



REPORT REFERENCE:

IMP7275-3

ENVIRONMENTAL NOISE IMPACT ASSESSMENT

British Standard 8233: 2014

CLIENT:

Goodwill Homes Limited

SITE:

59 Leigh Road,
Eastleigh,
Hampshire

SURVEY DATES:

27th October to 1st November 2022

Impact Acoustics Ltd

1 King John Avenue, Bournemouth, Dorset, BH11 9RS

Tel: 01202 581398

impactacoustics.co.uk

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1 EXECUTIVE SUMMARY

1.1 Instruction

Impact Acoustics Ltd have been instructed by Goodwill Homes Limited to undertake a background noise survey in order to establish the suitability, of the existing un-used office space, for a conversion to residential.

The calculation process within British Standard 8233: 2014 is to be adopted to determine the impact of existing commercial noise sources on the proposed accommodation scheme at 59 Leigh Road, Eastleigh, Hampshire.

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 calculations undertaken to British Standard 8233: 2014 will be used to determine the impact of existing commercial noise on the internal environment climate 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;
- Assess any commercial surrounding noise sources.

1.3 Summary of Results

A background noise survey was undertaken from the 27th October to the 1st November 2022 at one position at the rear of the site in order to establish the underlying background noise levels. Overall results are detailed and tabulated below.

Assessment Position	Date Start	Date Finish	Daytime LAeq	Night Time LAeq
Position 1	27/10/2022	01/11/2022	56.0	47.4*

Assessment Position	Date Start	Date Finish	Daytime LA90 Assessed either side of the opening hours 08:00-18:00
Position 1	27/10/2022	01/11/2022	50.0

*Night time for figure 5 discounted due to weather conditions.

1.4 Glazing & Ventilation Specification

The development should incorporate a 10mm glass / 16mm air gap / 4mm glass and install an MVHR system to the proposed development. This will ensure the internal noise levels are compliant with BS 8233: 2014 and that with regards to noise the planning permission can be granted.

1.5 Commercial Noise Assessments

1.5.1 Plant Noise Assessment

During several site visits and discussions with the neighbouring nursery, there is no commercial plant within the vicinity of the proposed development. Therefore no further assessment have been made in relation to plant.

1.5.2 Nursery Noise Assessment Daytime (07:00 – 18:00)

Calculated Façade Level	L _{Aeq} 50 dB
Recorded Background Noise Level	L _{A90} 50 dB
Excess Over Background	0 dB(A)
Conclusion	Low Impact

The above table demonstrates the existing 25 children playing outside all day will not have a detrimental effect on the proposed development.

1.6 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.

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

2 INTRODUCTION

2.1 Outline

Impact Acoustics Ltd have been instructed by Goodwill Homes Limited to undertake a background noise survey in order to establish the suitability, of the existing un-used office space, for a conversion to residential. The calculation process within British Standard 8233: 2014 is to be adopted to determine the impact of existing commercial noise sources on the proposed accommodation scheme at 59 Leigh Road, Eastleigh, Hampshire.

2.2 Measurement Periods & Locations

Ambient noise levels were measured between the 27th October and the 1st November 2022 at 1 position, as detailed within this report. This measurement positions were selected to determine the resultant noise levels from the commercial noise of the neighbouring Nursery and general ambient noise at the rear of the site. No measurements were recorded at the front of the site as in this location, the road is semi pedestrianised and unlikely to cause adverse noise impact.

Calculations have been completed to include the commercial noise sources and calculated back to the facades of the proposed development. This report by Impact Acoustics Ltd gives the results of these measurements and an assessment in accordance with government planning guidelines and relevant standards together with mitigation measures if required.

2.3 Neighbouring Nursery

Bright Horizons Eastleigh Day Nursery and Preschool is located at 61 – 63 Leigh Road, Eastleigh at operated Monday to Friday 08:45 hrs to 18:00 hrs and closed Saturdays and Sundays. Having spoken with the management at the Nursery, they have informed us that a normal day would consist of no more than 25 children outside at any one time.

They have also confirmed that this was the case during our measurements periods and therefore the noise levels recorded at the rear façade are true to that of the activities from the neighbouring nursery. These are therefore to be used within the BS 8233: 2014 calculations.

2.4 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 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.

2.5 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.'

2.6 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.

“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:

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.

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.

SOAEL – Significant Observed Adverse Effect Level

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

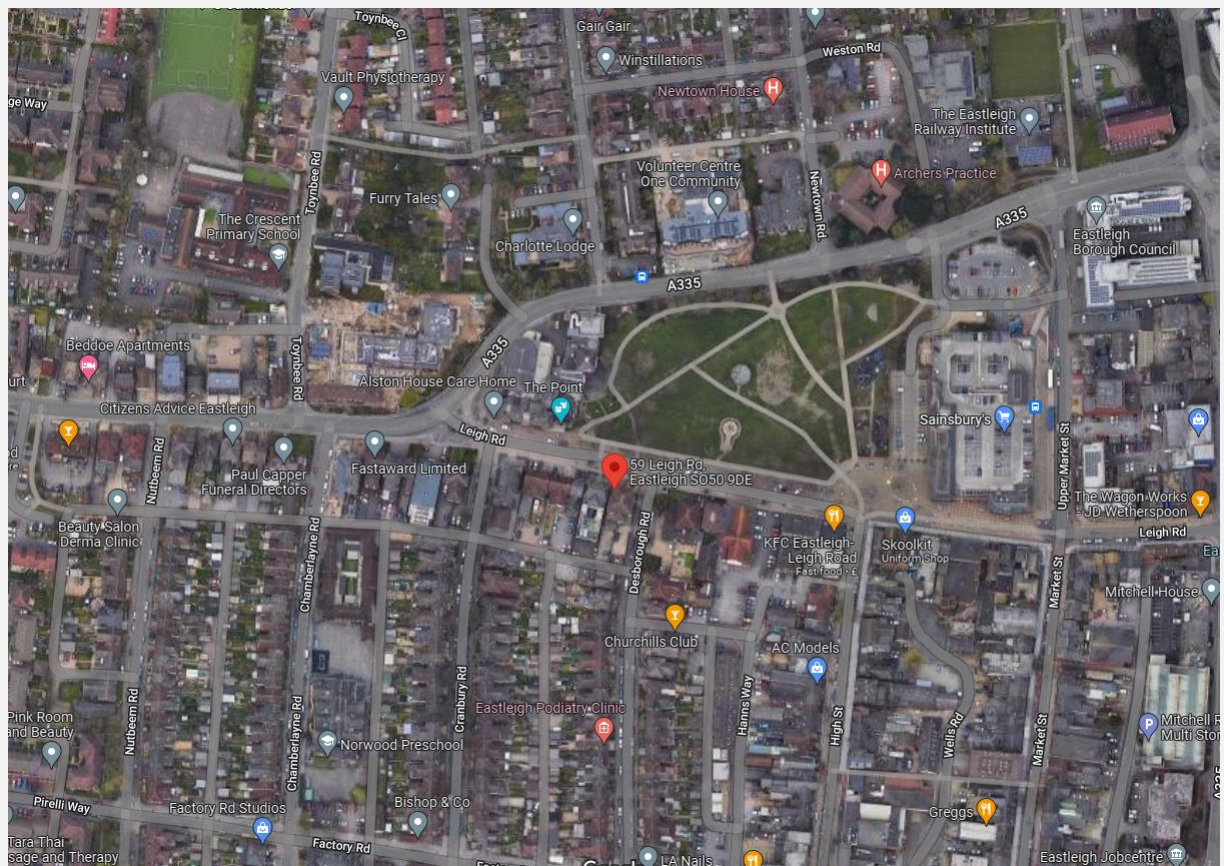
It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further 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.

2.7 BS 4142: 2014

Patron Noise falls outside the scope of BS 4142 and therefore no further assessments have been undertaken. No other commercial noise sources were detected or assessed.

3 SITE LOCATION

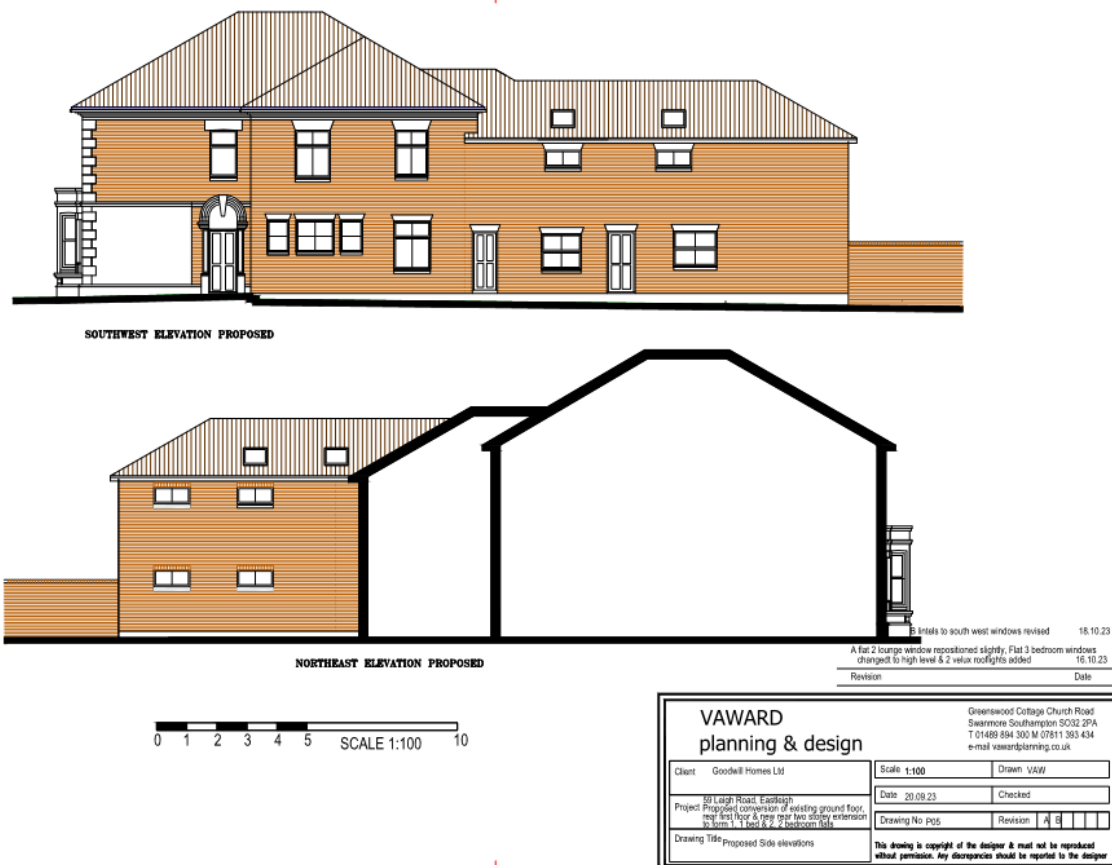
The site is located in Eastleigh, Hampshire.



