



REPORT REFERENCE:

IMP7275-1

## **ENVIRONMENTAL NOISE IMPACT ASSESSMENT**

### **Permitted Development**

British Standard 8233: 2014

CLIENT:

Goodwill Homes Limited

SITE:

59 Leigh Road,  
Eastleigh,  
Hampshire

SURVEY DATES:

27<sup>th</sup> October to 1<sup>st</sup> November 2022

[Impact Acoustics Ltd](#)

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

[Tel: 01202 581398](tel:01202581398)

[impactacoustics.co.uk](http://impactacoustics.co.uk)

|          |                                                                                                          |           |
|----------|----------------------------------------------------------------------------------------------------------|-----------|
| <b>1</b> | <b>EXECUTIVE SUMMARY .....</b>                                                                           | <b>5</b>  |
| 1.1      | INSTRUCTION .....                                                                                        | 5         |
| 1.2      | SCOPE OF REPORT.....                                                                                     | 5         |
| 1.3      | SUMMARY OF RESULTS .....                                                                                 | 5         |
| 1.4      | GLAZING & VENTILATION SPECIFICATION.....                                                                 | 6         |
| 1.5      | COMMERCIAL NOISE ASSESSMENTS.....                                                                        | 6         |
| 1.5.1    | <i>Plant Noise Assessment</i> .....                                                                      | 6         |
| 1.5.2    | <i>Nursery Noise Assessment Daytime (07:00 – 18:00)</i> .....                                            | 6         |
| 1.6      | CONCLUSION .....                                                                                         | 6         |
| <b>2</b> | <b>INTRODUCTION.....</b>                                                                                 | <b>7</b>  |
| 2.1      | OUTLINE .....                                                                                            | 7         |
| 2.2      | MEASUREMENT PERIODS & LOCATIONS .....                                                                    | 7         |
| 2.3      | NEIGHBOURING NURSERY.....                                                                                | 7         |
| 2.4      | BRITISH STANDARD 8233: 2014.....                                                                         | 8         |
| 2.5      | PLANNING PRACTICE GUIDANCE AND NOISE.....                                                                | 8         |
| 2.6      | GENERAL PERMITTED DEVELOPMENT ORDER (GDPO) 2020.....                                                     | 9         |
| 2.6.1    | <i>Restrictions</i> .....                                                                                | 9         |
| 2.6.2    | <i>Designations</i> .....                                                                                | 9         |
| 2.7      | NATIONAL PLANNING POLICY FRAMEWORK 2021 (NPPF) AND NOISE POLICY STATEMENT FOR ENGLAND 2010 (NPSE). ..... | 10        |
|          | <i>“Significant adverse” and “adverse”</i> .....                                                         | 10        |
|          | <i>NOEL – No Observed Effect Level</i> .....                                                             | 10        |
|          | <i>LOAEL – Lowest Observed Adverse Effect Level</i> .....                                                | 10        |
|          | <i>SOAEL – Significant Observed Adverse Effect Level</i> .....                                           | 10        |
| 2.8      | BS 4142: 2014.....                                                                                       | 10        |
| <b>3</b> | <b>SITE LOCATION.....</b>                                                                                | <b>11</b> |
| 3.1      | PROPOSED DEVELOPMENT.....                                                                                | 12        |
| <b>4</b> | <b>PROCEDURE .....</b>                                                                                   | <b>14</b> |
| <b>5</b> | <b>APPARATUS .....</b>                                                                                   | <b>15</b> |
| 5.1      | RION NOISE METER - POSITION 1 .....                                                                      | 15        |
| <b>6</b> | <b>RESULTS .....</b>                                                                                     | <b>16</b> |
| 6.1      | 27 <sup>TH</sup> – 28 <sup>TH</sup> OCTOBER 2022 .....                                                   | 16        |
| 6.2      | 28 <sup>TH</sup> – 29 <sup>TH</sup> OCTOBER 2022 .....                                                   | 16        |
| 6.3      | 29 <sup>TH</sup> – 30 <sup>TH</sup> OCTOBER 2022 .....                                                   | 16        |
| 6.4      | 30 <sup>TH</sup> – 31 <sup>ST</sup> OCTOBER 2022 .....                                                   | 16        |
| 6.5      | 31 <sup>ST</sup> OCTOBER – 1 <sup>ST</sup> NOVEMBER 2022 .....                                           | 16        |
| <b>7</b> | <b>BS 8233: 2014 ASSESSMENT .....</b>                                                                    | <b>17</b> |
| 7.1      | DISCUSSION OF RESULTS .....                                                                              | 17        |

