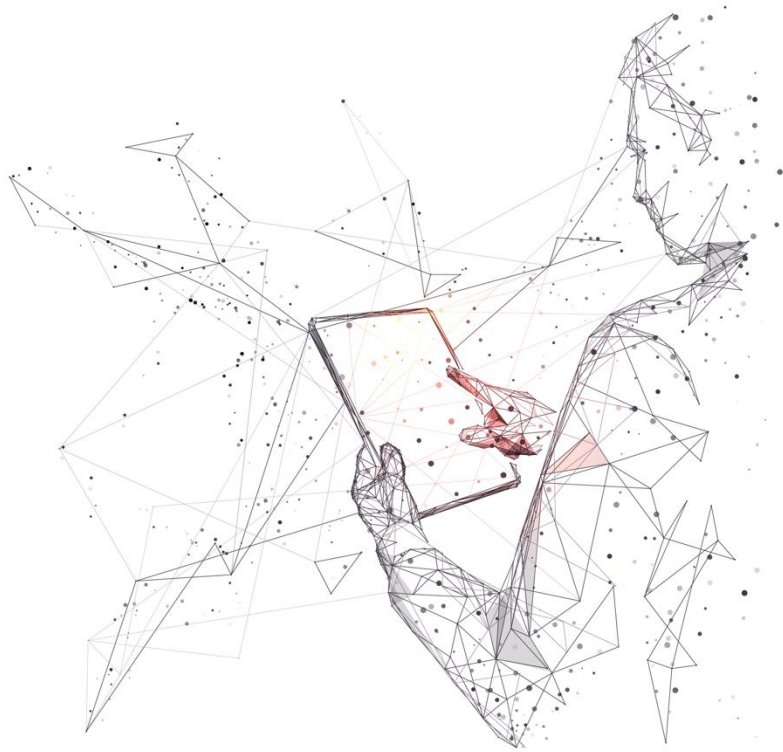


DECEMBER 18, 2023



# Noise Impact Assessment for Warehouse Expansion for Theo Davies & Sons, Glyn Ceiriog, Wales

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CRIMSON REMOTE SERVICES LTD

## Document Information

**Project Name** : NIA for warehouse expansion  
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|                                | Name          | Qualifications                          | Initials | Date     |
|--------------------------------|---------------|-----------------------------------------|----------|----------|
| Prepared by:                   | James Flitton | Associate Member Institute of Acoustics | JF       | 26/09/22 |
| Completed by:                  | James Flitton | Associate Member Institute of Acoustics | JF       | 29/09/22 |
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| For and on behalf of E2 Consul |               |                                         |          |          |
| Signed:                        |               |                                         |          |          |

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# 1. Introduction

- 1.1 This report has been commissioned to determine the noise impact of the expansion of the warehouse and workshop area for Theo Davies & Sons with potential of a new dust extraction system.
- 1.2 The survey will use BS4142:2014 for the noise assessment.

## 2.0 Site Details

- 2.0.1 The site is located in the village of Glyn Ceiriog, North Wales just north of the river Ceiriog.
- 2.0.2 The proposed expansion area is surrounded by residential to the East and West, with further residential across the B4500 through-road.
- 2.0.3 The current footprint is to the south of the proposed new workshop/warehouse, also surrounded by the same residential buildings on the East and West boundaries.

### 2.1 Location of monitors

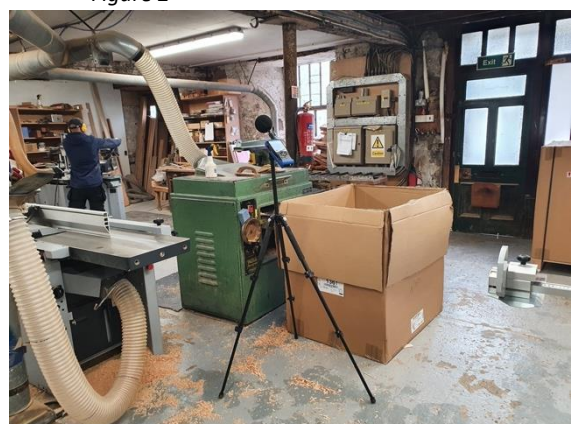
- 2.1.1 Location 1 – The 24hr survey was conducted at the North-East boundary – in the area where the proposed workshop expansion is to be located [Figure 1].
- 2.1.2 Location 2 – Measurements were also taken within the current building during a ‘typical’ working day to collect the likely break-out noise as all current operations are to be moved into the new building area. Location 2 was in the centre of the workshop collecting the full ambient levels [Figure 2]
- 2.1.3 Location 3 – The final measurement set was close to the existing dust extraction system while in full operation [Figure 3].

