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## **NOISE IMPACT ASSESSMENT REPORT - LAUNDERETTE VENTILATION FLUE**

**4 ECHO SQUARE, GRAVESEND DA12 1NP**

**FOR**

**GO TO – SERVICES LTD**



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## 1. EXECUTIVE SUMMARY

The Client intends to seek planning approval for a change of use to a launderette (Sui Generis Usage) as a result of which it is proposed to install a ventilation flue to service the premises at 4 Echo Square, Gravesend DA12 1NP.

Sound Licensing has undertaken an environmental noise survey at the site in order to determine prevailing background noise levels that are representative of the nearest noise sensitive properties, which have been identified as the first-floor residential premises directly above the site at 4 Echo Square, DA12.

The results of the noise survey are considered reasonable given the location of the measurement position and the existing noise sources in the local vicinity.

Noise calculations of the mechanical plant have been undertaken using all available details and plans provided by the client and obtaining manufacturers' specifications wherever possible. The data and information form the basis of the assessment.

Noise break-out limits for the mechanical plant have been proposed based on the methodologies of British Standard (BS) 4142:2014+A1:2019 and in accordance to Local Authority policy. A robust, worst-case assessment of the noise levels associated to the proposed mechanical plant has been undertaken.

In accordance with BS 4142:2014+A1:2019 guidance, the predicted noise impact due to the operation of the mechanical plant ***"is an indication of the specific sound source having a low impact"***. The predicted noise level of the mechanical plant at the nearest noise sensitive properties is considered to comply with the Gravesham Borough Council's policy.

## 2. INTRODUCTION

The client is proposing to install a new ventilation flue at the rear of 4 Echo Square, Gravesend DA12 1NP, the noise from which could have the potential to affect existing noise sensitive properties nearby.

The purposes of this report are:

- To determine prevailing environmental noise levels affecting surrounding properties due to nearby noise sources (e.g. road traffic, aircraft etc);
- Based on the above, to present noise emission limits in accordance with the requirements of BS 4142:2014+A1:2019 and Local Authority policy, and
- To undertake an assessment to demonstrate compliance with the Local Authority noise requirements.

### 3. SITE DESCRIPTION

Planning permission is being sought for the change of use to a launderette (Sui Generis Usage) at 4 Echo Square, Gravesend DA12 1NP (hereafter referred to as 'the site'). The property is a traditionally built three-storey terraced building in Gravesend. It is located in a mixed area comprising predominantly of commercial units at ground floor level with residential accommodation on the floors above.

The nearest sensitive residential receptors were noted to be the first-floor windows located on the rear façade of 4 Echo Square at an approximate distance of 3m from the ventilation flue terminus.

The nearest sensitive receptors are identified in figure 3.1. If the noise impact assessment details that there is an indication of the specific sound source having a low impact at these premises then it can be safely assumed it will be met at other properties of equal distance and/or those further away.

Figure 3.1 shows the site highlighted in **blue** with the nearest noise sensitive premises highlighted in **red**.

**Figure 3.1 Site Location and Surrounding Land Use**



Source: Google Maps

#### 4. ENVIRONMENTAL NOISE SURVEY METHODOLOGY

An unmanned environmental noise survey was undertaken at a single measurement location at first floor level to the rear of the site. The survey was undertaken between 12:00 hours on the 21<sup>st</sup> January and 15:00 hours on the 23<sup>rd</sup> January 2025. A survey at this time covers the most sensitive period of time in which the mechanical plant system may be operational.

Ambient, background and maximum noise levels ( $L_{Aeq}$ ,  $L_{A90}$  and  $L_{Amax}$  respectively) were measured throughout the noise survey in continuous 15-minute periods. The approximate measurement position is indicated in orange on Figure 4.1 below.

**Figure 4.1** Site Plan Showing Approximate Location of Measurement Position



Source: Google Maps

The sound level meter microphone was positioned on a tripod at a height of 1.5 metres, 1 metre from the side façade of the building at first floor level. The position is not considered to be in free-field and therefore a -3dB façade correction will be applied. The monitoring position is considered representative of background noise levels at the nearest identified noise sensitive properties. The monitoring position was chosen for equipment security reasons also.

The equipment used for the noise survey is summarised in Table 4.1.

**Table 4.1 Description of Equipment used for Noise Survey**

| Equipment                     | Description                                | Quantity | Serial Number |
|-------------------------------|--------------------------------------------|----------|---------------|
| Larson Davis Sound Expert LxT | Type 1 automated logging sound level meter | 1        | 0003814       |
| Larson Davis 377B02           | ½" microphone                              | 1        | 142503        |
| Larson Davis                  | Pre-amplifier                              | 1        | 028032        |
| Larson Davis CAL200           | Class 1 Calibrator                         | 1        | 12245         |

The noise survey and measurements were conducted in accordance with BS7445-1:2003 '*Description and measurement of environmental noise. Guide to quantities and procedures*'.

Weather conditions throughout the entire noise survey period were noted to be cold (approx. -1 - 8° Celsius), broken clouds (30 to 70% cloud cover approximately) with a light wind (<5m/s). These weather conditions were checked against and confirmed by the use of the Met Office mobile application available on smart phone technology. These conditions were maintained throughout the majority of the survey period and are considered reasonable for undertaking environmental noise measurements.

The noise monitoring equipment was field calibrated before and after the noise survey period. No significant drift was recorded ( $\pm 0.3$  dB). Equipment calibration certificates can be provided upon request.

## 5. NOISE SURVEY RESULTS AND OBSERVATIONS

### 5.1 Results

A summary of the measured ambient and typical background noise levels during the proposed operational hours are shown in Table 5.1 below (full monitoring data can be found in Appendix C).