|           |                                                                         |           |
|-----------|-------------------------------------------------------------------------|-----------|
| 7.2       | RECOMMENDATIONS .....                                                   | 17        |
| 7.3       | CALCULATED NOISE LEVELS .....                                           | 17        |
| 7.4       | CALCULATION PROCEDURE TO BS 8233: 2014 .....                            | 17        |
| 7.5       | GROUND FLOOR LOUNGE .....                                               | 18        |
| 7.6       | TOP FLOOR BEDROOM .....                                                 | 19        |
| 7.7       | GLAZING ( $R_{w1}$ ) .....                                              | 20        |
| 7.8       | WALLS (NON-GLAZED ELEMENTS) ( $R_{ew}$ ) .....                          | 20        |
| 7.9       | ROOF ( $R_{rr}$ ) .....                                                 | 20        |
| 7.10      | GLAZING & VENTILATION ASSESSMENT .....                                  | 20        |
| <b>8</b>  | <b>EXISTING COMMERCIAL NOISE LEVELS.....</b>                            | <b>21</b> |
| 8.1       | EXTERNAL PLANT .....                                                    | 21        |
| 8.2       | NURSERY CHILDREN NOISE .....                                            | 21        |
| 8.3       | IMAGES.....                                                             | 21        |
| 8.3.1     | <i>Rear View of Nursery .....</i>                                       | <i>21</i> |
| 8.3.2     | <i>Rooftop View of Nursery (Taken from the Nurseries Website) .....</i> | <i>22</i> |
| 8.4       | CALCULATION OF CHILDREN PLAYING NOISE LEVEL.....                        | 24        |
| 8.5       | INPUTTED NOISE LEVELS FOR 25 CHILDREN.....                              | 25        |
| 8.6       | VEHICLE MOVEMENT.....                                                   | 26        |
| 8.7       | CALCULATED FAÇADE LEVELS FROM CHILDREN PLAYING .....                    | 26        |
| 8.8       | 3D MODEL.....                                                           | 27        |
| <b>9</b>  | <b>NOISE ASSESSMENT .....</b>                                           | <b>28</b> |
| 9.1       | BACKGROUND NOISE LEVELS.....                                            | 28        |
| 9.2       | ASSESSMENT POSITION .....                                               | 28        |
| 9.3       | ASSESSMENT CRITERION.....                                               | 28        |
| 9.4       | NOISE METER FLOOR .....                                                 | 28        |
| 9.5       | ASSESSMENTS .....                                                       | 29        |
| 9.5.1     | <i>Daytime (07:00 – 18:00) .....</i>                                    | <i>29</i> |
| <b>10</b> | <b>THE NATIONAL PLANNING POLICY FRAMEWORK 2021 (NPPF).....</b>          | <b>30</b> |
| <b>11</b> | <b>CONCLUSION .....</b>                                                 | <b>31</b> |
| 11.1      | SUMMARY OF RESULTS .....                                                | 31        |
| 11.2      | GLAZING & VENTILATION SPECIFICATION.....                                | 31        |
| 11.3      | COMMERCIAL NOISE ASSESSMENTS.....                                       | 31        |
| 11.3.1    | <i>Plant Noise Assessment .....</i>                                     | <i>31</i> |
| 11.3.2    | <i>Nursery Noise Assessment Daytime (07:00 – 18:00) .....</i>           | <i>31</i> |
| 11.4      | CONCLUSION .....                                                        | 32        |
| <b>12</b> | <b>APPENDIX A - RESULTS.....</b>                                        | <b>33</b> |
| 12.1      | 27 <sup>TH</sup> – 28 <sup>TH</sup> OCTOBER 2022 .....                  | 33        |
| 12.2      | 28 <sup>TH</sup> – 29 <sup>TH</sup> OCTOBER 2022 .....                  | 34        |
| 12.3      | 29 <sup>TH</sup> – 30 <sup>TH</sup> OCTOBER 2022 .....                  | 35        |



12.4 30<sup>TH</sup> – 31<sup>ST</sup> OCTOBER 2022 ..... 36

12.5 31<sup>ST</sup> OCTOBER – 1<sup>ST</sup> NOVEMBER 2022 ..... 37

**13 APPENDIX B - ENVIRONMENTAL CONDITIONS ..... 38**

## 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 permitted development application to residential units under the current General Permitted Development Order (GDPO) 2020.

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. The only commercial noise with the potential to affect the proposed permitted development is that of the neighbouring Nursery and the associated noise from children outside.

### 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 27<sup>th</sup> October to the 1<sup>st</sup> 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<br>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 can maintain its existing double glazing 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 General Permitted Development Order 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 permitted development. Therefore no further assessment has been made in relation to plant.

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

|                                 |                        |
|---------------------------------|------------------------|
| Calculated Façade Level         | L <sub>Aeq</sub> 50 dB |
| Recorded Background Noise Level | L <sub>A90</sub> 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 permitted 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 2021, NPPF & NPSE and that with regards to noise, the permitted development can be granted.

## **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 permitted development application to residential units under the current General Permitted Development Order (GDPO) 2020.

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. The only commercial noise with the potential to affect the proposed permitted development is that of the neighbouring Nursery and the associated noise from children outside.

### **2.2 Measurement Periods & Locations**

Ambient noise levels were measured between the 27<sup>th</sup> October and the 1<sup>st</sup> 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 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 from 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 <sub>Aeq</sub> 16 HOUR | --                            |
| Dining                                    | Dining Room / Area | 40 dB L <sub>Aeq</sub> 16 HOUR | --                            |
| Sleeping (daytime resting)                | Bedroom            | 35 dB L <sub>Aeq</sub> 16 HOUR | 30 dB L <sub>Aeq</sub> 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 General Permitted Development Order (GDPO) 2020.

Planning: New commercial into residential (Class MA) Permitted Development rights state that, from 1 August 2021 new permitted development ("PD") rights (Class MA) to allow for the change of use from commercial, business use and service use (Class E) to residential use (Class C3) will come into force creating potential new development opportunities for farmers and landowners.

The introduction of new Class MA follows the reclassification of the use classes in September 2020, when Class E was introduced to replace the previous use classes of A1, A2 and A3 (retail, financial services and cafés/restaurants); B1a, b and c (offices, research establishments and light industry) and D1 and D2 (health clinics, nurseries and gyms). Notably, Class B2 (general industrial) and B8 (storage and distribution) remain unchanged and are therefore excluded from new Class MA PD rights.

The new class MA replaces the two, existing commercial-to-residential PD rights, being, Class O (office to residential) and Class M (A1 shops and A2 financial and professional services to residential). These rights will continue to apply until 31 July 2021.

### 2.6.1 Restrictions

As with other PD rights, those seeking to utilise the new MA right will have to satisfy prior approval requirements on transport, contamination, flooding, noise, and natural light. Restrictions also apply to a change of use under Class MA, including that the building's floor space: must have been in commercial business and service use (Class E) (or, prior to 1 September 2020, within any predecessor use class: A1, A2, A3, B1, D1(a), D1(b), D2(e)) use for 2 years continuously prior to the application for prior approval. must be an unused commercial building that has been vacant for the 3 months prior to the application; and must not be any bigger than 1,500 square metres.

### 2.6.2 Designations

In addition, development is neither permitted by Class MA in AONBs, SSSI, the Broads, any National Park and World Heritage Sites; nor if the site is occupied under an agricultural tenancy, unless the express consent of both landlord and the tenant is obtained.