Figure 1



Figure 3

Figure 2

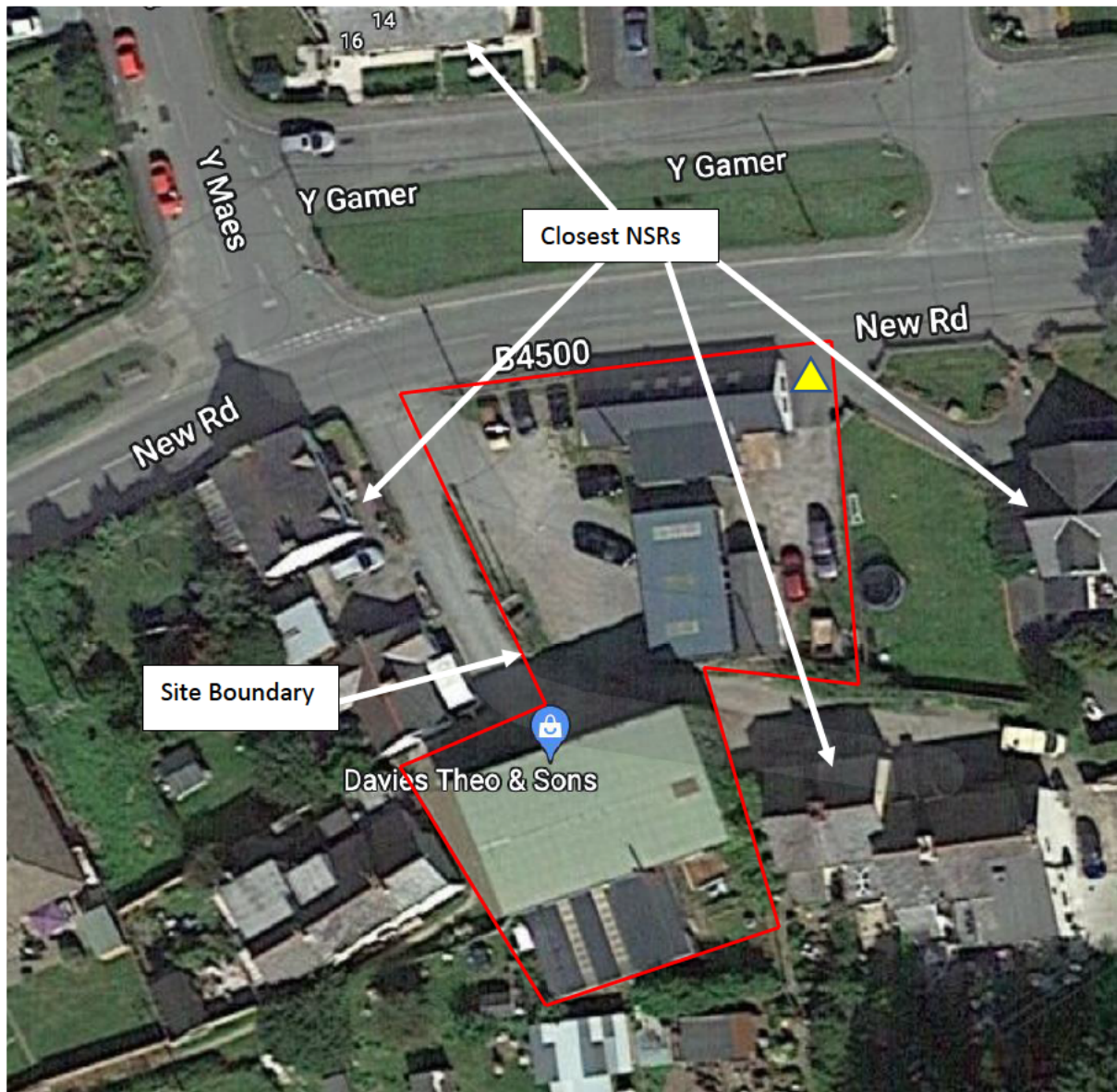




- 2.1.4 Measurements were made in 15 minute periods, on 1 second averaging, to allow for the removal of anomalies and increased accuracy. The data was averaged into  $L_{Aeq1hr}$  daytime and  $L_{Aeq15min}$  night-time with data also recorded for  $L_{Amax}$  in both day and night periods for the BS4142:2014 assessment.
- 2.1.5 The monitoring was conducted using 2 x Type 1 NTI XL2 sound level meter, Tripod, outdoor case with batteries and outdoor microphone protection.
- 2.2.6 The measurements were taken by a fully qualified engineer with AMIOA status with the institute of Acoustics.
- 2.2.7 All measurements were taken after a field calibration was undertaken to ensure accuracy and repeatability of measurements.
- 2.2.8 Further data such as wind speed, wind direction, rainfall intensity, temperature and cloud cover were all recorded at the beginning and end of the assessment at the monitoring location.
- 2.2.9 Any anomalies (such as noise by the engineer during setup and collection of the kit) were removed from the survey for a true reflection of the ambient levels in the vicinity. This was done by recording audio throughout the survey at each location and listening back through the files during the analysis process to confirm what was recorded manually during the survey.
- 2.2.10 Care was taken to inform any residents in the area that audio recording was taking place.

## 2.2 Plan Views of Site with Designated Work Areas

Figure 4



### Key



= Monitoring Position for Noise Assessment

2.3 Proposed Layout

Figure 5



## 3.0 Legislation

3.0.1 The Planning Guidance (Wales): Planning Policy and the Technical Advice Note (Wales) 11, Noise – October 1997 sets out guidelines for the assessment of noise during planning applications.

### 3.0.2 Mitigation

*“Measures introduced to control the source of, or limit exposure to, noise should be proportionate and reasonable, and may include:*

- i. engineering: reduction of noise at point of generation (e.g. using quiet machines and/or quiet methods of working); containment of noise generated (e.g. insulating buildings which house machinery and/or providing purpose-built barriers around sites); protection of surrounding noise-sensitive buildings (e.g. improving sound insulation in these buildings and/or screening them by purpose-built barriers);*
- ii. lay-out: adequate distance between noise source and noise-sensitive building or area; screening by natural barriers, other buildings, or non-critical rooms in a building;*
- iii. administrative: limiting operating time of noise source; restricting activities allowed on the site; specifying an acceptable noise limit.”*

### 3.0.3 Noise from Industrial and Commercial Developments

*“The likelihood of complaints about noise from industrial development can be assessed, where the Standard is appropriate, using guidance in BS 4142: 1990. Tonal or impulsive characteristics of the noise are likely to increase the scope for complaints and this is taken into account by the "rating level" defined in BS 4142. This "rating level" should be used when stipulating the level of noise that can be permitted. The likelihood of complaints is indicated by the difference between the noise from the new development (expressed in terms of the rating level) and the existing background noise. The Standard states that, 'A difference of around 10 dB or