62.3	51.9	49.3	48.9	54.5	51.8	47.1	35.6	17.2
04:00 - 04:15	61.2	87.1	39.6	57.2	53.9	57.1	54.1	57.2	55.0	51.6	41.1	20.4
04:15 - 04:30	59.4	79.0	34.0	55.7	58.1	51.3	51.3	56.0	53.0	49.3	38.7	20.6
04:30 - 04:45	61.2	79.7	38.2	56.0	52.1	52.2	53.3	57.4	54.9	52.2	41.6	27.6
04:45 - 05:00	62.1	81.5	38.5	54.6	50.8	51.3	53.2	58.8	56.2	51.3	40.6	26.0
05:00 - 05:15	60.8	80.3	40.8	57.8	54.1	52.5	53.9	57.6	54.4	49.1	37.3	17.9
05:15 - 05:30	62.3	80.7	40.8	56.0	49.6	51.3	53.3	58.9	56.8	50.5	38.2	26.0
05:30 - 05:45	62.7	81.4	40.9	57.9	53.3	52.6	55.0	59.3	56.4	52.2	41.0	24.0
05:45 - 06:00	64.4	80.6	43.9	58.5	53.2	53.6	55.6	61.3	58.5	53.1	41.0	21.4
06:00 - 06:15	64.3	83.7	43.1	58.1	51.9	52.5	55.5	61.1	58.5	53.0	40.8	31.5
06:15 - 06:30	64.6	81.3	43.0	60.4	55.6	54.0	55.7	60.9	58.9	54.8	43.2	25.2
06:30 - 06:45	67.3	80.9	51.7	64.2	61.2	58.8	59.6	63.7	61.1	57.2	45.6	26.9
06:45 - 07:00	67.9	87.4	52.8	63.8	66.4	62.4	60.6	64.1	61.5	57.9	47.5	33.4

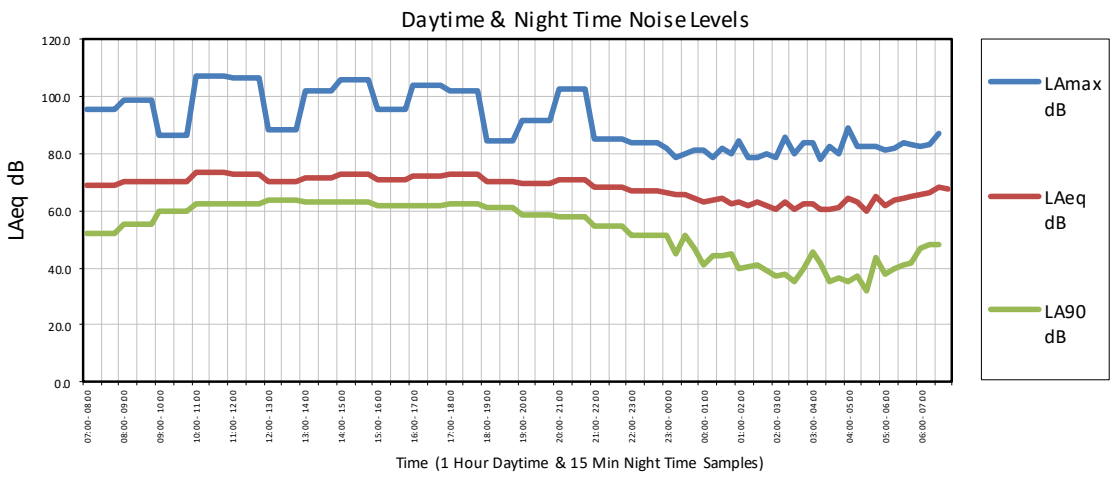


19.4 27th – 28th August 2023 Position 1

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 & Corresponding LAmax 16 HOUR	71.1	106.9	62.0	71.4	68.9	66.1	63.7	66.9	64.2	62.6	53.3	39.4
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Corresponding LAmax 8 HOUR	64.0	88.7	45.0	61.9	57.7	55.8	56.3	60.6	57.7	53.4	42.7	27.3

DAYTIME NOISE LEVELS 07:00 - 23:00 1 HOUR SAMPLES				Octave Band Centre Frequency (Hz)								
Date / Time	LAeq	LAmax	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
07:00 - 08:00	68.7	95.3	52.0	65.8	62.0	59.9	60.6	64.9	62.5	59.3	48.3	31.6
08:00 - 09:00	69.9	98.6	55.4	68.5	69.0	65.3	62.2	65.7	63.3	61.2	48.3	39.7
09:00 - 10:00	70.2	86.6	59.6	70.7	67.7	64.1	63.0	66.8	63.8	59.1	49.1	37.9
10:00 - 11:00	73.5	106.9	62.3	72.6	70.2	66.3	64.5	68.1	66.5	67.7	59.9	42.4
11:00 - 12:00	72.4	106.5	62.5	72.7	71.3	70.5	66.9	68.6	64.9	61.5	51.9	36.9
12:00 - 13:00	70.4	88.5	63.6	73.5	69.9	65.9	63.5	66.6	63.3	60.7	50.5	38.6
13:00 - 14:00	71.6	102.1	63.0	73.2	70.6	66.2	63.6	68.1	64.3	62.3	52.7	43.3
14:00 - 15:00	72.9	106.0	62.8	73.8	71.6	67.9	65.7	67.1	65.6	66.9	55.4	43.9
15:00 - 16:00	71.0	95.5	61.8	71.8	68.7	67.7	64.8	67.1	63.9	61.1	51.9	36.8
16:00 - 17:00	72.1	103.7	61.6	73.3	70.4	67.4	64.9	67.4	64.9	64.5	55.9	38.9
17:00 - 18:00	72.7	102.1	62.3	71.3	69.3	65.7	64.9	68.3	66.6	63.8	55.4	43.3
18:00 - 19:00	70.2	84.5	60.9	71.7	67.9	65.6	63.1	66.9	63.6	58.8	48.3	34.0
19:00 - 20:00	69.7	91.2	58.5	69.9	66.2	63.3	62.3	66.3	63.1	59.1	50.0	35.8
20:00 - 21:00	71.0	102.7	57.6	69.0	67.5	65.8	63.3	66.5	63.8	63.9	54.7	37.7
21:00 - 22:00	68.3	85.0	54.5	68.6	66.9	64.1	61.1	65.0	61.6	56.4	45.5	28.7
22:00 - 23:00	66.7	83.8	51.1	63.9	63.6	58.2	58.8	63.7	60.3	54.7	43.5	26.9

NIGHT TIME NOISE LEVELS 23:00 - 07:00 15 MINUTE SAMPLES				Octave Band Centre Frequency (Hz)								
Date / Time	LAeq	LAmax	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
23:00 - 23:15	66.3	81.8	51.1	65.5	66.6	61.5	58.9	63.0	59.6	54.2	43.2	26.4
23:15 - 23:30	65.3	78.6	44.8	62.2	56.5	55.7	57.1	62.2	59.3	53.4	42.0	24.0
23:30 - 23:45	65.8	79.6	51.2	62.0	56.0	57.0	57.8	62.7	59.5	54.8	43.9	27.4
23:45 - 00:00	64.1	81.2	47.1	59.2	55.1	55.7	56.1	60.9	57.9	52.6	41.1	22.8
00:00 - 00:15	63.2	80.9	41.1	60.1	63.8	54.3	54.9	60.2	56.6	51.6	40.7	25.5
00:15 - 00:30	63.9	78.3	43.9	61.3	58.5	55.6	55.5	60.9	57.7	51.6	40.0	20.7
00:30 - 00:45	64.3	81.5	44.1	60.7	52.4	54.0	55.8	61.5	58.0	51.8	40.1	22.6
00:45 - 01:00	62.6	79.8	45.1	60.4	55.6	53.8	54.6	59.5	56.2	51.8	41.1	27.7
01:00 - 01:15	63.2	84.1	39.8	59.9	59.6	54.5	55.3	59.9	56.9	52.8	42.6	28.2
01:15 - 01:30	61.8	78.4	40.4	56.4	52.8	53.7	53.6	58.6	55.7	50.2	39.0	24.9
01:30 - 01:45	63.0	78.4	40.7	58.7	52.2	52.0	54.2	60.0	56.8	51.6	41.2	22.1
01:45 - 02:00	61.9	79.8	39.1	68.0	55.1	52.7	54.2	58.4	55.4	52.1	41.3	25.3
02:00 - 02:15	60.7	78.3	37.0	54.9	51.5	51.3	52.2	57.7	54.7	48.5	36.7	18.6
02:15 - 02:30	63.3	85.4	37.5	55.6	53.0	53.7	55.5	59.5	56.5	55.0	44.4	35.8
02:30 - 02:45	60.5	79.7	35.3	58.3	50.3	49.7	51.6	57.3	54.5	49.2	38.2	24.1
02:45 - 03:00	62.5	83.6	39.5	58.2	54.8	54.3	54.9	59.1	56.2	51.8	40.7	25.5
03:00 - 03:15	62.6	83.6	45.2	58.6	55.5	54.2	54.5	58.9	56.0	53.8	44.0	30.3
03:15 - 03:30	60.7	77.7	41.6	55.1	48.8	49.4	52.0	57.9	54.5	47.8	35.7	17.1
03:30 - 03:45	60.3	82.1	34.9	56.6	48.8	49.5	53.9	57.2	53.6	48.8	37.5	21.5
03:45 - 04:00	60.9	79.8	36.2	59.3	52.5	50.6	52.7	57.6	54.8	50.3	39.9	22.7
04:00 - 04:15	64.3	88.7	34.9	63.9	57.9	60.8	57.7	60.3	57.8	54.5	43.5	26.2
04:15 - 04:30	63.1	82.3	36.8	56.7	53.3	52.2	55.3	59.6	56.7	53.2	42.6	25.8
04:30 - 04:45	59.9	82.1	31.8	59.5	54.1	55.9	53.8	56.3	52.9	49.0	38.4	25.6
04:45 - 05:00	65.0	82.3	43.8	62.1	56.7	56.3	57.5	61.4	58.9	54.6	45.7	30.8
05:00 - 05:15	61.9	81.1	37.7	59.0	51.1	52.7	53.9	58.6	55.7	51.4	40.5	21.5
05:15 - 05:30	63.4	81.9	39.8	62.2	56.4	56.2	55.6	59.9	56.7	53.5	43.4	24.8
05:30 - 05:45	64.5	83.9	40.9	62.3	58.3	56.4	57.9	60.9	58.1	54.3	43.4	25.6
05:45 - 06:00	64.8	82.8	41.8	63.2	55.4	56.8	57.8	61.2	58.5	53.9	42.8	25.5
06:00 - 06:15	65.3	82.3	46.6	65.5	59.4	56.7	58.2	61.7	59.0	54.8	43.8	28.1
06:15 - 06:30	66.4	83.3	48.4	64.9	58.8	58.0	59.0	62.7	60.2	56.5	45.8	30.4
06:30 - 06:45	67.9	86.7	48.4	65.4	58.8	58.5	60.2	64.3	61.7	57.7	47.0	28.9
06:45 - 07:00	67.7	81.7	47.5	64.6	58.4	58.2	59.7	64.1	61.5	57.6	47.5	30.6

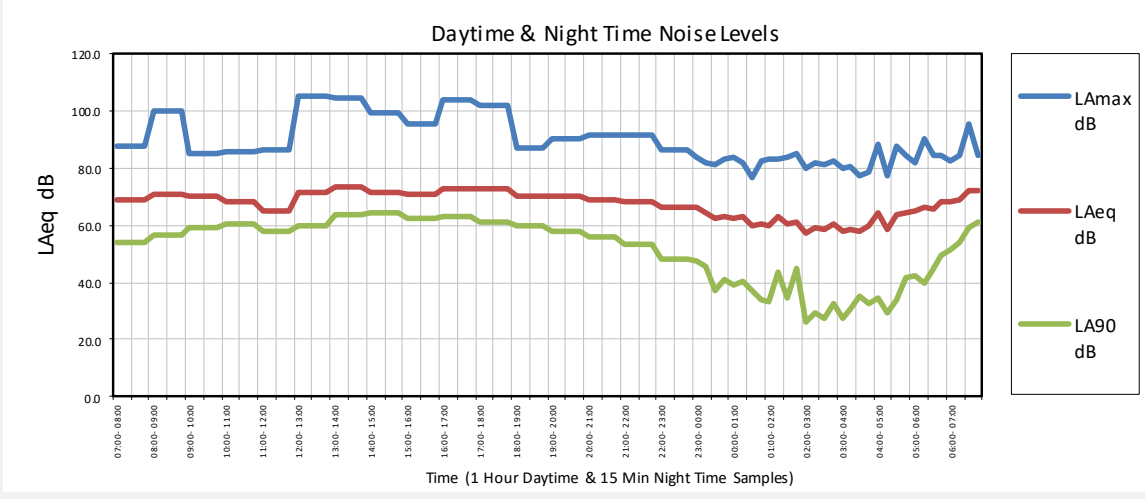


19.5 28th – 29th August 2023 Position 1

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 & Corresponding LAmax 16 HOUR	70.4	105.1	60.0	71.5	68.5	65.4	63.0	65.9	63.7	62.2	52.4	41.9
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Corresponding LAmax 8 HOUR	64.9	95.5	34.0	62.8	59.3	58.5	57.7	61.4	58.4	54.5	44.3	34.2