**Table 5.1 Measured Ambient and Typical Background Sound Pressure Levels**

| Date / Period (hours)      | Ambient Sound Pressure Level, dB $L_{Aeq,1hour}^*$ | Typical Background Sound Pressure Level, dB $L_{A90,1hour}^*$ |
|----------------------------|----------------------------------------------------|---------------------------------------------------------------|
| 21/01/2025(12:00 to 18:30) | <b>48-54</b>                                       | <b>42</b>                                                     |
| 22/01/2025(09:00 to 18:30) | <b>47-50</b>                                       | <b>42</b>                                                     |
| 23/01/2025(09:00 to 15:00) | <b>50-56</b>                                       | <b>47</b>                                                     |

\*Façade correction -3dB

The typical background noise level at the measurement position during the survey, at the time in which the plant could be operational, is **42dB**  $L_{A90,1hour}$ .

### 5.2 Observations

Given that the noise survey was unmanned, noise sources could not be identified. However, at the beginning and end of the survey background noise was dominated by noise from the vehicles on the local road network and nearby existing mechanical plant. After analysis of the data no significant abnormal noise source(s) were identifiable. It is considered that the measured noise levels are reasonable given the location of the measurement position.

## 6. EXTERNAL NOISE EMISSION LIMITS

### 6.1 Local Authority Requirements

The site lies within the jurisdiction of the Local Authority, Gravesham Borough Council. In previous applications the Environmental Health department have requested that the assessment be completed in accordance with BS4142:2014+A1:2019 and that it should demonstrate that the operating noise level of the plant will be at a minimum of 10dB(A) below the assessed typical background noise level,  $L_{A90,T}$ .

For the purposes of this report, an assessment has been undertaken in line with BS 4142:2014+A1:2019. A design criterion of achieving a minimum 10dB(A) below the background noise level has been adopted in line with the Local Authorities policy. Taking the noise monitoring data in Section 5 and Local Authority requirements above, the following design target has been adopted for mechanical plant as provided in Table 6.1.

**Table 6.1 Maximum Noise Emission Design Target at Residential Premises**

| Date / Period (hours)      | Typical Background Sound Pressure Level, dB $L_{A90,1hour}$ * | Rating Noise Level at Nearest Residential Facade, dB $L_{Ar,T}$ |
|----------------------------|---------------------------------------------------------------|-----------------------------------------------------------------|
| 21/01/2025(12:00 to 18:30) | 42                                                            | 32                                                              |
| 22/01/2025(09:00 to 18:30) | 42                                                            |                                                                 |
| 23/01/2025(09:00 to 15:00) | 47                                                            |                                                                 |

\* Façade correction -3dB

## 6.2 BS 4142:2014+A1:2019

BS 4142:2014+A1:2019 “Methods for rating and assessing industrial and commercial sound” presents a method for assessing the significance and possible adverse impact due to an industrial noise source, based on a comparison of the source noise levels and the background noise levels, both of which are measured or predicted at a noise sensitive receiver e.g. a residential property.

The specific noise level due to the source is determined, with a series of corrections for tonality, impulsivity, intermittency or other unusual characteristic. The rating level is then compared to the background noise level and the significance of the new noise source likelihood of any adverse impact is determined in accordance with the following advice:

*“The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occur. A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context. A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context. The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.”*

## 7. PROPOSED MECHANICAL PLANT AND ASSOCIATED NOISE LEVELS

It is proposed to install the following items of plant within the premises with a single ventilation flue to be installed externally at the rear of the premises.

**Table 7.0 Proposed Mechanical Plant**

| External Plant Item | Quantity | Make        | Model | Reference Noise Level* L <sub>p(A)</sub> |
|---------------------|----------|-------------|-------|------------------------------------------|
| Dryer               | 4        | Speed Queen | SUT30 | 63dB @ 1m                                |
| Dryer               | 2        | Speed Queen | SU055 | 59dB @ 1m                                |

\*Reference sound pressure levels. Manufacturer's specifications are provided in Appendix B.

The ducting will be 200mm standard spiral duct work. It is not proposed to install an inline fan motor, therefore only noise from the duct terminus has been considered.

In reference to section 6 of this report, a penalty addition (+3dB) has been applied for intermittency as the plant will be switched on & off as and when required. Penalty additions have not been applied for tonality as manufacturers' data shows no significant characteristics, or for impulsiveness as it is considered that these characteristics will not be perceptible sufficient to attract attention at the noise receptors. Penalty additions have not been applied for any other sound characteristics as mechanical plant of this type generally do not demonstrate such features.

The manufacturers were contacted and confirmed that there is no available spectral data for the proposed plant. However, it is considered unlikely that any tonality would be perceptible sufficient to attract attention due to the predicted low noise level and therefore no penalty has been applied for tonality.

### 7.1 Silencer

The ventilation system will be fitted with a CP01-M20-060 Elta silencer. The silencer provides the attenuation shown in Table 7.1. All silencers should be Melinex lined.

**Table 7.1 Silencer Attenuation**

| 63Hz | 125Hz | 250Hz | 500Hz | 1kHz | 2kHz | 4kHz | 8kHz |
|------|-------|-------|-------|------|------|------|------|
| 4    | 6     | 10    | 20    | 27   | 32   | 20   | 11   |

All silencers should be checked for suitability under the gas safety regulations before installation.

## 7.2 Directivity

A directivity correction should be applied as the extract fan duct aperture is to terminate approximately 90° to the nearest residential windows. A duct opening of 200mm has been used. The levels of attenuation (dB) at each octave frequency band (Hz) is provided in table 7.2 below.

**Table 7.2 Directivity Attenuation**

| 63Hz | 125Hz | 250Hz | 500Hz | 1kHz | 2kHz | 4kHz | 8kHz |
|------|-------|-------|-------|------|------|------|------|
| 0    | 0     | 0     | 4     | 7    | 12   | 14   | 17   |

All silencers should be checked for suitability under the gas safety regulations before installation.