higher indicates that complaints are likely. A difference of around 5 dB is of marginal significance'. Since background noise levels vary throughout a 24 hour period it will usually be necessary to assess the acceptability of noise levels for separate periods (e.g. day and night) chosen to suit the hours of operation of the proposed development. Similar considerations apply to developments that will emit significant noise at the weekend as well as during the week. In addition, general guidance on acceptable noise levels within buildings can be found in BS 8233: 1987.”*

## 3.1 BS4142:2014 +A1 (2019)

3.1.1 Noise effects on residential properties have been assessed according to the guidance in BS 4142:2014. This standard primarily provides a numerical method by which to determine the significance of sound of an industrial nature (i.e. the ‘specific sound’ from the proposed development) at residential sensitive receptors.

- 3.1.2 The specific sound level may then be corrected for the character of the sound (e.g. perceptibility of tones and/or impulses), if appropriate, and it is then termed the 'rating level', whether or not a rating penalty is applied. The 'residual sound' is defined as the 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.
- 3.1.3 According to BS 4142:2014, the background sound levels adopted for the assessment should be representative of the periods being assessed. The standard recommends that the background sound level should be collected from continuous measurements of normally not less than 15-minute intervals. However, the Standard states that there is no 'single' background sound level that can be derived from such measurements. It is particularly difficult to determine what is 'representative' of the night-time period because it can be subject to a wide variation in background sound levels between the shoulder night periods.
- 3.1.4 The method chosen for this section of the report is to use the data collected at the nearest NSR for the day and night periods to provide the ambient and background noise levels. The mode  $L_{Aeq\_1hr(\\text{Day})}$  and  $L_{Aeq\_15min(\\text{Night})}$  value will then be used for each time period over the course of the measurement as the most appropriate way of creating a representative value.
- 3.1.5 The specific sound levels have been determined separately in terms of the  $L_{Aeq1hr}$  during the daytime  $L_{Aeq15min}$  during the night-time using the noise prediction software, CadnaA. Daytime is typically between 07:00 and 23:00 hours and night-time is typically between 23:00 and 07:00 hours, so these periods have been adopted for this assessment.
- 3.1.6 At each of the most likely sensitive receptor locations, the rating level has been determined from the predicted specific sound level. Where it has considered it to be appropriate, a rating penalty has been applied for tonality, impulsivity and/or intermittent specific sounds as described in the commentary to paragraph 9.2 of BS4142:2014. This has been applied with consideration for the main sound sources from site that contribute to the level of specific sound at the receptor location.
- 3.1.7 As per the requirements of the standard, an initial estimate of the impact of the specific sound has been obtained by subtracting the measured background sound level from the rating level of the specific sound. Table 2 provides the initial evaluation of impact following this method.