Development is however permitted under Class MA in Green Belt, Conservation Areas and the open countryside, where it is more challenging to establish new residential use in planning policy terms. This represents a significant change by the Government and will create new and interesting opportunities for delivery of residential housing.

Applications under Class MA can only be made after 1st August 2021."

## 2.7 National Planning Policy Framework 2021 (NPPF) and Noise Policy Statement for England 2010 (NPSE).

References and evaluations are to be made to the National Planning Policy Framework 2021 (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

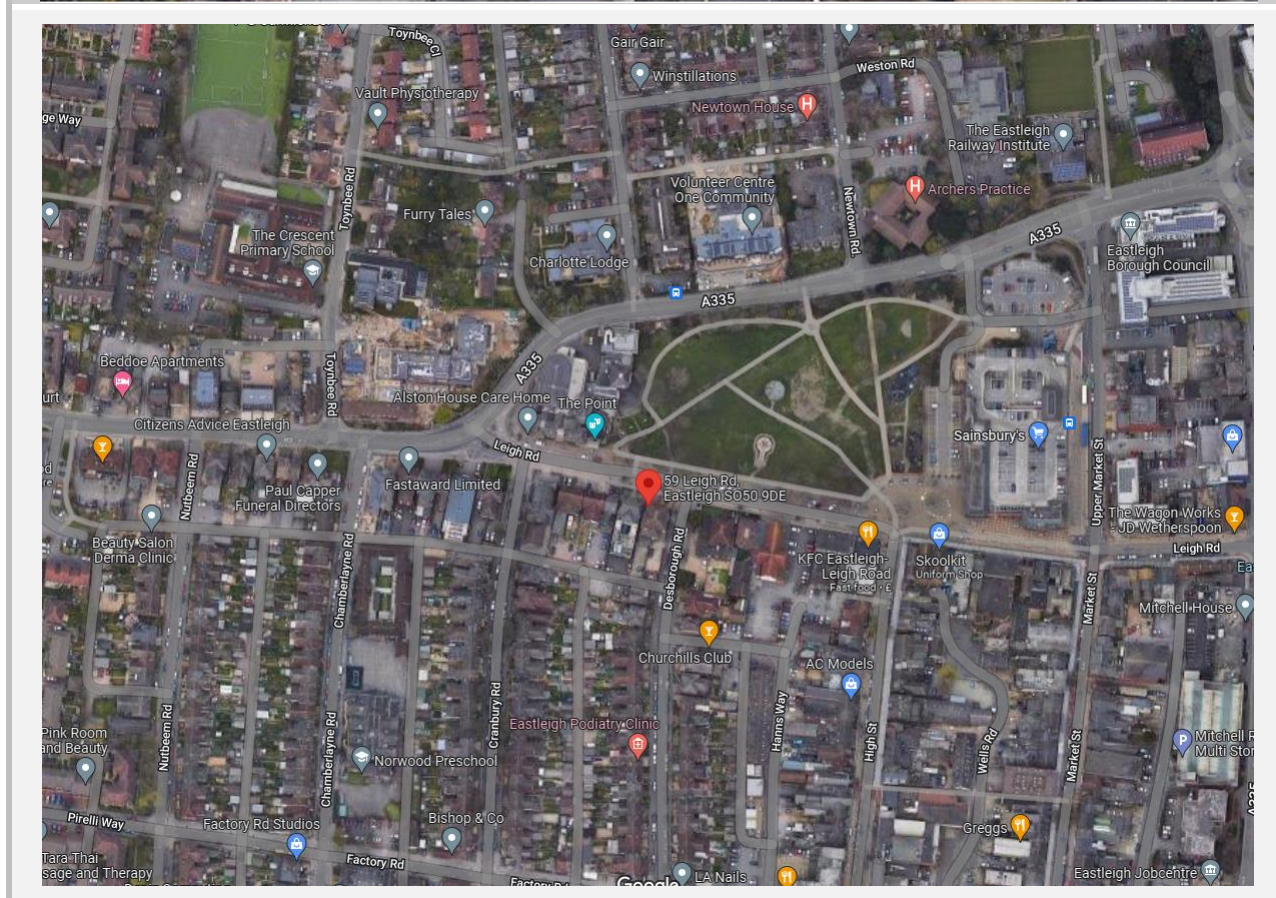
*This is the level above which significant adverse effects on health and quality of life occur.*