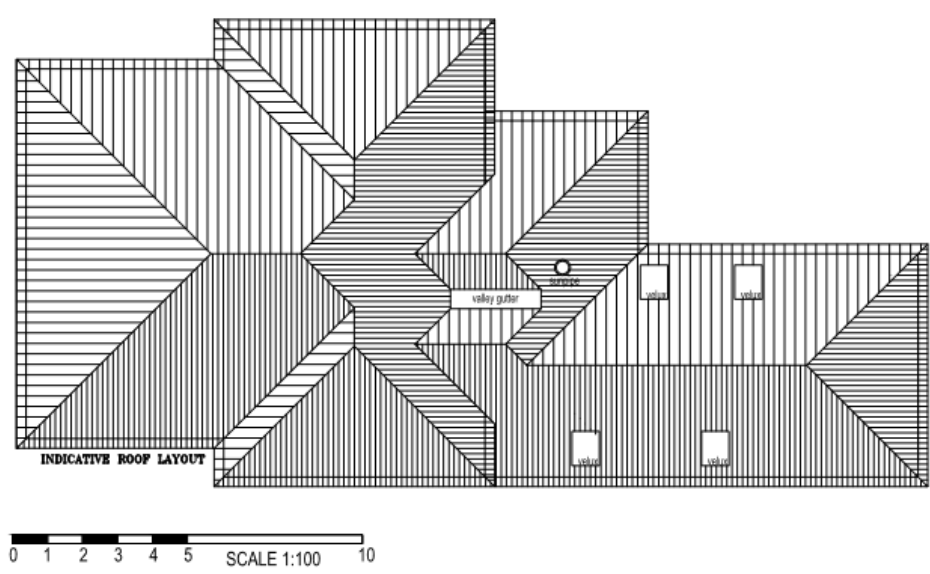
3.1 Proposed Development

The proposed development is shown below.

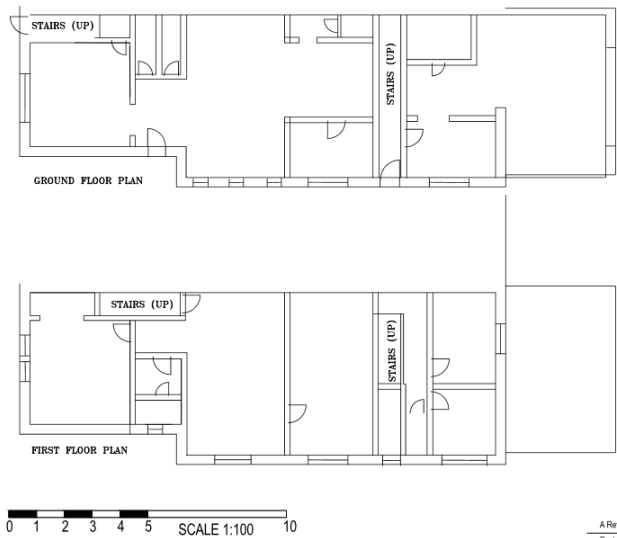




Side Elevation



Roof Layout



VAWARD planning & design		Greenwood Cottage Church Road Swanmore Southampton SO32 2PA T 01489 894 300 M 07811 383 434 e-mail vawardplanning.co.uk	
Client	Goodwill Homes Ltd	Scale 1:100	Drawn VAW
Project	59 Leigh Road, Eastleigh	Date 01.09.22	Checked
Drawing Title	Existing Floor layouts	Drawing No P04	Revision A
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EXISTING



VAWARD planning & design		Greenwood Cottage Church Road Swanmore Southampton SO32 2PA T 01489 894 300 M 07811 383 434 e-mail vawardplanning.co.uk	
Client	Goodwill Homes Ltd	Scale 1:100	Drawn VAW
Project	59 Leigh Road, Eastleigh Proposed conversion of existing ground floor near first floor & new rear two storey extension to form a 3 bed & 2 bathroom flat	Date 20.08.23	Checked
Drawing Title	Proposed Floor layouts	Drawing No P03	Revision
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PROPOSED

4 PROCEDURE

Position 2 was located at the rear in order to capture the background levels at the rear of the property. Sample measurements were recorded over continuous 15 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.

<u>Daytime 07:00 – 23:00</u>		<u>Night Time 23:00 – 07:00</u>	
LAeq 1 HOUR dB	LA10 1 HOUR dB	LAeq 15 MINUTES dB	LA10 15 MINUTES dB
LAMAX 1 HOUR dB	LA50 1 HOUR dB	LAMAX 15 MINUTES dB	LA50 15 MINUTES dB
LAMIN 1 HOUR dB	LA90 1 HOUR dB	LAMIN 15 MINUTES dB	LA90 15 MINUTES dB

Calculations have been made generally 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 LAeq 16 HOUR dB levels for daytime and LAeq 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 LAeq 16 Hour dB daytime and LAeq 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 $2 \times 10^{-5} \text{ Nm}^{-2}$ 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 Impact Acoustics Ltd in accordance with UKAS directive LAB 23.

5.1 Rion noise meter - Position 1

Description	Make	Type	Serial No.	Calibration Intervals	Last Calibrated	Next Due Calibration
Integrated Sound Level Meter	Rion	NL-52	00242696	2 YEARS	15.06.2021	15.06.2023
12.5mm Microphone (with windshield)	Rion	UC-59	06178	2 YEARS	15.06.2021	15.06.2023
Microphone Pre – Amplifier	Rion	NH-25	32724	2 YEARS	15.06.2021	15.06.2023

Full calibration certificates are available upon request.

6 RESULTS

6.1 27th – 28th October 2022

NOISE LEVEL SUMMARY ASSESSMENT				Octave Band Centre Frequency (Hz)								
Date / Time	LAeq	LAmaz	LA90	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LA90 1 HOUR & Corresponding LAeq 1 HOUR	56.0	83.4	50.0	60.8	57.1	55.8	53.5	50.9	48.0	42.5	0.0	0.0
NIGHT TIME 23:00 - 07:00 LA90 15 MIN & Corresponding LAeq 15 MIN	47.4	81.6	44.0	52.1	49.3	49.3	45.8	42.0	36.3	30.9	0.0	0.0

6.2 28th – 29th October 2022

NOISE LEVEL SUMMARY ASSESSMENT				Octave Band Centre Frequency (Hz)								
Date / Time	LAeq	LAmaz	LA90	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LA90 1 HOUR & Corresponding LAeq 1 HOUR	54.2	83.7	49.0	59.1	55.0	53.5	51.7	49.7	45.7	39.5	0.0	0.0
NIGHT TIME 23:00 - 07:00 LA90 15 MIN & Corresponding LAeq 15 MIN	46.6	74.2	40.0	55.6	49.3	47.1	44.0	41.0	38.0	34.0	0.0	0.0

6.3 29th – 30th October 2022

NOISE LEVEL SUMMARY ASSESSMENT				Octave Band Centre Frequency (Hz)								
Date / Time	LAeq	LAmaz	LA90	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LA90 1 HOUR & Corresponding LAeq 1 HOUR	53.7	82.0	48.0	59.6	56.0	54.4	51.3	48.7	44.6	39.8	0.0	0.0
NIGHT TIME 23:00 - 07:00 LA90 15 MIN & Corresponding LAeq 15 MIN	45.5	74.1	39.0	52.3	48.1	46.6	42.9	40.6	35.9	30.0	0.0	0.0

6.4 30th – 31st October 2022

NOISE LEVEL SUMMARY ASSESSMENT				Octave Band Centre Frequency (Hz)								
Date / Time	LAeq	LAmaz	LA90	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LA90 1 HOUR & Corresponding LAeq 1 HOUR	55.9	80.6	49.0	59.0	55.2	53.9	53.6	50.7	48.3	44.0	0.0	0.0
NIGHT TIME 23:00 - 07:00 LA90 15 MIN & Corresponding LAeq 15 MIN	45.9	73.8	40.0	49.5	47.4	46.7	43.7	41.3	35.4	31.2	0.0	0.0

6.5 31st October – 1st November 2022

NOISE LEVEL SUMMARY ASSESSMENT				Octave Band Centre Frequency (Hz)								
Date / Time	LAeq	LAmaz	LA90	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LA90 1 HOUR & Corresponding LAeq 1 HOUR	54.6	78.3	47.0	58.4	56.3	54.5	51.9	49.6	46.3	41.1	0.0	0.0
NIGHT TIME 23:00 - 07:00 LA90 15 MIN & Corresponding LAeq 15 MIN	52.9	84.5	47.0	66.6	58.0	53.1	50.7	47.8	44.6	40.6	0.0	0.0

7 BS 8233: 2014 ASSESSMENT

7.1 Discussion of Results

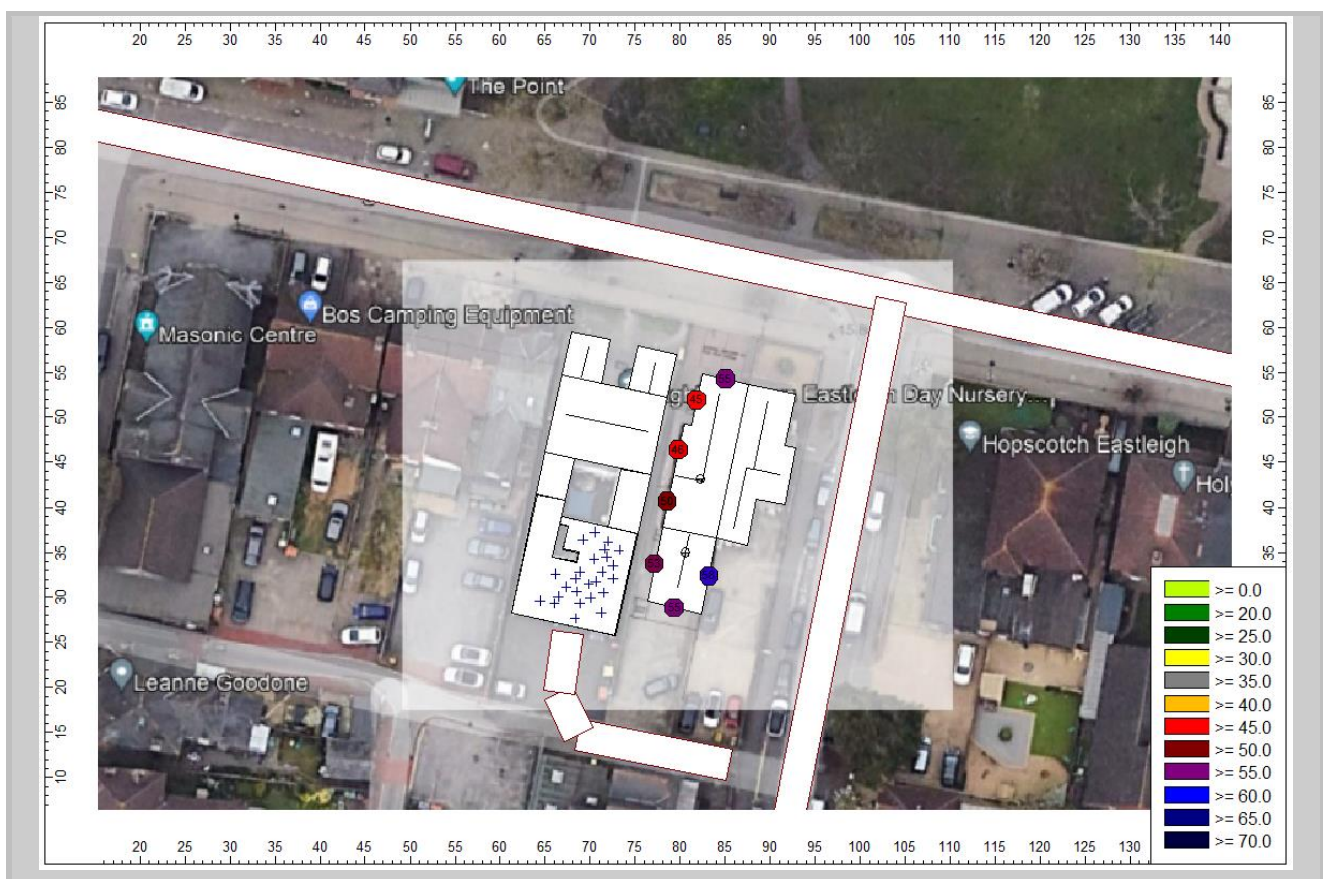
It can be seen from the attached graph and downloaded results that the external noise levels have followed the expected path and remained fairly constant throughout the day. The levels then gradually dropped off as the evening progressed and began to rise when morning traffic levels increased.