Table 1

| Magnitude  | Difference Between rating Level and Background Level | Comments                          |
|------------|------------------------------------------------------|-----------------------------------|
| High       | +10dB                                                | Significant Adverse impact Likely |
| Medium     | +5 to +10dB                                          | Adverse impact Likely             |
| Low        | 0 to +5 dB                                           | Adverse impact unlikely           |
| Negligible | Less than 0dB                                        | Adverse impact unlikely           |
| No Change  | -10 dB                                               | No adverse impact                 |

3.1.8 Following the initial evaluation of impact, the context of the sound has also been considered, which is a key requirement of the Standard. In evaluation of the context, the following factors have been considered:

- the absolute level of the sound;
- the character and level of the residual sound compared to the character and level of the specific sound and
- the sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions.

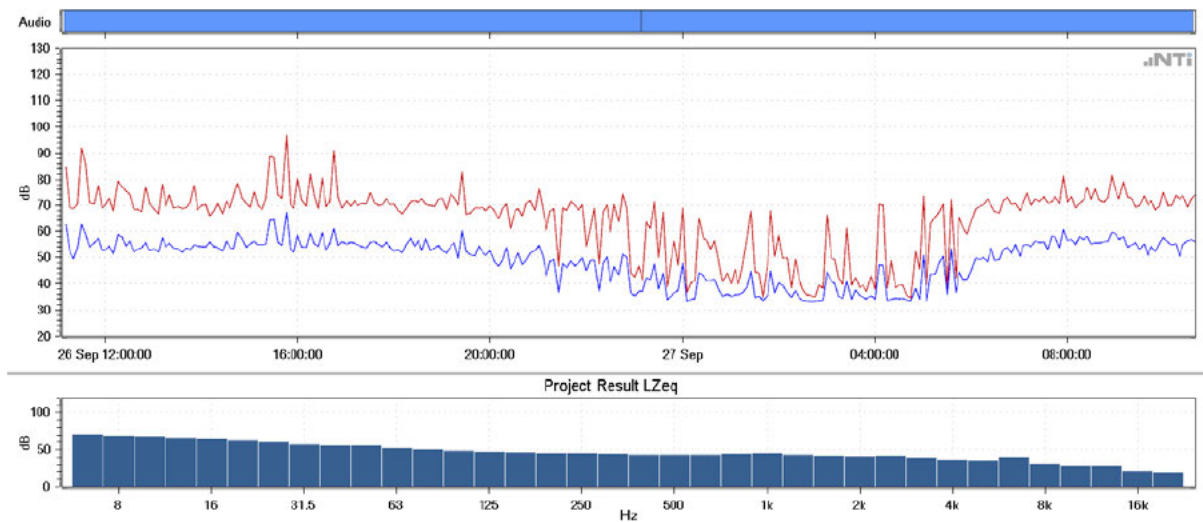
## 4.0 Results

### 4.1 – Location 1 (External Background Noise)

Table 2

| Location                  | Start Date/Time     | L <sub>Amax</sub> | L <sub>Aeq1hr</sub> (Mode) | L <sub>Aeq15min</sub> (Mode) | L <sub>A90</sub> |
|---------------------------|---------------------|-------------------|----------------------------|------------------------------|------------------|
| Main site Extraction Unit | 27/09/22<br>13.51pm |                   |                            |                              |                  |
| Day (0700-2300)           |                     | 96.7dBA           | 55.0dBA                    |                              | 43.3dBA          |
| Night (2300-0700)         |                     | 73.3dBA           |                            | 43.1dBA                      | 33.4dBA          |

Figure 6



#### Comments

Main through road so medium traffic levels. Plenty of HGV & farm traffic vs standard cars.