*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.*

## 2.8 BS 4142: 2014

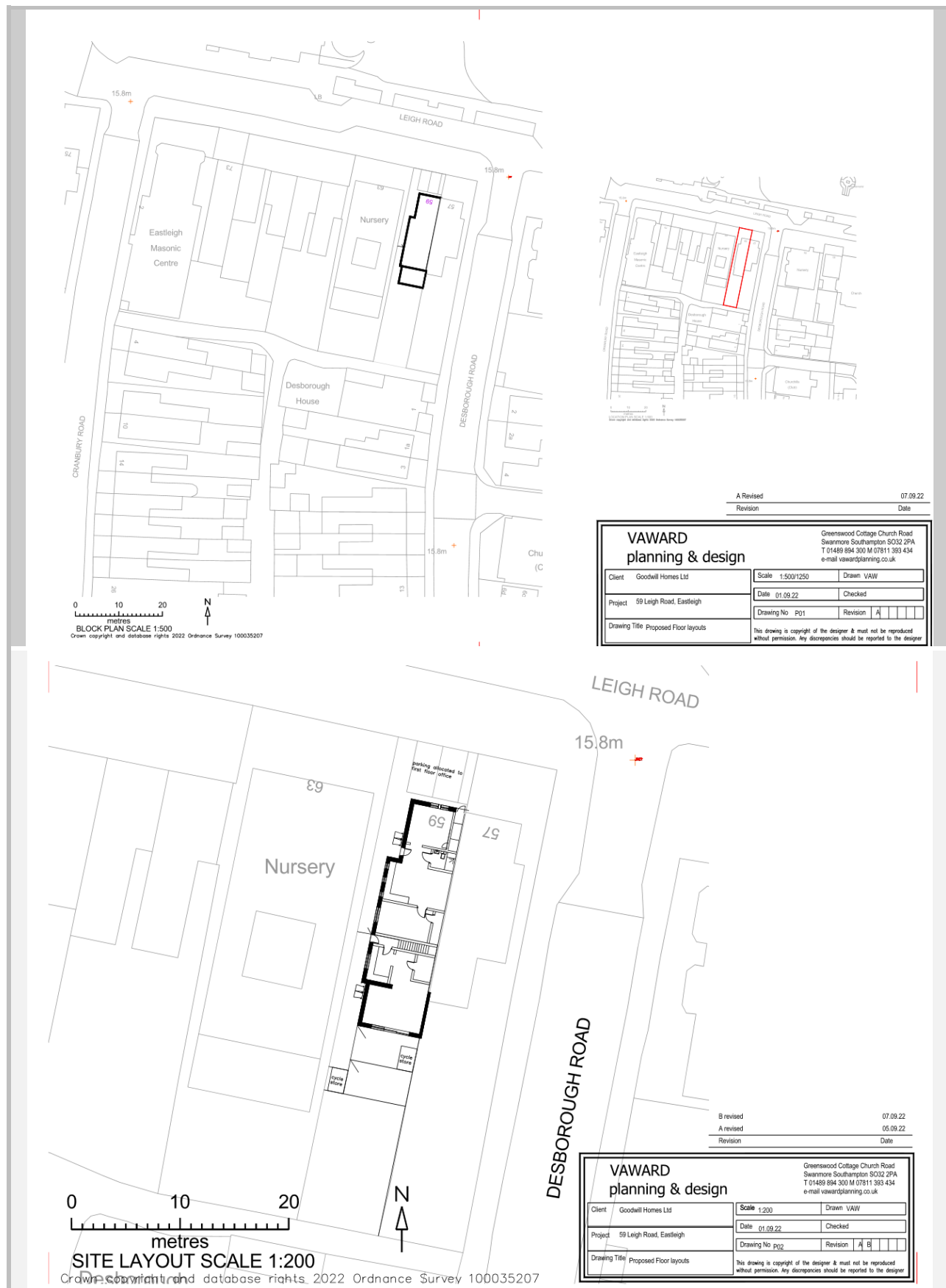
Patron Noise falls outside the scope of BS 4142 and therefore no further assessments have been undertaken. No other commercial noise sources were detected or assessed.

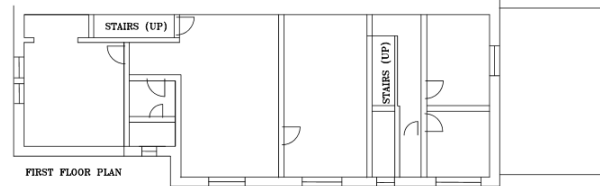
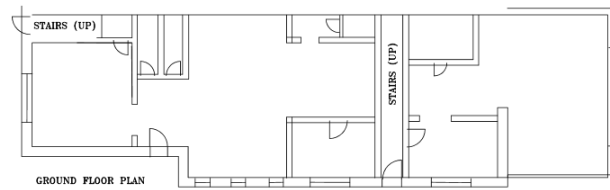
The site is located in Eastleigh, Hampshire.



### 3.1 Proposed Development

The proposed development is shown below.



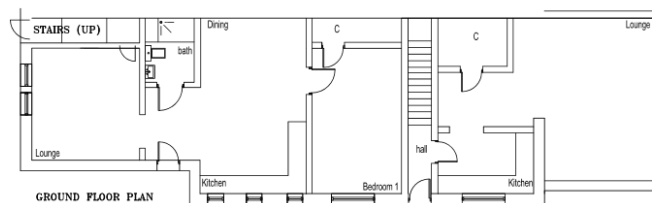


0 1 2 3 4 5 SCALE 1:100 10

A Revised 07.09.22  
Revision Date

|                                    |                          |                                                                                                                                             |          |
|------------------------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|----------|
| <b>VAWARD</b><br>planning & design |                          | Greenwood Cottage Church Road<br>Swanmore Southampton SO32 2PA<br>T 01489 894 300 M 07811 363 434<br>e-mail vawardplanning.co.uk            |          |
| Client                             | Goodwill Homes Ltd       | Scale                                                                                                                                       | 1:100    |
| Project                            | 59 Leigh Road, Eastleigh | Date                                                                                                                                        | 01.09.22 |
| Drawing Title                      | Existing Floor layouts   | Checked                                                                                                                                     |          |
|                                    |                          | Drawing No                                                                                                                                  | P04      |
|                                    |                          | Revision                                                                                                                                    | A        |
|                                    |                          | This drawing is copyright of the designer & must not be reproduced without permission. Any discrepancies should be reported to the designer |          |

EXISTING



0 1 2 3 4 5 SCALE 1:100 10

B revised 07.09.22  
A revised 05.09.22  
Revision Date

|                                    |                          |                                                                                                                                             |          |
|------------------------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|----------|
| <b>VAWARD</b><br>planning & design |                          | Greenwood Cottage Church Road<br>Swanmore Southampton SO32 2PA<br>T 01489 894 300 M 07811 363 434<br>e-mail vawardplanning.co.uk            |          |
| Client                             | Goodwill Homes Ltd       | Scale                                                                                                                                       | 1:100    |
| Project                            | 59 Leigh Road, Eastleigh | Date                                                                                                                                        | 01.09.22 |
| Drawing Title                      | Proposed Floor layouts   | Checked                                                                                                                                     |          |
|                                    |                          | Drawing No                                                                                                                                  | P03      |
|                                    |                          | Revision                                                                                                                                    | A B      |
|                                    |                          | This drawing is copyright of the designer & must not be reproduced without permission. Any discrepancies should be reported to the designer |          |

PROPOSED

#### 4 PROCEDURE

External noise levels were recorded over a typical period and analysis date extrapolated between 07:00 hrs 29<sup>th</sup> April to 0700 3<sup>rd</sup> May 2022 at two positions as detailed within this report.

