



Workdry International  
Plant Noise Impact Assessment  
Report No. 25-0081-0 R01.1

# Portakabin

## Workdry International

### Plant Noise Impact Assessment

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Report No.:  
25-0081-0 R01.1

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# 1 Introduction

## 1.1 Context

Sustainable Acoustics has been commissioned by Portakabin to undertake a Noise Impact Assessment of proposed development at Workdry International, Bournemouth Rd, Chandler's Ford, Eastleigh SO53 3ZL. The proposed development comprises demolition of an existing office building and construction of a new office building in a similar position, which will include external fixed plant. The Noise Impact Assessment is required to assess the potential impact of plant noise on nearby noise sensitive receptors (NSRs).

Selection of the plant items has yet to be finalised, therefore plant noise limits have been set.

## 1.2 Site Description

### 1.2.1 Site Location

The site (illustrated in Figure 1) is located on the north eastern edge of an industrial area that is bounded to the south and east by residential development.

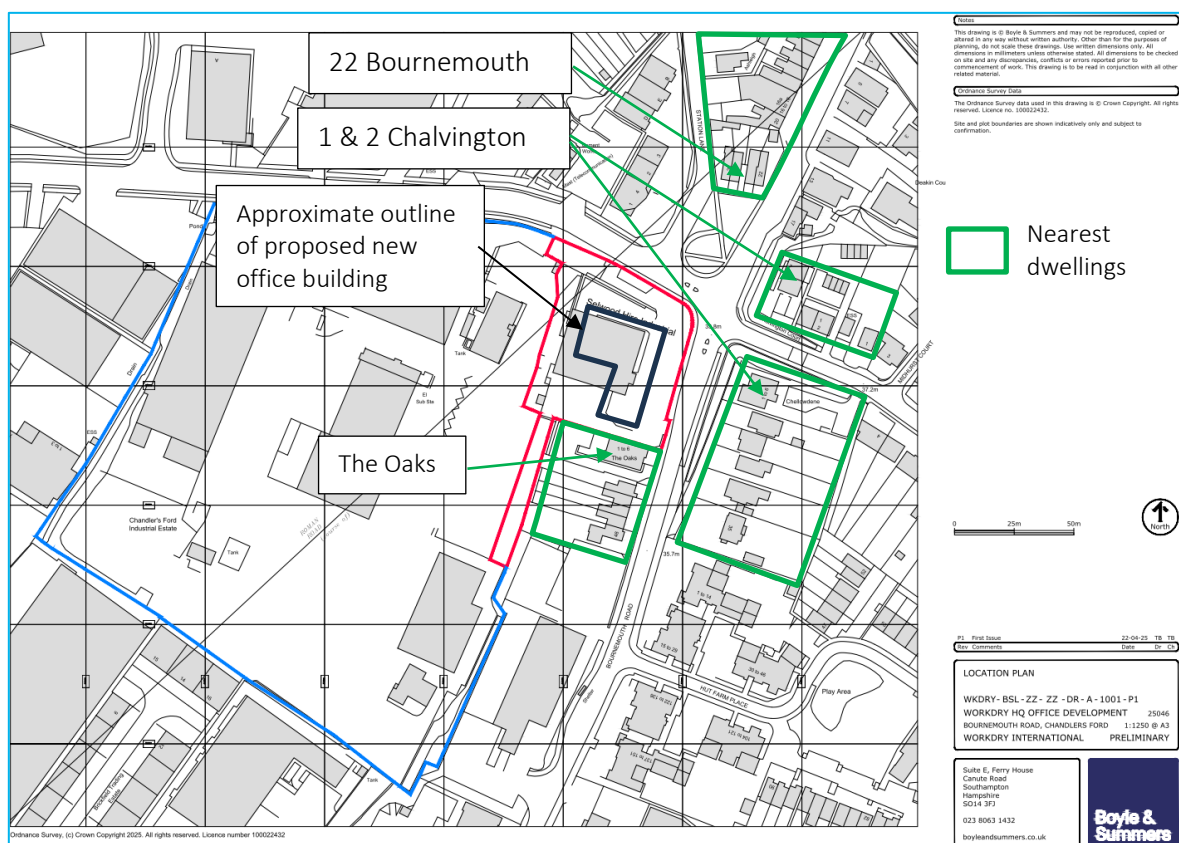


Figure 1: Site Location

The nearest dwellings to the site are 1 – 6 the Oaks immediately to the south of the proposed development site.

The designated area for the mechanical ventilation plant units is shown below in Figure 2.



Figure 2: Proposed Building layout and plant location.

## 1.3 Proposed Plant

The current ventilation system proposal comprises the following units:

- 4 Daikin Compressor units RZAG60A – Only half of them operating at any time.
- 2 Daikin air source heat pump (ASHP) EWTY050CZ – To operate during daytime only.
- 1 Daikin variable refrigerant volume (VRV) Condenser unit REYA10A – To operate during daytime only.
- 1 Daikin VRV Condenser unit REYA12A – To operate during daytime only.
- 1 Daikin VRV Condenser unit REYA14A – To operate during daytime only.
- 1 Daikin VRV Condenser unit REYA16A – To operate during daytime only.
- 1 Daikin VRV Condenser unit REYA20A – To operate during daytime only.



## 2 Policy, Guidance and Assessment Criteria

### 2.1 British Standard BS 4142:2014+A1:2019

BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound' describes methods for rating and assessing sound of an industrial and/or commercial nature, to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident. The sound from the industrial/commercial source is rated by using the sound level of the source, known as the specific sound level, and adding an appropriate character correction (for e.g. tonality, impulsivity or intermittency of the source) to give a rating level of the sound source. To gain an initial estimate of the potential impacts of the sound source, it is compared to the background sound level, and the level by which the rating level exceeds the background sound level indicates the potential impacts summarised in Table 1.

| Difference           | Assessment                                                                               |
|----------------------|------------------------------------------------------------------------------------------|
| Around 10 dB or more | Likely to be an indication of a significant adverse impact, depending on the context     |
| Around 5 dB          | Likely to be an indication of an adverse impact, depending on the context                |
| 0 dB or less         | An indication of the specific sound source having a low impact, depending on the context |

Table 1: BS 4142 Initial Estimate of Impact of the Specific Sound

The standard suggests that where an initial estimate of the impact needs to be modified due to the context, all pertinent factors should be taken into consideration, including:

- 1) The absolute level of the sound;
- 2) The character and level of the residual sound compared to the character and level of the specific sound;
- 3) The sensitivity of the receptor.

The current edition of the standard also requires that the potential impact of uncertainty should be reported, and that reasonably practicable steps are taken to reduce the level of uncertainty.

In determining the background sound level, it is stated in the commentary to paragraph 8.1 that *"it is important to ensure values that are reliable and suitably represent both the particular circumstances and periods of interest. For this purpose, the objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods"*.

In relation to the absolute level of sound, it is noted that *"Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night."*



## 2.2 Local Authority Requirements

### 2.2.1 Local Planning Policy

The site falls within the remit of Eastleigh Borough Council (EBC).

Relevant policy on noise is Policy DM8, Pollution:

*"1. Development will not be permitted if it is likely to cause loss of amenity or impact on public health or other unacceptable environmental impacts through:*

*...*

*c. noise or vibration".*

### 2.2.2 Correspondence with Eastleigh Borough Council

No correspondence has been undertaken with Eastleigh Borough Council specifically for this project, however, for a similar project undertaken recently (April 2025) the Pollution Control Manager of EBC advised that the rating level of the plant noise should not exceed 5 dB below the background noise level. Alternatively, in cases where background sound levels are particularly low, it may be acceptable to design to equal to or below the background sound level.

## 3 Environmental Sound Survey

### 3.1 Methodology

An unattended sound survey was undertaken between approximately 11:15 hrs on Wednesday 11<sup>th</sup> June and 15:45 hrs on Monday 16<sup>th</sup> June 2025 in the location illustrated as LT1 and LT2 in Figure 3. The location of LT1 was selected as being a secure location close to the nearest residential receptors, and the location of LT2 was selected to provide a measurement sheltered from Bournemouth Road. The microphones were placed at a height of approximately 2.5m above ground level and were fitted with outdoor windshields. Position LT2 was approximately 2m from the rear façade/retaining wall of the existing building.