*\*based on Appendix C*

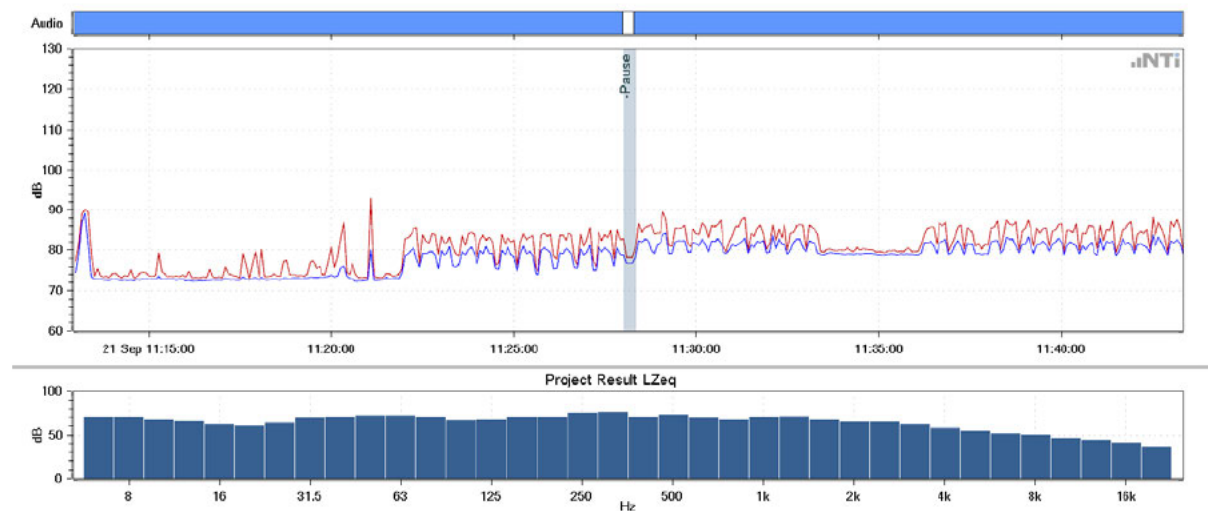
| Cloud Cover | Temperature (Celcius) | Presence of fog/snow/ice | Wind Speed (m/s) | Wind Direction |
|-------------|-----------------------|--------------------------|------------------|----------------|
| 8           | 11.5 (1hr mode)       | No                       | 2.8              | NW             |

## 4.2 – Location 2 & 3 (Internal)

Table 3

| Location                | Start Date/Time | L <sub>Amax</sub> | L <sub>Aeq1hr</sub> (Mode) | L <sub>A90</sub> |
|-------------------------|-----------------|-------------------|----------------------------|------------------|
| <b>Main Workshop</b>    |                 |                   |                            |                  |
| Current Extraction Unit | <b>11.12am</b>  | <b>93.1dBA</b>    | <b>77.2dBA</b>             | <b>72.3dBA</b>   |
| Central Area            | <b>11.31am</b>  | <b>89.5dBA</b>    | <b>81.1dBA</b>             | <b>78.7dBA</b>   |