7.2 Recommendations

For the purpose of this assessment, the corresponding façade levels will be used within the BS 8233: 2014 calculations in order to evaluate the worst case scenario and determine if the existing glazing and ventilation can be maintained.

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 development, the suitability of the existing windows and ventilation have been verified.

7.3 Calculated Noise levels



7.4 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.

7.5 Ground Floor Lounge

Recorded Site Data (Corrected for Free Field)	Octave Band Centre Frequency (Hz)					
	125	250	500	1000	2000	4000
Daytime Leqff	58.3	56.5	53.9	51.6	48.3	43.1
Night time Leqff	60.0	55.1	52.7	49.8	46.6	42.6
Room Data	Sf	Sr	Swi	Sew	Srr	Volume
Area m²	7	0	5	2	0	82
Specification Summary	Site Specific Specification			Attenuation Required		
Glazing Specification	10mm / (6-16mm) / 4mm			Rw(C; Ctr)	35(-2,-5) dB	
Ventilation Strategy	MVHR			Dne'w	54 dB	
Wall Specification	Brick & Block Cavity Wall			Rw	54 dB	
Roof Specification	Standard Roof			Rw	43 dB	
Detailed Specification	Octave Band Centre Frequency (Hz)					
	125	250	500	1000	2000	4000
Glazing Specification (Rwi)	24.0	21.0	32.0	37.0	42.0	43.0
Ventilation Strategy (Dne)	40.0	44.0	45.0	51.0	56.0	56.0
Wall Specification (Rew)	40.0	44.0	45.0	51.0	56.0	56.0
Roof Specification (Rrr)	28.0	34.0	40.0	45.0	49.0	49.0
Calculation Results						
Daytime Hours (07:00-23:00)			L _{Aeq} 16 HOUR	26.7	dB(A)	
Night Time Hours (23:00-07:00)			L _{Aeq} 8 HOUR	25.9	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.					

7.6 Top Floor Lounge

Recorded Site Data (Corrected for Free Field)	Octave Band Centre Frequency (Hz)					
	125	250	500	1000	2000	4000
Daytime Leqff	58.3	56.5	53.9	51.6	48.3	43.1
Night time Leqff	60.0	55.1	52.7	49.8	46.6	42.6
Room Data	Sf	Sr	Swi	Sew	Srr	Volume
Area m²	12	30	8	4	30	73
Specification Summary	Site Specific Specification			Attenuation Required		
Glazing Specification	10mm / (6-16mm) / 4mm			Rw(C; Ctr)	35(-2,-5) dB	
Ventilation Strategy	MVHR			Dne'w	54 dB	
Wall Specification	Brick & Block Cavity Wall			Rw	54 dB	
Roof Specification	Standard Roof			Rw	43 dB	
Detailed Specification	Octave Band Centre Frequency (Hz)					
	125	250	500	1000	2000	4000
Glazing Specification (Rwi)	24.0	21.0	32.0	37.0	42.0	43.0
Ventilation Strategy (Dne)	40.0	44.0	45.0	51.0	56.0	56.0
Wall Specification (Rew)	40.0	44.0	45.0	51.0	56.0	56.0
Roof Specification (Rrr)	28.0	34.0	40.0	45.0	49.0	49.0
Calculation Results						
Daytime Hours (07:00-23:00)			L _{Aeq} 16 HOUR	30.2	dB(A)	
Night Time Hours (23:00-07:00)			L _{Aeq} 8 HOUR	29.8	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.					

The calculations within this report demonstrate compliance with both the BS 8233 criteria of L_{Aeq} 16 HOUR 35 dB and the councils suggested criteria of L_{Aeq} 16 HOUR 30 dB.

7.7 Glazing (R_{wi})

Octave Band Frequency	125	250	500	1000	2000	4000	$R_{w (C:ctr)}$ dB
10mm / (16mm) / 4mm	24	21	32	37	42	43	35(-2,-5) dB

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

Octave Band Frequency	125	250	500	1000	2000	4000	R_w dB
Minimum External Wall Attenuation	40.0	44.0	45.0	51.0	56.0	56.0	50.0

7.9 Roof (R_{rr})

Octave Band Frequency	125	250	500	1000	2000	4000	R_w dB
Minimum Value Pitched Roof	28.0	34.0	40.0	45.0	49.0	49.0	43.0

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.

7.10 Glazing & Ventilation Assessment

The development should incorporate a 10mm glass / 16mm air gap / 4mm glass and install an MVHR system to the proposed development. This will ensure the internal noise levels are compliant with BS 8233: 2014 and that with regards to noise planning permission can be granted.

8 EXISTING COMMERCIAL NOISE LEVELS

8.1 External Plant

During several site visits and discussions with the neighbouring nursery, there is no commercial plant within the vicinity of the proposed development. Therefore no further assessment have been made in relation to plant.

8.2 Nursery Children Noise

The proposal is to convert the existing premises into residential on the same foot print as the existing structure, as demonstrated on the proposed drawings detailed within this report.

Bright Horizons Eastleigh Day Nursery and Preschool is located at 61 – 63 Leigh Road, Eastleigh at operated Monday to Friday 08:45 hrs to 18:00 hrs and closed Saturdays and Sundays. Having spoken with the management at the Nursery, they have informed us that a normal day would consist of no more than 25 children outside at any one time. Calculations have been based on 50% of the children all speaking at exactly the same time.

They have also confirmed that this was the case during our measurement periods and therefore the noise levels recorded at the rear façade are true to that of the activities from the neighbouring nursery. These are therefore to be used within the BS 8233: 2014 calculations.

8.3 Images

8.3.1 Rear View of Nursery

The following image from Google Earth show the elevated first floor platform where the outdoor activity area is located.



8.3.2 Rooftop View of Nursery (Taken from the Nurseries Website)

The following image from the Nurseries Website show the location of the external play are in relation to the neighbouring proposed residential dwellings as well as the existing residential dwellings





8.4 Calculation of Children Playing Noise Level

The resulting noise source is calculated in accordance with ISO9613-2:1996. The sound data has been taken on the basis of a distributed noise level of 60dBA (LAeq,T) from 20 conversations with normal voices (ref. 60 dB(A) @ 1m BS8233) distributed internally. Noise levels are calculated based on capacity to show worst case scenario. Whilst during a majority of the proposed daytime periods, the external areas will be limited to no more than 25 children at any one time, between the hours of 12:00 and 23:00. The garden area will have the capacity of up to 25 children. However, not all 60 people will be speaking at exactly the same point in time and therefore a worst case scenario and ratio of 1:2 has been assumed and the noise levels from 25 children all speaking and playing at exactly the same moment has been used within our calculations.

A noise level spectrum obtained from real speech recordings of 50% male 50% female voices over 20 languages listed in ITU-T P50 (BS7827:1996) and corrected to 60dBA:

Vocal noise spectrum used for noise breakout calculations (BS7827:1996)	Octave band (Hz) sound pressure level (dB)								
	63	125	250	500	1000	2000	4000	8000	Total
Occupational noise (worst case)	54	61	64	60	52	43	36	32	60

The following values have been inputted into the CADNA A model as a sound power level equivalent.

Sound Power Level Per Child	Octave band (Hz) sound power level (dB)								
	63	125	250	500	1000	2000	4000	8000	Total
Occupational noise (worst case)	65	72	75	71	63	54	47	43	71

This is further reinforced when assessing the noise impact from raised voices; Impact Acoustics have used the values indicated in (Handbook of Acoustical Measurements and Noise Control, Harris, Cyril.):

Type of Communication	Noise Levels LAeq, T at 1m (dBA)	
	Male	Female
Casual	53	50
Normal	58	55
Raised	65	62
Loud	75	71
Shout	88	82

8.6 Vehicle Movement

In addition, 100 vehicle movements have been allowed for to and from the nursery throughout the day. These have been added to the CADNA A Model.

Road (CRTN)

Name:

ID:

SCS/Dist. (m):

Emission:

☒ Count, Q (Veh/18h):

Road Type:

☐ Exact Count Data:

Number of Vehicles/Hour q:

D: E: N:

Percentage heavy vehicles p (%):

D: E: N:

☐ L10 dB(A)

D: E: N:

Traffic Speed (km/h):

Road Surface:

☒ Surface Correction (dB):

☒ (no correction)

Texture Depth (mm):

Road Gradient: Input (%)