Attended measurements and observations were also taken (at positions ST1-ST3), principally to inform the acoustic design of the proposed office building. The attended measurements are provided at Appendix 1 for information, but are not used in this report other than for basic observations.

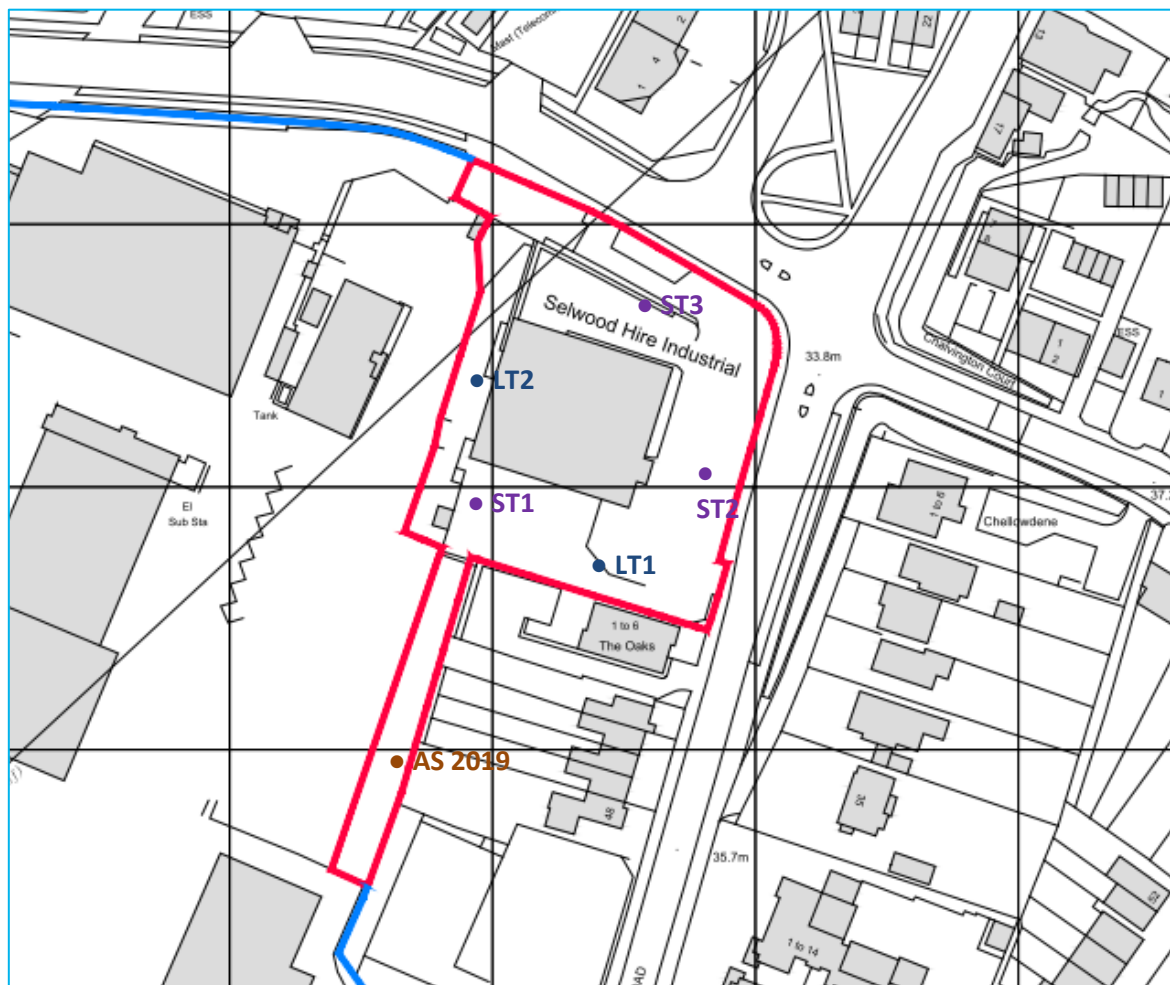


Figure 3: Environmental Sound Level Measurement Locations



## 3.2 Instrumentation

Table 2 summarises the instrumentation used for sound measurements. Prior to and on completion of the survey, the calibration of the units was checked with the field calibrator and the drift observed to be less than 0.1 dB.

| Equipment                         | Type  | Serial Number | Calibration |                |
|-----------------------------------|-------|---------------|-------------|----------------|
|                                   |       |               | Date        | Certificate no |
| LT1                               |       |               |             |                |
| Svantek Class 1 Sound Level Meter | SV307 | 149025        | 16/12/2024  | 1510742-2      |
| Microphone                        | ST30  | 153972        | 16/12/2024  | 1510742-2      |
| LT2                               |       |               |             |                |
| Svantek Class 1 Sound Level Meter | SV307 | C157314       | 16/12/2024  | 1510742-1      |
| Microphone                        | ST30  | 157804        | 16/12/2024  | 1510742-1      |
| Calibrator                        |       |               |             |                |
| Svantek Calibrator                | SV33  | 58228         | 24/09/2024  | 1509750-1      |

Table 2: Instrumentation used for Sound Measurements

## 3.3 Weather Conditions

The weather conditions during the sound survey were generally mild and calm with temperatures ranging from approximately 10°C to 31°C with no periods with wind speeds above 5 m/s. One period of rain occurred, between approximately 11:00 hrs and 13:30 hrs on 12<sup>th</sup> June, therefore sound measurements during these periods have been removed prior to analysis of the results.

## 3.4 Analysis of Ambient and Background Sound Levels

The measured sound levels are summarised in Table 3 and illustrated in Figure 4 and Figure 5. The statistical distribution of measured background sound levels is shown in Figure 6 to Figure 9.

| Period                                               | Time Range  | Ambient sound level (dB L <sub>Aeq, T</sub> ) |            | Maximum sound level (dB L <sub>AFmax</sub> ) |                      | Background sound level (dB L <sub>A90, 15 min</sub> ) |                      |      |                             |      |
|------------------------------------------------------|-------------|-----------------------------------------------|------------|----------------------------------------------|----------------------|-------------------------------------------------------|----------------------|------|-----------------------------|------|
|                                                      |             | Range (15 min)                                | Period (T) | Range                                        | Typical <sup>1</sup> | Range                                                 | Typical <sup>2</sup> | Mode | 20 <sup>th</sup> percentile | Mean |
| LT1: South position (free-field)                     |             |                                               |            |                                              |                      |                                                       |                      |      |                             |      |
| Daytime                                              | 07:00-23:00 | 49 - 65                                       | 57         | 59 - 96                                      | 79                   | 38 - 55                                               | 47                   | 48   | 46                          | 47   |
| Night                                                | 23:00-07:00 | 38 - 64                                       | 52         | 35 - 93                                      | 71                   | 33 - 50                                               | 37                   | 39   | 37                          | 39   |
| LT2: West of the proposed development (façade level) |             |                                               |            |                                              |                      |                                                       |                      |      |                             |      |
| Daytime                                              | 07:00-23:00 | 42 - 66                                       | 55         | 44 - 97                                      | 78                   | 36 - 58                                               | 45                   | 48   | 42                          | 45   |
| Night                                                | 23:00-07:00 | 35 - 56                                       | 47         | 35 - 88                                      | 66                   | 31 - 49                                               | 35                   | 40   | 35                          | 38   |

<sup>1</sup> Typical maximum sound level taken as the 10th highest of 2min samples during the period.

<sup>2</sup> Typical background sound level shown is mean during day and 20th percentile at night.