## 7.3 Building Screening

Due to the positioning of the ventilation flue terminus, there will be significant building screening, due to the rear extension roofline, from the nearest residential properties so there will be no direct line of sight, therefore attenuation due to barrier loss has also been considered (calculations are provided in Appendix D).

Corrections have also been applied for the attenuation from duct bends (1)\* and length of the ductwork (10m)\*\*.

\* Reference: Improving Ductwork, EU project, Brussels 1999. Also same as CIBSE.

\*\* Reference data taken from CIBSE Guide B4 2016 b Ventilation Services Noise

## 8. NOISE IMPACT ASSESSMENT

This section presents calculations to predict the noise impact of the proposed launderette ventilation flue, located at the site, at the nearest noise sensitive properties.

### 8.1 Proposed Operational Hours and Background Noise Levels

The ventilation flue will operate as required during the opening hours of the proposed business. The opening hours are from 09:00 – 18:30 hours Tuesday to Friday, 08:30 – 18:00 Saturday, 10:00 – 16:00 Sunday and closed on Monday.

The typical background noise level at the measurement position during the survey is **42dB**  $L_{A90,1\text{hour}}$ . The design range is **32dB**  $L_{A,r,T}$  at the façade of the nearest residential premises.

### 8.2 Nearest Noise Sensitive Properties

The nearest sensitive residential receptors were noted to be the first-floor windows located on the rear façade of 4 Echo Square at an approximate distance of 3m from the extract terminus.

### 8.3 Description of Calculation Process

In accordance with the methodologies of BS 4142:2014+A1:2019, calculations have been undertaken to predict noise levels in which the ventilation flue could be operational at its maximum level. Given the distances between the noise sources and the noise sensitive receptors, point source calculations have been used.

### 8.4 Noise Level Predictions

Calculations to predict the noise of the ventilation flue operating at the facade of the residential property is given below. Full calculations are provided in Appendix D.

The rating noise level at the 1<sup>st</sup> floor window, with the mechanical plant operating, is predicted to be **29dB**  $L_{A,r,T}$  which is **13dB(A) below** the typical background noise level (42dB  $L_{A90,1\text{hour}}$ ).

In accordance with BS 4142:2014+A1:2019 guidance, noise from the mechanical plant ***“is an indication of the specific sound source having a low impact”***. *The lower the rating level is relative to the measured background level, the less likely it is that the specific sound source will have an adverse impact.*

### 8.5 Vibration

In addition to the control of airborne noise transfer, it is important to consider the transfer of noise as vibration to adjacent properties as well as any sensitive areas of the same building. Vibration from the system is not expected, however, as a precaution plant should wherever possible be installed on suitable type isolators.

### **Uncertainty**

The levels of uncertainty in the data and calculations are considered to be low/medium given the robust exercise undertaken in noise monitoring and the confidence in the data statistical analysis. Manufacturers' data for the plant is highly likely to be robust. Detailed calculations and resultant noise levels at the residential location are considered to be confidently predicted.

## **9. CONCLUSION**

Sound Licensing has undertaken an environmental noise survey at the site in order to determine prevailing background noise levels that are representative of the nearest noise sensitive properties. The operation of the ventilation flue, in accordance with BS 4142:2014+A1:2019 guidance, indicates to creating a low impact. All worst-case scenarios have been applied to the assessment. The predicted cumulative operating noise level of the ventilation flue is demonstrated to comply with the Gravesham Borough Council's policy.