Position 1 was located at the front of the site in order to capture the noise levels associated with the main road. 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 27<sup>th</sup> – 28<sup>th</sup> 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<br>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<br>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 28<sup>th</sup> – 29<sup>th</sup> 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<br>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<br>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 29<sup>th</sup> – 30<sup>th</sup> 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<br>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<br>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 30<sup>th</sup> – 31<sup>st</sup> 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<br>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<br>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 31<sup>st</sup> October – 1<sup>st</sup> 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<br>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<br>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

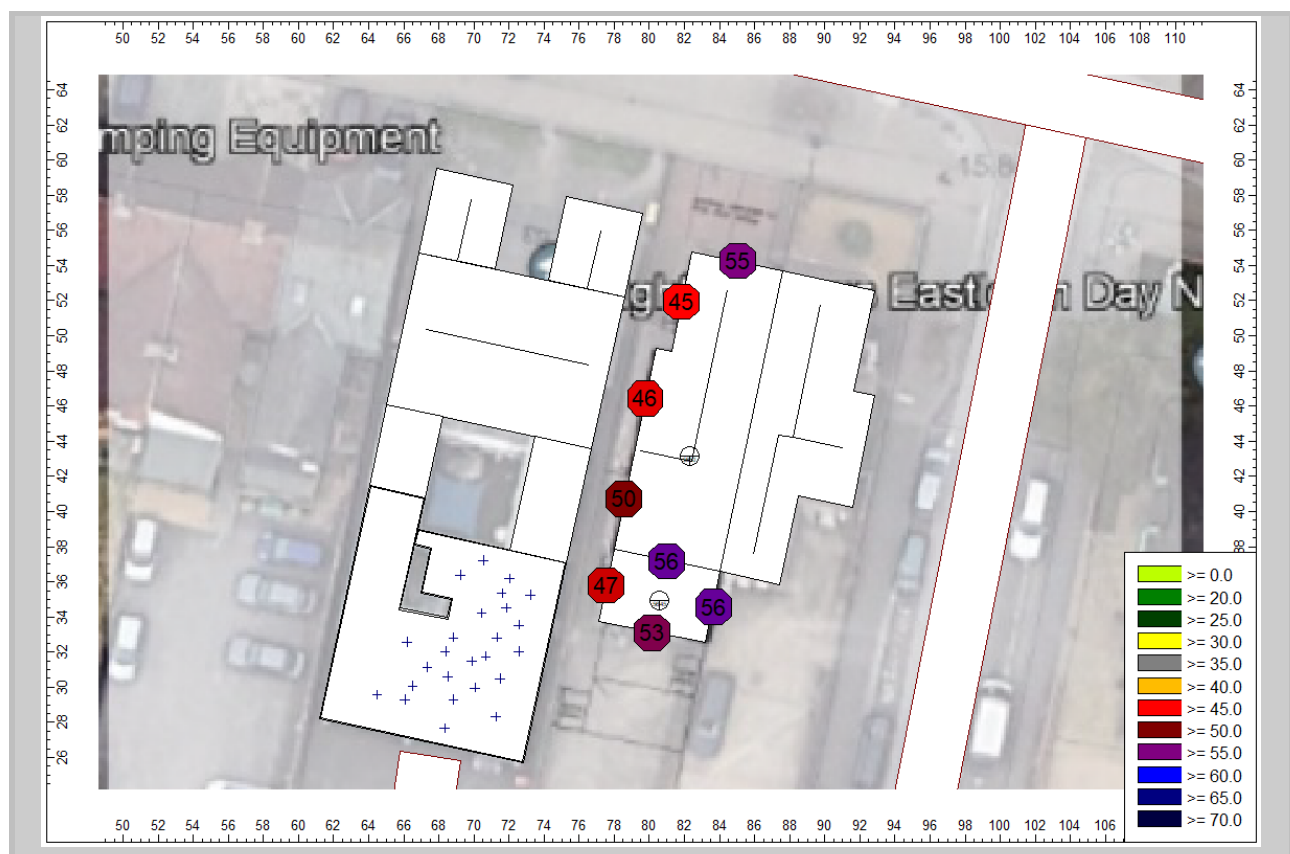
It can be seen from the attached graph and downloaded results that the external noise levels have followed the expected path and remained fairly constant throughout the day. The levels then gradually dropped off as the evening progressed and began to rise when morning traffic levels increased.

### 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 permitted 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<br>(Corrected for Free Field) | Octave Band Centre Frequency (Hz)                                                                            |      |                          |                      |       |              |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------|------|--------------------------|----------------------|-------|--------------|
|                                                  | 125                                                                                                          | 250  | 500                      | 1000                 | 2000  | 4000         |
| Daytime Leqff                                    | 56.3                                                                                                         | 54.5 | 51.9                     | 49.6                 | 46.3  | 41.1         |
| Night time Leqff                                 | 58.0                                                                                                         | 53.1 | 50.7                     | 47.8                 | 44.6  | 40.6         |
|                                                  |                                                                                                              |      |                          |                      |       |              |
| Room Data                                        | Sf                                                                                                           | Sr   | Swi                      | Sew                  | Srr   | Volume       |
| Area m²                                          | 13                                                                                                           | 10   | 6.6                      | 6.4                  | 10    | 59.5         |
|                                                  |                                                                                                              |      |                          |                      |       |              |
| Specification Summary                            | Site Specific Specification                                                                                  |      |                          | Attenuation Required |       |              |
| Glazing Specification                            | 4mm / (6-16mm) / 4mm                                                                                         |      |                          | Rw(C; Ctr)           |       | 29(-1,-4) 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)                      | 21.0                                                                                                         | 17.0 | 25.0                     | 35.0                 | 37.0  | 31.0         |
| Ventilation Strategy (Dne)                       | 33.0                                                                                                         | 32.0 | 29.0                     | 29.0                 | 31.0  | 33.0         |
| 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 <sub>Aeq</sub> 16 HOUR | 30.4                 | dB(A) |              |
| Night Time Hours (23:00-07:00)                   |                                                                                                              |      | L <sub>Aeq</sub> 8 HOUR  | 29.6                 | 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 Bedroom