Table 3: Summary Sound Results from Logging Sound Level Meters

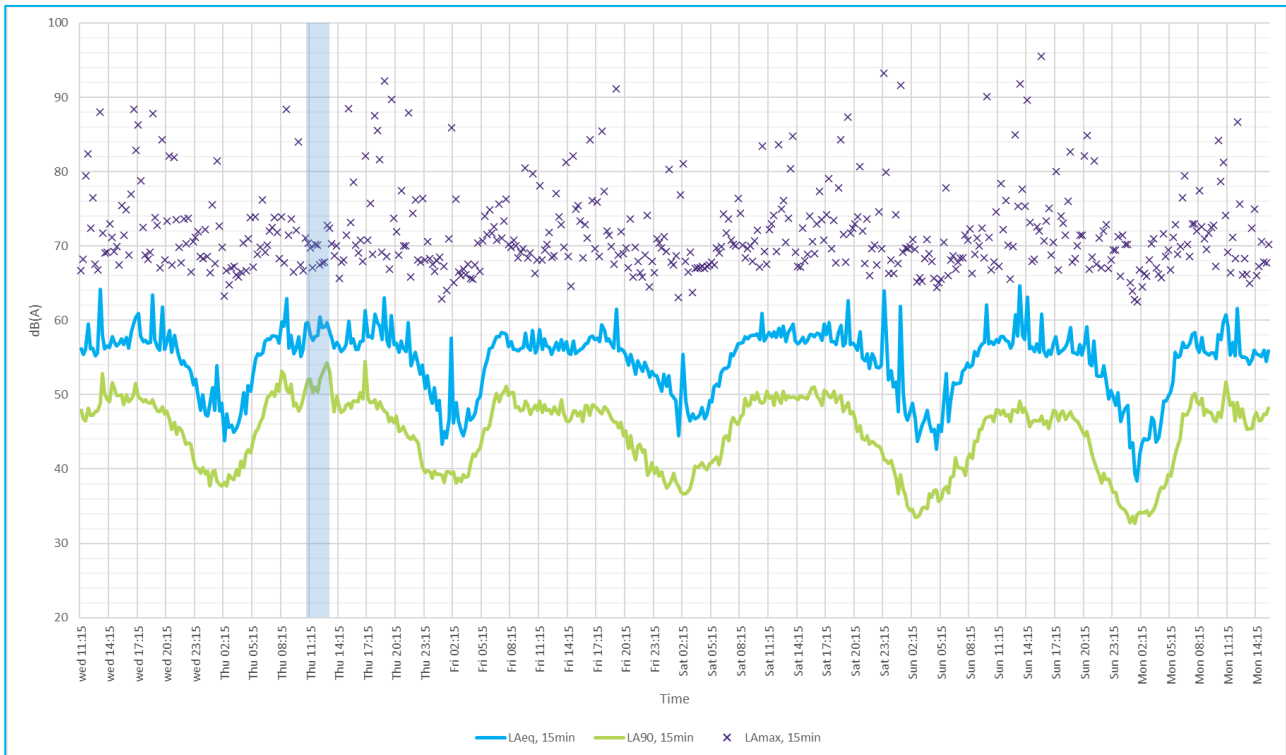


Figure 4: Measured Environmental Sound Levels: LT1 (free-field)

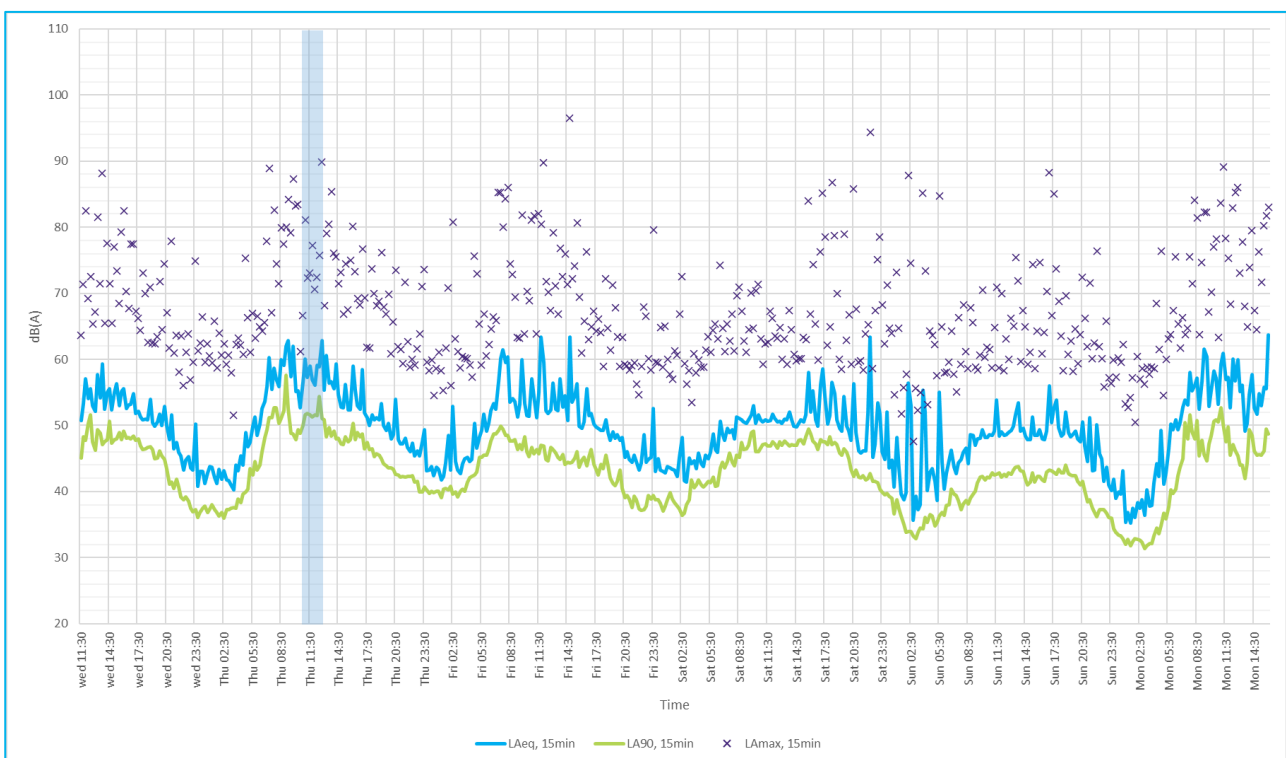


Figure 5: Measured Environmental Sound Levels: LT2 (façade level)