## APPENDIX A – Acoustic Terminology

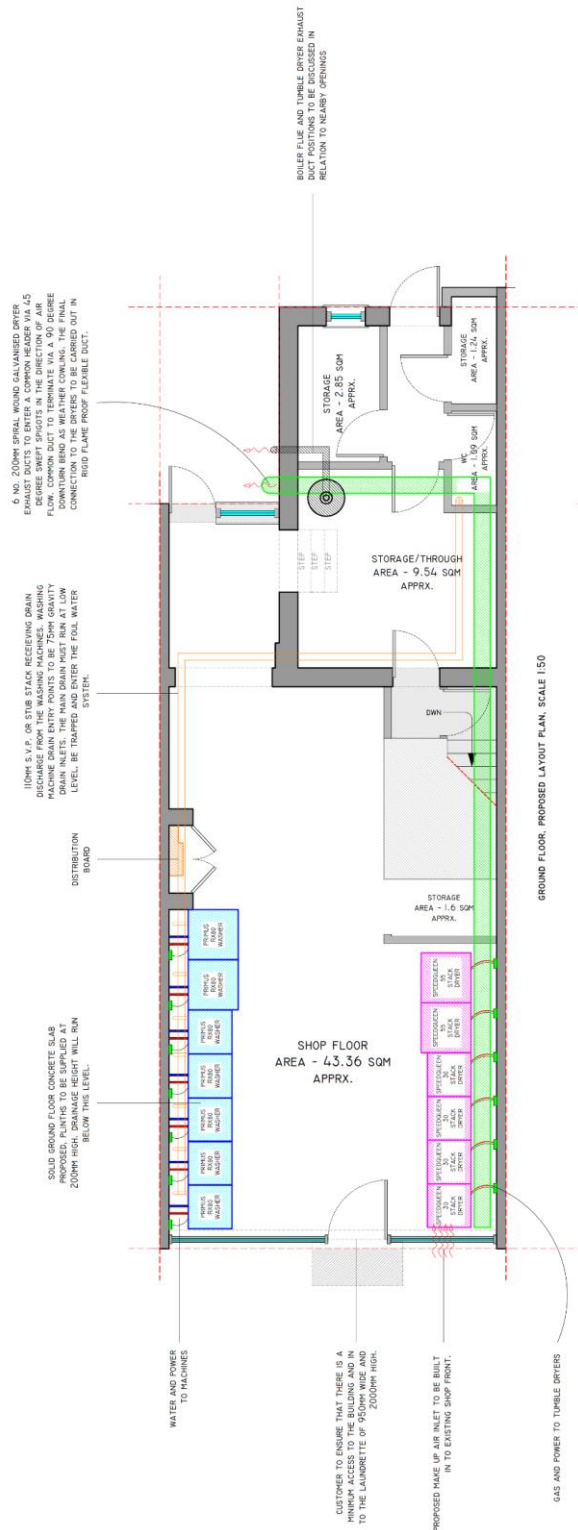
| Parameter                                                          | Description                                                                                                                                                                                                                    |
|--------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Acoustic environment                                               | Sound from all sound sources as modified by the environment                                                                                                                                                                    |
| Ambient sound                                                      | Totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far                                                                                                      |
| Ambient sound level, $L_a = L_{Aeq,T}$                             | Equivalent continuous A-weighted sound pressure level of the totally encompassing sound in a given situation at a given time, usually from many sources near and far, at the assessment location over a given time interval, T |
| Background sound level, $LA_{90,T}$                                | 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      |
| Decibel (dB)                                                       | A logarithmic scale representing the sound pressure or power level relative to the threshold of hearing ( $20 \times 10^{-6}$ Pascals).                                                                                        |
| Equivalent continuous A-weighted sound pressure level, $L_{Aeq,T}$ | Value of the A-weighted sound pressure level in decibels of continuous steady sound that, within a specified time interval, $T = t_2 - t_1$ , has the same mean-squared sound pressure as a sound that varies with time        |
| Measurement time interval, $T_m$                                   | Total time over which measurements are taken                                                                                                                                                                                   |
| Rating level, $L_{Ar,Tr}$                                          | Specific sound level plus any adjustment for the characteristic features of the sound                                                                                                                                          |
| Reference time interval, $T_r$                                     | Specified interval over which the specific sound level is determined                                                                                                                                                           |
| Residual sound                                                     | Ambient sound remaining at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound                                                              |
| Residual sound level, $L_r = L_{Aeq,T}$                            | Equivalent continuous A-weighted sound pressure level of the residual sound at the assessment location over a given time interval, T                                                                                           |
| Specific sound level, $L_s = L_{Aeq,Tr}$                           | Equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, $T_r$                                                             |
| Specific sound source                                              | Sound source being assessed                                                                                                                                                                                                    |

### References:

BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound'

## APPENDIX B – Data Sheets and Figures

### Proposed Ground Floor Plan



## Speed Queen SU055 & SUT30 Data Sheets

### TUMBLE DRYERS

#### SU INDUSTRIAL TUMBLE DRYERS



SU055

| MODEL                          | SU025             | SU030             | SU035             |
|--------------------------------|-------------------|-------------------|-------------------|
| Capacity (kg)                  | 11,3              | 13,6              | 15,9              |
| Volume drum (l)                | 217               | 271               | 347               |
| Heating*                       | E / S / G         | E / S / G         | E / S / G         |
| Standard electric heating (kW) | 12                | 21                | 24                |
| Execution                      | Coin / OPL        | Coin / OPL        | Coin / OPL        |
| Net weight (kg)                | 135               | 150               | 164               |
| Dimensions HxWxD (mm)          | 1622 x 711 x 1038 | 1622 x 711 x 1191 | 1622 x 800 x 1191 |

| MODEL                          | SU050             | SU055             | SU075             |
|--------------------------------|-------------------|-------------------|-------------------|
| Capacity (kg)                  | 22,7              | 24,9              | 34                |
| Volume drum (l)                | 528               | 491               | 634               |
| Heating*                       | E / S / G         | E / S / G         | E / S / G         |
| Standard electric heating (kW) | 30                | 27                | 30                |
| Execution                      | Coin / OPL        | Coin / OPL        | Coin / OPL        |
| Net weight (kg)                | 247               | 197               | 279               |
| Dimensions HxWxD (mm)          | 1946 x 981 x 1226 | 1695 x 876 x 1362 | 1946 x 981 x 1378 |

| MODEL                          | SU120                 | SU170              | SU200              |
|--------------------------------|-----------------------|--------------------|--------------------|
| Capacity (kg)                  | 54,4                  | 77,1               | 90,7               |
| Volume drum (l)                | 1021                  | 1408               | 1656               |
| Heating*                       | E / S / G             | S / G              | S / G              |
| Standard electric heating (kW) | 60                    | -                  | -                  |
| Execution                      | OPL                   | OPL                | OPL                |
| Net weight (kg)                | 624 (S) / 578 (E / G) | 760 (S) / 714 (G)  | 794 (S) / 774 (G)  |
| Dimensions HxWxD (mm)          | 2177 x 1178 x 1725    | 2388 x 1349 x 1749 | 2388 x 1349 x 1948 |



SUT30

#### SUT STACK INDUSTRIAL TUMBLE DRYERS

| MODEL                          | SUT30             | SUT45             |
|--------------------------------|-------------------|-------------------|
| Capacity (kg)                  | 2 x 13,6          | 2 x 20,4          |
| Volume drum (l)                | 2 x 301           | 2 x 421           |
| Heating*                       | E / S / G         | G                 |
| Standard electric heating (kW) | 21                | -                 |
| Execution                      | Coin / OPL        | Coin / OPL        |
| Net weight (kg)                | 247               | 305               |
| Dimensions HxWxD (mm)          | 1937 x 800 x 1086 | 2059 x 876 x 1236 |

## Elta CP01-M20-060 Silencer Data Sheet

# CP01 – M20 SILENCER

## Product Overview

Available in four standard lengths, M-Series Silencers have excellent attenuation properties, achieved with sound absorbing infill retained in the attenuator casing by a perforated galvanised steel liner.