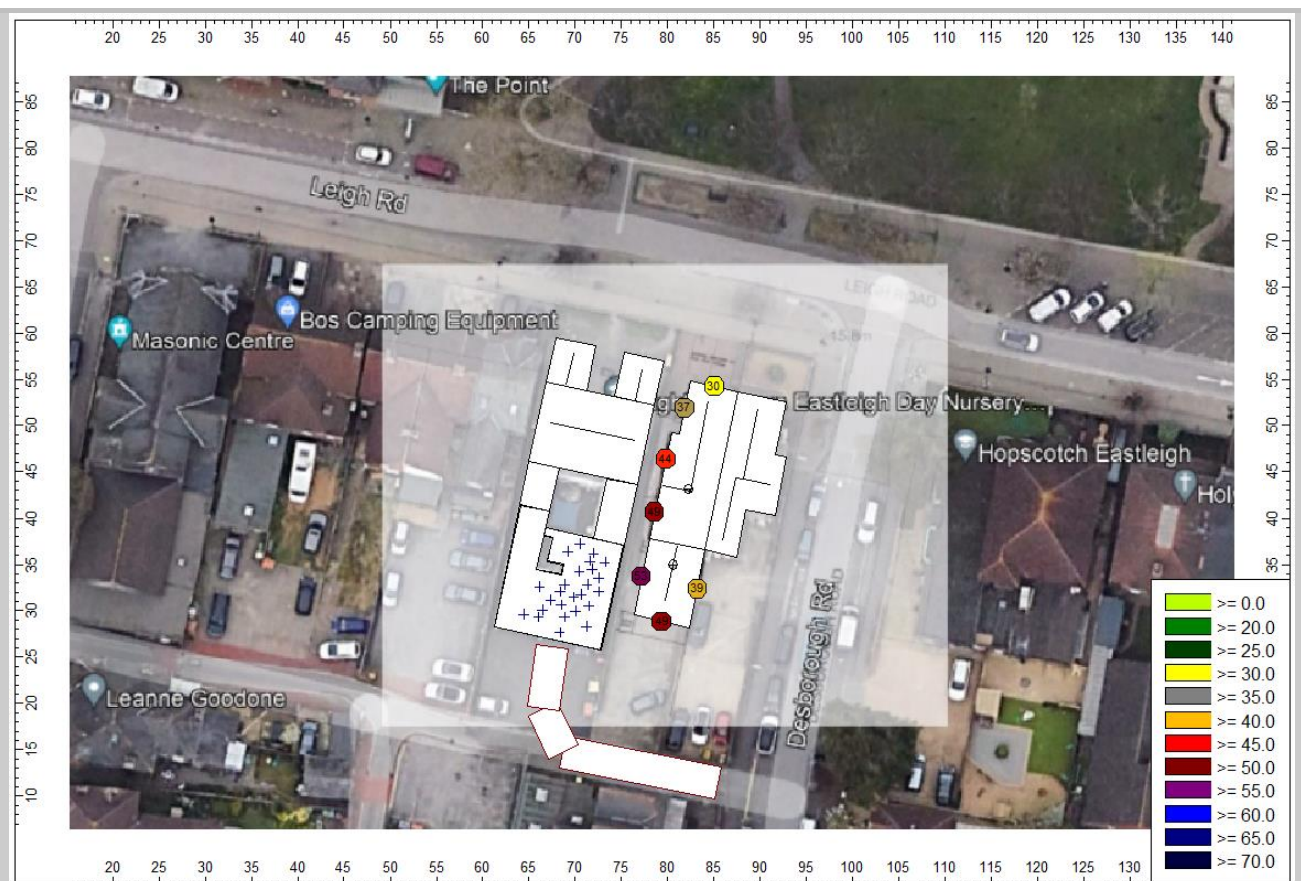
OK Cancel

Geometry... Help

Day Evening Night

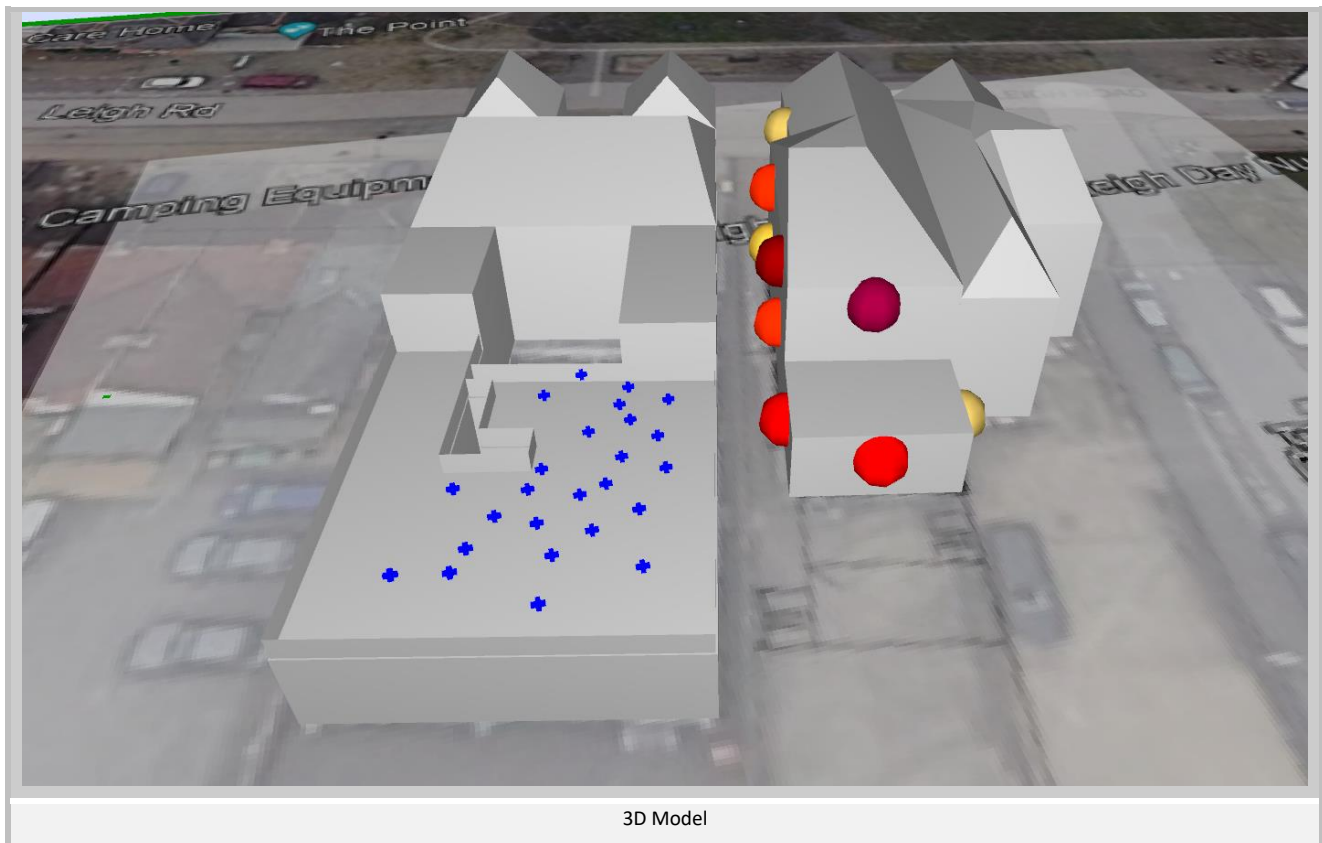
Inputted Vehicle Movement

8.7 Calculated Façade Levels from Children Playing



Calculated Facade Level from Children Playing

8.8 3D Model



Based on the above calculated façade levels, the following assessments can be made:-

9 NOISE ASSESSMENT

9.1 Background Noise Levels

A background noise survey was undertaken from the 27th October to the 1st November 2022 at one position at the rear of the site in order to establish the underlying background noise levels. Overall results are detailed and tabulated below.

Assessment Position	Date Start	Date Finish	Daytime LAeq	Night Time LAeq
Position 1	27/10/2022	01/11/2022	56.0	47.4*

Assessment Position	Date Start	Date Finish	Daytime LA90 Assessed either side of the opening hours 08:00-18:00
Position 1	27/10/2022	01/11/2022	50.0

9.2 Assessment Position

Proposed development as detailed within this report.

9.3 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 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

9.4 Noise Meter Floor

BS 4142: 2014 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.

9.5 Assessments

9.5.1 Daytime (07:00 – 18:00)

Calculated Façade Level	L _{Aeq} 50 dB
Recorded Background Noise Level	L _{A90} 50 dB
Excess Over Background	0 dB(A)
Conclusion	Low Impact

The above table demonstrates the existing 25 children playing outside all day will not have a detrimental effect on the proposed development.

10 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 191 - 194 of the National Planning Policy Framework 2023 (NPPF) states the following:

Paragraph 191 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 192 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 193 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 194 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 existing 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.

11 CONCLUSION

11.1 Summary of Results

A background noise survey was undertaken from the 27th October to the 1st November 2022 at one position at the rear of the site in order to establish the underlying background noise levels. Overall results are detailed and tabulated below.

Assessment Position	Date Start	Date Finish	Daytime LAeq	Night Time LAeq
Position 1	27/10/2022	01/11/2022	56.0	47.4*

Assessment Position	Date Start	Date Finish	Daytime LA90 Assessed either side of the opening hours 08:00-18:00
Position 1	27/10/2022	01/11/2022	50.0

*Night time for figure 5 discounted due to weather conditions.

11.2 Glazing & Ventilation Specification

The development should incorporate a 10mm glass / 16mm air gap / 4mm glass and install an MVHR system to the proposed development. This will ensure the internal noise levels are compliant with BS 8233: 2014 and that with regards to noise the planning permission can be granted.

11.3 Commercial Noise Assessments

11.3.1 Plant Noise Assessment

During several site visits and discussions with the neighbouring nursery, there is no commercial plant within the vicinity of the proposed development. Therefore no further assessment have been made in relation to plant.

11.3.2 Nursery Noise Assessment Daytime (07:00 – 18:00)

Calculated Façade Level	LAeq 50 dB
Recorded Background Noise Level	LA90 50 dB
Excess Over Background	0 dB(A)
Conclusion	Low Impact

The above table demonstrates the existing 25 children playing outside all day will not have a detrimental effect on the proposed development.

11.4 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.

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

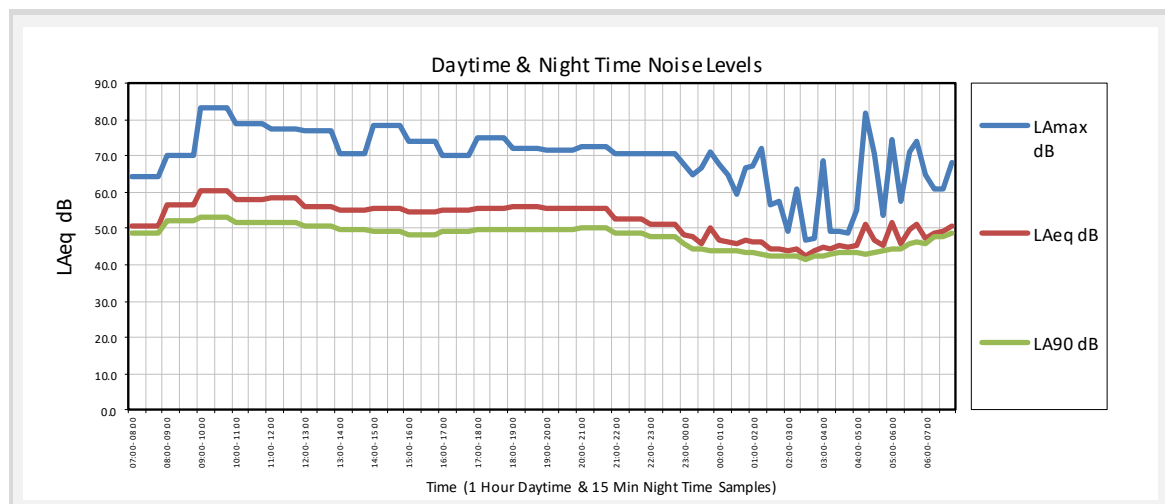
12 APPENDIX A - RESULTS

12.1 27th – 28th October 2022

NOISE LEVEL SUMMARY ASSESSMENT				Octave Band Centre Frequency (Hz)								
Date / Time	LAeq	LAmaz	LA90	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LAeq 16 HOUR & Corresponding LAmaz 16 HOUR	56.0	83.4	50.0	60.8	57.1	55.8	53.5	50.9	48.0	42.5	0.0	0.0
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Corresponding LAmaz 8 HOUR	47.4	81.6	44.0	52.1	49.3	49.3	45.8	42.0	36.3	30.9	0.0	0.0