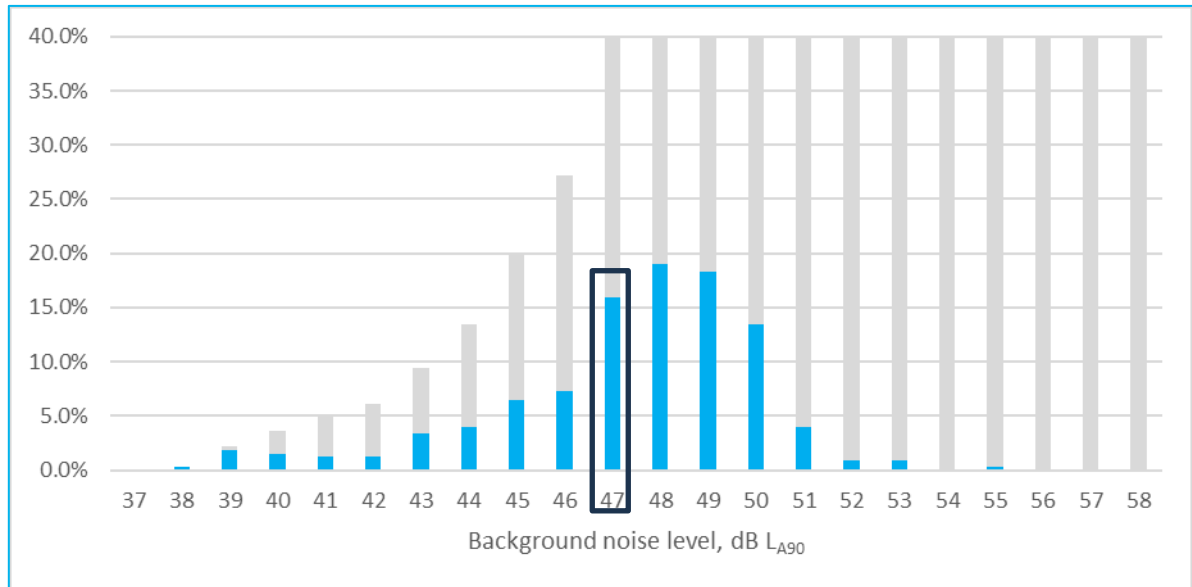


Figure 6: Statistical distribution of daytime background sound levels – LT1

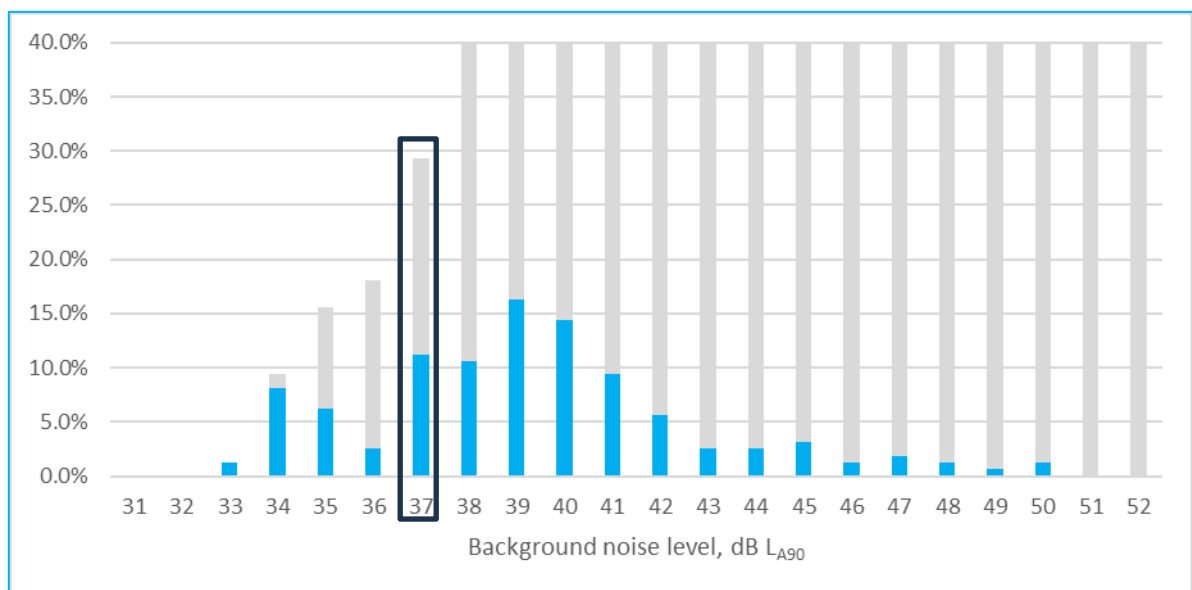


Figure 7: Statistical distribution of night-time background sound levels – LT1

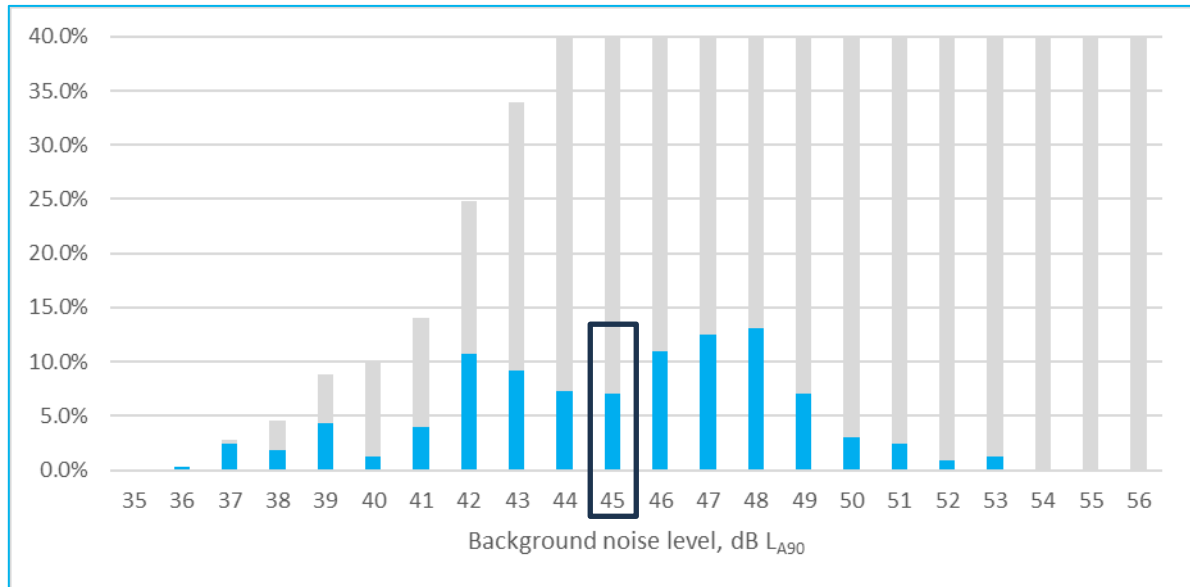


Figure 8: Statistical distribution of daytime background sound levels – LT2

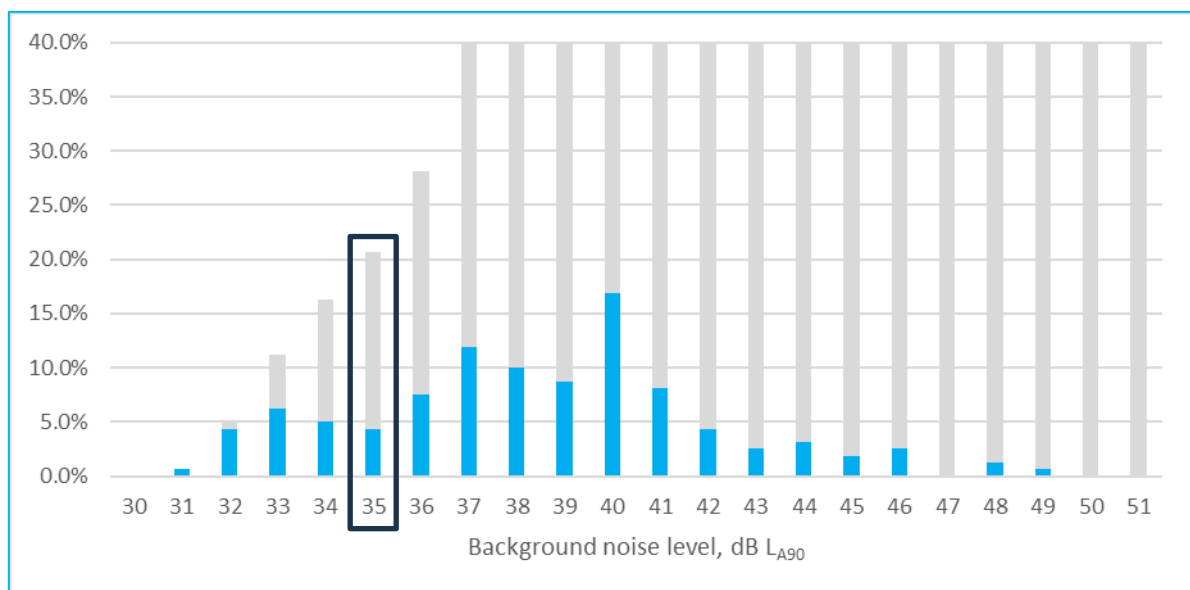


Figure 9: Statistical distribution of night-time background sound levels – LT2

Table 3 indicates that the sound levels measured at LT1 and LT2 were similar. For reference, a survey by Clarke Saunders in 2019 for a previous planning application at the site also found a similar level of 46 dB LA90 during the day and a marginally higher level of 38 dB LA90 at night, at the position 'CS 2019' on Figure 3.

The background sound levels measured at LT2 were slightly lower than those measured at LT1, as it is screened from Bournemouth Road. Therefore the background sound levels measured at LT2 are considered to represent the rear of the flats to the south at '1-6 The Oaks' and LT1 to represent the other nearby receptors.

### 3.5 Observations

Ambient sound levels were observed to be controlled by road traffic on Bournemouth Road and School Lane. There are traffic lights at the junction and contribution between the two sources is cyclic. There is less traffic, but a higher proportion of heavy goods vehicles on School Lane. Occasional short term events, such as movement of fork-lifts and deliveries to site, were observed on the main Selwood site.

There are five existing condenser units on the south façade of the existing office building, however the building was empty at the time of the survey and these were not in use.