- Fits directly into 200mm diameter ducting
- Standard lengths 300, 600, 900 & 1200mm
- Use up to 70°C (standard construction)
- Systems up to 1000 Pascals
- Special lengths on request

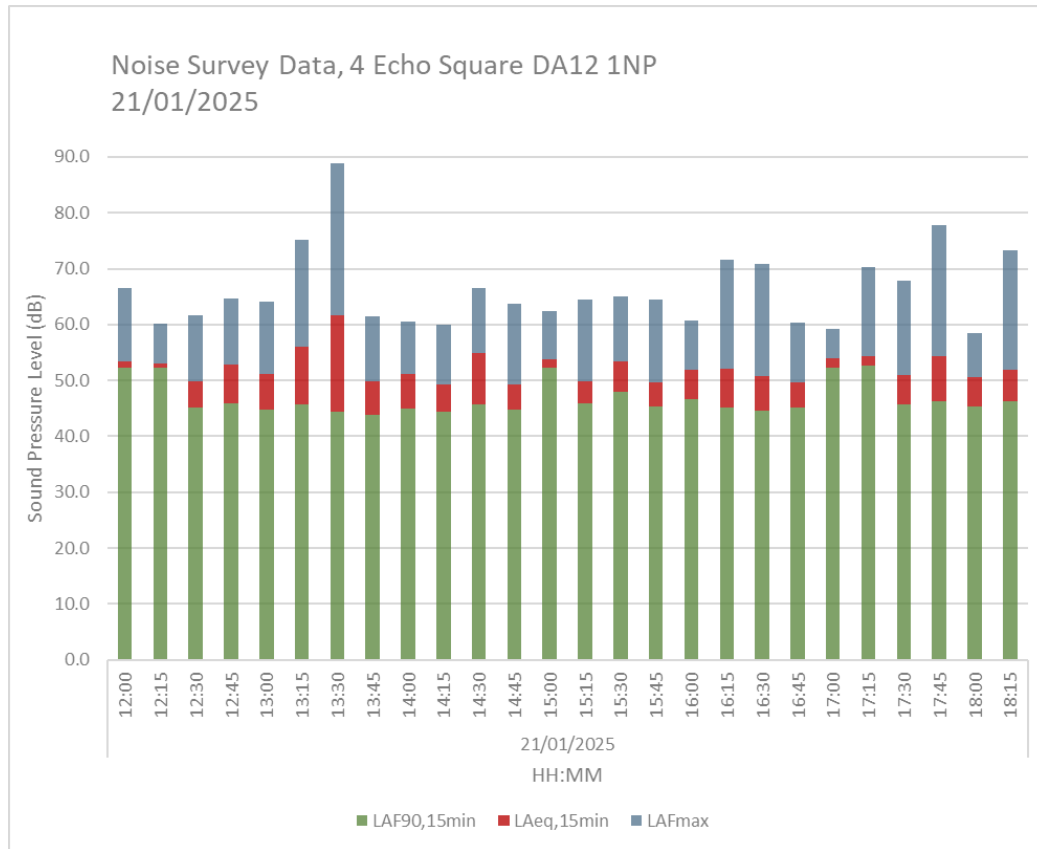


## Typical Noise Reduction (dB) - Centre Band Frequency

| Product Code     | 63 Hz | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | 8000 Hz |
|------------------|-------|--------|--------|--------|---------|---------|---------|---------|
| CP01 - M20 - 030 | 2     | 3      | 6      | 13     | 17      | 20      | 18      | 9       |
| CP01 - M20 - 060 | 4     | 6      | 10     | 20     | 27      | 32      | 20      | 11      |
| CP01 - M20 - 090 | 7     | 9      | 14     | 32     | 39      | 36      | 26      | 16      |
| CP01 - M20 - 120 | 10    | 12     | 17     | 36     | 41      | 44      | 28      | 16      |