DAYTIME NOISE LEVELS 07:00 - 23:00 1 HOUR SAMPLES												
Date / Time	LAeq	LAmaz	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
07:00 - 08:00	50.8	64.0	49.0	58.6	52.6	50.7	48.9	47.0	40.5	35.4	0.0	0.0
08:00 - 09:00	56.6	70.1	52.0	61.9	57.4	55.9	54.2	51.4	49.0	45.0	0.0	0.0
09:00 - 10:00	60.3	83.4	53.0	64.4	58.7	59.1	56.9	54.5	54.1	50.6	0.0	0.0
10:00 - 11:00	57.7	78.6	52.0	63.0	58.9	58.3	55.6	52.4	48.9	43.5	0.0	0.0
11:00 - 12:00	58.2	77.5	52.0	60.2	55.1	54.3	54.1	53.6	52.8	43.3	0.0	0.0
12:00 - 13:00	56.1	76.9	51.0	60.2	58.1	55.6	53.7	51.5	47.9	40.6	0.0	0.0
13:00 - 14:00	54.9	70.4	50.0	61.0	57.3	56.3	52.9	49.6	45.3	39.7	0.0	0.0
14:00 - 15:00	55.5	78.2	49.0	60.6	58.1	56.1	53.6	50.5	45.8	39.4	0.0	0.0
15:00 - 16:00	54.5	73.8	48.0	58.8	56.5	56.0	52.3	49.5	45.0	38.4	0.0	0.0
16:00 - 17:00	54.8	70.1	49.0	60.5	55.8	55.0	52.6	49.9	46.5	39.0	0.0	0.0
17:00 - 18:00	55.3	75.0	50.0	61.0	56.1	55.0	53.2	50.8	46.3	39.6	0.0	0.0
18:00 - 19:00	55.7	72.1	50.0	62.0	59.5	55.9	53.5	50.8	46.9	40.3	0.0	0.0
19:00 - 20:00	55.6	71.4	50.0	60.3	58.2	56.5	53.8	50.4	46.1	39.7	0.0	0.0
20:00 - 21:00	55.6	72.3	50.0	59.3	57.0	56.5	54.5	50.2	44.7	37.7	0.0	0.0
21:00 - 22:00	52.6	70.4	49.0	56.8	53.1	52.9	50.2	48.2	42.5	37.8	0.0	0.0
22:00 - 23:00	51.2	70.3	48.0	55.1	52.1	51.9	48.8	46.8	41.5	34.6	0.0	0.0

NIGHT TIME NOISE LEVELS 23:00 - 07:00 15 MINUTE SAMPLES												
Date / Time	LAeq	LAmaz	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
23:00 - 23:15	48.1	67.7	46.0	53.5	49.4	50.2	45.7	42.9	37.4	32.3	0.0	0.0
23:15 - 23:30	47.9	64.5	45.0	52.8	49.3	49.8	45.7	43.4	36.6	28.7	0.0	0.0
23:30 - 23:45	46.0	66.7	44.0	51.1	50.1	48.7	43.7	41.2	31.6	27.7	0.0	0.0
23:45 - 00:00	50.0	71.2	44.0	55.8	49.9	49.8	47.7	44.5	41.8	38.1	0.0	0.0
00:00 - 00:15	46.6	67.8	44.0	50.5	47.3	48.9	44.6	42.1	34.7	27.1	0.0	0.0
00:15 - 00:30	46.4	64.5	44.0	52.9	49.3	49.3	45.0	40.9	33.3	28.2	0.0	0.0
00:30 - 00:45	45.8	59.2	44.0	51.1	48.4	48.3	44.4	40.8	30.7	22.9	0.0	0.0
00:45 - 01:00	46.6	66.8	43.0	50.3	48.3	49.5	44.5	41.6	34.3	24.9	0.0	0.0
01:00 - 01:15	46.2	67.0	43.0	52.5	49.2	49.0	44.9	40.4	32.5	26.8	0.0	0.0
01:15 - 01:30	46.4	72.2	43.0	49.9	46.8	47.8	45.0	42.1	32.7	27.0	0.0	0.0
01:30 - 01:45	44.1	56.6	43.0	48.6	48.3	47.7	42.1	38.4	27.7	19.6	0.0	0.0
01:45 - 02:00	44.1	57.6	42.0	49.1	46.2	47.1	42.8	38.5	28.1	20.0	0.0	0.0
02:00 - 02:15	43.6	49.0	42.0	49.0	46.0	47.0	42.0	37.9	27.3	19.7	0.0	0.0
02:15 - 02:30	44.2	60.8	42.0	50.0	45.6	47.1	42.4	38.9	30.7	21.1	0.0	0.0
02:30 - 02:45	42.6	46.6	41.0	48.9	44.9	46.5	40.8	36.7	25.9	17.8	0.0	0.0
02:45 - 03:00	43.8	47.3	43.0	49.6	47.1	47.8	42.2	37.7	25.4	17.1	0.0	0.0
03:00 - 03:15	44.9	68.8	43.0	48.6	46.0	47.8	43.2	39.5	32.1	25.9	0.0	0.0
03:15 - 03:30	44.5	49.2	43.0	49.7	49.2	48.4	42.8	38.2	27.3	18.1	0.0	0.0
03:30 - 03:45	45.4	49.4	44.0	53.2	50.6	48.7	44.1	39.4	28.1	18.6	0.0	0.0
03:45 - 04:00	45.0	48.9	43.0	52.1	49.7	48.5	43.8	38.9	28.3	19.0	0.0	0.0
04:00 - 04:15	45.4	54.9	43.0	52.5	48.9	47.8	44.5	39.6	31.0	22.4	0.0	0.0
04:15 - 04:30	51.0	81.6	43.0	51.8	48.6	52.6	49.6	44.5	41.7	35.6	0.0	0.0
04:30 - 04:45	46.7	70.5	44.0	50.3	48.6	49.1	45.4	40.9	34.9	29.1	0.0	0.0
04:45 - 05:00	45.5	53.5	44.0	50.0	48.9	48.2	44.7	39.7	29.8	21.4	0.0	0.0
05:00 - 05:15	51.5	74.4	44.0	55.5	51.4	52.1	48.6	45.1	44.5	39.6	0.0	0.0
05:15 - 05:30	45.7	57.2	44.0	51.1	49.0	48.1	44.8	40.2	30.5	21.9	0.0	0.0
05:30 - 05:45	49.9	70.9	46.0	53.1	50.3	50.7	48.8	44.8	39.1	34.4	0.0	0.0
05:45 - 06:00	50.9	73.8	46.0	53.6	51.6	51.1	49.5	45.0	41.8	38.1	0.0	0.0
06:00 - 06:15	47.0	64.7	46.0	51.8	49.6	48.9	45.9	42.0	32.7	24.9	0.0	0.0
06:15 - 06:30	48.7	60.8	48.0	54.9	51.2	50.4	47.5	43.9	34.2	26.3	0.0	0.0
06:30 - 06:45	49.2	60.7	48.0	54.2	52.2	51.0	47.9	44.5	35.0	27.8	0.0	0.0
06:45 - 07:00	50.8	68.1	49.0	54.4	53.1	51.5	49.0	46.4	39.3	31.9	0.0	0.0

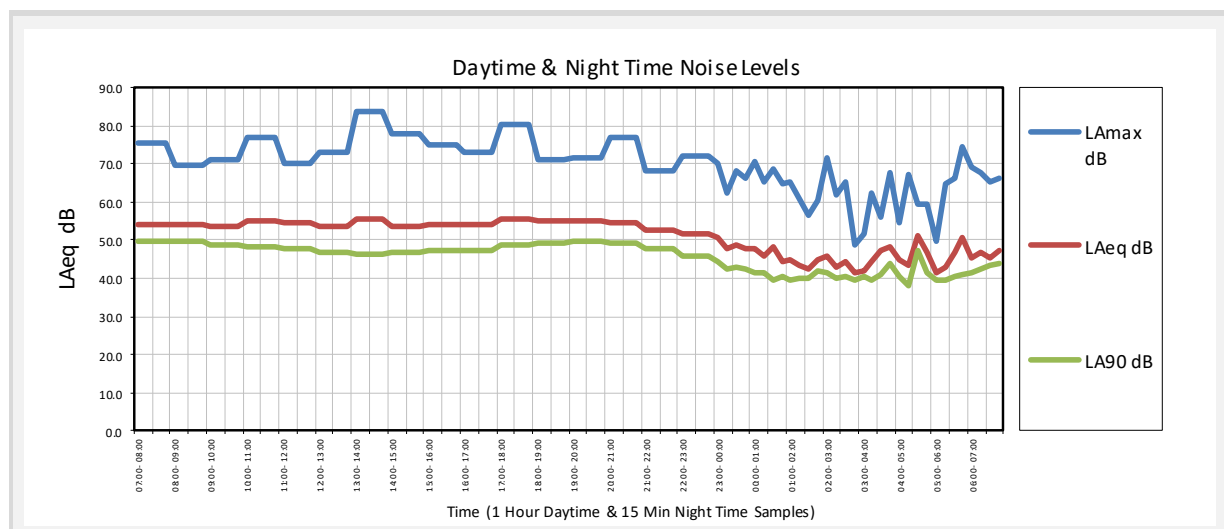


12.2 28th – 29th October 2022

NOISE LEVEL SUMMARY ASSESSMENT				Octave Band Centre Frequency (Hz)								
Date / Time	LAeq	LAmaz	LA90	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LAeq 16 HOUR & Cor r esponding LAmaz 16 HOUR	54.2	83.7	49.0	59.1	55.0	53.5	51.7	49.7	45.7	39.5	0.0	0.0
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Cor r esponding LAmaz 8 HOUR	46.6	74.2	40.0	55.6	49.3	47.1	44.0	41.0	38.0	34.0	0.0	0.0

DAYTIME NOISE LEVELS 07:00 - 23:00 1 HOUR SAMPLES												
Date / Time	LAeq	LAmaz	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
07:00 - 08:00	54.0	75.6	50.0	56.8	54.8	53.7	51.3	48.5	45.9	42.6	0.0	0.0
08:00 - 09:00	54.1	69.5	50.0	58.0	54.3	53.6	51.8	49.4	45.3	40.6	0.0	0.0
09:00 - 10:00	53.5	70.8	49.0	59.2	54.6	52.7	51.0	49.1	44.7	38.9	0.0	0.0
10:00 - 11:00	55.2	76.9	48.0	59.9	55.5	55.4	53.3	50.4	46.0	40.7	0.0	0.0
11:00 - 12:00	54.5	70.2	48.0	58.9	56.7	52.8	51.5	49.9	47.4	39.7	0.0	0.0
12:00 - 13:00	53.4	72.9	47.0	59.0	53.6	52.3	50.7	49.0	45.5	38.9	0.0	0.0
13:00 - 14:00	55.7	83.7	46.0	59.1	53.9	53.5	52.0	52.3	46.9	40.1	0.0	0.0
14:00 - 15:00	53.5	77.7	47.0	58.8	55.4	52.9	50.6	49.5	44.5	38.3	0.0	0.0
15:00 - 16:00	54.0	74.7	47.0	59.1	55.3	53.1	51.8	49.3	45.4	39.1	0.0	0.0
16:00 - 17:00	54.2	73.1	47.0	58.9	54.2	52.7	51.5	49.7	46.5	39.4	0.0	0.0
17:00 - 18:00	55.4	80.1	49.0	60.8	56.6	55.7	53.1	50.3	46.5	39.8	0.0	0.0
18:00 - 19:00	54.8	71.0	49.0	60.8	55.8	53.9	52.6	50.4	45.7	39.3	0.0	0.0
19:00 - 20:00	55.0	71.6	50.0	60.0	55.1	54.1	52.8	50.5	45.9	40.2	0.0	0.0
20:00 - 21:00	54.3	76.9	49.0	60.2	55.8	53.9	51.8	49.8	45.9	38.2	0.0	0.0
21:00 - 22:00	52.7	68.3	48.0	57.1	52.8	52.1	50.2	48.7	43.4	36.5	0.0	0.0
22:00 - 23:00	51.6	71.8	46.0	57.0	52.0	52.4	49.3	46.7	42.5	35.9	0.0	0.0