Figure 10: Existing plant on south façade (not in use at time of survey)



## 4 Plant Noise Assessment

### 4.1 Target Noise Levels

The target plant rating level is 5 dB below the existing background sound level, except where background sound levels are particularly low. The proposed plant sound level limits, when assessed according to the methodology in BS 4142: 2014, are therefore as shown in the table below. Note the background sound levels at position LT2 have been corrected to equivalent free-field levels by subtracting 3dB as they were measured at approximately 2m from the façade/wall.

| Receptor                         | Representative background sound levels, dB L <sub>A90</sub> |                          | Sound Rating Level, dB L <sub>Ar, Tr</sub> (free-field equivalent) |                          |
|----------------------------------|-------------------------------------------------------------|--------------------------|--------------------------------------------------------------------|--------------------------|
|                                  | Daytime (07:00-23:00)                                       | Night-time (23:00-07:00) | Daytime (07:00-23:00)                                              | Night-time (23:00-07:00) |
| Rear of properties to the south  | 42                                                          | 32                       | 37                                                                 | 32*                      |
| All other residential properties | 47                                                          | 37                       | 42                                                                 | 32                       |

Table 4: Proposed plant sound levels

\*Rating sound levels below approximately 35 dB L<sub>Aeq, T</sub> externally at noise sensitive properties may be considered unnecessarily low to provide adequate protection; taking the attenuation through a partially open window as approximately 13 dBA<sup>1</sup>, the internal sound level contribution from the plant would therefore be less than 15 dB L<sub>Aeq, 15 min</sub> to the south, which is very low and unlikely to be noticeable in context. By comparison this is more than 10 dB below the design guide criterion for bedrooms at night in the British Standard BS 8233:2014 'Guidance on Sound insulation and noise reduction for buildings'. A rating level equal to the background sound level is therefore proposed for this position at night.

The rating level should include sound from all plant associated with the proposed development and should also include any corrections for acoustic characteristics, such as tonality and intermittency according to the descriptions in BS 4142: 2014.

### 4.2 Context of the Proposed Plant

The context of the proposed plant is that it is replacing existing plant in an area characterised as mixed use industrial and residential.

### 4.3 Acoustic Character Corrections

Third-octave frequency band data was not available for any of the proposed plant items assessed, therefore it is not possible to do an objective assessment of tonality of the noise; however, from a

<sup>1</sup>Acoustics, Ventilation and Overheating, Residential Design Guide (2020 Version 1.1) suggests 13 dB in Appendix C.



subjective assessment it is considered that this type of noise source normally has a slightly tonal character, thus, a +2 dB correction to the rating level will be applied.

It is considered appropriate to not apply any additional correction related to intermittency or impulsivity of the source.

## 4.4 Noise Source Data

Manufacturers data for the selected noise sources is provided in Appendix 3. A summary of the sound power levels used in this assessment is shown below in Table 5.

| Model     | dBA | Octave Band Sound Power Data |        |        |        |         |         |         |         |
|-----------|-----|------------------------------|--------|--------|--------|---------|---------|---------|---------|
|           |     | 63 Hz                        | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | 8000 Hz |
| EWTY050CZ | 81  | 94**                         | 89**   | 80**   | 76**   | 73**    | 72**    | 71**    | 65**    |
| RZAG60A   | 64  | 68*                          | 68     | 64     | 63     | 59      | 52      | 47      | 41      |
| REYA10A   | 79  | 80*                          | 80     | 78     | 78     | 72      | 68      | 67      | 60      |
| REYA12A   | 83  | 84*                          | 84     | 83     | 82     | 77      | 72      | 72      | 64      |
| REYA14A   | 79  | 78*                          | 78     | 77     | 78     | 72      | 70      | 67      | 64      |
| REYA16A   | 84  | 84*                          | 84     | 82     | 84     | 77      | 73      | 71      | 67      |
| REYA20A   | 88  | 87*                          | 87     | 87     | 87     | 82      | 77      | 76      | 67      |

\*63 Hz band data not provided by manufacturer. It was assumed similar to 125Hz value.

\*\*Spectrum shape obtained from sound pressure levels at 1m and raised to match the overall sound power level.

Table 5: Plant sound power levels from manufacturers data

## 4.5 Predicted Noise Levels

Using the software IMMI 2024 a digital model of the site with its immediate context was generated to predict incident sound pressure levels at the indicated nearest sensitive receptors. The model includes topography and façade reflections. RZAG60A units were placed on the façade of the building at a 0.8 m height, and with a directivity pattern perpendicular to the façade. As a mitigation measure a 3 m high acoustic barrier was included around the ASHP and VRV units, which were modelled at a 1.7 m height above ground level based on manufacturer's data. The acoustic barrier is considered with a 'class A' absorptive material finish at the interior face of the enclosure. As reference, an example of suitable acoustic barriers is provided in Appendix 4 of this report. The mitigation scheme is illustrated in Figure 11.

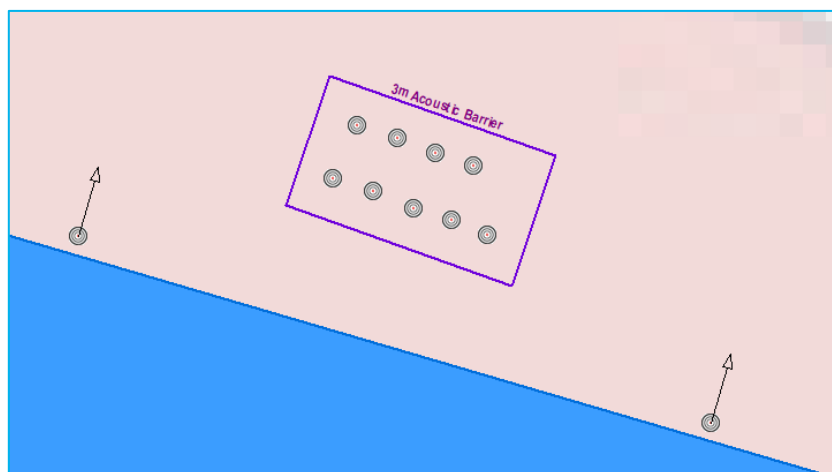


Figure 11: Sound source and mitigation setup for digital model

The corresponding predicted noise levels at the NSR positions are shown below in Figure 7 for daytime levels, and Table 7 for night-time periods.

| Daytime              | The Oaks        | 2 Chalvington Rd | 1 Chalvington Rd | 22 Bournemouth Rd |
|----------------------|-----------------|------------------|------------------|-------------------|
| Predicted level      | 26              | 29               | 40               | 38                |
| Penalty              | 2               | 2                | 2                | 2                 |
| Rating level         | 28              | 31               | 42               | 40                |
| Background level     | 42              | 47               | 47               | 47                |
| Target noise level   | 37              | 42               | 42               | 42                |
| Difference to target | -9              | -11              | 0                | -2                |
| Assessment           | Meets Criterion | Meets Criterion  | Meets Criterion  | Meets Criterion   |

Table 6: Predicted plant noise levels at NSR positions - Daytime

| Night                | The Oaks        | 2 Chalvington Rd | 1 Chalvington Rd | 22 Bournemouth Rd |
|----------------------|-----------------|------------------|------------------|-------------------|
| Predicted level      | -11             | 7                | 21               | 21                |
| Penalty              | 2               | 2                | 2                | 2                 |
| Rating level         | -9              | 9                | 23               | 23                |
| Background level     | 32              | 37               | 37               | 37                |
| Target noise level   | 32              | 32               | 32               | 32                |
| Difference to target | -43             | -25              | -11              | -11               |
| Assessment           | Meets Criterion | Meets Criterion  | Meets Criterion  | Meets Criterion   |

Table 7: Predicted plant noise levels at NSR positions – Night-time

From Figure 7, and Table 7 it is predicted that the plant noise level limits are met at all noise sensitive receptors during both daytime and night-time periods.



## 5 Uncertainty

### 5.1 Ambient and Background Sound Level Measurements

Background sound levels will vary with time, however typical levels have been identified from five days of sound monitoring during periods in which the background sound climate was considered to be normal for the area (i.e. no construction work, maintenance work or road closures nearby) to reduce uncertainty.

Calibrated Class 1 sound level meters have been used to reduce the uncertainty of accuracy and increase the repeatability of the ambient and background sound level measurements.

### 5.2 Predicted Sound Levels

An area of uncertainty is the attenuation effect of the perimeter barrier surrounding the plant items. Such attenuation was calculated based on recognised calculation software, and it is considered that the uncertainty provided by it is low.

The calculations use manufacturers' noise data, adds uncertainty to the predicted sound levels, but it is considered that the uncertainty is low.

### 5.3 Effect of Uncertainty

The effects of uncertainty have been minimised as far as possible, but it is still possible that the noise assessment has under- or over-predicted the noise impact of the proposed plant. However, on balance, it is considered that the impact of uncertainty is likely to be low.



## 6 Conclusion

Sustainable Acoustics Ltd has undertaken a Baseline Plant Noise Assessment for the proposed development at Workdry International, Bournemouth Rd, Chandler's Ford.