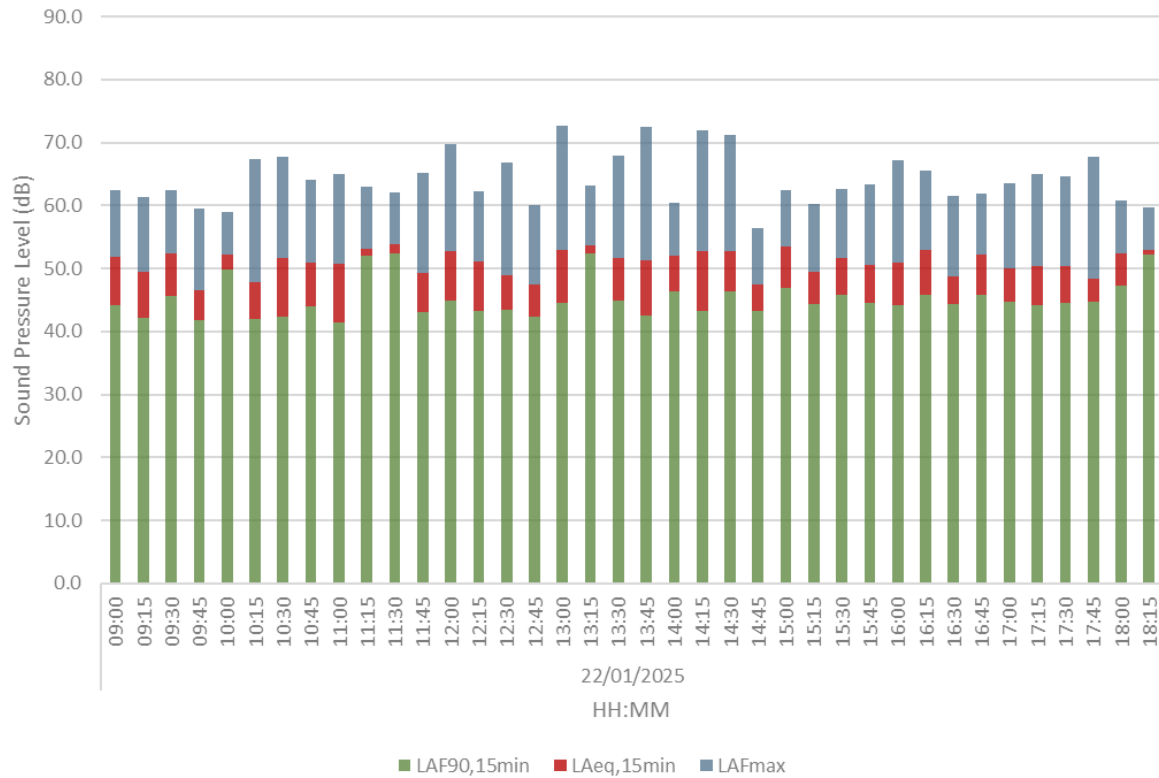
Typical noise reduction data is derived from continual testing to BS4718 and other standards in independent UKAS certified laboratories, which includes where appropriate, re-generated or self noise testing in both forward and reverse flow conditions. If you request system analysis from our technicians all predictions will be assessed using the relevant certified insertion loss data together with relevant dynamic corrections.