DAYTIME NOISE LEVELS 07:00 - 23:00 1 HOUR SAMPLES				Octave Band Centre Frequency (Hz)								
Date / Time	LAeq	LAmax	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
07:00 - 08:00	68.8	87.4	54.2	69.0	62.9	60.3	61.3	65.3	62.6	58.4	47.4	30.4
08:00 - 09:00	70.5	99.6	56.8	68.1	64.4	64.2	63.0	66.6	64.6	59.8	49.2	33.1
09:00 - 10:00	69.8	85.0	59.0	71.3	65.3	63.2	62.5	66.3	63.5	59.3	49.3	34.0
10:00 - 11:00	68.0	85.8	60.2	72.8	69.0	64.1	61.3	63.4	61.1	59.7	50.6	44.5
11:00 - 12:00	64.9	86.5	57.8	71.1	66.3	61.3	57.7	59.8	58.4	56.6	48.1	39.0
12:00 - 13:00	71.7	105.1	59.8	72.7	70.0	64.2	60.9	64.7	64.9	66.9	58.2	42.8
13:00 - 14:00	73.5	104.7	63.5	73.7	69.2	64.9	65.5	68.0	67.1	66.8	56.4	46.1
14:00 - 15:00	71.3	99.2	64.0	72.8	70.8	68.7	66.2	66.9	64.2	61.8	51.6	46.2
15:00 - 16:00	70.4	95.4	62.4	73.9	72.3	68.6	64.2	66.3	63.2	60.3	51.3	44.6
16:00 - 17:00	72.9	103.5	62.8	71.9	70.4	68.5	64.5	68.1	66.4	65.0	54.2	44.9
17:00 - 18:00	72.7	101.8	60.9	72.1	71.9	67.9	65.4	67.5	65.1	66.3	56.6	43.4
18:00 - 19:00	70.1	86.8	59.8	74.3	68.3	66.0	62.8	66.6	63.2	59.1	48.9	41.8
19:00 - 20:00	69.8	90.4	57.9	69.3	67.0	66.5	62.8	66.2	63.1	58.8	48.3	33.1
20:00 - 21:00	68.9	91.6	55.6	67.6	65.6	62.7	61.6	65.5	62.3	58.0	47.7	34.1
21:00 - 22:00	68.3	91.7	53.5	65.9	63.3	61.1	60.4	64.8	62.0	57.7	46.7	29.5
22:00 - 23:00	66.2	86.1	48.0	63.9	60.6	58.4	58.8	62.7	59.7	55.7	45.0	31.3

NIGHT TIME NOISE LEVELS 23:00 - 07:00 15 MINUTE SAMPLES				Octave Band Centre Frequency (Hz)								
Date / Time	LAeq	LAmax	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
23:00 - 23:15	66.3	83.4	47.5	64.2	67.8	62.8	58.8	62.8	59.7	54.4	43.5	29.3
23:15 - 23:30	64.4	81.8	45.8	60.6	62.1	61.5	58.0	61.0	57.7	52.9	42.8	26.7
23:30 - 23:45	62.3	80.9	36.9	57.1	55.5	53.4	54.3	58.9	56.1	51.8	40.6	26.7
23:45 - 00:00	63.0	82.8	41.0	61.2	58.3	57.2	55.4	59.1	56.6	53.5	42.8	25.9
00:00 - 00:15	62.3	84.0	39.3	59.4	56.1	55.2	55.8	59.1	55.5	51.2	39.9	26.3
00:15 - 00:30	62.9	81.8	40.1	59.1	55.5	55.7	55.0	59.8	56.6	51.0	39.7	23.0
00:30 - 00:45	59.5	76.4	36.9	54.2	47.5	48.6	50.7	56.5	53.4	47.2	35.8	27.0
00:45 - 01:00	60.6	82.2	33.7	62.8	54.1	54.8	54.1	56.9	54.0	50.1	40.7	30.4
01:00 - 01:15	59.5	83.0	33.0	57.1	57.8	55.2	55.0	55.2	52.5	49.6	38.3	26.0
01:15 - 01:30	63.1	82.8	43.8	61.2	54.7	55.7	56.7	59.7	56.4	52.3	41.8	29.2
01:30 - 01:45	60.2	84.0	34.6	57.2	53.6	52.4	52.2	56.4	53.8	51.5	40.9	25.1
01:45 - 02:00	61.2	85.2	44.6	60.6	55.8	54.0	54.2	56.8	54.2	53.4	42.8	27.3
02:00 - 02:15	57.2	79.5	26.3	55.7	49.8	51.7	48.8	54.2	51.0	45.4	34.1	30.1
02:15 - 02:30	59.0	81.8	29.2	55.9	52.1	52.0	53.4	54.9	52.2	49.7	39.3	28.1
02:30 - 02:45	58.3	80.9	27.7	53.6	60.3	52.4	50.6	54.7	51.6	47.8	37.4	26.0
02:45 - 03:00	60.4	82.3	32.6	53.8	51.6	52.6	52.9	56.3	53.9	52.2	42.9	26.6
03:00 - 03:15	58.1	80.1	27.6	52.6	43.5	47.4	49.8	55.0	52.2	45.5	33.6	15.6
03:15 - 03:30	58.4	80.3	30.3	52.7	49.4	47.2	49.8	55.4	52.2	46.9	36.1	20.1
03:30 - 03:45	57.6	77.1	35.5	53.4	47.2	47.3	49.5	54.1	51.6	47.5	36.6	19.0
03:45 - 04:00	59.6	78.7	32.3	56.9	48.2	50.4	51.3	56.5	53.2	48.5	37.9	21.5
04:00 - 04:15	64.1	88.3	34.4	58.7	55.9	61.3	58.4	60.0	57.4	53.9	42.7	25.4
04:15 - 04:30	58.4	76.9	29.6	56.2	49.2	48.4	49.9	55.4	52.4	45.9	34.1	16.4
04:30 - 04:45	63.4	87.6	33.9	59.2	53.3	54.5	57.5	59.8	56.6	53.0	42.4	33.1
04:45 - 05:00	64.4	84.4	41.3	60.7	58.7	58.4	57.6	60.9	58.0	53.5	42.6	28.9
05:00 - 05:15	65.2	81.7	42.2	62.0	55.8	57.5	57.7	61.9	58.7	55.0	44.7	28.1
05:15 - 05:30	66.4	90.1	39.9	62.2	55.6	58.1	58.7	63.4	59.8	55.0	44.5	26.3
05:30 - 05:45	65.7	84.4	44.8	63.4	56.8	58.0	58.5	62.2	59.4	55.2	45.9	28.1
05:45 - 06:00	68.5	84.2	49.1	66.7	61.2	61.9	61.7	64.9	62.0	57.9	47.3	32.2
06:00 - 06:15	68.2	82.7	51.5	67.0	61.0	60.0	60.6	64.7	62.0	57.8	47.6	32.1
06:15 - 06:30	68.9	84.4	53.8	66.9	60.5	60.9	61.4	65.3	62.6	58.7	48.0	32.0
06:30 - 06:45	72.0	95.5	58.9	70.9	65.6	67.1	64.7	68.4	65.1	62.3	53.4	48.0
06:45 - 07:00	71.7	84.6	60.9	69.9	66.1	63.4	64.2	68.3	65.5	60.8	49.8	32.2

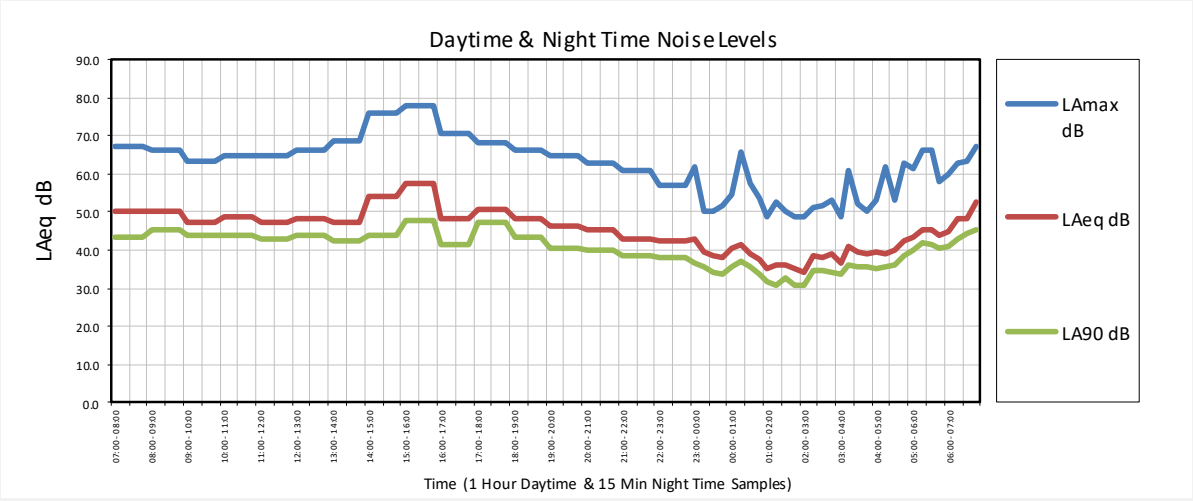


19.6 24th – 25th August 2023 Position 2

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 & Corresponding LAmax 16 HOUR	50.2	78.0	43.0	56.8	53.4	49.9	45.3	44.0	41.6	42.3	36.6	21.2
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Corresponding LAmax 8 HOUR	43.2	67.3	36.0	47.9	43.1	41.7	38.8	37.4	33.1	36.8	26.1	13.6

DAYTIME NOISE LEVELS 07:00 - 23:00 1 HOUR SAMPLES				Octave Band Centre Frequency (Hz)								
Date / Time	LAeq	LAmax	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
07:00 - 08:00	50.3	67.3	43.0	56.1	49.8	47.3	42.0	41.7	39.3	47.0	32.7	13.8
08:00 - 09:00	50.2	66.0	46.0	57.4	51.3	47.9	45.0	44.8	42.4	42.0	35.3	13.8
09:00 - 10:00	47.5	63.2	44.0	56.4	49.2	46.8	42.7	41.7	38.6	40.1	33.2	14.5
10:00 - 11:00	48.6	64.9	44.0	56.6	48.4	46.8	42.9	42.3	39.5	42.8	33.6	14.4
11:00 - 12:00	47.5	64.9	43.0	56.8	48.3	46.2	42.9	40.4	36.7	42.3	30.3	13.0
12:00 - 13:00	48.3	66.2	44.0	56.4	47.8	45.7	43.9	42.5	41.2	39.9	33.8	15.1
13:00 - 14:00	47.2	68.6	43.0	56.6	48.5	46.1	42.0	41.9	39.9	37.8	31.2	14.3
14:00 - 15:00	53.9	75.9	44.0	58.8	60.2	56.4	49.2	46.7	44.3	44.2	39.5	21.1
15:00 - 16:00	57.3	78.0	48.0	61.8	61.3	57.6	53.1	50.8	48.6	48.4	45.7	31.5
16:00 - 17:00	48.4	70.4	41.0	57.5	50.4	47.0	42.4	43.1	40.9	39.3	30.1	13.2
17:00 - 18:00	50.7	68.1	47.0	58.0	51.8	47.6	43.7	45.2	43.6	42.9	38.9	23.2
18:00 - 19:00	48.4	66.4	43.0	55.6	50.1	44.5	43.0	43.0	40.2	41.0	33.9	16.3
19:00 - 20:00	46.3	64.5	41.0	53.5	44.5	42.3	44.0	41.4	37.4	37.1	27.7	12.0
20:00 - 21:00	45.3	62.6	40.0	52.1	46.7	43.8	41.0	41.4	37.2	33.3	23.7	12.2
21:00 - 22:00	42.9	60.7	38.0	51.1	47.2	44.0	39.9	38.4	33.3	24.3	17.6	17.7
22:00 - 23:00	42.1	56.9	38.0	49.8	46.2	43.5	39.6	37.6	32.2	23.0	16.3	11.5