An environmental sound measurement survey was carried out between approximately 11:15 hrs on Wednesday 11<sup>th</sup> June and 15:45 hrs on Monday 16<sup>th</sup> June 2025 to determine the existing background sound level at nearby noise sensitive receptors during the daytime and night-time.

As selection of the plant items has yet to be finalised, plant noise limits have been set. Using the Eastleigh Borough Council normal requirements, target plant rating sound levels have been recommended at Table 4 of this report for at the nearest noise sensitive receptors.

The ventilation design includes appropriate mitigation with the implementation acoustic barriers that allow predicted rating levels at the nearest properties to be 5 dBA below the existing background sound level, considering noise sources operating at their maximum sound power level.

Thus, the predicted noise levels are assessed to have a low impact at the noise receptor positions, and to meet the planning requirements on noise grounds.



## Appendix 1 Attended Measurements



| Address | Date     | Start Time | Duration | Comments and observations                                                                                                                                                                                                                                                                                                                            | Measured Levels, dB |                      |                  |                  |                  |
|---------|----------|------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------------------|------------------|------------------|------------------|
|         |          |            |          |                                                                                                                                                                                                                                                                                                                                                      | L <sub>Aeq</sub>    | L <sub>Amax, f</sub> | L <sub>A90</sub> | L <sub>A10</sub> | L <sub>A50</sub> |
| ST1     | 11/06/25 | 12:24      | 15min    | Background dominated by traffic. Few pedestrians. Occasional distant alarm sound. 12:29 - Car horn and people yelling.<br>Traffic count School Lane (10 min): HGV 7, Cars/Vans 57, PSV 0, Motorbikes 1                                                                                                                                               | 61                  | 81                   | 53               | 64               | 59               |
| ST1     | 11/06/25 | 13:18      | 15min    | Background dominated by traffic. Engine at carpark running. 13:25 - Motorbike event. 13:26 - Firetruck horn and siren event. Occasional bird noise.                                                                                                                                                                                                  | 69                  | 92                   | 52               | 64               | 58               |
| ST1     | 16/06/25 | 15:33      | 15min    | Traffic noise from Bournemouth Roa and School Lane in background. Seven cars leave Selwood car park. 1 Lorry enters site.<br>Traffic count School Lane (10 min): HGV 2, LGV 1, Cars/Vans 76, PSV 0, Motorbikes 1                                                                                                                                     | 60                  | 70                   | 54               | 63               | 59               |
| ST2     | 11/06/25 | 12:04      | 15min    | Traffic noise highly dominant, mostly engines standing and revving at traffic light. Few pedestrians. Birds noise barely audible. 12:19 - Car close to microphone leaving carpark.<br>Traffic count Bournemouth Road (10 min): HGV 3, Cars/Vans 97, PSV 1                                                                                            | 58                  | 76                   | 51               | 61               | 57               |
| ST2     | 11/06/25 | 13:00      | 15min    | Traffic noise dominant, mostly car engines. Some conversation noise from pedestrians. Gardening equipment audible from neighbouring properties.                                                                                                                                                                                                      | 58                  | 71                   | 50               | 61               | 56               |
| ST2     | 16/06/25 | 15:14      | 15min    | Traffic noise from Bournemouth Road in background. Two cars parking up (paused out of Survey), Child shouts 77dBA.<br>Traffic count Bournemouth Road (10 min): HGV 8, LGV 3, Cars/Vans 147, PSV 3, Motorbikes 1                                                                                                                                      | 57                  | 79                   | 49               | 60               | 56               |
| ST3     | 11/06/25 | 11:46      | 15min    | Background dominated by traffic noise from Bournemouth Road. Still audible but quieter traffic noise from School Lane. Occasionally some distant metal cutting noise from west. Occasional aircraft noise. Natural and recorded birds noise. Periodic reverse beeping noise from forklift work. 11:57 - Car with loud music on Bournemouth Rd event. | 48                  | 59                   | 45               | 51               | 48               |
| ST3     | 11/06/25 | 12:42      | 15min    | Background dominated by traffic noise from Bournemouth Road. Audible but quieter traffic noise from School Lane. Some conversation noise from smoking area. Periodic reverse beeping, and natural and recorded birds noise.                                                                                                                          | 52                  | 66                   | 49               | 54               | 51               |
| ST3     | 11/06/25 | 13:37      | 15min    | Traffic noise from Bournemouth Roa and School Lane in background. Car engine at carpark. Some conversation noise from smoking area. Periodic reverse beeping, and natural and recorded birds noise. Heavy materials being moved around. 13:41 - Lorry drives in (63dB approx.). 13:51 - Second lorry with music on.                                  | 53                  | 77                   | 48               | 53               | 50               |
| ST3     | 16/06/25 | 14:57      | 15min    | Background dominated by traffic. Trolley 61dBA, Van enters 55dBA, Conversation in yard approx. 50-60dBA for 3-4mins, Conversation and vehicle door closures, Lorry enters 60 dBA, Door close.                                                                                                                                                        | 51                  | 69                   | 47               | 54               | 50               |



## Appendix 2 Acoustic Terminology



## Environmental Noise

Environmental noise is normally described in terms of the single figure A-weighted sound pressure level, in decibels (dB). The A-weighting corresponds to the frequency sensitivity of the ear and, therefore, provides an approximation to the subjective response to sound at different frequencies. When a sound level is expressed in this way, the units can be denoted dB(A).

When sound is time varying, it is convenient to express the sound level using an indicator, or descriptor that takes account of this variation. Two types of indicator are in common use, the equivalent continuous sound level and the statistical indicators.

### Equivalent continuous sound level

$L_{Aeq, T}$ : This indicator provides the overall noise exposure to time varying sound and is the energy average of the sound over a specified time period. It is the notional steady level that would, over a given period of time, deliver the same sound energy as the actual fluctuating sound over the same period. It is denoted  $L_{eq, T}$ , or, if A-weighted,  $L_{Aeq, T}$ , where T is the time period of interest.

### Statistical indicators

The statistical indicators are also single figure descriptors, but provide additional information on the temporal variation of the noise level with time. The indicators are expressed as the sound level exceeded for a specified percentage of the time period of interest and the most commonly used are described below:

- $L_{A90, T}$ : the A-weighted noise level exceeded for 90% of the time period T. This indicator is representative of the noise level occurring in the absence of short-term events and is used in the UK to represent the background noise level.
- $L_{Amax, T}$ : the maximum A-weighted noise level that occurred during the time period T. It usually includes an additional subscript, slow (s) or fast (f), i.e.  $L_{Amax, slow, T}$  or  $L_{Amax, fast, T}$  which denotes the response time used in the analysis algorithm. The fast response tracks the maximum level of a rapidly changing sound more accurately than the slow response and the value is generally higher for impulsive or transient sounds.

## Definition of terms used in BS 4142

### Specific sound source

The sound source under investigation for assessing the likelihood of complaints.

### Reference time interval, $T_r$

The specified interval over which an equivalent continuous A-weighted sound pressure level is determined. This is 1 hour during the day from 07:00 to 23:00 and 15 min from 23:00 to 07:00.



**Specific sound level,  $L_s = L_{Aeq, Tr}$**

The equivalent continuous A-weighted sound pressure level at the assessment position produced by the specific sound source over a given reference time interval.

**Measurement time interval,  $T_m$**

The total time over which measurements are taken.

**Rating level,  $L_{Ar, Tr}$**

The Specific sound level plus any adjustment for the characteristic features of the sound.

**Ambient sound level  $L_a = L_{Aeq, T}$**

Totally encompassing sound in a given situation at a given time usually composed of sound from many sources near and far, at the assessment location over a given time interval, T.

**Residual sound**

The ambient sound remaining at the assessment location when the specific sound source is suppressed to a degree such that it does not contribute to the ambient sound.

**Residual sound level,  $L_r = L_{Aeq, Tr}$**

The equivalent continuous A-weighted sound pressure level of the residual sound, at the assessment location over a given time interval, T.

**Background sound level,  $L_{A90, T}$**

The A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using time weighting, F, and quoted to the nearest whole number of decibels.