## APPENDIX C – Noise Monitoring Data

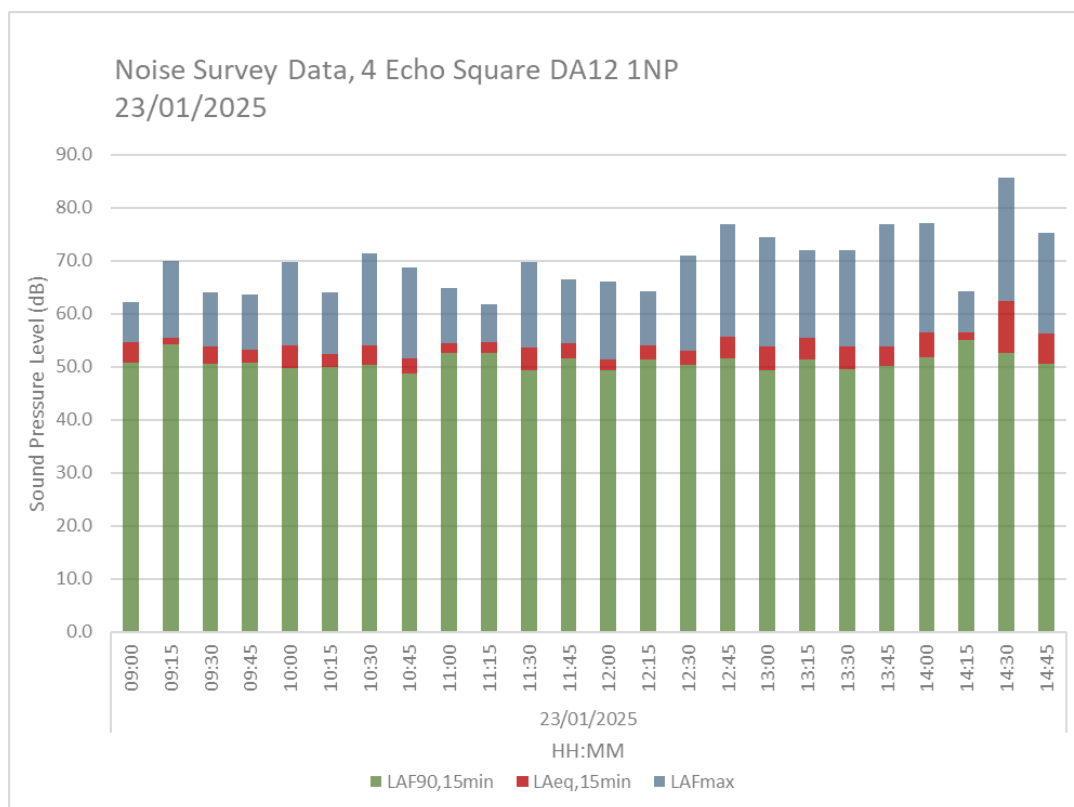


| Date       | Time  | L <sub>Aeq,15min</sub> | L <sub>AFmax</sub> | L <sub>AF90,15min</sub> | L <sub>Aeq,1hour</sub> | L <sub>AF90,1hour</sub> |
|------------|-------|------------------------|--------------------|-------------------------|------------------------|-------------------------|
| 21/01/2025 | 12:00 | 53.4                   | 66.5               | 52.2                    | 52.5                   | 50.1                    |
|            | 12:15 | 53.1                   | 60.2               | 52.3                    |                        |                         |
|            | 12:30 | 49.8                   | 61.7               | 45.2                    |                        |                         |
|            | 12:45 | 52.9                   | 64.7               | 45.9                    |                        |                         |
|            | 13:00 | 51.2                   | 64.0               | 44.8                    | 57.1                   | 44.8                    |
|            | 13:15 | 56.0                   | 75.1               | 45.8                    |                        |                         |
|            | 13:30 | 61.6                   | 88.9               | 44.4                    |                        |                         |
|            | 13:45 | 49.8                   | 61.5               | 43.8                    |                        |                         |
|            | 14:00 | 51.2                   | 60.5               | 44.9                    | 51.8                   | 45.0                    |
|            | 14:15 | 49.3                   | 60.0               | 44.4                    |                        |                         |
|            | 14:30 | 54.9                   | 66.5               | 45.8                    |                        |                         |
|            | 14:45 | 49.2                   | 63.7               | 44.7                    |                        |                         |
|            | 15:00 | 53.8                   | 62.4               | 52.2                    | 52.1                   | 48.8                    |
|            | 15:15 | 49.9                   | 64.5               | 45.9                    |                        |                         |
|            | 15:30 | 53.4                   | 65.0               | 47.9                    |                        |                         |
|            | 15:45 | 49.6                   | 64.5               | 45.4                    |                        |                         |
|            | 16:00 | 51.9                   | 60.7               | 46.6                    | 51.2                   | 45.4                    |
|            | 16:15 | 52.0                   | 71.6               | 45.1                    |                        |                         |
|            | 16:30 | 50.7                   | 70.9               | 44.5                    |                        |                         |
|            | 16:45 | 49.6                   | 60.4               | 45.2                    |                        |                         |
|            | 17:00 | 53.9                   | 59.2               | 52.2                    | 53.6                   | 50.3                    |
|            | 17:15 | 54.3                   | 70.2               | 52.6                    |                        |                         |
|            | 17:30 | 51.0                   | 67.8               | 45.8                    |                        |                         |
|            | 17:45 | 54.3                   | 77.7               | 46.2                    |                        |                         |
|            | 18:00 | 50.5                   | 58.5               | 45.3                    | 51.3                   | 45.8                    |
|            | 18:15 | 51.9                   | 73.2               | 46.2                    |                        |                         |

Noise Survey Data, 4 Echo Square DA12 1NP  
22/01/2025



| Date       | Time  | L <sub>Aeq,15min</sub> | L <sub>AFmax</sub> | L <sub>AF90,15min</sub> | L <sub>Aeq,1hour</sub> | L <sub>AF90,1hour</sub> | Date       | Time  | L <sub>Aeq,15min</sub> | L <sub>AFmax</sub> | L <sub>AF90,15min</sub> | L <sub>Aeq,1hour</sub> | L <sub>AF90,1hour</sub> |  |  |
|------------|-------|------------------------|--------------------|-------------------------|------------------------|-------------------------|------------|-------|------------------------|--------------------|-------------------------|------------------------|-------------------------|--|--|
| 22/01/2025 | 09:00 | 51.8                   | 62.4               | 44.2                    | 50.5                   | 43.7                    | 22/01/2025 | 14:00 | 52.0                   | 60.5               | 46.3                    | 51.7                   | 45.1                    |  |  |
|            | 09:15 | 49.4                   | 61.4               | 42.2                    |                        |                         |            | 14:15 | 52.8                   | 71.9               | 43.3                    |                        |                         |  |  |
|            | 09:30 | 52.3                   | 62.5               | 45.6                    |                        |                         |            | 14:30 | 52.8                   | 71.2               | 46.4                    |                        |                         |  |  |
|            | 09:45 | 46.5                   | 59.5               | 41.8                    |                        |                         |            | 14:45 | 47.5                   | 56.4               | 43.2                    |                        |                         |  |  |
|            | 10:00 | 52.2                   | 59.0               | 49.9                    | 51.0                   | 45.9                    |            | 15:00 | 53.4                   | 62.5               | 46.9                    | 51.5                   | 45.5                    |  |  |
|            | 10:15 | 47.8                   | 67.4               | 42.0                    |                        |                         |            | 15:15 | 49.4                   | 60.3               | 44.4                    |                        |                         |  |  |
|            | 10:30 | 51.7                   | 67.8               | 42.4                    |                        |                         |            | 15:30 | 51.6                   | 62.7               | 45.8                    |                        |                         |  |  |
|            | 10:45 | 51.0                   | 64.1               | 44.0                    |                        |                         |            | 15:45 | 50.5                   | 63.4               | 44.5                    |                        |                         |  |  |
|            | 11:00 | 50.7                   | 65.0               | 41.5                    | 52.1                   | 49.6                    |            | 16:00 | 50.9                   | 67.2               | 44.1                    | 51.5                   | 45.1                    |  |  |
|            | 11:15 | 53.1                   | 62.9               | 52.0                    |                        |                         |            | 16:15 | 52.9                   | 65.6               | 45.8                    |                        |                         |  |  |
|            | 11:30 | 53.8                   | 62.1               | 52.4                    |                        |                         |            | 16:30 | 48.8                   | 61.5               | 44.3                    |                        |                         |  |  |
|            | 11:45 | 49.3                   | 65.1               | 43.0                    |                        |                         |            | 16:45 | 52.2                   | 61.9               | 45.9                    |                        |                         |  |  |
|            | 12:00 | 52.7                   | 69.8               | 44.9                    | 50.5                   | 43.6                    |            | 17:00 | 50.0                   | 63.6               | 44.7                    | 49.8                   | 44.5                    |  |  |
|            | 12:15 | 51.1                   | 62.2               | 43.3                    |                        |                         |            | 17:15 | 50.3                   | 65.0               | 44.2                    |                        |                         |  |  |
|            | 12:30 | 48.9                   | 66.9               | 43.5                    |                        |                         |            | 17:30 | 50.4                   | 64.7               | 44.5                    |                        |                         |  |  |
|            | 12:45 | 47.5                   | 60.1               | 42.3                    |                        |                         |            | 17:45 | 48.4                   | 67.7               | 44.7                    |                        |                         |  |  |
|            | 13:00 | 52.9                   | 72.6               | 44.5                    | 52.5                   | 47.9                    |            | 18:00 | 52.4                   | 60.7               | 47.2                    | 52.7                   | 50.4                    |  |  |
|            | 13:15 | 53.7                   | 63.2               | 52.3                    |                        |                         |            | 18:15 | 53.0                   | 59.7               | 52.2                    |                        |                         |  |  |
|            | 13:30 | 51.6                   | 67.9               | 44.9                    |                        |                         |            |       |                        |                    |                         |                        |                         |  |  |
|            | 13:45 | 51.2                   | 72.4               | 42.5                    |                        |                         |            |       |                        |                    |                         |                        |                         |  |  |