NIGHT TIME NOISE LEVELS 23:00 - 07:00 15 MINUTE SAMPLES												
Date / Time	LAeq	LAmaz	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
23:00 - 23:15	50.7	70.2	45.0	54.9	54.5	53.4	48.1	44.3	40.9	36.8	0.0	0.0
23:15 - 23:30	47.6	62.5	42.0	57.0	54.1	50.6	45.4	41.2	36.0	28.9	0.0	0.0
23:30 - 23:45	48.9	68.2	43.0	53.6	49.2	48.8	46.2	44.5	40.6	32.1	0.0	0.0
23:45 - 00:00	47.9	66.4	42.0	54.0	48.3	47.9	45.8	43.3	38.9	31.7	0.0	0.0
00:00 - 00:15	47.5	70.3	42.0	52.4	47.9	47.3	45.2	43.3	38.7	30.2	0.0	0.0
00:15 - 00:30	45.7	65.1	41.0	52.4	46.4	47.2	44.5	39.7	36.4	30.0	0.0	0.0
00:30 - 00:45	48.2	68.5	39.0	58.6	56.8	48.8	44.6	42.6	38.1	30.9	0.0	0.0
00:45 - 01:00	44.2	64.5	41.0	56.9	51.9	45.9	42.8	37.7	31.9	23.9	0.0	0.0
01:00 - 01:15	44.9	65.1	40.0	56.1	46.3	45.6	42.7	40.2	35.9	26.3	0.0	0.0
01:15 - 01:30	43.5	60.8	40.0	57.0	45.6	45.2	42.3	38.2	32.2	24.0	0.0	0.0
01:30 - 01:45	42.3	56.5	40.0	61.0	46.1	44.5	41.4	36.1	28.6	21.1	0.0	0.0
01:45 - 02:00	44.6	60.5	42.0	59.6	48.5	46.2	43.0	38.7	35.3	22.4	0.0	0.0
02:00 - 02:15	45.8	71.6	41.0	55.1	52.8	47.6	43.6	39.6	35.0	28.8	0.0	0.0
02:15 - 02:30	43.0	62.0	40.0	51.9	45.8	45.5	41.8	37.2	29.6	24.3	0.0	0.0
02:30 - 02:45	44.3	65.4	40.0	52.2	47.1	46.0	42.4	39.2	34.3	25.0	0.0	0.0
02:45 - 03:00	41.4	48.8	40.0	50.2	44.3	44.9	39.9	35.4	26.4	20.4	0.0	0.0
03:00 - 03:15	41.7	51.5	40.0	51.1	45.2	45.0	40.3	35.7	26.3	19.7	0.0	0.0
03:15 - 03:30	44.2	62.1	40.0	51.6	44.9	44.9	41.4	38.8	36.1	31.8	0.0	0.0
03:30 - 03:45	47.1	56.1	41.0	50.0	44.0	43.1	42.7	41.7	41.1	37.3	0.0	0.0
03:45 - 04:00	48.2	67.5	44.0	49.3	45.2	45.4	44.1	42.4	41.5	39.8	0.0	0.0
04:00 - 04:15	44.6	54.3	40.0	55.1	45.8	44.2	41.0	38.7	36.5	35.7	0.0	0.0
04:15 - 04:30	43.5	67.2	38.0	49.8	46.0	42.6	40.1	38.2	36.0	32.6	0.0	0.0
04:30 - 04:45	51.1	59.4	47.0	47.9	44.8	47.2	47.0	45.5	44.8	42.1	0.0	0.0
04:45 - 05:00	46.6	59.6	42.0	51.0	45.2	45.0	43.2	40.8	38.9	37.9	0.0	0.0
05:00 - 05:15	41.4	49.7	40.0	59.6	46.0	43.6	39.0	35.4	28.9	25.8	0.0	0.0
05:15 - 05:30	42.7	64.6	39.0	59.5	46.6	43.7	40.0	37.3	33.2	28.0	0.0	0.0
05:30 - 05:45	46.6	66.1	41.0	56.7	47.7	47.7	43.9	40.3	38.4	34.7	0.0	0.0
05:45 - 06:00	50.7	74.2	41.0	57.8	49.8	49.0	48.5	44.3	43.2	40.6	0.0	0.0
06:00 - 06:15	45.2	69.2	42.0	53.7	47.3	45.8	42.8	39.5	35.9	33.6	0.0	0.0
06:15 - 06:30	46.9	67.8	42.0	54.1	48.5	47.6	45.0	41.6	37.6	31.2	0.0	0.0
06:30 - 06:45	45.3	65.3	43.0	53.6	48.2	47.0	43.4	40.2	33.6	29.1	0.0	0.0
06:45 - 07:00	47.4	66.1	44.0	54.7	49.8	48.1	44.4	42.1	39.3	33.6	0.0	0.0

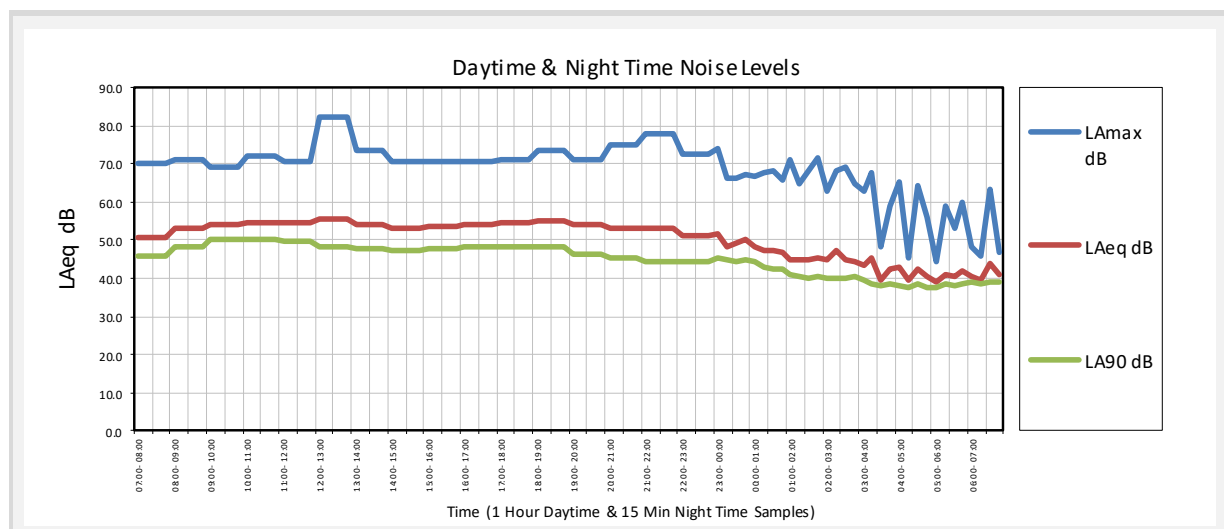


12.3 29th – 30th October 2022

NOISE LEVEL SUMMARY ASSESSMENT				Octave Band Centre Frequency (Hz)								
Date / Time	LAeq	LAmx	LA90	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LAeq 16 HOUR & Cor r esponding LAmx 16 HOUR	53.7	82.0	48.0	59.6	56.0	54.4	51.3	48.7	44.6	39.8	0.0	0.0
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Cor r esponding LAmx 8 HOUR	45.5	74.1	39.0	52.3	48.1	46.6	42.9	40.6	35.9	30.0	0.0	0.0

DAYTIME NOISE LEVELS 07:00 - 23:00 1 HOUR SAMPLES												
Date / Time	LAeq	LAmx	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
07:00 - 08:00	50.9	70.0	46.0	55.3	53.2	52.3	49.3	44.8	40.7	37.0	0.0	0.0
08:00 - 09:00	53.1	70.9	48.0	58.2	54.8	53.7	51.6	48.2	42.7	36.2	0.0	0.0
09:00 - 10:00	53.9	69.0	50.0	59.1	56.0	54.5	51.3	49.6	44.2	38.4	0.0	0.0
10:00 - 11:00	54.5	72.2	50.0	60.7	57.9	56.0	52.2	49.4	44.5	38.6	0.0	0.0
11:00 - 12:00	54.3	70.6	49.0	59.0	54.9	54.8	51.8	49.7	45.4	38.9	0.0	0.0
12:00 - 13:00	55.5	82.0	48.0	60.0	58.3	55.9	52.3	49.6	46.8	45.7	0.0	0.0
13:00 - 14:00	54.2	73.6	47.0	59.6	55.4	55.2	52.4	49.1	44.7	38.5	0.0	0.0
14:00 - 15:00	53.0	70.4	47.0	59.7	55.8	54.0	50.7	48.0	44.0	37.1	0.0	0.0
15:00 - 16:00	53.3	70.7	47.0	60.0	56.2	54.5	50.9	48.4	44.1	37.0	0.0	0.0
16:00 - 17:00	53.8	70.5	48.0	59.7	55.4	54.1	51.4	49.3	44.7	37.5	0.0	0.0
17:00 - 18:00	54.5	71.0	48.0	60.2	56.7	55.7	52.3	49.5	44.9	37.7	0.0	0.0
18:00 - 19:00	54.9	73.4	48.0	61.8	58.7	55.2	52.2	49.8	46.4	41.1	0.0	0.0
19:00 - 20:00	54.1	71.3	46.0	61.0	56.2	53.6	51.2	49.0	46.4	41.5	0.0	0.0
20:00 - 21:00	52.9	74.7	45.0	59.7	55.4	52.9	50.5	47.8	43.9	39.9	0.0	0.0
21:00 - 22:00	52.9	77.7	44.0	59.4	53.6	52.7	50.2	47.7	44.4	41.2	0.0	0.0
22:00 - 23:00	50.9	72.4	45.0	54.9	52.8	51.9	48.4	45.4	42.1	38.9	0.0	0.0