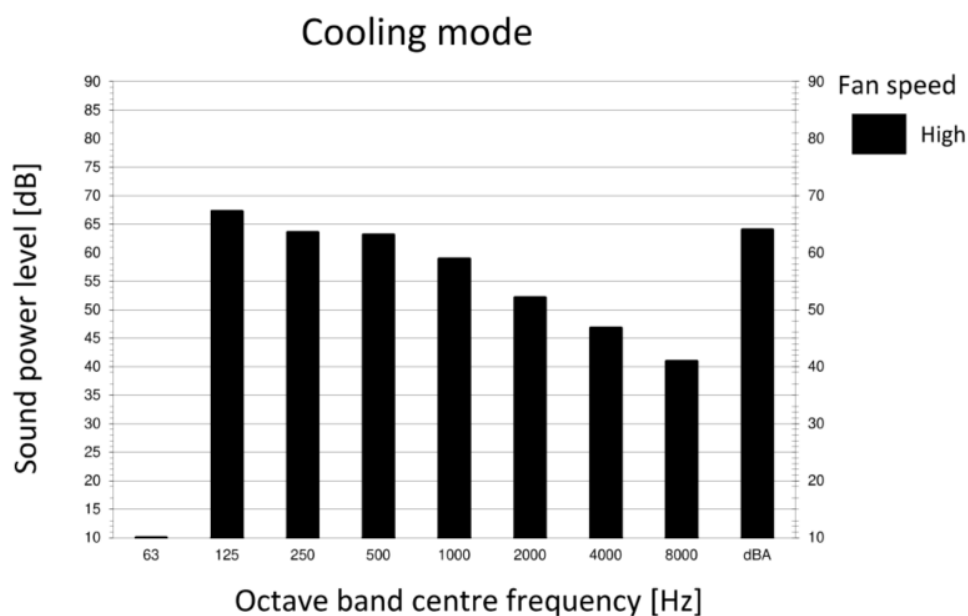
## Appendix 3 Manufacturer Info Sheets



## 10 Sound data

### 10 - 1 Sound Power Spectrum

RZAG60A



#### Notes

1. dBA = A-weighted sound power level (A scale according to IEC).
2. Reference acoustic pressure 0 dB = 20 µPa
3. Measured according to ISO 3744

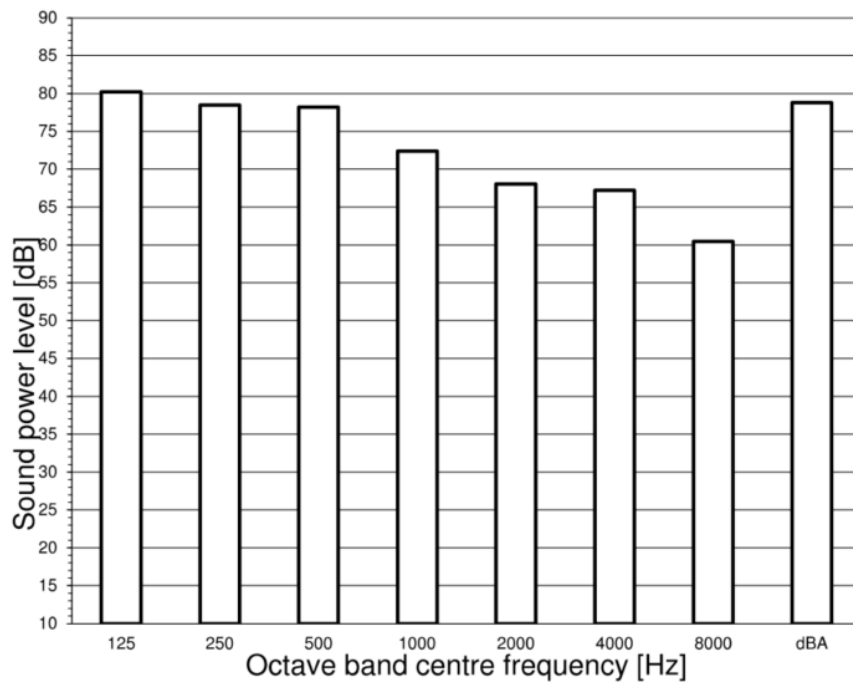
3D120196

### EWA(Y)T~CZ – Octave Band

| MODEL             | Sound pressure level at 1 m from the unit |        |        |        |         |         |         |         |       | Sound Power |  |
|-------------------|-------------------------------------------|--------|--------|--------|---------|---------|---------|---------|-------|-------------|--|
|                   | 63 Hz                                     | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | 8000 Hz | db(A) | db (A)      |  |
| EWYT/EWAT016CZ-A1 | 68.1                                      | 63.0   | 58.0   | 54.9   | 55.5    | 50.8    | 49.0    | 42.3    | 59.6  | 76.0        |  |
| EWYT/EWAT021CZ-A1 | 71.2                                      | 65.5   | 58.7   | 55.4   | 53.7    | 51.5    | 49.0    | 42.9    | 59.6  | 76.0        |  |
| EWYT/EWAT025CZ-A1 | 74.3                                      | 69.9   | 60.9   | 56.8   | 54.5    | 53.5    | 51.1    | 44.8    | 61.6  | 78.0        |  |
| EWYT/EWAT032CZ-A1 | 68.5                                      | 62.6   | 59.5   | 58.2   | 57.9    | 55.0    | 49.1    | 33.8    | 62.2  | 79.0        |  |
| EWYT/EWAT040CZ-A1 | 68.6                                      | 62.7   | 59.7   | 58.8   | 59.5    | 55.9    | 49.2    | 33.8    | 63.2  | 80.0        |  |
| EWYT/EWAT040CZ-A2 | 74.3                                      | 68.5   | 61.8   | 58.5   | 56.9    | 54.6    | 52.1    | 45.9    | 62.8  | 80.0        |  |
| EWYT/EWAT050CZ-A2 | 77.1                                      | 72.0   | 63.4   | 59.0   | 56.3    | 55.1    | 53.6    | 47.8    | 63.8  | 81.0        |  |
| EWYT/EWAT064CZ-A2 | 75.0                                      | 70.8   | 64.9   | 61.3   | 58.9    | 58.6    | 52.4    | 46.2    | 65.4  | 83.0        |  |
| EWYT/EWAT090CZ-A2 | 75.2                                      | 71.3   | 65.7   | 62.6   | 60.6    | 61.3    | 52.7    | 46.2    | 67.0  | 85.0        |  |



REYA10A

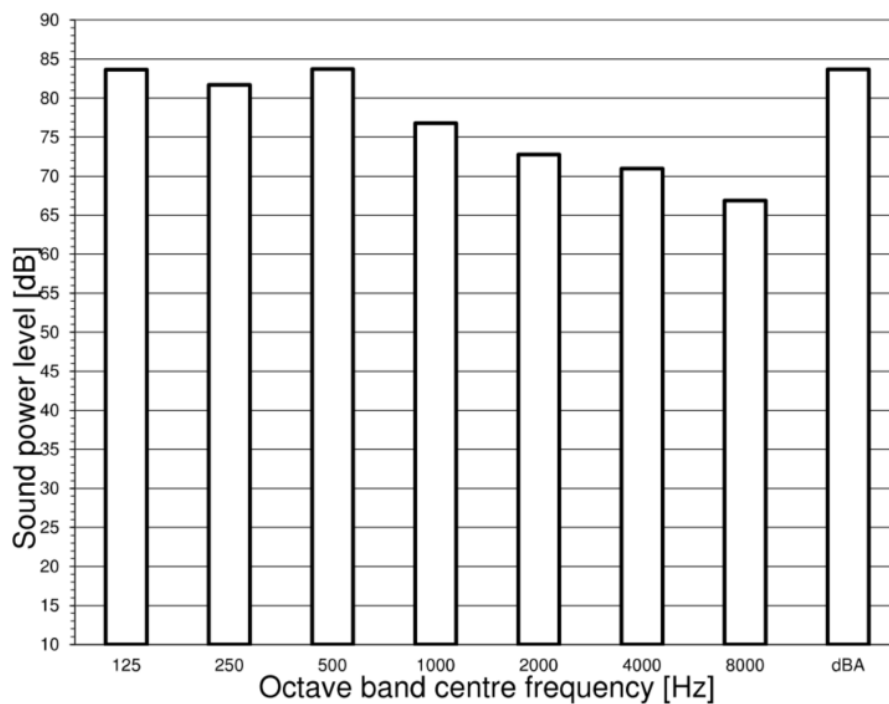


Notes

- dBA = A-weighted sound power level (A scale according to IEC).
- Reference acoustic intensity  $0\text{dB} = 10^{-12} \text{ W}$ .
- Measured according to ISO 3744