Figure 7



### Comments

Constant values as saws were used continuously throughout the assessment

*\*based on Appendix C*

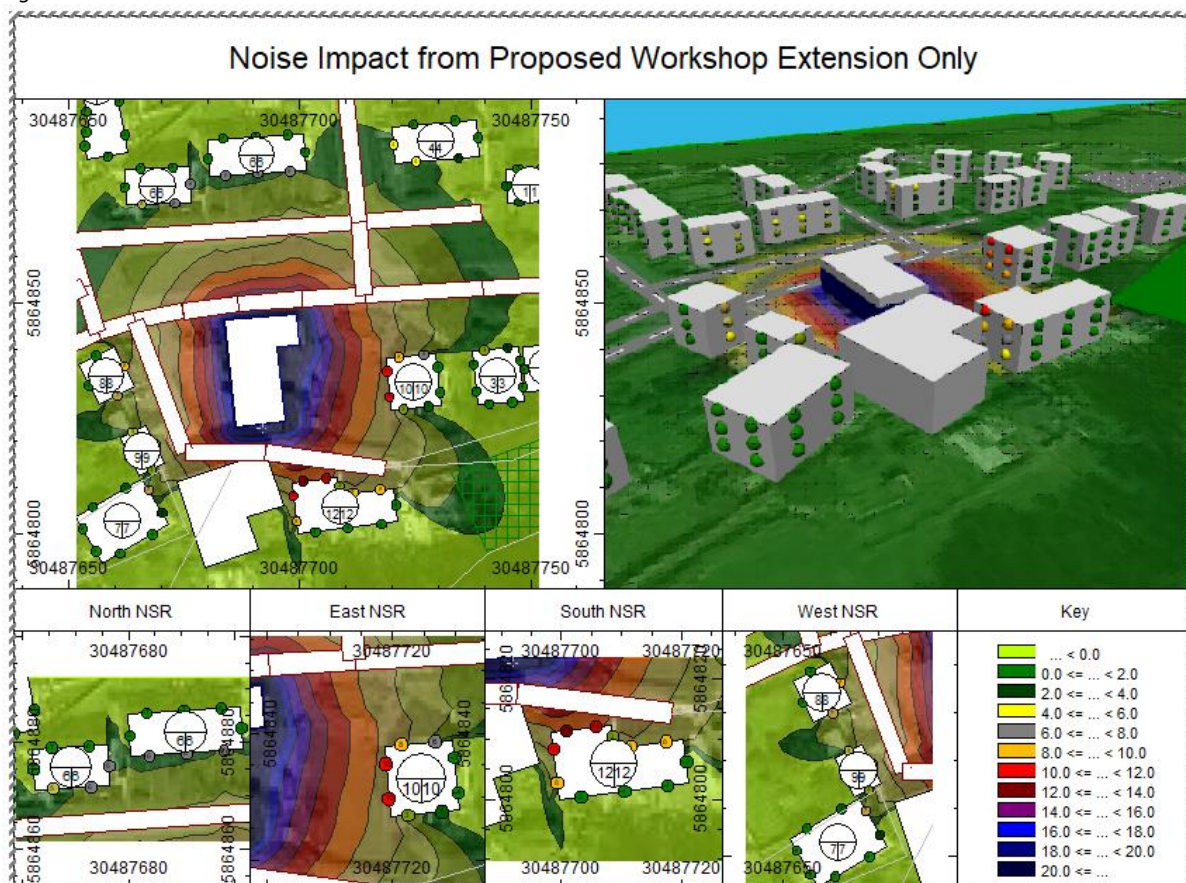
| Cloud Cover  | Temperature (Celcius) | Presence of fog/snow/ice | Wind Speed (m/s) | Wind Direction |
|--------------|-----------------------|--------------------------|------------------|----------------|
| 8 (external) | 11.5 (external)       | No                       | N/A              | N/A            |

## 5.0 Analysis of Results

### 5.1 Calculated results to BS4142:2014

- 5.1.1 Table 4 shows the resulting figures for Day and Night according to BS4142.
- 5.1.2 The measurement values from the dust extraction unit and the main workshop were used in the noise modelling software, CadnaA, as calibration points for the noise exposure from the site on the surrounding area.
- 5.1.3 This has then been used in the CadnaA noise modelling software to produce a modelled noise impact value at the four main identified noise sensitive receptor locations (NSRs) to the North, South, East and West of the existing and proposed development.
- 5.1.4 The modelled values and comparisons made in table 4 look at the noise impact from running the site for the current 7am through until 6pm Monday - Friday. This does not account for background levels or any other sources in the area – just the impact from the proposed site.
- 5.1.5 CadnaA modelled values

Figure 8



- 5.1.5 The highest modelled value (seen in figure 8 at the South NSR) has then been used as part of the comparison for the BS4142 assessment in table 6.

Table 4

| Measurement Type                         | Parameter           | Result | Comment                                                                |
|------------------------------------------|---------------------|--------|------------------------------------------------------------------------|
| Day                                      |                     |        |                                                                        |
| Ambient sound                            | L <sub>Aeq</sub>    | 55dBA  | Measured at NSR-Source present                                         |
| Residual sound level                     | L <sub>Aeq1hr</sub> |        |                                                                        |
| Background sound level                   | L <sub>A901hr</sub> | 43dBA  | Measured at NSR-Source present                                         |
| Specific Sound Level                     | L <sub>Aeq1hr</sub> | 12dBA  | Modelled                                                               |
| Acoustic Feature Correction              | dBA                 | 3      | Impulsive noise likely from the site (although not audible at the NSR) |
| Rating Level                             | dBA                 | 15dBA  |                                                                        |
| Difference of Background vs Rating level | dBA                 | -28dB  |                                                                        |
| Likelihood of complaints                 |                     |        | No Adverse impact                                                      |

- 5.1.6 From the results in table 4 it can be seen that there is no adverse impact from the site if the current noise levels are to be considered for the planning application.

## 5.2 Dust Extraction System

- 5.2.1 The proposal under consideration is also looking to add the dust extraction system to the exterior of one side of the building. This produces a new noise source, new specific noise level and the potential for a new level of disturbance.
- 5.2.2 The manufacturer's figures for the unit have been entered into the CadnaA noise modelling software at each of the facades where the extraction unit could be placed. This has then been assessed according to BS4142:2014 in the same manner as table 4. In each case the highest level at any of the NSR has been used.