NIGHT TIME NOISE LEVELS 23:00 - 07:00 15 MINUTE SAMPLES												
Date / Time	LAeq	LAmx	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
23:00 - 23:15	51.8	74.1	45.0	58.9	53.7	51.4	48.6	46.4	43.7	41.0	0.0	0.0
23:15 - 23:30	48.3	66.2	45.0	52.1	49.6	49.4	46.1	43.9	37.3	31.1	0.0	0.0
23:30 - 23:45	49.0	66.0	45.0	52.9	49.5	49.0	46.6	44.5	39.8	33.6	0.0	0.0
23:45 - 00:00	50.0	67.3	45.0	51.4	49.5	50.7	48.0	45.3	40.4	33.7	0.0	0.0
00:00 - 00:15	48.1	66.8	44.0	52.7	50.3	48.9	45.6	43.7	38.3	30.9	0.0	0.0
00:15 - 00:30	47.4	67.6	43.0	52.6	47.7	47.6	45.0	43.1	37.9	31.1	0.0	0.0
00:30 - 00:45	47.3	68.3	43.0	54.1	50.5	48.2	44.6	42.9	38.0	29.4	0.0	0.0
00:45 - 01:00	46.6	65.9	42.0	50.7	47.3	46.7	44.1	42.5	36.8	29.5	0.0	0.0
01:00 - 01:15	45.0	71.1	41.0	48.2	45.7	45.5	42.7	41.3	34.4	24.5	0.0	0.0
01:15 - 01:30	44.9	64.9	41.0	49.0	45.5	45.9	42.3	40.4	35.8	27.1	0.0	0.0
01:30 - 01:45	44.9	68.2	40.0	51.2	45.6	45.4	41.8	40.8	36.2	27.0	0.0	0.0
01:45 - 02:00	45.5	71.4	40.0	54.5	45.5	46.8	43.6	40.7	35.3	28.3	0.0	0.0
02:00 - 02:15	44.8	62.8	40.0	53.9	46.4	46.2	42.2	40.1	35.6	27.1	0.0	0.0
02:15 - 02:30	47.1	68.0	40.0	53.5	55.9	50.2	43.3	40.5	36.7	31.3	0.0	0.0
02:30 - 02:45	44.6	69.1	40.0	52.0	46.2	46.1	41.7	39.7	35.8	28.0	0.0	0.0
02:45 - 03:00	44.3	64.6	40.0	50.7	45.3	45.6	41.7	39.7	35.3	27.0	0.0	0.0
03:00 - 03:15	43.3	62.8	39.0	49.3	44.5	44.6	40.5	38.8	34.2	25.7	0.0	0.0
03:15 - 03:30	45.3	67.8	39.0	50.2	49.4	47.4	42.7	40.4	35.4	27.5	0.0	0.0
03:30 - 03:45	39.5	48.1	38.0	50.6	42.8	42.0	37.7	34.5	25.3	21.1	0.0	0.0
03:45 - 04:00	42.3	58.8	39.0	51.7	44.6	43.9	40.1	37.2	32.1	25.4	0.0	0.0
04:00 - 04:15	42.8	65.4	38.0	51.5	46.1	43.7	40.4	37.7	33.7	26.3	0.0	0.0
04:15 - 04:30	39.4	45.3	37.0	55.4	44.7	42.1	37.2	33.8	25.1	21.2	0.0	0.0
04:30 - 04:45	42.6	64.2	38.0	51.7	45.1	43.2	39.8	37.8	33.9	27.4	0.0	0.0
04:45 - 05:00	40.4	56.0	38.0	50.1	44.0	44.7	38.3	33.6	24.9	20.7	0.0	0.0
05:00 - 05:15	39.0	44.1	37.0	50.0	44.3	42.0	37.0	33.6	24.6	20.5	0.0	0.0
05:15 - 05:30	40.9	58.9	38.0	49.8	47.2	44.0	39.1	34.5	27.6	21.4	0.0	0.0
05:30 - 05:45	40.3	53.0	38.0	49.6	47.9	43.7	38.0	33.9	25.2	20.7	0.0	0.0
05:45 - 06:00	41.9	60.0	39.0	48.2	46.5	44.6	40.2	36.2	28.8	22.4	0.0	0.0
06:00 - 06:15	40.2	48.0	39.0	50.8	44.0	42.9	38.2	34.9	25.3	21.0	0.0	0.0
06:15 - 06:30	39.6	45.6	38.0	50.9	42.7	41.8	37.7	34.6	25.4	22.3	0.0	0.0
06:30 - 06:45	43.9	63.3	39.0	50.8	44.6	46.0	41.4	38.3	35.9	26.0	0.0	0.0
06:45 - 07:00	40.9	46.9	39.0	53.4	44.5	42.8	39.3	36.1	26.5	21.4	0.0	0.0

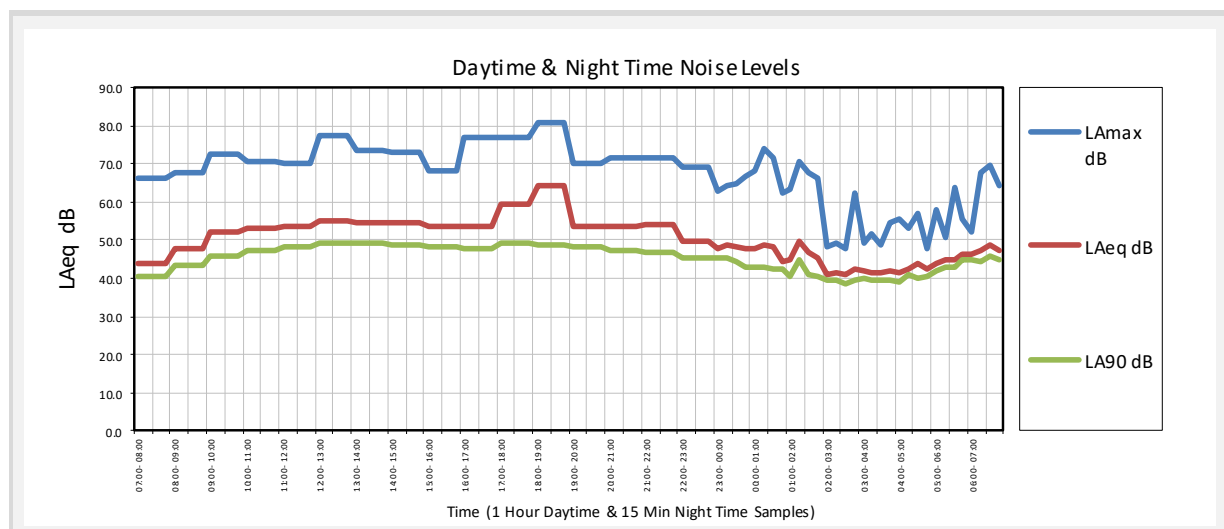


12.4 30th – 31st October 2022

NOISE LEVEL SUMMARY ASSESSMENT				Octave Band Centre Frequency (Hz)								
Date / Time	LAeq	LAmaz	LA90	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LAeq 16 HOUR & Cor r esponding LAmaz 16 HOUR	55.9	80.6	49.0	59.0	55.2	53.9	53.6	50.7	48.3	44.0	0.0	0.0
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Cor r esponding LAmaz 8 HOUR	45.9	73.8	40.0	49.5	47.4	46.7	43.7	41.3	35.4	31.2	0.0	0.0

DAYTIME NOISE LEVELS 07:00 - 23:00 1 HOUR SAMPLES												
Date / Time	LAeq	LAmaz	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
07:00 - 08:00	43.7	66.3	40.0	51.9	47.5	45.2	41.2	38.9	32.8	28.0	0.0	0.0
08:00 - 09:00	47.8	67.8	43.0	51.7	49.5	47.6	44.5	43.3	39.6	34.6	0.0	0.0
09:00 - 10:00	52.3	72.4	46.0	55.8	54.3	52.2	49.8	47.3	44.1	37.1	0.0	0.0
10:00 - 11:00	53.0	70.7	47.0	59.1	55.1	52.9	50.7	48.3	44.5	37.4	0.0	0.0
11:00 - 12:00	53.7	69.9	48.0	58.9	54.2	53.1	51.0	49.4	45.3	38.5	0.0	0.0
12:00 - 13:00	55.0	77.5	49.0	60.8	57.6	55.4	53.2	50.0	45.5	39.2	0.0	0.0
13:00 - 14:00	54.7	73.4	49.0	61.1	56.6	54.9	52.2	50.0	46.3	39.7	0.0	0.0
14:00 - 15:00	54.5	73.0	49.0	60.6	54.7	53.4	51.7	50.0	46.8	41.8	0.0	0.0
15:00 - 16:00	53.7	68.0	48.0	60.3	54.2	52.5	50.6	49.2	45.9	41.2	0.0	0.0
16:00 - 17:00	53.7	76.8	48.0	60.8	54.6	54.0	51.3	49.0	45.5	38.4	0.0	0.0
17:00 - 18:00	59.3	76.8	49.0	59.8	57.0	57.1	56.8	53.7	51.3	49.4	0.0	0.0
18:00 - 19:00	64.2	80.6	49.0	61.0	58.6	58.9	61.9	58.3	57.4	53.2	0.0	0.0
19:00 - 20:00	53.6	70.0	48.0	58.0	53.9	52.8	51.0	49.0	45.3	39.3	0.0	0.0
20:00 - 21:00	53.5	71.7	47.0	57.2	55.2	52.8	51.1	48.8	44.9	38.9	0.0	0.0
21:00 - 22:00	53.8	71.4	47.0	58.8	56.4	54.0	51.9	48.6	44.8	38.1	0.0	0.0
22:00 - 23:00	49.8	68.9	45.0	54.2	50.8	49.2	46.8	45.6	41.4	33.6	0.0	0.0