NIGHT TIME NOISE LEVELS 23:00 - 07:00 15 MINUTE SAMPLES				Octave Band Centre Frequency (Hz)								
Date / Time	LAeq	LAmax	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
23:00 - 23:15	42.9	61.8	37.0	49.2	48.3	45.0	40.1	37.9	33.0	23.4	15.8	11.8
23:15 - 23:30	39.4	50.1	36.0	47.8	43.3	40.4	36.1	35.2	29.9	21.6	14.8	11.5
23:30 - 23:45	38.5	50.2	34.0	47.3	42.8	39.5	35.2	34.6	28.5	19.4	14.1	12.4
23:45 - 00:00	38.1	51.6	34.0	46.5	39.3	38.4	35.1	34.3	28.6	20.9	15.5	11.3
00:00 - 00:15	40.5	54.3	35.0	46.6	46.1	43.8	38.8	34.4	28.1	20.9	16.2	11.4
00:15 - 00:30	41.4	65.6	37.0	47.4	45.0	43.2	38.7	36.3	31.0	27.3	24.8	22.3
00:30 - 00:45	39.0	57.5	36.0	46.0	40.5	40.6	36.2	34.7	28.6	22.0	18.6	14.0
00:45 - 01:00	37.5	53.6	34.0	43.3	43.9	37.5	34.9	33.3	26.6	18.2	13.8	15.2
01:00 - 01:15	35.3	48.5	32.0	45.5	35.5	35.4	32.5	31.5	25.1	17.3	13.8	11.3
01:15 - 01:30	36.3	52.5	31.0	43.3	40.3	35.5	34.0	32.3	26.1	18.7	14.2	11.7
01:30 - 01:45	36.3	50.0	33.0	42.2	37.7	37.2	34.6	32.0	25.2	17.1	13.0	11.3
01:45 - 02:00	35.3	48.7	31.0	42.7	35.7	36.5	32.7	31.4	24.7	16.7	13.7	11.3
02:00 - 02:15	34.2	48.9	31.0	39.9	37.2	34.7	31.7	29.8	23.8	19.3	16.6	11.4
02:15 - 02:30	38.3	51.0	34.0	42.3	38.2	38.4	36.3	34.1	27.9	21.9	19.5	11.5
02:30 - 02:45	38.0	51.8	35.0	43.1	39.6	39.2	36.1	33.4	27.2	21.1	18.8	11.5
02:45 - 03:00	38.8	53.1	34.0	43.3	38.3	39.2	37.5	33.8	28.9	22.8	20.6	11.6
03:00 - 03:15	36.4	48.9	34.0	41.3	34.5	35.9	34.0	32.6	25.6	22.2	20.5	11.5
03:15 - 03:30	41.0	60.8	36.0	45.0	40.1	42.6	39.5	35.7	30.9	23.4	21.1	12.0
03:30 - 03:45	39.3	52.1	36.0	42.5	37.5	38.8	37.3	34.8	30.0	24.6	20.0	11.5
03:45 - 04:00	38.8	50.1	36.0	43.7	36.4	37.0	36.2	34.9	30.0	24.1	20.8	11.6
04:00 - 04:15	39.6	53.2	35.0	45.2	38.1	39.2	37.5	35.2	29.7	24.7	22.0	11.6
04:15 - 04:30	39.0	61.8	36.0	44.3	36.6	37.1	36.0	34.5	30.1	28.0	26.8	12.5
04:30 - 04:45	39.9	53.3	36.0	47.1	39.1	39.3	37.6	35.4	29.7	26.9	25.6	12.3
04:45 - 05:00	42.3	62.8	39.0	46.8	39.7	39.5	38.0	37.9	33.9	32.2	30.3	14.1
05:00 - 05:15	43.5	61.2	40.0	48.3	39.7	39.8	38.2	39.7	36.2	31.9	24.5	12.0
05:15 - 05:30	45.4	66.1	42.0	47.8	40.0	41.7	40.0	41.4	37.7	34.9	31.8	15.1
05:30 - 05:45	45.3	66.1	41.0	49.1	40.3	41.1	40.1	41.6	37.5	34.6	30.0	13.8
05:45 - 06:00	44.0	57.8	41.0	50.7	43.0	43.2	42.9	39.7	33.9	27.6	24.6	12.1
06:00 - 06:15	44.8	59.7	41.0	51.3	48.1	44.8	41.1	41.0	35.2	29.7	24.5	11.9
06:15 - 06:30	48.2	62.6	43.0	51.4	45.2	44.2	41.7	41.4	38.4	44.0	30.7	13.4
06:30 - 06:45	48.0	63.4	44.0	53.4	49.2	48.5	45.2	42.4	37.5	39.5	31.4	14.7
06:45 - 07:00	52.8	67.3	46.0	55.3	49.7	47.9	44.2	42.6	40.7	50.2	35.7	15.2

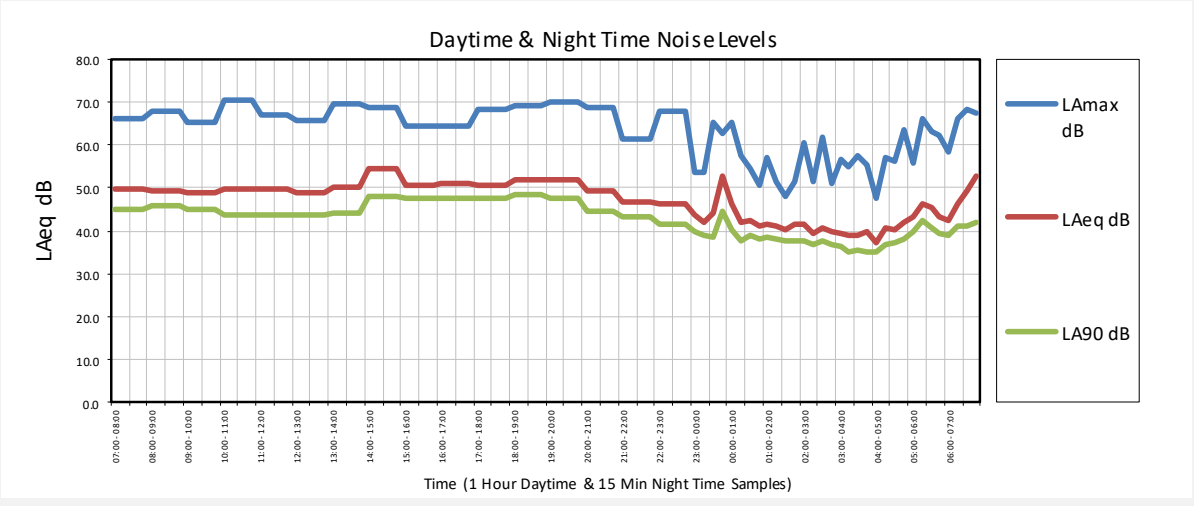


19.7 25th – 26th August 2023 Position 2

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 & Corresponding LAmax 16 HOUR	50.4	70.6	44.0	57.1	52.5	49.6	46.4	45.3	41.8	40.2	36.0	18.4
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Corresponding LAmax 8 HOUR	44.8	68.2	38.0	47.3	43.8	42.4	39.5	38.9	36.1	38.6	30.5	15.7

DAYTIME NOISE LEVELS 07:00 - 23:00 1 HOUR SAMPLES				Octave Band Centre Frequency (Hz)								
Date / Time	LAeq	LAmax	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
07:00 - 08:00	49.8	66.1	45.0	56.3	49.6	47.9	43.9	44.3	42.8	41.6	31.7	14.0
08:00 - 09:00	49.4	67.9	46.0	57.1	50.7	48.5	44.5	43.9	41.1	41.6	33.1	14.1
09:00 - 10:00	48.9	65.3	45.0	56.2	52.5	47.2	44.5	43.4	41.0	39.5	34.3	14.7
10:00 - 11:00	49.6	70.6	44.0	56.9	51.3	47.7	47.3	44.1	40.8	39.3	29.4	12.8
11:00 - 12:00	49.6	67.1	44.0	58.1	54.0	50.3	45.6	44.2	41.5	36.9	29.3	12.9
12:00 - 13:00	48.8	65.7	44.0	57.6	54.9	49.5	45.2	43.6	38.9	35.8	30.5	14.6
13:00 - 14:00	50.3	69.7	44.0	57.2	54.3	51.0	46.7	44.9	41.0	39.3	33.8	16.8
14:00 - 15:00	54.5	68.6	48.0	60.3	57.1	54.7	51.6	48.7	45.4	44.2	40.0	21.3
15:00 - 16:00	50.4	64.4	47.0	57.9	49.8	47.9	45.6	46.2	41.6	40.5	38.9	21.8
16:00 - 17:00	51.0	64.5	47.0	58.5	52.2	49.8	46.6	46.5	42.5	40.2	38.4	21.2
17:00 - 18:00	50.8	68.2	48.0	57.4	51.1	48.7	46.3	46.4	42.6	40.1	38.7	21.3
18:00 - 19:00	51.7	69.1	49.0	57.9	53.2	49.7	47.4	47.2	43.3	41.5	38.5	20.9
19:00 - 20:00	52.0	70.2	48.0	55.6	52.1	50.4	47.3	46.8	43.0	44.0	39.5	21.3
20:00 - 21:00	49.2	68.6	45.0	52.6	49.2	48.3	45.4	44.9	40.4	36.9	33.1	15.8
21:00 - 22:00	46.5	61.2	43.0	54.3	48.7	46.0	42.4	42.3	37.5	34.1	33.0	15.9
22:00 - 23:00	46.3	67.7	41.0	51.5	47.3	45.9	43.4	42.1	37.1	31.3	28.7	13.4

NIGHT TIME NOISE LEVELS 23:00 - 07:00 15 MINUTE SAMPLES				Octave Band Centre Frequency (Hz)								
Date / Time	LAeq	LAmax	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
23:00 - 23:15	43.7	53.5	40.0	49.5	46.9	44.8	40.2	39.2	34.3	29.4	27.3	13.0
23:15 - 23:30	42.2	53.7	39.0	48.6	41.7	41.2	38.5	37.8	33.1	30.6	29.5	13.9
23:30 - 23:45	44.1	65.2	39.0	49.5	44.3	42.3	40.9	40.0	34.7	31.4	30.1	14.2
23:45 - 00:00	52.7	62.9	45.0	46.3	40.1	41.4	42.8	46.6	46.3	46.2	43.4	27.0
00:00 - 00:15	46.2	65.1	40.0	48.8	47.0	45.5	42.5	40.8	38.0	36.3	32.4	17.0
00:15 - 00:30	42.2	57.7	38.0	46.9	43.1	42.1	39.7	37.6	33.2	28.5	22.2	11.6
00:30 - 00:45	42.4	54.5	39.0	48.3	45.0	42.7	39.2	38.1	33.6	27.8	21.5	11.5
00:45 - 01:00	41.0	50.8	38.0	46.7	39.4	39.3	37.6	37.2	32.6	26.7	20.4	11.4
01:00 - 01:15	41.6	57.1	39.0	46.9	38.3	39.2	37.8	37.7	33.7	29.1	22.5	11.7
01:15 - 01:30	41.2	51.3	38.0	44.3	38.7	39.5	38.0	37.5	32.6	26.1	21.3	11.5
01:30 - 01:45	40.4	48.0	38.0	42.5	37.2	38.2	36.7	36.1	32.3	29.2	25.9	13.0
01:45 - 02:00	41.4	51.3	38.0	42.6	39.9	40.2	38.6	36.9	32.7	29.6	26.0	13.1
02:00 - 02:15	41.6	60.5	38.0	44.1	41.7	42.2	40.0	36.9	31.4	26.2	22.2	11.8
02:15 - 02:30	39.2	51.4	37.0	46.4	40.4	38.2	36.8	35.3	29.8	23.1	17.6	11.3
02:30 - 02:45	40.9	61.8	38.0	43.6	38.7	38.8	37.3	36.7	33.5	28.1	19.4	11.4
02:45 - 03:00	39.7	51.2	37.0	47.1	39.7	39.3	36.8	35.7	30.8	24.1	18.5	11.4
03:00 - 03:15	39.4	56.6	36.0	42.2	37.2	38.1	36.7	35.5	30.8	23.8	17.8	11.4
03:15 - 03:30	38.9	54.9	35.0	42.0	38.1	39.9	38.0	34.1	27.8	19.9	15.4	11.3
03:30 - 03:45	39.0	57.7	36.0	44.4	39.5	40.2	36.4	34.5	29.2	22.2	17.7	11.4
03:45 - 04:00	39.7	55.2	35.0	42.4	43.0	41.0	38.3	34.8	28.6	21.3	16.2	11.3
04:00 - 04:15	37.3	47.4	35.0	44.8	35.8	36.5	34.8	33.4	27.9	21.2	17.0	11.4
04:15 - 04:30	40.5	57.2	37.0	45.7	39.0	39.3	37.4	36.4	32.5	25.1	16.9	12.0
04:30 - 04:45	40.4	56.3	37.0	45.7	37.6	39.7	37.3	36.4	31.9	24.6	18.2	11.4
04:45 - 05:00	42.2	63.7	38.0	44.7	41.7	42.2	38.1	37.1	33.1	32.3	30.7	19.3
05:00 - 05:15	43.1	56.0	40.0	46.9	38.6	38.9	37.1	39.7	36.1	29.7	17.2	11.3
05:15 - 05:30	46.2	66.1	43.0	44.7	39.2	38.5	37.3	42.7	39.4	35.7	31.1	19.9
05:30 - 05:45	45.6	63.3	41.0	48.0	46.4	46.1	41.3	40.8	37.5	32.8	25.2	12.6
05:45 - 06:00	43.4	62.3	39.0	49.1	45.2	43.0	41.7	39.1	33.5	27.4	19.8	11.5
06:00 - 06:15	42.6	58.4	39.0	46.7	44.4	42.6	39.4	37.6	34.7	29.1	20.7	11.4
06:15 - 06:30	46.5	66.0	41.0	51.5	49.6	47.3	41.9	40.6	38.4	37.6	24.0	11.8
06:30 - 06:45	49.4	68.2	41.0	51.9	51.2	47.7	42.1	39.9	37.8	46.1	31.1	12.5
06:45 - 07:00	52.7	67.3	42.0	51.7	48.5	46.4	44.1	40.5	39.5	50.7	34.3	13.7