| Date       | Time  | L <sub>Aeq,15min</sub> | L <sub>AFmax</sub> | L <sub>AF90,15min</sub> | L <sub>Aeq,1hour</sub> | L <sub>AF90,1hour</sub> |
|------------|-------|------------------------|--------------------|-------------------------|------------------------|-------------------------|
| 23/01/2025 | 09:00 | 54.7                   | 62.2               | 50.8                    | 54.4                   | 51.9                    |
|            | 09:15 | 55.4                   | 69.9               | 54.2                    |                        |                         |
|            | 09:30 | 53.9                   | 64.1               | 50.5                    |                        |                         |
|            | 09:45 | 53.2                   | 63.7               | 50.8                    |                        |                         |
|            | 10:00 | 54.1                   | 69.8               | 49.7                    | 53.2                   | 49.7                    |
|            | 10:15 | 52.5                   | 64.0               | 49.9                    |                        |                         |
|            | 10:30 | 54.0                   | 71.4               | 50.3                    |                        |                         |
|            | 10:45 | 51.6                   | 68.8               | 48.8                    |                        |                         |
|            | 11:00 | 54.5                   | 64.9               | 52.7                    | 54.3                   | 51.8                    |
|            | 11:15 | 54.7                   | 61.9               | 52.7                    |                        |                         |
|            | 11:30 | 53.6                   | 69.7               | 49.3                    |                        |                         |
|            | 11:45 | 54.5                   | 66.5               | 51.6                    |                        |                         |
|            | 12:00 | 51.5                   | 66.1               | 49.3                    | 53.8                   | 50.8                    |
|            | 12:15 | 54.1                   | 64.2               | 51.3                    |                        |                         |
|            | 12:30 | 53.0                   | 70.9               | 50.4                    |                        |                         |
|            | 12:45 | 55.7                   | 76.9               | 51.7                    |                        |                         |
|            | 13:00 | 53.8                   | 74.5               | 49.4                    | 54.3                   | 50.2                    |
|            | 13:15 | 55.5                   | 72.1               | 51.5                    |                        |                         |
|            | 13:30 | 53.8                   | 72.0               | 49.6                    |                        |                         |
|            | 13:45 | 53.8                   | 76.9               | 50.1                    |                        |                         |
|            | 14:00 | 56.6                   | 77.1               | 51.9                    | 58.8                   | 52.9                    |
|            | 14:15 | 56.5                   | 64.2               | 55.1                    |                        |                         |
|            | 14:30 | 62.4                   | 85.8               | 52.6                    |                        |                         |
|            | 14:45 | 56.3                   | 75.3               | 50.6                    |                        |                         |

## APPENDIX D – Calculations

| <u>Adding dB</u>                          |    |    |    |    |    |    |   |   |
|-------------------------------------------|----|----|----|----|----|----|---|---|
| <u>Levels to be added</u> (Max. of eight) |    |    |    |    |    |    |   |   |
| <u>Enter values</u>                       | 63 | 63 | 63 | 63 | 59 | 59 | 0 | 0 |
| Total = 69.8 dB                           |    |    |    |    |    |    |   |   |

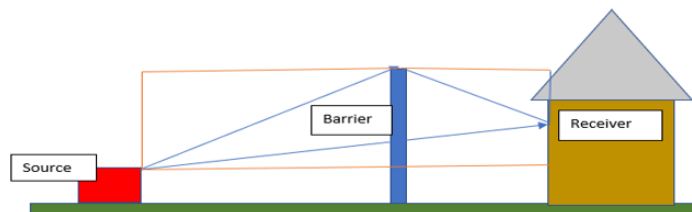
**Cumulative Internal Sound Pressure Level = 70dB  $L_{Aeq,T}$**

### Building Screening Attenuation Calculation – Ventilation Flue

Applicable where barrier breaks line of sight between source and receiver

Example Illustration of Barrier Attenuation

|                     | Metres |
|---------------------|--------|
| Source to Barrier   | 0.4    |
| Receiver to Barrier | 2.8    |
| Source to Receiver  | 3      |



|                 |     |
|-----------------|-----|
| Path Difference | 0.2 |
|-----------------|-----|

| Frequency Hz       | 63  | 125 | 250 | 500  | 1000 | 2000 | 4000 | 8000 |
|--------------------|-----|-----|-----|------|------|------|------|------|
| Barrier Correction | 6.5 | 7.7 | 9.5 | 11.7 | 14.2 | 17.0 | 19.8 | 22.8 |

**Overall Attenuation (500Hz) = 12dB**

| Calculation to Nearest Sensitive Receptor | dB  |
|-------------------------------------------|-----|
| Cumulative SPL of 6 No. Dryers            | 70  |
| 1 Bend (200mm Spiral Ductwork)            | -3  |
| 10m length (200mm Circular Ductwork)      | -1  |
| 90° Directivity to Nearest Receptor       | -4  |
| Silencer (ELTA CP01-M20-060)              | -14 |
| Screening From Existing Roofline          | -12 |
| Distance Attenuation (10m)                | -10 |
| Intermittency (+3dB)                      | +3  |
| SPL @ Nearest Sensitive Receptor          | 29  |

**Cumulative Sound Pressure Level @ Nearest Sensitive Receptor = 29dB  $L_{Ar,T}$**