| Recorded Site Data<br>(Corrected for Free Field) | Octave Band Centre Frequency (Hz)                                                                            |      |                          |                      |       |              |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------|------|--------------------------|----------------------|-------|--------------|
|                                                  | 125                                                                                                          | 250  | 500                      | 1000                 | 2000  | 4000         |
| Daytime Leqff                                    | 56.3                                                                                                         | 54.5 | 51.9                     | 49.6                 | 46.3  | 41.1         |
| Night time Leqff                                 | 58.0                                                                                                         | 53.1 | 50.7                     | 47.8                 | 44.6  | 40.6         |
|                                                  |                                                                                                              |      |                          |                      |       |              |
| Room Data                                        | Sf                                                                                                           | Sr   | Swi                      | Sew                  | Srr   | Volume       |
| Area m²                                          | 7.8                                                                                                          | 7.36 | 1.5                      | 6.3                  | 7.36  | 20           |
|                                                  |                                                                                                              |      |                          |                      |       |              |
| Specification Summary                            | Site Specific Specification                                                                                  |      |                          | Attenuation Required |       |              |
| Glazing Specification                            | 4mm / (6-16mm) / 4mm                                                                                         |      |                          | Rw(C; Ctr)           |       | 29(-1,-4) 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)                      | 21.0                                                                                                         | 17.0 | 25.0                     | 35.0                 | 37.0  | 31.0         |
| Ventilation Strategy (Dne)                       | 33.0                                                                                                         | 32.0 | 29.0                     | 29.0                 | 31.0  | 33.0         |
| 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 <sub>Aeq</sub> 16 HOUR | 24.7                 | dB(A) |              |
| Night Time Hours (23:00-07:00)                   |                                                                                                              |      | L <sub>Aeq</sub> 8 HOUR  | 24.0                 | 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.                                                         |      |                          |                      |       |              |

The calculations within this report demonstrate compliance with both the BS 8233 criteria of L<sub>Aeq</sub> 16 HOUR 35 dB and the councils suggested criteria of L<sub>Aeq</sub> 16 HOUR 30 dB.

### 7.7 Glazing ( $R_{wi}$ )

| Octave Band Frequency                | 125  | 250  | 500  | 1000 | 2000 | 4000 | $R_{w(C:Ctr)}$ |
|--------------------------------------|------|------|------|------|------|------|----------------|
| 4mm glass / 16mm air gap / 4mm glass | 21.0 | 17.0 | 25.0 | 35.0 | 37.0 | 31.0 | 29 (-1,-4)     |

### 7.8 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 | 56.0 | 50.0  |

### 7.9 Roof ( $R_{rr}$ )

| Octave Band Frequency      | 125  | 250  | 500  | 1000 | 2000 | 4000 | $R_w$ |
|----------------------------|------|------|------|------|------|------|-------|
| 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 can maintain its existing double glazing 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 General Permitted Development Order 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 permitted 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.

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



See Inside (Seeinside\_co.uk)  
SEPT 2017



See Inside (Seeinside\_co.uk)  
SEPT 2017



## 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     |

The following noise levels have been inputted in to the 3D acoustic model in order to calculate the resultant noise levels at the aforementioned assessment position.

[illegible]

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):

0.0

Emission:

Count, Q (Veh/18h):

100

Road Type:

Federal Road

Exact Count Data:

Number of Vehicles/Hour q:

D: 4.90

E: 0.00

N: 1.10

Percentage heavy vehicles p (%):

D: 20.0

E: 0.0

N: 20.0

L10 dB(A)

D: 51.8

E: 0.0

N: 45.3

Day

Evening

Night

Traffic Speed (km/h):

20

Road Surface:

Surface Correction (dB):

0.0

(no correction)

Texture Depth (mm):

5.0

Road Gradient: Input (%):

0.0

OK

Cancel

Geometry...