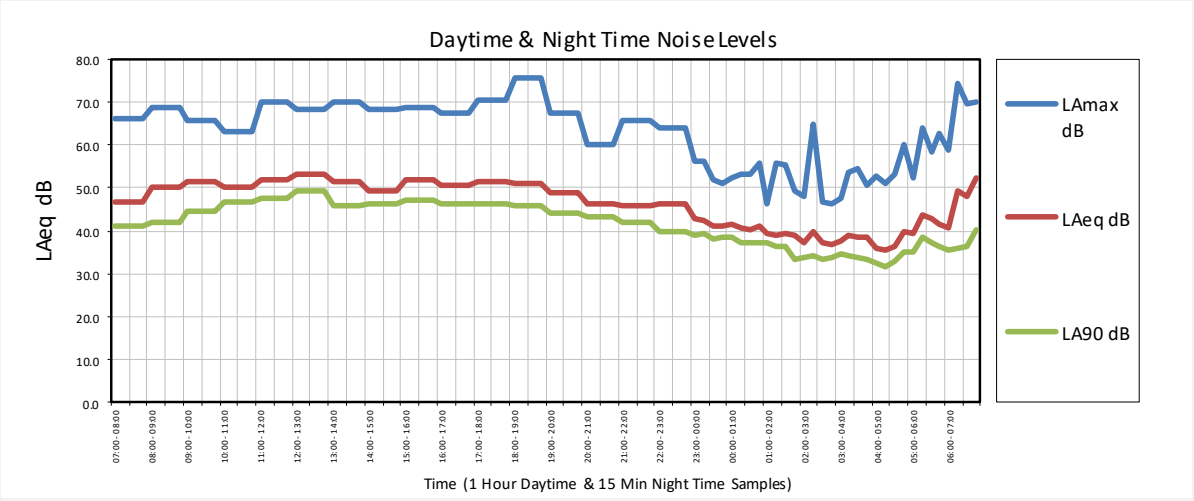


19.8 26th – 27th August 2023 Position 2

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 & Corresponding LAmax 16 HOUR	50.3	75.8	46.0	56.7	53.1	48.9	45.6	45.5	42.2	40.4	35.6	19.2
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Corresponding LAmax 8 HOUR	42.9	74.2	37.0	45.4	41.1	39.8	37.3	37.1	34.2	36.4	30.3	11.8

DAYTIME NOISE LEVELS 07:00 - 23:00 1 HOUR SAMPLES				Octave Band Centre Frequency (Hz)								
Date / Time	LAeq	LAmax	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
07:00 - 08:00	46.7	66.3	41.0	53.6	49.8	46.4	42.4	40.9	37.7	38.8	27.9	11.9
08:00 - 09:00	50.0	68.9	42.0	54.0	54.9	51.3	46.3	44.7	41.4	38.2	28.8	12.2
09:00 - 10:00	51.6	65.9	45.0	55.5	48.7	46.5	43.9	46.2	45.1	43.9	40.1	24.7
10:00 - 11:00	50.2	63.3	47.0	55.5	49.9	47.6	45.4	45.5	42.5	41.3	35.0	18.8
11:00 - 12:00	51.9	70.2	47.0	58.5	54.0	49.4	45.8	47.3	44.9	42.0	36.5	19.1
12:00 - 13:00	53.1	68.1	49.0	56.2	51.6	48.1	46.8	48.3	46.2	45.0	40.2	23.8
13:00 - 14:00	51.4	69.9	46.0	56.7	60.7	51.3	45.9	45.9	42.5	39.2	32.4	14.9
14:00 - 15:00	49.4	68.3	46.0	56.0	51.1	48.9	44.7	45.2	40.2	39.2	36.7	19.9
15:00 - 16:00	51.7	68.9	47.0	58.1	52.8	51.0	47.6	47.0	42.7	41.2	39.2	22.4
16:00 - 17:00	50.8	67.6	46.0	56.8	51.7	49.8	46.1	47.0	41.6	39.0	37.3	20.3
17:00 - 18:00	51.4	70.3	46.0	57.0	51.4	48.2	45.8	46.4	43.6	43.1	36.5	19.1
18:00 - 19:00	51.3	75.8	46.0	61.9	52.4	49.3	48.0	46.3	43.2	39.7	34.1	16.8
19:00 - 20:00	48.9	67.7	44.0	55.8	49.9	48.3	45.5	44.1	39.5	38.5	31.7	14.0
20:00 - 21:00	46.4	59.9	43.0	55.5	48.8	46.0	42.4	42.8	37.4	28.7	23.1	11.9
21:00 - 22:00	45.9	65.9	42.0	52.3	48.6	47.2	43.2	41.6	35.8	27.0	20.7	11.7
22:00 - 23:00	46.4	63.9	40.0	52.0	49.1	48.4	45.1	41.5	34.2	24.6	18.0	12.8

NIGHT TIME NOISE LEVELS 23:00 - 07:00 15 MINUTE SAMPLES				Octave Band Centre Frequency (Hz)								
Date / Time	LAeq	LAmax	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
23:00 - 23:15	42.9	56.2	39.0	49.8	45.8	44.7	40.5	38.6	32.2	21.5	14.9	11.3
23:15 - 23:30	42.5	56.3	40.0	51.1	44.5	43.0	38.7	38.7	33.7	22.7	15.9	11.3
23:30 - 23:45	41.2	52.1	38.0	47.3	41.2	41.7	38.7	37.7	31.0	20.5	14.6	11.4
23:45 - 00:00	41.3	51.0	39.0	48.1	41.2	40.6	38.5	38.0	31.6	21.3	15.2	11.3
00:00 - 00:15	41.6	52.4	38.0	47.0	41.7	41.3	39.3	38.1	31.3	20.9	14.7	11.3
00:15 - 00:30	40.8	53.2	37.0	47.9	42.9	40.4	37.3	37.6	31.2	20.5	14.6	11.3
00:30 - 00:45	40.4	53.4	37.0	47.0	41.4	38.7	36.9	37.2	31.6	22.1	15.6	11.3
00:45 - 01:00	41.0	55.9	37.0	46.3	42.1	40.3	38.2	37.5	31.5	22.3	16.9	11.6
01:00 - 01:15	39.5	46.5	37.0	42.8	36.5	38.2	36.8	36.1	30.1	21.0	15.1	11.3
01:15 - 01:30	39.1	55.8	36.0	41.9	36.7	38.1	36.2	35.7	30.0	22.3	17.2	11.4
01:30 - 01:45	39.4	55.4	36.0	43.4	37.2	38.4	36.7	36.0	30.2	22.2	18.5	11.4
01:45 - 02:00	38.8	49.4	33.0	42.3	39.9	39.5	37.6	34.3	26.9	18.9	15.5	11.3
02:00 - 02:15	37.1	48.2	34.0	45.3	37.0	36.1	34.3	33.6	27.9	19.2	13.9	11.3
02:15 - 02:30	40.0	64.7	34.0	43.8	43.1	40.3	38.3	35.3	28.9	23.9	21.6	11.4
02:30 - 02:45	37.2	46.8	34.0	41.3	34.4	35.5	35.1	33.9	27.1	18.1	14.0	11.3
02:45 - 03:00	36.8	46.2	34.0	42.3	36.2	37.1	34.5	33.1	26.6	18.9	15.3	11.3
03:00 - 03:15	37.7	47.5	35.0	42.2	38.4	36.9	35.3	34.2	27.5	18.7	13.9	11.3
03:15 - 03:30	38.9	53.7	34.0	41.2	37.8	39.2	38.0	34.4	27.6	18.8	14.3	11.3
03:30 - 03:45	38.5	54.3	34.0	41.3	42.7	38.6	36.8	34.2	27.4	18.7	13.6	11.3
03:45 - 04:00	38.6	50.7	33.0	43.5	39.2	36.4	34.4	34.6	31.2	24.2	13.4	11.2
04:00 - 04:15	35.9	52.8	32.0	42.7	37.7	35.9	33.6	32.1	25.3	17.4	13.9	11.3
04:15 - 04:30	35.5	50.9	32.0	40.9	38.8	34.5	32.6	31.9	26.1	18.9	15.2	11.5
04:30 - 04:45	36.4	53.1	33.0	40.8	34.7	34.7	33.4	32.4	27.1	24.2	21.3	12.3
04:45 - 05:00	39.7	60.0	35.0	41.0	35.1	35.1	34.1	36.2	32.4	27.4	23.3	14.6
05:00 - 05:15	39.6	52.5	35.0	40.8	34.9	34.6	33.4	36.2	33.0	26.0	14.3	11.3
05:15 - 05:30	43.5	64.0	39.0	41.3	36.4	34.0	32.7	39.4	37.0	34.6	29.2	12.6
05:30 - 05:45	42.7	58.6	37.0	43.0	40.7	39.1	36.6	38.6	35.7	32.3	24.4	11.6
05:45 - 06:00	41.7	62.9	37.0	45.1	41.8	39.4	39.3	36.0	33.4	32.1	27.7	11.4
06:00 - 06:15	40.5	59.0	35.0	43.2	38.5	37.1	39.5	36.1	31.2	23.9	16.7	11.3
06:15 - 06:30	49.2	74.2	36.0	46.1	42.8	40.4	37.2	40.0	40.7	43.2	43.8	14.6
06:30 - 06:45	48.2	69.8	36.0	48.2	45.8	43.8	38.6	40.4	40.7	43.5	31.1	12.1
06:45 - 07:00	52.5	70.0	40.0	48.5	46.2	45.3	41.3	42.9	43.5	49.4	37.8	13.9



19.9 27th – 28th August 2023 Position 2

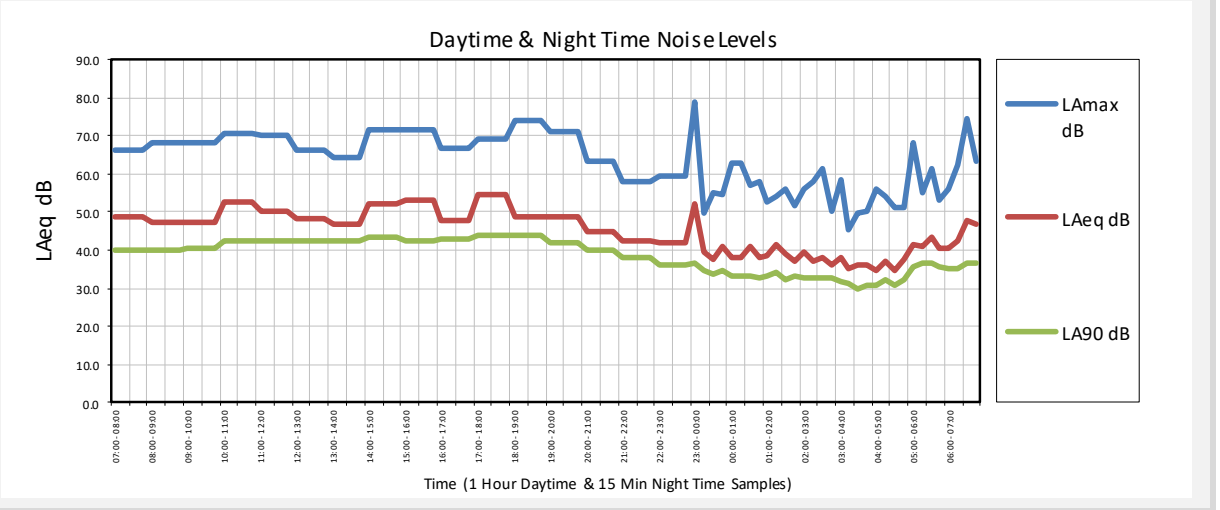
NOISE LEVEL SUMMARY ASSESSMENT				Octave Band Centre Frequency (Hz)								
Date / Time	LAeq	LAmax	LA90	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LAeq 16 HOUR & Corresponding LAmax 16 HOUR	49.7	73.7	42.0	55.2	51.7	49.2	45.1	44.1	41.3	40.6	36.9	16.4
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Corresponding LAmax 8 HOUR	41.9	78.7	33.0	46.0	41.4	39.7	37.0	35.7	36.1	32.6	26.1	12.0