### 5.2.3 CadnaA Model – Dust Extraction on the East Façade

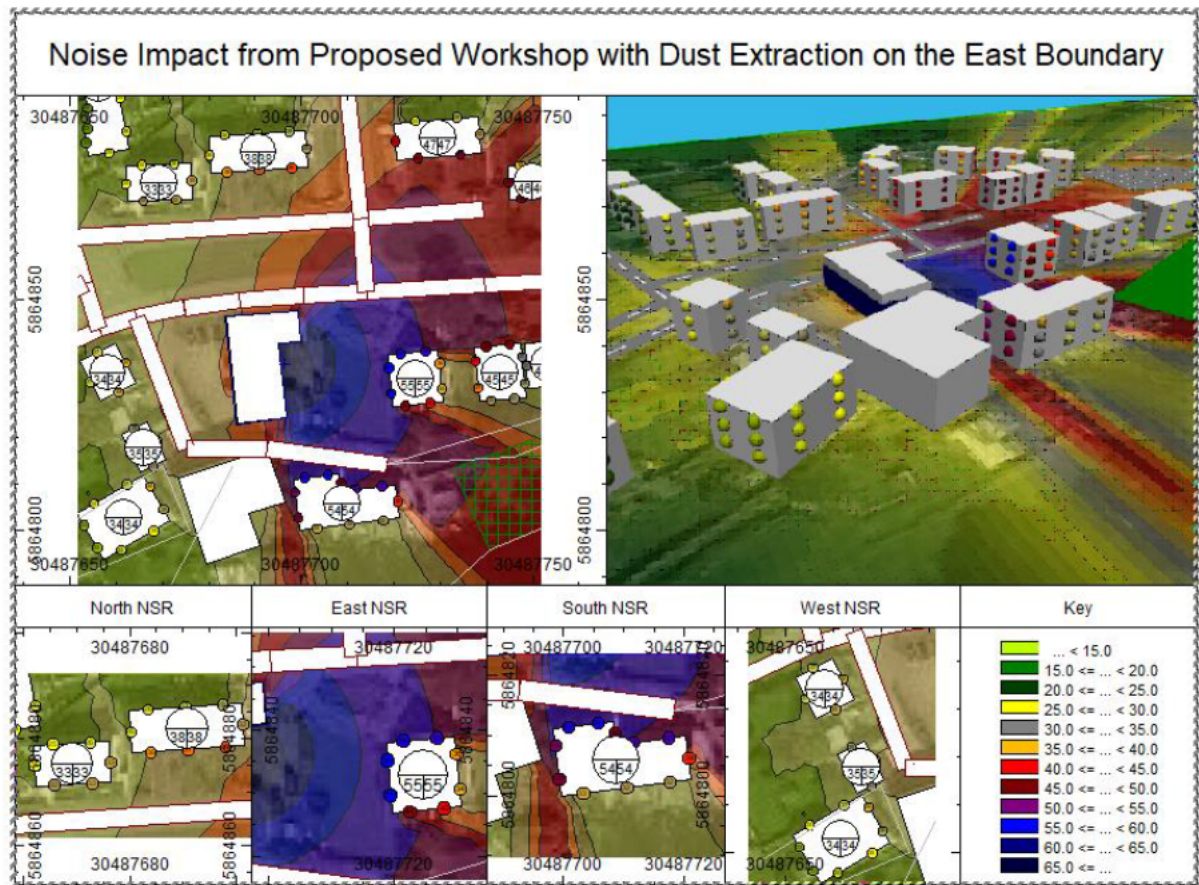


Table 5

| Measurement Type                         | Parameter    | Result | Comment                                 |
|------------------------------------------|--------------|--------|-----------------------------------------|
| Day                                      |              |        |                                         |
| Ambient sound                            | $L_{Aeq}$    | 55dBA  | Measured at NSR-Source present          |
| Residual sound level                     | $L_{Aeq1hr}$ |        |                                         |
| Background sound level                   | $L_{A901hr}$ | 43dBA  | Measured at NSR-Source present          |
| Specific Sound Level                     | $L_{Aeq1hr}$ | 55dBA  | Modelled                                |
| Acoustic Feature Correction              | dBA          | 4      | Extraction system is likely to be tonal |
| Rating Level                             | dBA          | 59dBA  |                                         |
| Difference of Background vs Rating level | dBA          | +16dB  |                                         |
| Likelihood of complaints                 |              |        | Adverse impact Expected                 |