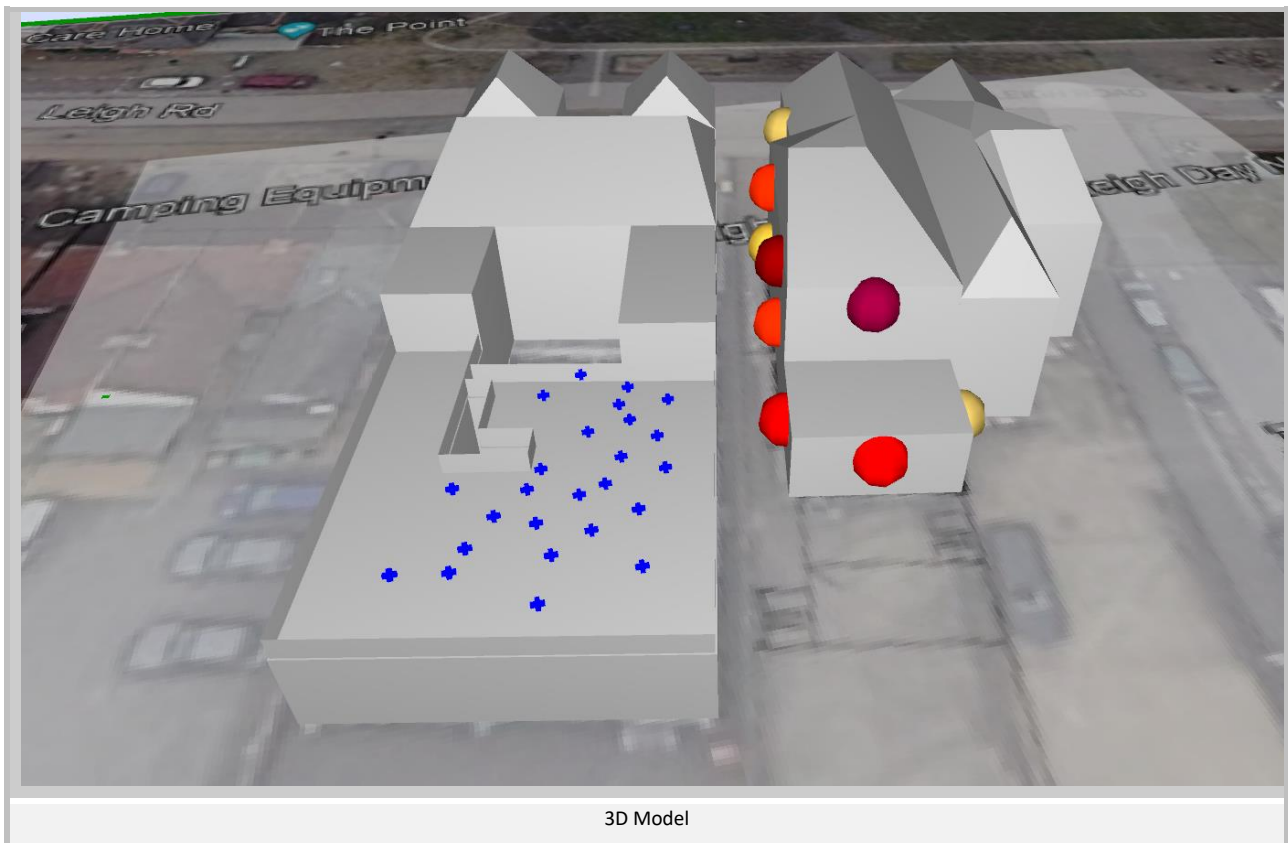
Help

Inpitted Vehicle Movement

8.7 Calculated Façade Levels 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 27<sup>th</sup> October to the 1<sup>st</sup> 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<br>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 permitted 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         | 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 permitted development.

## 10 THE NATIONAL PLANNING POLICY FRAMEWORK 2021 (NPPF)

The National Planning Policy Framework 2021 (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 2021 (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 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 27<sup>th</sup> October to the 1<sup>st</sup> 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<br>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 can maintain its existing double glazing 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 General Permitted Development Order 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 permitted development. Therefore no further assessment has 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 permitted 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 2021, NPPF & NPSE and that with regards to noise, the permitted development can be granted.

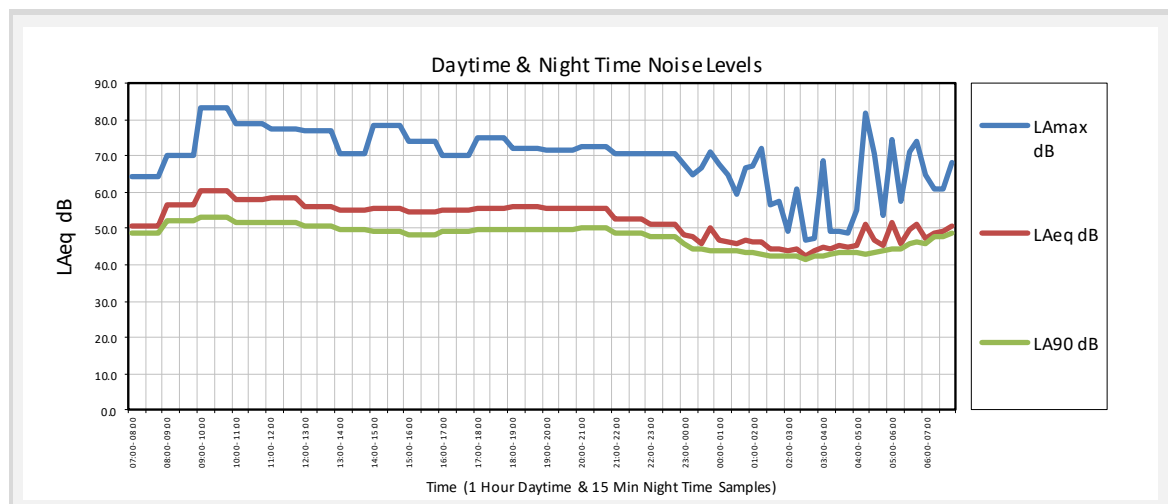
## 12 APPENDIX A - RESULTS

### 12.1 27<sup>th</sup> – 28<sup>th</sup> 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<br><small>LAeq 16 HOUR &amp; Corresponding LAmaz 16 HOUR</small>  | 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<br><small>LAeq 8 HOUR &amp; Corresponding LAmaz 8 HOUR</small> | 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    |

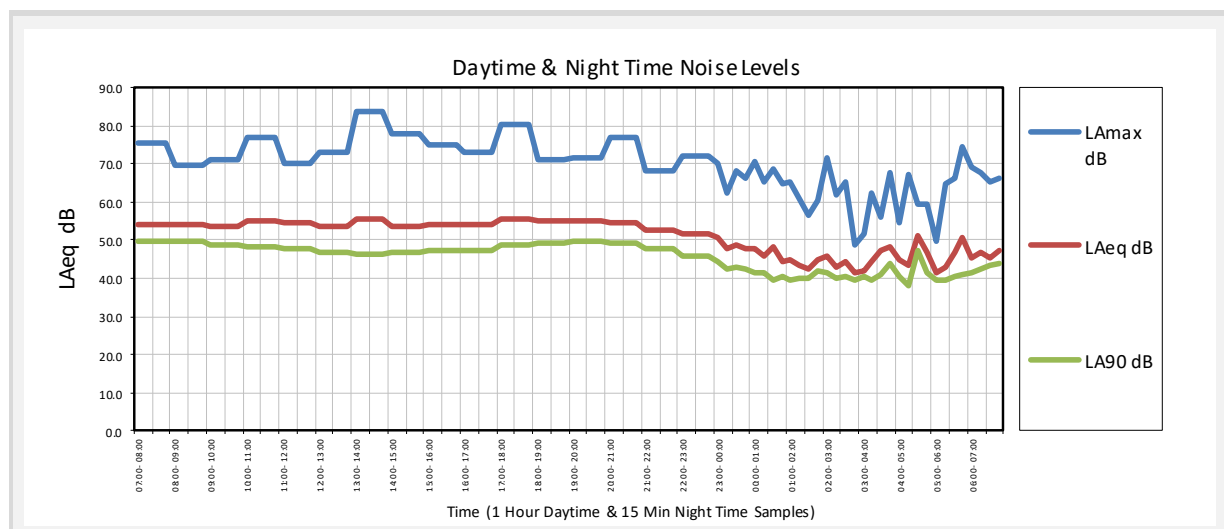


12.2 28<sup>th</sup> – 29<sup>th</sup> October 2022

| 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<br><small>LAeq 16 HOUR &amp; Cor r esponding LAmaz 16 HOUR</small>  | 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<br><small>LAeq 8 HOUR &amp; Cor r esponding LAmaz 8 HOUR</small> | 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    |