DAYTIME NOISE LEVELS 07:00 - 23:00 1 HOUR SAMPLES

Date / Time	LAeq	LAmax	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	48.5	66.2	40.0	50.4	47.9	45.2	40.9	41.6	41.1	43.3	30.0	12.0
08:00 - 09:00	47.1	67.9	40.0	52.1	50.0	47.7	42.9	40.0	37.1	40.7	27.3	12.0
09:00 - 10:00	47.4	68.0	41.0	53.9	49.6	46.7	42.3	41.7	39.8	38.8	27.9	12.5
10:00 - 11:00	52.4	70.7	42.0	57.7	55.3	52.7	48.4	47.0	44.9	40.2	32.1	14.1
11:00 - 12:00	50.2	70.2	42.0	56.9	52.8	50.2	46.8	45.5	41.8	35.9	33.4	16.2
12:00 - 13:00	48.3	66.4	42.0	57.2	51.9	48.2	44.5	43.5	39.4	35.7	33.1	15.3
13:00 - 14:00	46.9	64.1	43.0	56.5	50.5	46.2	42.5	42.3	37.5	35.1	36.8	16.8
14:00 - 15:00	51.9	71.5	43.0	57.5	54.8	51.8	48.4	47.0	43.6	39.9	36.3	19.2
15:00 - 16:00	53.2	71.4	43.0	57.5	57.2	55.1	50.6	47.3	43.4	40.2	39.2	17.8
16:00 - 17:00	47.5	66.6	43.0	56.1	50.4	46.3	42.9	43.1	39.3	35.3	33.8	15.8
17:00 - 18:00	54.6	68.9	44.0	55.4	50.7	50.7	45.3	47.9	46.7	48.4	46.3	22.6
18:00 - 19:00	48.7	73.7	44.0	54.4	48.6	46.2	42.5	42.7	40.9	42.1	35.6	17.0
19:00 - 20:00	48.8	70.9	42.0	53.2	48.1	45.4	43.9	43.7	40.8	40.6	31.8	13.4
20:00 - 21:00	44.6	63.1	40.0	52.6	46.6	44.6	41.0	40.0	34.7	31.0	33.2	13.0
21:00 - 22:00	42.2	57.8	38.0	51.2	46.0	44.0	39.1	37.9	31.7	24.6	22.1	14.2
22:00 - 23:00	41.9	59.5	36.0	49.5	45.2	42.4	40.1	37.3	30.7	23.8	20.4	12.1

NIGHT TIME NOISE LEVELS 23:00 - 07:00 15 MINUTE SAMPLES

Date / Time	LAeq	LAmax	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	51.9	78.7	36.0	51.0	47.9	44.8	41.3	42.2	48.9	42.9	25.9	12.5
23:15 - 23:30	39.5	49.8	35.0	46.6	42.2	41.7	36.7	35.0	29.0	20.5	16.3	11.4
23:30 - 23:45	37.3	55.0	34.0	45.3	35.0	35.2	33.8	34.2	28.2	20.7	17.6	12.6
23:45 - 00:00	41.0	54.6	35.0	44.5	42.0	42.1	40.2	36.1	29.2	21.2	17.4	11.4
00:00 - 00:15	38.2	62.9	33.0	43.0	41.2	35.8	35.2	35.0	28.9	19.0	14.3	11.8
00:15 - 00:30	38.2	62.9	33.0	43.0	41.2	35.8	35.2	35.0	28.9	19.0	14.3	11.8
00:30 - 00:45	40.8	57.0	33.0	45.5	42.4	41.5	39.9	36.1	28.7	19.6	14.5	11.3
00:45 - 01:00	38.2	57.9	33.0	45.1	43.1	40.2	36.1	33.1	26.9	20.0	16.4	12.0
01:00 - 01:15	38.7	52.6	33.0	45.8	45.4	40.3	36.7	33.7	26.1	17.9	13.5	11.4
01:15 - 01:30	41.2	54.1	34.0	45.1	45.3	43.9	40.2	35.4	27.4	18.0	13.2	11.5
01:30 - 01:45	39.2	55.8	32.0	43.4	42.0	41.7	38.3	33.5	26.3	17.2	13.2	11.3
01:45 - 02:00	36.9	51.8	33.0	50.8	36.5	35.2	33.2	33.1	28.6	20.4	14.5	11.3
02:00 - 02:15	39.7	56.0	33.0	41.2	40.3	41.9	39.5	33.4	25.9	17.7	14.0	11.3
02:15 - 02:30	37.1	58.1	33.0	41.7	34.8	35.1	33.7	33.0	28.1	26.2	22.2	11.5
02:30 - 02:45	37.9	61.5	33.0	41.6	40.7	41.4	34.7	32.1	26.9	17.9	14.5	15.0
02:45 - 03:00	36.2	50.3	33.0	41.6	35.9	36.2	33.6	32.2	26.8	18.4	13.2	11.5
03:00 - 03:15	38.1	58.6	32.0	45.0	37.5	38.1	37.2	33.2	26.7	23.0	22.3	15.0
03:15 - 03:30	35.1	45.4	31.0	38.8	31.4	32.6	31.5	31.9	26.6	17.8	12.5	11.2
03:30 - 03:45	36.0	49.9	30.0	41.7	31.0	31.9	31.0	32.5	28.8	21.5	13.0	11.2
03:45 - 04:00	35.9	50.0	31.0	42.1	32.4	32.3	31.2	32.3	28.8	21.2	13.0	11.2
04:00 - 04:15	34.8	56.0	31.0	42.8	33.8	33.8	31.9	31.3	25.5	17.9	14.2	11.3
04:15 - 04:30	37.1	54.1	32.0	43.6	37.2	37.2	34.8	33.1	27.2	21.0	17.2	11.4
04:30 - 04:45	34.6	51.2	31.0	42.5	33.9	34.4	32.1	30.9	24.4	17.0	13.4	11.3
04:45 - 05:00	37.7	51.2	32.0	46.2	36.0	35.8	34.4	34.3	28.7	22.2	18.7	11.4
05:00 - 05:15	41.2	68.3	36.0	43.2	36.2	36.6	35.4	37.9	33.6	30.6	22.7	11.7
05:15 - 05:30	41.1	54.8	37.0	44.2	38.2	37.0	35.0	37.2	34.2	28.8	26.7	11.6
05:30 - 05:45	43.4	61.1	37.0	44.5	34.5	34.8	34.0	37.2	35.2	34.3	38.8	14.3
05:45 - 06:00	40.3	53.0	36.0	48.6	38.3	36.8	35.5	36.7	32.8	26.2	17.0	11.3
06:00 - 06:15	40.4	56.1	35.0	47.7	38.3	37.0	35.6	35.3	32.9	32.0	23.5	11.5
06:15 - 06:30	42.6	62.3	35.0	49.6	46.4	43.9	41.5	36.1	32.1	29.5	23.3	11.5
06:30 - 06:45	47.7	74.6	37.0	50.0	47.1	44.8	42.1	40.4	42.7	38.7	30.7	12.0
06:45 - 07:00	46.8	63.1	37.0	49.0	43.0	39.5	36.4	38.6	38.1	43.3	32.6	12.4



19.10 28th – 29th August 2023 Position 2

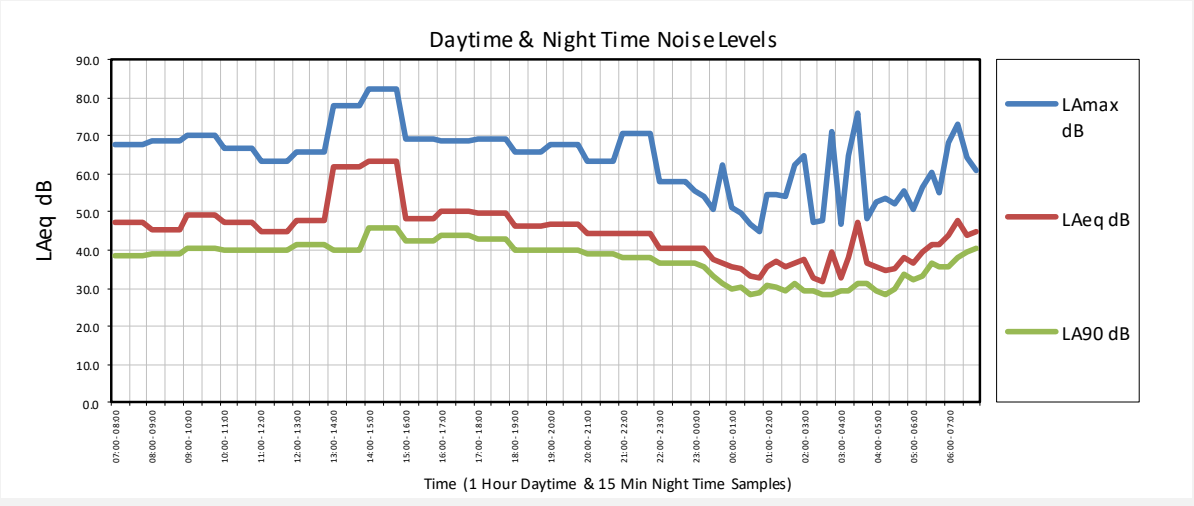
NOISE LEVEL SUMMARY ASSESSMENT				Octave Band Centre Frequency (Hz)								
Date / Time	LAeq	LAmax	LA90	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LAeq 16 HOUR & Corresponding LAmax 16 HOUR	54.3	82.0	40.0	56.6	52.8	50.8	51.9	50.2	45.8	41.6	32.2	15.4
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Corresponding LAmax 8 HOUR	40.2	76.1	29.0	46.8	41.0	38.4	35.2	34.8	33.5	30.9	22.0	12.7

DAYTIME NOISE LEVELS 07:00 - 23:00 1 HOUR SAMPLES

Date / Time	LAeq	LAmax	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	47.3	67.5	39.0	52.0	45.9	42.1	38.2	39.6	38.5	43.3	33.4	12.4
08:00 - 09:00	45.5	68.7	39.0	52.4	47.3	44.9	40.8	39.4	35.6	38.9	29.5	12.4
09:00 - 10:00	49.0	70.1	41.0	55.2	49.4	48.4	43.9	41.3	43.2	39.8	35.4	14.5
10:00 - 11:00	47.1	66.8	40.0	56.6	49.9	46.4	43.0	42.1	38.9	35.8	30.4	13.0
11:00 - 12:00	44.7	63.1	40.0	56.5	49.8	44.7	40.1	39.0	35.7	34.0	33.1	16.7
12:00 - 13:00	47.6	65.8	42.0	57.4	51.3	47.4	42.1	41.8	39.7	38.1	35.2	23.3
13:00 - 14:00	61.8	77.8	40.0	58.4	56.5	55.4	59.6	57.8	53.6	49.2	37.6	14.5
14:00 - 15:00	63.1	82.0	46.0	62.8	61.1	59.7	61.2	59.3	54.1	47.4	33.4	14.4
15:00 - 16:00	48.4	68.9	42.0	58.0	52.7	48.7	43.5	43.1	39.7	39.0	30.0	13.3
16:00 - 17:00	50.4	68.4	44.0	56.4	52.5	49.4	45.4	45.8	42.8	38.9	30.9	14.0
17:00 - 18:00	49.7	69.1	43.0	56.1	51.9	50.2	44.4	45.0	41.7	37.9	29.0	12.9
18:00 - 19:00	46.0	65.5	40.0	56.9	50.2	44.7	41.0	40.5	36.7	38.4	29.9	13.0
19:00 - 20:00	46.9	67.5	40.0	52.4	45.8	44.2	41.6	40.9	38.4	40.5	30.7	12.6
20:00 - 21:00	44.6	63.1	39.0	52.7	47.6	43.7	40.4	41.0	35.1	28.7	20.9	11.6
21:00 - 22:00	44.3	70.7	38.0	50.8	46.3	43.7	39.7	39.7	37.7	29.1	16.8	12.4
22:00 - 23:00	40.7	58.1	37.0	48.3	43.9	41.6	38.4	36.5	30.1	21.2	16.2	11.6