3D141170

REYA16A



Notes

- dBA = A-weighted sound power level (A scale according to IEC).
- Reference acoustic intensity  $0\text{dB} = 10^{-12} \text{ W}$ .
- Measured according to ISO 3744

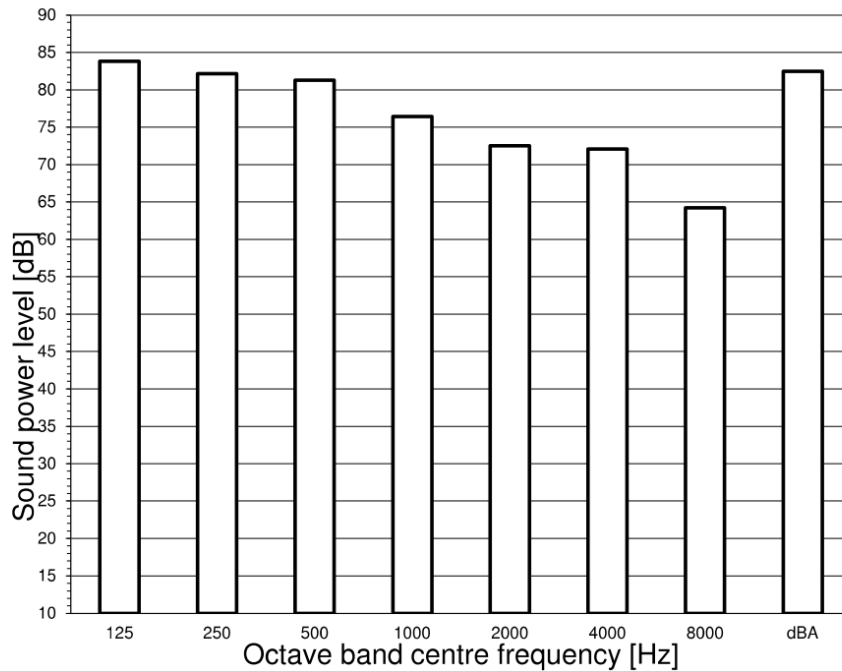
3D141173



## 11 Sound data

### 11 - 1 Sound Power Spectrum - Cooling

REYA12A

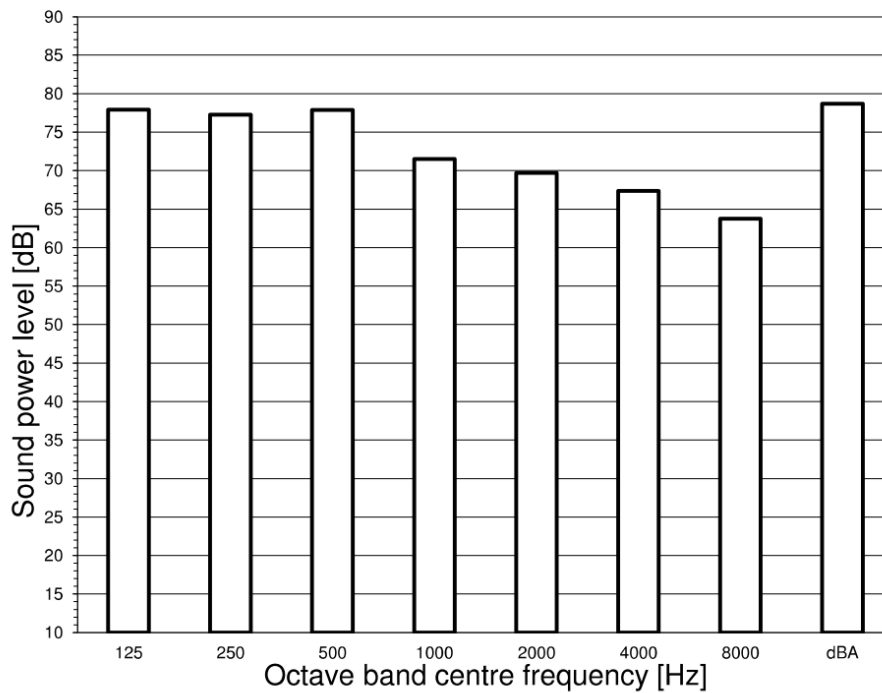


#### Notes

- dBA = A-weighted sound power level (A scale according to IEC).
- Reference acoustic intensity 0dB =  $10^{-12}$  W.
- Measured according to ISO 3744

3D141171

REYA14A



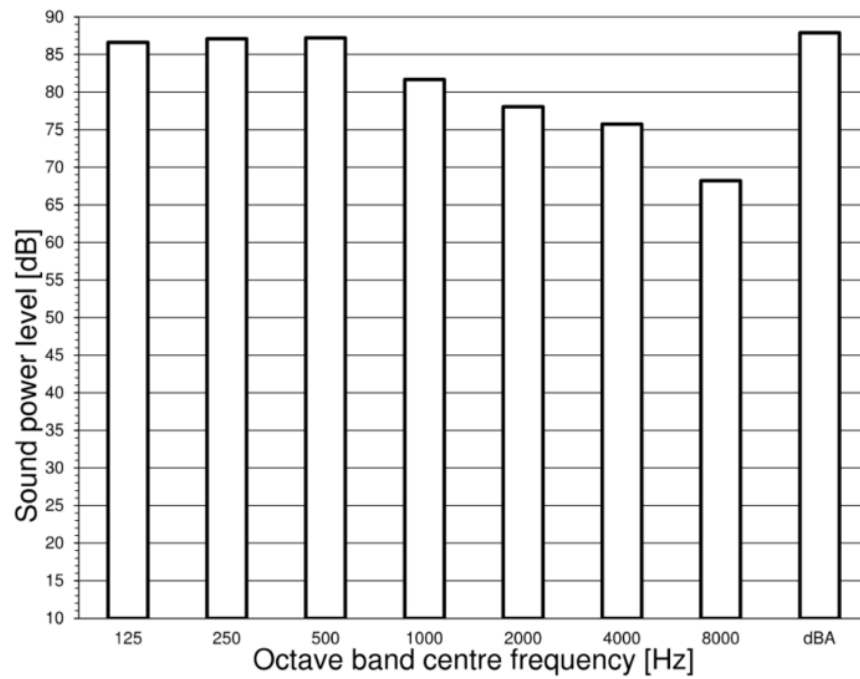
#### Notes

- dBA = A-weighted sound power level (A scale according to IEC).
- Reference acoustic intensity 0dB =  $10^{-12}$  W.
- Measured according to ISO 3744

3D141172



REYA20A



Notes

- dBA = A-weighted sound power level (A scale according to IEC).
- Reference acoustic intensity 0dB =  $10^{-12}$  W.
- Measured according to ISO 3744

3D141175



## Appendix 4 Acoustic Barrier Example



## GRAMM BARRIER SYSTEMS SOUNDBLOK RANGE

### NATURAL SoundBlok® ABSORPTIVE

Tried, Tested, Trusted



Gramm offer a full range of acoustic barriers to safeguard and protect a whole range of property and sites from noise as well as providing the security you need. Whether your requirement is to keep sound in or out of your premises, we have the right noise barriers and acoustic fencing to provide the solution.

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info@grammbarriers.com    grammbarriers.com

Cross section detail

| Class                                                                                               | Acoustic Performance                                                                                                                                                                      | Design Life                           | Replacement Design Life<br>Based on 120 years    |
|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|--------------------------------------------------|
| A4<br>B3                                                                                            | D1a 12 dB<br>D1a 35 dB                                                                                                                                                                    | 30 years - Panels<br>60 years - Posts | 3<br>1                                           |
| Foundation Type                                                                                     | Fixing Method / Post Type                                                                                                                                                                 | Fixings                               | Maintenance                                      |
| 1) Shallow concrete pad footing set at 3.0m centres.<br>2) Augered foundations set at 3.0m centres. | 1) Galvanised steel or PPC posts with baseplates fixed to concrete pad footings using chemfix resin anchors/studs.<br>2) Steel RSJ posts set into augered foundations using ST5 concrete. | Stainless Steel                       | Zero Maintenance.<br>Yearly inspection required. |

**Gramm Barrier Systems Ltd noise barrier & fencing specialist.**

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