NIGHT TIME NOISE LEVELS 23:00 - 07:00 15 MINUTE SAMPLES												
Date / Time	LAeq	LAmaz	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
23:00 - 23:15	47.7	62.9	45.0	51.2	48.5	48.9	45.3	43.6	36.8	28.8	0.0	0.0
23:15 - 23:30	48.8	64.1	45.0	54.4	51.7	50.4	46.0	44.5	38.2	31.0	0.0	0.0
23:30 - 23:45	48.0	64.8	44.0	54.6	49.9	49.3	45.8	43.6	36.9	30.8	0.0	0.0
23:45 - 00:00	47.9	66.8	43.0	49.7	47.3	48.2	45.8	43.5	37.9	31.2	0.0	0.0
00:00 - 00:15	47.6	67.9	43.0	52.8	47.1	49.1	45.4	43.0	37.4	29.6	0.0	0.0
00:15 - 00:30	48.9	73.8	43.0	47.3	48.2	52.7	46.4	41.5	37.8	38.1	0.0	0.0
00:30 - 00:45	48.4	71.4	43.0	48.4	47.6	50.4	47.3	42.1	37.5	34.7	0.0	0.0
00:45 - 01:00	44.2	62.5	42.0	46.4	44.9	45.9	42.0	40.2	31.1	23.7	0.0	0.0
01:00 - 01:15	44.9	63.2	41.0	47.0	44.3	45.8	42.5	40.6	34.4	29.2	0.0	0.0
01:15 - 01:30	49.8	70.3	45.0	47.0	45.9	46.7	44.9	44.1	44.0	40.6	0.0	0.0
01:30 - 01:45	46.6	67.5	41.0	47.5	45.1	45.3	42.8	41.6	39.1	36.6	0.0	0.0
01:45 - 02:00	45.3	66.2	41.0	47.5	45.1	44.1	42.6	41.3	36.5	32.0	0.0	0.0
02:00 - 02:15	41.1	48.3	39.0	47.2	44.7	41.9	39.3	37.2	26.8	19.0	0.0	0.0
02:15 - 02:30	41.6	49.4	40.0	46.6	44.3	41.6	39.7	38.1	27.2	18.9	0.0	0.0
02:30 - 02:45	40.7	47.6	39.0	46.9	46.6	42.3	38.5	36.4	26.2	18.9	0.0	0.0
02:45 - 03:00	42.4	62.3	40.0	48.6	46.3	43.2	40.7	38.1	29.7	25.4	0.0	0.0
03:00 - 03:15	41.7	49.2	40.0	46.4	45.8	42.8	40.1	37.7	26.4	17.7	0.0	0.0
03:15 - 03:30	41.5	51.5	40.0	45.9	44.2	42.1	39.8	37.5	28.5	20.9	0.0	0.0
03:30 - 03:45	41.3	48.5	40.0	48.2	45.8	42.4	39.9	37.1	25.8	17.5	0.0	0.0
03:45 - 04:00	42.1	54.5	40.0	48.1	48.5	43.8	40.1	37.5	27.0	17.9	0.0	0.0
04:00 - 04:15	41.3	55.3	39.0	47.8	45.7	42.2	39.9	37.2	26.2	17.6	0.0	0.0
04:15 - 04:30	42.5	53.1	41.0	47.8	46.1	43.2	40.9	38.7	27.5	19.0	0.0	0.0
04:30 - 04:45	44.0	56.8	40.0	48.2	47.3	42.7	42.2	40.5	30.6	22.0	0.0	0.0
04:45 - 05:00	42.3	47.9	41.0	47.9	46.1	42.9	40.8	38.6	27.2	18.2	0.0	0.0
05:00 - 05:15	43.7	57.8	42.0	51.0	46.4	44.4	42.1	39.8	30.9	22.9	0.0	0.0
05:15 - 05:30	44.6	50.4	43.0	47.7	47.7	46.3	43.6	39.9	27.7	18.2	0.0	0.0
05:30 - 05:45	45.0	63.5	43.0	49.2	46.9	45.4	43.1	40.7	34.4	26.7	0.0	0.0
05:45 - 06:00	46.5	55.7	45.0	49.2	49.8	47.5	45.2	42.3	31.2	27.1	0.0	0.0
06:00 - 06:15	46.5	52.2	45.0	51.9	49.4	47.7	44.7	42.0	31.6	33.3	0.0	0.0
06:15 - 06:30	47.2	67.6	44.0	49.7	48.3	46.6	45.4	43.3	36.0	31.3	0.0	0.0
06:30 - 06:45	48.7	69.5	46.0	51.1	49.7	48.6	46.7	44.7	38.3	31.9	0.0	0.0
06:45 - 07:00	47.1	64.3	45.0	50.1	46.9	46.7	45.2	43.3	35.9	30.1	0.0	0.0



12.5 31st October – 1st November 2022

NOISE LEVEL SUMMARY ASSESSMENT				Octave Band Centre Frequency (Hz)								
Date / Time	LAeq	LAmx	LA90	63	125	250	500	1.0k	2.0k	4.0k	8.0k	16.0k
DAYTIME 07:00 - 23:00 LAeq 16 HOUR & Cor r esponding LAmx 16 HOUR	54.6	78.3	47.0	58.4	56.3	54.5	51.9	49.6	46.3	41.1	0.0	0.0
NIGHT TIME 23:00 - 07:00 LAeq 8 HOUR & Cor r esponding LAmx 8 HOUR	52.9	84.5	47.0	66.6	58.0	53.1	50.7	47.8	44.6	40.6	0.0	0.0

DAYTIME NOISE LEVELS 07:00 - 23:00 1 HOUR SAMPLES												
Date / Time	LAeq	LAmx	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
07:00 - 08:00	51.3	74.6	47.0	55.2	52.9	51.0	49.0	46.5	42.2	37.8	0.0	0.0
08:00 - 09:00	54.3	73.4	50.0	57.3	54.6	53.6	52.8	49.6	44.7	37.2	0.0	0.0
09:00 - 10:00	55.8	73.3	49.0	59.4	58.0	56.9	54.0	50.3	46.3	40.0	0.0	0.0
10:00 - 11:00	54.6	74.9	48.0	58.2	54.8	54.0	51.2	49.7	47.5	41.9	0.0	0.0
11:00 - 12:00	55.6	78.3	49.0	58.1	56.3	54.4	52.6	51.5	47.6	40.6	0.0	0.0
12:00 - 13:00	54.2	73.9	49.0	59.0	54.0	54.3	51.4	49.9	45.6	38.9	0.0	0.0
13:00 - 14:00	54.7	73.5	48.0	58.6	60.1	54.6	51.9	49.8	45.7	39.0	0.0	0.0
14:00 - 15:00	53.8	70.9	47.0	58.9	56.2	54.6	50.9	48.9	45.4	38.5	0.0	0.0
15:00 - 16:00	55.4	73.5	48.0	58.5	59.1	55.7	52.9	50.3	46.5	40.1	0.0	0.0
16:00 - 17:00	54.4	70.6	48.0	58.5	54.9	53.9	51.0	49.2	47.0	43.6	0.0	0.0
17:00 - 18:00	54.9	71.9	49.0	58.4	55.6	55.1	52.2	50.0	46.7	41.6	0.0	0.0
18:00 - 19:00	55.6	71.3	50.0	59.4	58.4	56.3	52.9	50.3	47.1	41.6	0.0	0.0
19:00 - 20:00	53.6	68.5	48.0	58.4	53.8	53.6	50.9	48.7	45.3	39.6	0.0	0.0
20:00 - 21:00	54.7	71.5	47.0	56.4	53.4	53.9	51.8	49.1	47.4	43.4	0.0	0.0
21:00 - 22:00	54.4	69.7	47.0	59.3	56.0	54.8	51.5	48.5	46.6	43.3	0.0	0.0
22:00 - 23:00	53.9	73.0	47.0	59.6	53.2	51.6	50.5	49.0	47.1	43.3	0.0	0.0

NIGHT TIME NOISE LEVELS 23:00 - 07:00 15 MINUTE SAMPLES												
Date / Time	LAeq	LAmx	LA90	63	125	250	500	1.0 k	2.0 k	4.0 k	8.0 k	16.0 k
23:00 - 23:15	53.5	69.1	46.0	60.1	56.8	56.5	51.6	46.7	43.8	40.5	0.0	0.0
23:15 - 23:30	52.5	77.9	47.0	63.1	55.0	52.3	49.8	47.8	44.6	40.9	0.0	0.0
23:30 - 23:45	50.7	73.1	45.0	59.9	52.3	50.4	48.1	46.1	42.5	38.5	0.0	0.0
23:45 - 00:00	49.2	70.9	44.0	59.8	51.5	49.4	46.6	44.3	40.3	36.3	0.0	0.0
00:00 - 00:15	50.5	70.3	45.0	63.3	55.0	51.2	48.4	46.0	41.8	37.8	0.0	0.0
00:15 - 00:30	51.9	68.7	46.0	63.4	55.9	52.3	50.1	47.3	43.4	39.4	0.0	0.0
00:30 - 00:45	54.1	79.1	47.0	67.4	60.1	54.2	51.8	48.9	45.4	41.2	0.0	0.0
00:45 - 01:00	54.3	71.4	48.0	67.2	58.9	54.4	52.2	49.4	46.7	43.4	0.0	0.0
01:00 - 01:15	60.8	84.5	51.0	75.9	67.3	61.2	58.3	55.2	52.4	48.2	0.0	0.0
01:15 - 01:30	59.2	78.2	51.0	72.8	64.3	59.5	57.4	54.2	51.0	46.9	0.0	0.0
01:30 - 01:45	54.8	77.9	47.0	70.3	61.0	55.0	52.4	49.6	46.6	42.7	0.0	0.0
01:45 - 02:00	56.0	80.9	47.0	73.9	63.8	55.8	53.1	50.0	46.9	42.8	0.0	0.0
02:00 - 02:15	54.5	76.3	47.0	68.8	60.2	55.0	52.4	49.6	46.5	42.7	0.0	0.0
02:15 - 02:30	51.9	70.7	45.0	65.0	56.6	52.0	49.7	47.1	44.1	40.4	0.0	0.0
02:30 - 02:45	52.7	69.0	47.0	65.0	57.0	52.9	50.7	48.0	45.2	41.8	0.0	0.0
02:45 - 03:00	53.5	69.2	49.0	64.5	56.4	52.7	50.9	48.5	46.7	43.3	0.0	0.0
03:00 - 03:15	53.6	73.2	47.0	65.7	58.1	53.7	51.9	48.8	46.3	43.0	0.0	0.0
03:15 - 03:30	53.1	74.6	46.0	66.7	57.7	53.0	50.7	48.2	45.6	42.1	0.0	0.0
03:30 - 03:45	47.0	62.5	43.0	58.3	50.8	47.2	45.3	42.4	37.9	34.2	0.0	0.0
03:45 - 04:00	44.8	61.5	42.0	54.4	47.5	44.8	43.1	40.3	34.5	30.8	0.0	0.0
04:00 - 04:15	44.0	58.7	41.0	54.7	47.5	44.1	42.6	40.0	32.4	28.0	0.0	0.0
04:15 - 04:30	47.2	67.0	43.0	59.6	51.5	47.2	45.3	42.9	38.2	34.6	0.0	0.0
04:30 - 04:45	44.5	57.4	43.0	51.2	46.1	43.8	43.0	40.6	32.3	28.5	0.0	0.0
04:45 - 05:00	45.5	64.8	43.0	56.8	49.0	45.4	43.8	41.4	34.8	31.0	0.0	0.0
05:00 - 05:15	46.1	66.9	43.0	60.4	50.2	45.9	44.2	41.9	35.9	31.6	0.0	0.0
05:15 - 05:30	44.4	53.7	43.0	51.1	46.1	43.7	43.1	40.5	30.9	27.2	0.0	0.0
05:30 - 05:45	45.9	63.2	43.0	50.2	46.4	44.7	44.1	42.1	34.8	28.7	0.0	0.0
05:45 - 06:00	46.1	60.1	44.0	51.0	45.8	45.1	44.8	42.5	32.6	27.5	0.0	0.0
06:00 - 06:15	46.4	63.6	44.0	52.3	47.3	45.8	44.8	42.4	34.7	30.5	0.0	0.0
06:15 - 06:30	52.1	74.9	45.0	58.6	52.9	52.4	49.6	46.6	45.0	38.6	0.0	0.0
06:30 - 06:45	50.5	70.3	46.0	55.6	50.6	50.1	48.4	45.6	41.9	37.3	0.0	0.0
06:45 - 07:00	49.9	64.4	47.0	60.5	53.1	49.9	47.9	46.0	39.9	35.7	0.0	0.0