NIGHT TIME NOISE LEVELS 23:00 - 07:00 15 MINUTE SAMPLES

Date / Time	LAeq	LAmax	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	40.3	55.6	36.0	48.1	45.7	41.6	37.2	36.1	29.5	21.6	18.3	11.7
23:15 - 23:30	40.3	53.8	36.0	50.3	48.3	43.5	36.9	34.8	29.2	21.3	16.9	11.4
23:30 - 23:45	37.4	50.4	33.0	46.0	44.3	40.1	34.7	32.2	25.7	18.3	15.1	11.3
23:45 - 00:00	36.4	62.4	31.0	44.9	36.6	35.5	33.0	32.1	28.9	21.2	14.9	11.4
00:00 - 00:15	35.6	51.1	30.0	43.0	34.9	34.8	32.5	32.3	25.7	16.7	13.3	12.7
00:15 - 00:30	35.2	49.6	30.0	43.4	34.8	35.1	32.0	31.7	25.3	17.3	14.6	11.4
00:30 - 00:45	33.4	46.8	28.0	42.1	34.0	33.3	30.3	29.7	23.6	15.2	12.8	18.2
00:45 - 01:00	32.7	44.6	29.0	39.8	33.3	33.4	30.0	28.8	22.2	14.7	12.6	17.1
01:00 - 01:15	35.5	54.3	31.0	44.5	39.2	37.2	34.1	30.5	23.1	16.5	13.6	11.5
01:15 - 01:30	36.9	54.4	30.0	44.2	37.6	39.2	35.5	31.6	25.4	17.0	13.4	11.5
01:30 - 01:45	35.5	54.1	29.0	42.6	37.4	37.8	33.9	30.3	24.0	16.3	13.0	11.4
01:45 - 02:00	36.6	62.4	31.0	44.9	34.6	34.3	32.4	33.5	28.6	18.9	13.8	13.0
02:00 - 02:15	37.4	64.6	29.0	39.0	31.3	32.5	30.1	34.6	31.0	21.4	13.3	12.0
02:15 - 02:30	32.8	47.3	29.0	39.7	32.9	33.3	30.7	28.3	22.9	16.9	13.9	13.5
02:30 - 02:45	31.9	47.7	29.0	37.1	36.2	32.2	29.4	27.7	21.9	15.0	13.0	11.4
02:45 - 03:00	39.3	70.9	28.0	38.5	32.3	32.6	30.9	36.0	34.1	21.0	13.9	11.3
03:00 - 03:15	32.8	46.7	30.0	38.2	32.2	32.0	30.2	29.3	22.4	14.7	12.6	11.3
03:15 - 03:30	38.0	64.7	29.0	37.0	31.4	31.9	30.4	30.5	28.5	32.4	31.4	16.2
03:30 - 03:45	47.2	76.1	31.0	38.1	33.2	38.1	33.6	33.4	42.7	42.5	28.3	11.9
03:45 - 04:00	36.8	48.0	31.0	42.2	33.5	34.3	32.2	33.5	29.0	20.1	13.8	11.3
04:00 - 04:15	35.5	52.4	29.0	44.3	45.5	38.0	31.5	29.9	23.5	15.9	13.2	11.3
04:15 - 04:30	34.7	53.6	28.0	42.0	32.8	35.5	31.5	30.9	24.9	17.9	14.7	11.3
04:30 - 04:45	34.9	51.9	30.0	44.5	35.4	34.4	32.3	31.2	24.8	18.0	15.0	11.3
04:45 - 05:00	37.9	55.7	34.0	45.3	38.4	37.3	34.8	34.0	28.1	24.3	22.8	13.1
05:00 - 05:15	36.8	50.4	32.0	44.6	37.3	35.8	33.2	33.6	27.3	19.4	14.4	11.3
05:15 - 05:30	39.4	56.6	33.0	45.8	35.6	35.4	33.4	36.3	31.8	26.2	14.6	11.3
05:30 - 05:45	41.4	60.3	37.0	45.6	34.1	34.9	33.9	37.8	34.8	31.0	17.8	11.4
05:45 - 06:00	41.3	55.0	35.0	50.2	39.4	38.4	35.8	37.7	34.0	28.0	16.2	11.3
06:00 - 06:15	43.6	68.2	36.0	49.9	39.7	38.8	43.0	37.5	37.4	26.5	23.3	11.4
06:15 - 06:30	47.8	73.0	38.0	51.0	42.3	41.9	38.1	40.1	43.4	40.5	30.9	12.1
06:30 - 06:45	43.6	64.0	39.0	53.6	46.5	44.4	39.7	39.9	33.7	26.8	20.2	11.5
06:45 - 07:00	45.0	60.9	41.0	54.4	48.9	45.2	40.4	40.4	35.3	35.2	27.1	13.5



20 APPENDIX B - LAmax 1 MINUTE DATA

20.1.1 World Health Organisations 'Guidelines For Community Noise'.

The WHO Guideline for Community Noise suggests that levels of L_{AFmax} 45 dB should not exceed more than 10 events within any one night time period 23:00 – 07:00. Therefore, calculations and assessments are to be made against this criteria to ascertain if the proposed glazing and ventilation specification will be suitable to achieve that of the assessed 11th highest recorded L_{AFmax} dB level.

20.2 Results

Therefore, the following tabulated results from the worst night have been calculated and demonstrate compliance with the requirements of PRoPG. The following 1 minute data is detailed below together with the number above or below the LAmax 80 & 85 dB threshold.

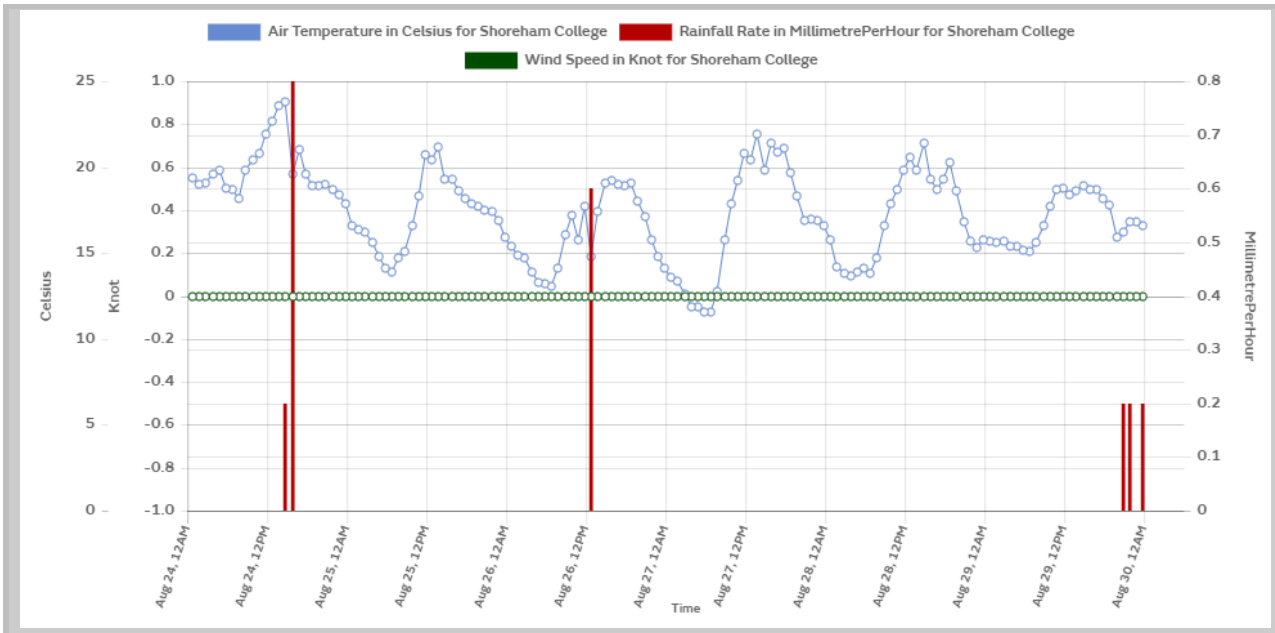
20.2.1 Professional Practice Guidance on Planning & Noise.

L_{AFmax} dB	79.7	80.0	80.1	79.1	74.9	L_{AFmax} dB	79.7	80.0	80.1	79.1	74.9	L_{AFmax} dB	79.7	80.0	80.1	79.1	74.9
Time	Fig 1	Fig 2	Fig 3	Fig 4	Fig 5	Time	Fig 1	Fig 2	Fig 3	Fig 4	Fig 5	Time	Fig 1	Fig 2	Fig 3	Fig 4	Fig 5
23:00:59	76.5	79.0	76.7	74.8	75.9	23:49:59	76.6	83.0	83.5	74.6	77.8	00:38:59	74.1	83.1	76.2	79.9	50.7
23:01:59	73.4	79.7	78.5	73.2	79.1	23:50:59	77.6	88.1	78.4	77.5	75.4	00:39:59	81.6	81.1	79.5	76.3	72.6
23:02:59	83.4	79.6	77.7	81.8	76.1	23:51:59	74.0	82.4	79.3	78.6	72.3	00:40:59	86.5	80.6	77.2	77.8	74.4
23:03:59	76.6	76.5	75.5	74.2	59.5	23:52:59	69.0	87.3	75.6	73.0	76.9	00:41:59	78.6	86.2	78.7	80.6	41.1
23:04:59	81.3	78.4	75.7	76.5	83.4	23:53:59	78.1	80.3	75.7	74.3	73.3	00:42:59	75.2	78.4	77.9	81.5	42.2
23:05:59	77.4	75.6	75.4	78.1	76.0	23:54:59	78.0	85.5	79.7	76.6	80.0	00:43:59	81.0	57.3	78.2	50.8	73.1
23:06:59	80.7	76.6	74.2	76.6	78.7	23:55:59	73.7	60.2	78.2	73.4	82.8	00:44:59	45.1	77.7	77.0	51.9	74.6
23:07:59	79.2	76.4	76.3	73.6	77.0	23:56:59	82.6	82.8	78.3	77.9	74.0	00:45:59	76.7	78.5	76.9	76.5	76.1
23:08:59	80.8	75.3	75.7	75.4	77.8	23:57:59	79.6	81.2	79.3	79.3	53.5	00:46:59	38.1	84.5	79.5	74.6	76.0
23:09:59	78.2	75.6	77.1	74.9	73.8	23:58:59	71.4	86.6	77.6	77.0	76.6	00:47:59	79.2	82.9	79.3	72.9	74.1
23:10:59	79.5	78.8	77.0	75.7	78.8	23:59:59	72.6	83.8	77.6	70.9	79.6	00:48:59	76.2	86.7	75.6	75.3	35.0
23:11:59	81.1	74.5	79.2	73.9	76.7	00:00:59	69.8	83.4	76.1	78.7	76.6	00:49:59	72.8	81.7	76.2	50.2	74.7
23:12:59	78.3	77.1	76.5	75.9	76.7	00:01:59	76.1	83.2	76.7	74.6	73.6	00:50:59	75.9	76.2	81.3	78.2	50.2
23:13:59	76.5	76.7	76.1	74.7	76.8	00:02:59	76.2	83.5	76.7	47.4	36.4	00:51:59	75.6	88.1	79.3	75.0	72.8
23:14:59	77.1	79.2	85.1	77.1	77.7	00:03:59	80.3	83.0	70.5	74.2	84.0	00:52:59	74.7	85.3	77.7	42.0	45.2
23:15:59	74.6	75.2	76.7	75.2	77.4	00:04:59	73.0	83.7	77.5	74.1	73.8	00:53:59	83.4	80.7	81.6	76.9	70.8
23:16:59	75.8	74.6	76.3	76.6	78.3	00:05:59	58.7	82.3	76.3	78.9	75.4	00:54:59	75.1	75.9	77.1	72.8	78.5
23:17:59	77.6	76.3	79.9	77.9	75.0	00:06:59	76.5	84.0	72.2	62.0	79.2	00:55:59	56.0	82.5	78.3	79.8	34.3
23:18:59	77.1	75.7	77.0	78.0	74.9	00:07:59	74.1	81.8	79.8	49.0	51.7	00:56:59	72.1	76.8	76.6	73.5	32.8
23:19:59	74.1	73.9	78.2	77.0	72.1	00:08:59	73.1	83.5	81.8	76.4	74.3	00:57:59	73.6	84.0	77.7	73.5	35.8
23:20:59	75.7	80.7	76.1	76.3	66.2	00:09:59	81.9	83.7	60.9	77.0	72.5	00:58:59	79.6	85.4	78.3	75.3	82.2
23:21:59	75.9	78.0	77.8	75.6	76.6	00:10:59	73.7	83.1	76.1	75.7	70.8	00:59:59	73.4	77.7	75.3	78.5	76.0
23:22:59	71.5	77.0	77.6	78.6	75.4	00:11:59	73.3	85.5	78.0	76.7	74.3	01:00:59	84.0	80.2	75.1	77.8	40.9
23:23:59	77.2	74.4	77.9	77.4	76.2	00:12:59	80.6	87.6	77.2	74.0	76.8	01:01:59	39.7	78.5	70.3	74.8	82.8
23:24:59	75.1	80.1	78.3	75.6	81.8	00:13:59	80.6	78.1	76.0	76.7	74.2	01:02:59	76.9	75.7	73.3	75.6	83.0
23:25:59	78.4	77.3	76.5	71.5	77.6	00:14:59	76.9	81.9	79.7	80.9	70.5	01:03:59	37.3	83.8	74.9	84.1	52.9
23:26:59	76.2	79.8	78.2	75.9	74.5	00:15:59	76.4	82.2	79.1	49.7	81.8	01:04:59	79.4	75.2	78.2	64.6	47.4
23:27:59	75.6	76.1	77.9	76.3	75.5	00:16:59	85.6	84.4	75.6	76.0	51.5	01:05:59	71.2	76.9	71.0	78.3	74.3
23:28:59	75.4	75.4	76.3	75.4	74.2	00:17:59	75.3	87.7	76.8	78.3	73.2	01:06:59	34.9	79.5	77.4	57.4	73.3
23:29:59	76.6	82.9	74.4	74.2	72.5	00:18:59	74.9	76.3	78.1	76.6	78.2	01:07:59	45.4	78.5	74.9	80.1	47.9
23:30:59	79.6	75.9	73.8	74.5	44.3	00:19:59	75.2	80.7	80.8	77.0	73.1	01:08:59	71.6	84.6	77.7	76.5	35.8
23:31:59	77.6	75.7	77.1	72.2	76.9	00:20:59	84.3	82.6	79.7	76.2	75.3	01:09:59	57.6	61.7	74.8	70.5	75.4
23:32:59	73.7	76.4	58.8	75.6	79.1	00:21:59	76.1	86.6	76.5	77.7	73.3	01:10:59	33.4	43.1	75.0	76.6	44.4
23:33:59	77.4	77.5	75.6	76.0	38.7	00:22:59	78.5	77.3	73.4	72.1	73.9	01:11:59	76.9	85.2	51.0	78.8	74.1
23:34:59	76.9	75.3	76.4	77.8	73.7	00:23:59	48.6	78.5	80.9	75.9	74.5	01:12:59	77.8	80.0	78.6	71.3	61.6
23:35:59	79.9	76.6	77.5	77.6	78.9	00:24:59	80.5	77.0	76.8	77.1	78.0	01:13:59	75.8	84.6	73.2	83.4	79.0
23:36:59	73.8	75.9	77.0	76.8	77.4	00:25:59	77.6	77.2	77.5	77.2	71.7	01:14:59	41.5	82.7	74.0	76.9	75.7
23:37:59	79.8	74.5	78.6	74.0	74.1	00:26:59	70.9	76.3	78.2	59.2	79.3	01:15:59	31.0	77.1	71.6	73.3	82.8
23:38:59	73.9	74.8	74.7	77.8	78.8	00:27:59	77.8	83.9	46.3	77.2	76.3	01:16:59	35.4	79.1	57.8	74.1	78.1
23:39:59	74.4	74.1	75.6	76.6	73.3	00:28:59	78.3	82.6	74.0	78.1	45.0	01:17:59	74.6	74.9	77.4	40.1	77.4
23:40:59	75.3	76.6	76.9	74.9	76.0	00:29:59	78.7	83.9	77.4	77.0	73.9	01:18:59	62.2	82.4	77.9	50.8	81.1
23:41:59	79.2	76.2	77.7	76.6	40.9	00:30:59	75.4	82.6	76.4	75.0	69.6	01:19:59	35.8	81.1	76.7	73.5	46.2
23:42:59	75.0	77.6	74.6	77.8	75.9	00:31:59	77.7	80.8	75.6	73.9	75.4	01:20:59	74.3	84.8	81.7	76.7	52.7
23:43:59	74.9	76.3	80.4	79.5	72.6	00:32:59	76.9	81.1	77.8	79.5	73.2	01:21:59	49.0	74.0	78.6	74.8	77.5
23:44:59	76.8	80.8	76.6	79.6	80.9	00:33:59	78.3	78.8	87.4	55.6	72.6	01:22:59	78.5	77.8	75.3	73.8	78.7
23:45:59	56.3	82.8	78.2	75.7	75.8	00:34:59	42.6	83.2	83.8	78.8	75.0	01:23:59	74.3	81.8	75.8	76.1	75.7