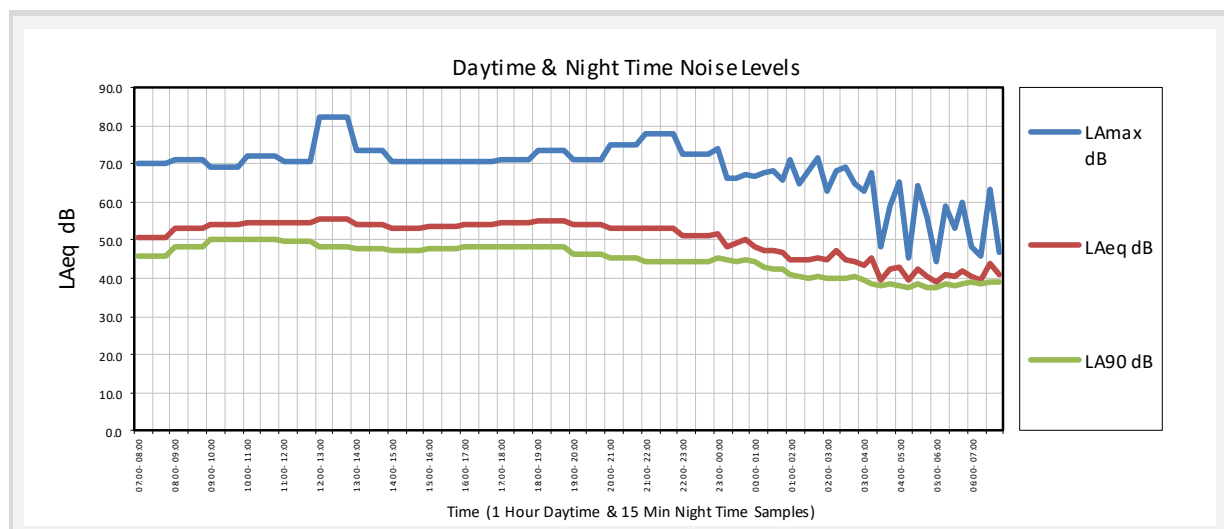


12.3 29<sup>th</sup> – 30<sup>th</sup> October 2022

| 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<br><small>LAeq 16 HOUR &amp; Cor r esponding LAmx 16 HOUR</small>  | 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<br><small>LAeq 8 HOUR &amp; Cor r esponding LAmx 8 HOUR</small> | 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    |

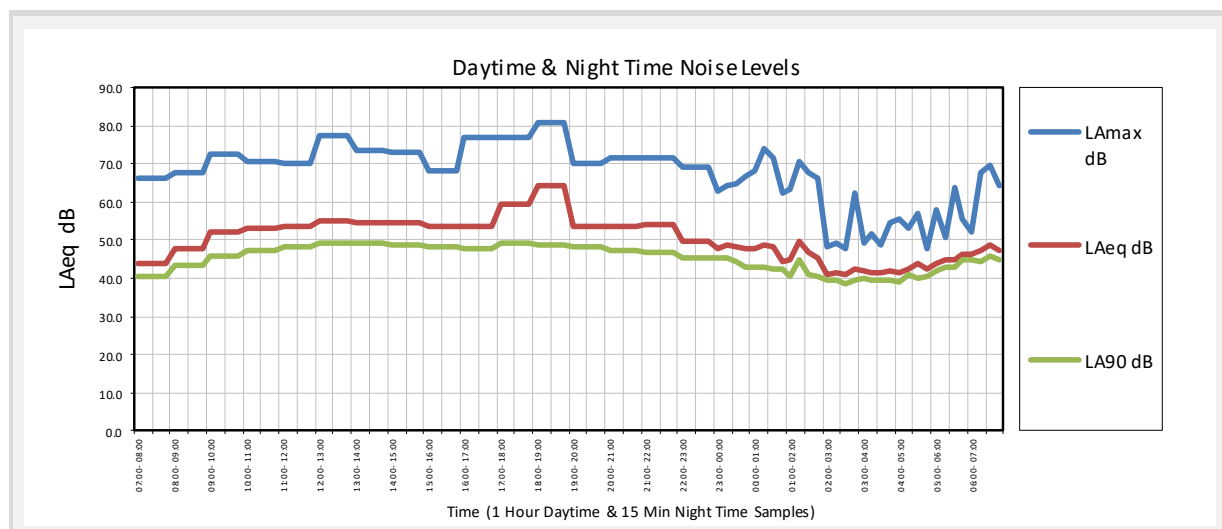


12.4 30<sup>th</sup> – 31<sup>st</sup> October 2022

| 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<br><small>LAeq 16 HOUR &amp; Cor r esponding LAmaz 16 HOUR</small>  | 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<br><small>LAeq 8 HOUR &amp; Cor r esponding LAmaz 8 HOUR</small> | 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 31<sup>st</sup> October – 1<sup>st</sup> 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<br><small>LAeq 16 HOUR &amp; Cor r esponding LAmx 16 HOUR</small>  | 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<br><small>LAeq 8 HOUR &amp; Cor r esponding LAmx 8 HOUR</small> | 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    |