23:46:59	74.7	80.6	72.7	78.8	75.5	00:35:59	53.0	78.5	76.4	76.2	70.0	01:24:59	84.7	79.6	57.5	78.4	75.9
23:47:59	76.7	78.7	79.6	81.2	72.6	00:36:59	74.7	83.0	74.6	75.5	75.2	01:25:59	73.8	77.3	41.4	76.5	65.5
23:48:59	76.7	80.2	78.2	80.4	76.5	00:37:59	75.8	80.1	75.3	75.6	76.4	01:26:59	78.6	87.0	78.0	74.5	74.2
L_{AFmax} dB	**##**	**##**	**87.7**	**88.7**	**95.5**	**L_{AFmax} dB**	**##**	**##**	**87.7**	**88.7**	**95.5**	**L_{AFmax} dB**	**##**	**##**	**87.7**	**88.7**	**95.5**
Time	**Fig 1**	**Fig 2**	**Fig 3**	**Fig 4**	**Fig 5**	**Time**	**Fig 1**	**Fig 2**	**Fig 3**	**Fig 4**	**Fig 5**	**Time**	**Fig 1**	**Fig 2**	**Fig 3**	**Fig 4**	**Fig 5**
01:27:59	83.2	82.4	77.5	78.2	71.0	02:38:59	45.7	57.5	75.3	49.6	38.7	03:49:59	75.7	53.6	80.1	77.7	51.9
01:28:59	75.9	78.3	87.7	54.6	75.6	02:39:59	76.6	81.3	74.9	63.5	38.5	03:50:59	82.3	91.4	49.9	49.7	30.8
01:29:59	73.5	77.5	76.2	75.4	77.1	02:40:59	34.5	73.0	75.2	76.7	74.2	03:51:59	75.8	74.5	75.7	38.1	42.4
01:30:59	42.5	77.7	74.8	77.9	71.2	02:41:59	80.8	57.2	50.4	74.0	43.7	03:52:59	72.8	43.7	46.0	77.2	70.7
01:31:59	77.7	74.2	75.2	77.2	45.8	02:42:59	38.7	77.8	78.4	75.4	75.1	03:53:59	76.5	78.5	78.5	40.5	78.1
01:32:59	49.2	73.0	49.1	76.1	81.4	02:43:59	35.6	78.1	61.6	38.1	42.1	03:54:59	73.0	74.6	51.1	74.2	42.5
01:33:59	76.9	78.5	70.8	78.4	35.4	02:44:59	61.4	74.7	75.4	77.6	77.8	03:55:59	77.7	43.5	38.9	43.0	77.6
01:34:59	73.1	77.0	79.1	76.6	72.8	02:45:59	73.1	76.1	75.4	76.8	45.4	03:56:59	78.0	41.6	75.9	43.5	42.8
01:35:59	75.4	58.9	77.4	76.7	72.6	02:46:59	33.1	86.2	71.4	68.6	76.7	03:57:59	77.5	81.2	73.2	73.0	77.5
01:36:59	71.8	80.4	83.4	74.1	46.1	02:47:59	44.9	80.3	77.3	79.7	46.4	03:58:59	52.9	52.2	33.5	66.0	78.7
01:37:59	83.3	78.3	76.6	59.8	72.9	02:48:59	76.3	78.5	80.0	75.4	43.3	03:59:59	77.8	74.0	43.9	76.7	73.4
01:38:59	73.3	46.3	76.8	75.1	73.1	02:49:59	36.4	78.6	41.7	60.4	76.1	04:00:59	48.0	47.0	76.9	34.7	78.5
01:39:59	61.5	76.5	75.9	50.7	84.0	02:50:59	34.7	87.0	78.3	72.7	58.5	04:01:59	35.9	55.8	61.1	77.6	77.6
01:40:59	68.3	80.3	67.5	40.2	68.1	02:51:59	63.6	77.8	54.4	83.6	75.3	04:02:59	78.0	47.2	33.4	76.2	30.8
01:41:59	35.6	79.5	73.7	73.6	40.4	02:52:59	82.8	77.8	79.2	73.4	76.7	04:03:59	60.1	74.9	74.8	80.7	74.2
01:42:59	51.5	76.2	75.9	76.8	42.9	02:53:59	78.1	57.4	44.4	44.7	51.3	04:04:59	75.3	74.1	52.8	51.4	56.9
01:43:59	75.3	80.3	77.6	78.2	44.8	02:54:59	84.7	81.3	79.3	79.5	61.0	04:05:59	61.6	43.8	75.5	63.2	51.3
01:44:59	77.7	81.6	76.0	76.5	33.1	02:55:59	78.1	78.6	77.8	78.3	67.4	04:06:59	37.6	74.5	35.5	74.1	35.4
01:45:59	74.5	45.6	67.5	41.7	76.2	02:56:59	42.5	77.8	44.4	75.0	82.3	04:07:59	78.5	83.7	35.9	40.4	74.9
01:46:59	60.6	79.5	79.5	77.6	42.8	02:57:59	41.8	76.6	73.7	71.5	75.7	04:08:59	40.8	78.2	53.3	76.8	78.5
01:47:59	72.7	78.6	50.4	61.8	73.3	02:58:59	48.9	78.7	76.4	49.1	46.0	04:09:59	75.8	56.2	87.1	73.1	80.6
01:48:59	75.0	86.8	75.7	77.1	85.2	02:59:59	35.7	76.4	76.9	76.7	76.7	04:10:59	82.6	77.1	76.5	48.7	49.1
01:49:59	34.5	88.0	48.8	46.2	73.7	03:00:59	36.0	49.0	77.5	51.4	37.4	04:11:59	83.8	43.7	35.9	76.7	45.1
01:50:59	41.1	61.6	74.6	75.6	51.5	03:01:59	40.2	83.8	73.9	74.5	30.0	04:12:59	88.4	75.1	35.3	85.4	84.9
01:51:59	77.9	80.9	79.8	76.9	78.4	03:02:59	40.7	83.3	78.6	77.2	80.1	04:13:59	41.7	46.1	36.1	88.7	76.6
01:52:59	36.9	82.2	78.1	76.0	74.2	03:03:59	73.9	79.9	39.7	76.5	55.3	04:14:59	71.6	80.5	77.9	37.7	88.3
01:53:59	74.4	71.1	78.2	79.8	73.8	03:04:59	74.0	82.7	41.0	83.6	76.6	04:15:59	36.3	77.2	73.8	82.3	43.3
01:54:59	37.7	76.6	73.1	42.1	69.3	03:05:59	71.4	75.0	54.4	74.8	72.0	04:16:59	74.9	80.6	73.3	42.6	27.4
01:55:59	32.5	80.1	46.5	75.3	74.7	03:06:59	37.4	75.9	72.5	77.5	32.6	04:17:59	77.5	81.2	47.3	80.0	47.7
01:56:59	33.6	77.7	77.7	77.0	76.2	03:07:59	80.0	70.4	75.7	76.2	46.8	04:18:59	38.3	75.7	79.0	75.3	76.4
01:57:59	77.2	79.3	76.0	43.6	48.7	03:08:59	78.4	69.7	76.0	75.7	29.8	04:19:59	74.4	80.1	72.7	75.8	76.9
01:58:59	72.1	76.1	51.3	73.6	42.6	03:09:59	74.7	78.6	75.5	74.1	79.9	04:20:59	76.1	82.2	73.1	81.9	41.9
01:59:59	32.6	80.3	76.7	79.7	74.1	03:10:59	38.7	55.6	79.8	80.5	78.1	04:21:59	48.3	80.1	41.6	76.5	76.1
02:00:59	49.8	81.6	71.6	75.3	51.6	03:11:59	76.1	46.7	78.1	73.1	74.4	04:22:59	81.9	42.6	75.7	39.0	69.0
02:01:59	32.6	76.8	73.7	75.7	46.2	03:12:59	71.5	77.6	80.5	76.4	72.2	04:23:59	75.1	89.6	76.9	79.9	29.0
02:02:59	32.9	79.1	74.5	76.5	49.7	03:13:59	79.6	44.0	76.3	38.1	33.1	04:24:59	61.5	73.2	73.0	80.4	74.8
02:03:59	36.1	51.6	74.9	76.4	40.8	03:14:59	89.6	77.2	55.2	40.3	75.4	04:25:59	74.8	74.4	73.7	40.5	52.8
02:04:59	80.5	42.0	50.3	73.5	73.0	03:15:59	73.2	75.0	80.3	75.7	75.7	04:26:59	83.6	85.4	61.7	43.6	76.2
02:05:59	79.3	78.5	78.6	76.9	75.9	03:16:59	77.4	75.9	74.9	77.4	75.6	04:27:59	51.3	84.1	75.5	77.3	76.9
02:06:59	54.7	76.3	75.8	74.7	31.8	03:17:59	33.8	78.2	53.2	76.9	72.7	04:28:59	38.5	76.7	72.9	70.2	39.1
02:07:59	33.6	83.7	79.4	73.9	79.5	03:18:59	71.3	47.4	77.7	42.6	80.3	04:29:59	48.6	81.3	71.5	74.2	42.3
02:08:59	34.6	81.7	38.7	72.6	79.4	03:19:59	72.9	40.2	54.7	39.6	60.5	04:30:59	81.7	80.2	74.4	78.5	77.7
02:09:59	74.0	61.8	36.1	52.2	41.6	03:20:59	73.9	39.5	77.0	59.0	49.8	04:31:59	78.0	74.7	72.3	67.1	76.3
02:10:59	55.2	45.7	78.4	76.8	74.7	03:21:59	77.7	40.3	63.0	75.7	53.3	04:32:59	82.7	77.5	72.9	74.3	77.7
02:11:59	37.3	50.9	79.1	55.3	74.7	03:22:59	37.5	52.6	45.2	40.3	72.8	04:33:59	77.4	82.1	79.7	37.4	83.3
02:12:59	33.5	81.9	75.5	41.1	38.4	03:23:59	75.4	78.1	74.9	75.9	75.6	04:34:59	76.1	72.5	48.0	77.4	75.5
02:13:59	79.6	75.8	79.0	78.3	40.0	03:24:59	80.6	81.0	78.2	75.9	38.4	04:35:59	77.3	73.4	72.3	34.7	31.9
02:14:59	76.4	76.8	73.8	74.8	43.0	03:25:59	78.7	74.2	75.7	77.7	43.1	04:36:59	45.5	47.4	72.1	35.1	73.0
02:15:59	75.3	81.2	78.6	78.2	31.7	03:26:59	73.9	75.7	75.7	38.1	77.1	04:37:59	76.4	79.0	75.8	76.7	76.2
02:16:59	72.9	80.8	78.6	42.9	38.0	03:27:59	42.6	77.5	60.8	36.2	72.8	04:38:59	76.2	75.1	76.6	40.6	75.3
02:17:59	35.7	78.8	78.3	53.3	40.9	03:28:59	76.2	76.9	43.7	40.1	62.5	04:39:59	86.0	84.2	42.9	82.1	54.8
02:18:59	56.1	78.9	76.6	85.4	81.8	03:29:59	73.1	74.1	79.1	72.8	72.7	04:40:59	77.5	77.9	75.2	76.2	87.6
02:19:59	36.8	77.8	55.3	62.0	53.6	03:30:59	41.1	79.1	75.5	60.1	74.9	04:41:59	52.3	74.7	78.8	81.1	74.9
02:20:59	80.7	50.7	83.0	84.6	47.1	03:31:59	39.6	87.3	80.4	37.7	75.7	04:42:59	72.0	80.9	79.2	36.9	77.3
02:21:59	76.6	81.6	84.0	68.1	79.9	03:32:59	77.0	77.5	80.2	82.1	39.9	04:43:59	78.2	84.6	77.6	58.6	48.1
02:22:59	74.7	80.2	50.4	76.1	73.0	03:33:59	44.1	78.7	74.9	70.9	34.0	04:44:59	71.4	82.7	77.0	46.4	78.5
02:23:59	60.0	64.4	63.7	77.1	73.5	03:34:59	73.2	76.9	70.5	67.3	41.5	04:45:59	73.5	77.0	73.2	74.6	33.3
02:24:59	74.5	79.6	76.6	75.2	63.4	03:35:59	71.5	79.3	80.7	47.3	73.5	04:46:59	77.3	50.1	73.6	78.6	73.9
02:25:59	70.3	87.2	74.9	42.8	39.0	03:36:59	83.1	73.3	42.9	42.1	74.9	04:47:59	77.9	44.4	77.0	59.7	77.3
02:26:59	84.6	78.4	52.6	73.3	79.4	03:37:59	61.7	76.8	76.3	80.1	31.3	04:48:59	81.2	75.0	73.8	78.3	78.2
02:27:59	74.5	47.8	76.2	75.7	75.9	03:38:59	75.2	78.7	75.5	72.6	33.2	04:49:59	73.4	76.1	79.5	52.6	81.5
02:28:59	71.4	69.9	74.4	80.5	47.7	03:39:59	36.4	40.3	74.2	35.3	45.3	04:50:59	75.7	58.0	78.6	55.0	76.8
02:29:59	37.8	81.1	38.4	72.5	47.3	03:40:59	40.5	41.9	41.5	35.6	47.0	04:51:59	79.4	84.4	78.8	79.0	77.7
02:30:59	45.2	79.2	74.0	62.8	30.2	03:41:59	45.3	77.5	79.3	53.3	65.3	04:52:59	77.0	82.7	46.5	76.8	80.2
02:31:59	75.2	77.0	76.2	79.7	31.6	03:42:59	80.3	48.4	54.7	76.3	77.1	04:53:59	75.3	76.1	78.6	81.4	78.0
02:32:59	37.6	81.5	50.1	75.9	32.1	03:43:59	34.2	75.4	75.6	74.4	51.0	04:54:59	77.7	79.1	76.3	82.2	78.1
02:33:59	77.3	40.8	79.8	77.6	79.0	03:44:59	36.1	64.5	78.6	79.0	72.1	04:55:59	80.9	77.5	72.6	77.6	84.4
02:34:59	81.4	80.4	76.4	37.8	56.7	03:45:59	77.8	53.3	50.2	74.5	74.7	04:56:59	74.2	71.3	53.2	76.7	68.0

02:35:59	41.5	74.0	71.7	62.8	80.9	03:46:59	74.2	55.4	38.1	76.1	31.4	04:57:59	73.5	75.5	81.5	82.3	76.4
02:36:59	78.1	76.8	74.5	75.5	75.4	03:47:59	75.1	74.0	74.1	77.6	75.7	04:58:59	82.5	82.7	71.0	68.3	73.1
02:37:59	53.1	78.2	76.8	78.9	45.7	03:48:59	75.0	74.6	37.8	79.8	75.9	04:59:59	52.7	82.2	51.2	72.2	39.3
L_{AFmax} dB	**72.7**	**78.6**	**50.4**	**61.8**	**73.3**	**L_{AFmax} dB**	**##**	**78.7**	**76.4**	**49.1**	**##**	**L_{AFmax} dB**	**75.8**	**56.2**	**87.1**	**73.1**	**##**
Time	**Fig 1**	**Fig 2**	**Fig 3**	**Fig 4**	**Fig 5**	**Time**	**Fig 1**	**Fig 2**	**Fig 3**	**Fig 4**	**Fig 5**	**Time**	**Fig 1**	**Fig 2**	**Fig 3**	**Fig 4**	**Fig 5**
05:00:59	79.3	80.3	74.2	75.2	76.1	05:40:59	75.8	75.1	69.4	77.0	82.1	06:20:59	79.3	78.3	73.9	78.7	76.4
05:01:59	76.3	81.2	74.5	54.1	72.5	05:41:59	81.8	74.0	78.2	76.4	84.4	06:21:59	79.6	83.2	78.0	78.0	80.5
05:02:59	76.5	81.3	78.4	73.1	64.4	05:42:59	78.3	85.8	72.8	77.7	77.6	06:22:59	82.2	78.6	81.3	75.8	81.8
05:03:59	83.7	52.2	76.9	56.2	66.4	05:43:59	76.4	79.6	63.2	80.8	79.8	06:23:59	81.1	84.9	75.4	80.2	78.1
05:04:59	83.9	79.0	71.1	73.9	81.7	05:44:59	78.3	77.4	78.6	79.7	80.6	06:24:59	78.9	80.9	79.1	83.3	73.3
05:05:59	83.9	81.2	50.9	72.2	77.6	05:45:59	79.3	74.7	72.7	80.2	81.7	06:25:59	81.2	77.8	79.4	80.6	81.7
05:06:59	81.5	83.8	77.7	79.8	80.1	05:46:59	87.8	74.0	78.5	76.3	84.2	06:26:59	77.9	79.2	74.9	81.9	79.8
05:07:59	82.6	87.3	63.7	47.1	80.8	05:47:59	75.1	79.0	79.8	78.4	76.8	06:27:59	80.5	81.3	80.1	76.3	79.8
05:08:59	76.0	81.7	75.5	75.1	76.7	05:48:59	82.8	81.6	76.6	82.5	80.1	06:28:59	85.4	77.7	78.4	79.6	84.4
05:09:59	77.9	51.8	80.3	78.8	78.6	05:49:59	81.7	73.9	80.6	78.9	77.8	06:29:59	80.8	78.5	80.1	81.6	79.0
05:10:59	79.7	83.8	43.9	75.1	75.9	05:50:59	83.0	54.2	76.4	80.8	80.1	06:30:59	82.6	79.0	78.7	82.1	95.5
05:11:59	78.2	78.2	43.0	73.2	78.5	05:51:59	76.0	57.4	75.2	65.2	76.3	06:31:59	77.4	57.6	80.8	80.7	88.0
05:12:59	78.7	66.5	74.6	73.4	73.0	05:52:59	77.4	79.4	78.1	74.5	80.7	06:32:59	84.0	81.3	79.4	79.4	75.7
05:13:59	77.6	79.1	75.4	77.1	78.2	05:53:59	76.7	86.8	77.7	73.0	75.2	06:33:59	83.1	80.6	76.9	79.7	83.3
05:14:59	77.1	77.7	48.1	81.1	75.4	05:54:59	86.6	74.9	79.7	81.1	82.0	06:34:59	81.0	81.7	80.7	78.8	80.0
05:15:59	78.8	80.0	76.3	80.7	74.7	05:55:59	80.4	59.6	73.8	78.9	82.9	06:35:59	81.6	77.8	77.3	82.8	78.4
05:16:59	75.3	71.5	74.6	76.3	80.1	05:56:59	78.0	84.0	78.5	74.8	79.6	06:36:59	81.6	78.2	77.4	73.4	81.9
05:17:59	79.6	79.9	77.8	57.8	81.4	05:57:59	81.4	82.9	79.6	82.8	81.7	06:37:59	80.2	79.6	76.5	86.7	80.8
05:18:59	80.7	52.1	80.2	77.2	77.1	05:58:59	79.2	78.7	78.6	57.8	83.2	06:38:59	83.2	81.6	77.1	78.3	78.3
05:19:59	80.7	78.0	73.7	75.8	74.6	05:59:59	82.1	52.5	71.2	76.9	78.8	06:39:59	81.6	78.0	80.3	82.8	77.7
05:20:59	79.9	75.7	75.3	76.8	80.8	06:00:59	77.6	82.1	76.2	75.5	76.1	06:40:59	81.5	75.9	74.4	79.6	81.1
05:21:59	72.6	73.1	73.8	75.6	77.9	06:01:59	83.7	75.0	80.7	81.8	78.2	06:41:59	84.2	78.8	80.9	79.1	81.9
05:22:59	75.5	79.3	45.4	80.2	78.5	06:02:59	81.5	80.8	56.5	82.3	76.7	06:42:59	80.3	80.5	74.7	79.0	78.3
05:23:59	50.1	81.1	71.1	79.1	77.9	06:03:59	74.8	79.6	66.1	78.2	77.3	06:43:59	79.0	80.0	80.1	79.8	83.5
05:24:59	84.7	78.3	72.0	81.9	77.7	06:04:59	81.9	77.0	73.4	79.6	80.9	06:44:59	82.7	77.7	78.0	78.1	81.4
05:25:59	80.8	78.6	78.1	76.1	90.1	06:05:59	78.1	78.6	72.1	74.1	78.5	06:45:59	84.2	80.9	87.4	80.9	77.5
05:26:59	81.6	80.9	75.0	54.5	76.1	06:06:59	80.5	77.7	78.9	82.0	79.8	06:46:59	82.2	78.7	77.4	79.0	78.3
05:27:59	83.1	77.7	78.1	75.7	76.4	06:07:59	76.7	81.0	83.7	78.5	78.7	06:47:59	79.5	79.2	77.8	78.0	78.8
05:28:59	82.7	53.6	62.3	78.5	79.9	06:08:59	77.8	79.0	78.5	79.1	77.0	06:48:59	80.7	80.1	77.2	77.0	80.1
05:29:59	80.8	73.8	80.7	48.7	77.8	06:09:59	78.1	74.3	78.6	49.5	79.5	06:49:59	81.3	80.6	80.9	79.6	80.1
05:30:59	74.5	79.7	74.7	75.5	76.1	06:10:59	78.9	78.7	80.8	77.7	78.6	06:50:59	79.8	78.1	77.2	72.8	78.1
05:31:59	74.8	50.2	78.1	54.0	77.4	06:11:59	79.8	77.5	76.1	78.4	77.1	06:51:59	80.2	82.0	77.3	79.0	77.9
05:32:59	77.3	85.0	74.7	79.2	80.5	06:12:59	78.6	76.6	77.6	81.5	78.2	06:52:59	79.9	83.1	86.5	77.8	84.6
05:33:59	76.8	78.0	78.8	79.0	79.6	06:13:59	79.3	75.7	48.9	75.3	75.8	06:53:59	77.6	80.1	77.8	79.2	78.8
05:34:59	81.7	83.3	76.8	76.7	77.0	06:14:59	83.1	81.4	76.8	75.7	82.7	06:54:59	81.4	80.4	76.9	78.8	77.6
05:35:59	80.6	72.1	81.4	83.3	79.9	06:15:59	81.4	77.0	74.7	71.9	75.7	06:55:59	78.6	82.4	77.6	76.7	81.3
05:36:59	83.8	93.3	76.9	78.5	54.8	06:16:59	78.2	82.6	76.1	79.3	78.7	06:56:59	83.4	79.7	79.7	81.7	80.1
05:37:59	79.0	78.0	75.5	82.7	77.4	06:17:59	81.5	83.2	78.0	75.6	75.4	06:57:59	89.6	75.1	77.8	79.1	79.2
05:38:59	81.6	72.3	60.9	72.1	81.2	06:18:59	83.0	76.8	60.2	77.1	76.4	06:58:59	83.7	80.0	79.2	74.5	81.2
05:39:59	76.8	80.7	75.5	83.9	72.3	06:19:59	81.3	79.8	78.8	71.1	77.8	06:59:59	81.4	80.6	78.7	80.0	76.7

21 APPENDIX C - ENVIRONMENTAL CONDITIONS



24th – 29th August 2023

#END OF REPORT#