## 5.2.4 CadnaA Model – Dust Extraction on the South Façade

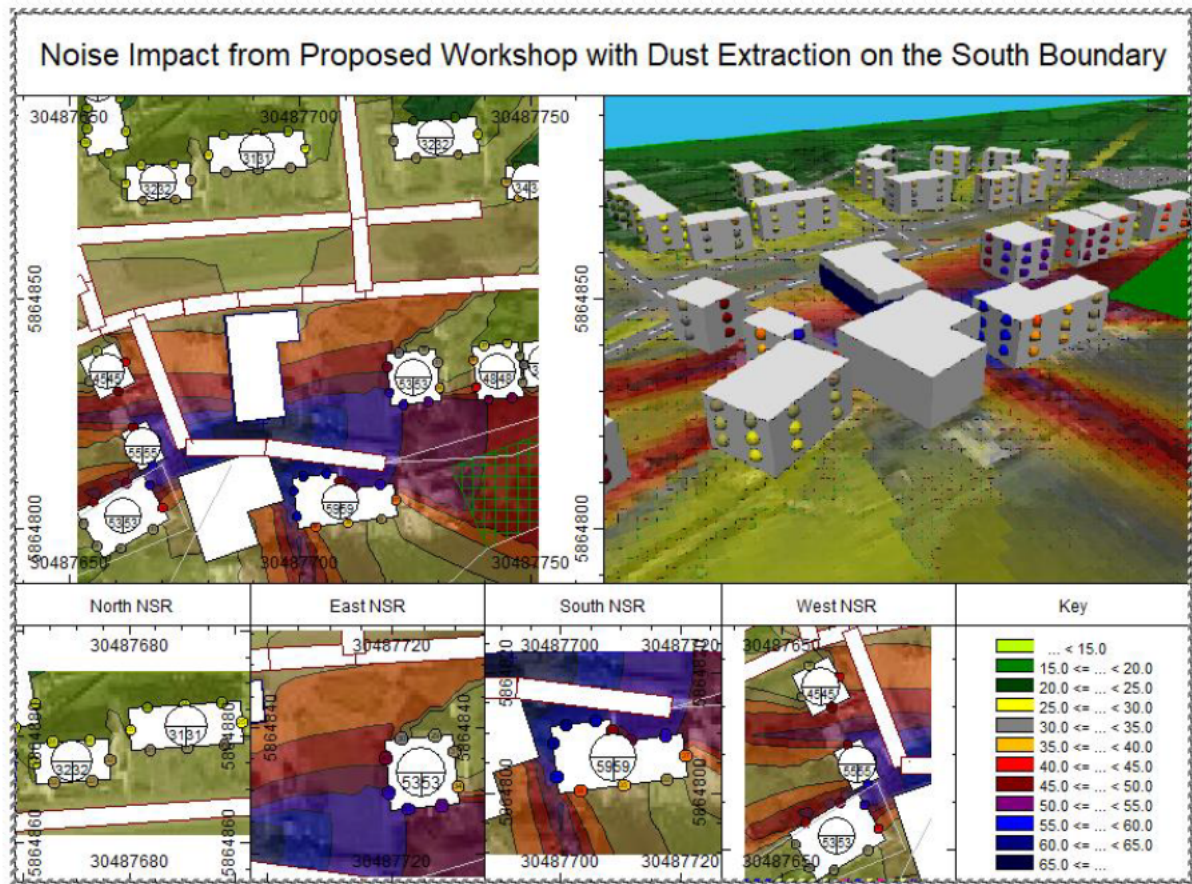


Table 6

| Measurement Type                         | Parameter    | Result | Comment                                 |
|------------------------------------------|--------------|--------|-----------------------------------------|
| Day                                      |              |        |                                         |
| Ambient sound                            | $L_{Aeq}$    | 55dBA  | Measured at NSR-Source present          |
| Residual sound level                     | $L_{Aeq1hr}$ |        |                                         |
| Background sound level                   | $L_{A901hr}$ | 43dBA  | Measured at NSR-Source present          |
| Specific Sound Level                     | $L_{Aeq1hr}$ | 59dBA  | Modelled                                |
| Acoustic Feature Correction              | dBA          | 4      | Extraction system is likely to be tonal |
| Rating Level                             | dBA          | 63dBA  |                                         |
| Difference of Background vs Rating level | dBA          | +20dB  |                                         |
| Likelihood of complaints                 |              |        | Adverse impact Expected                 |

### 5.2.5 CadnaA Model – Dust Extraction on the West Façade

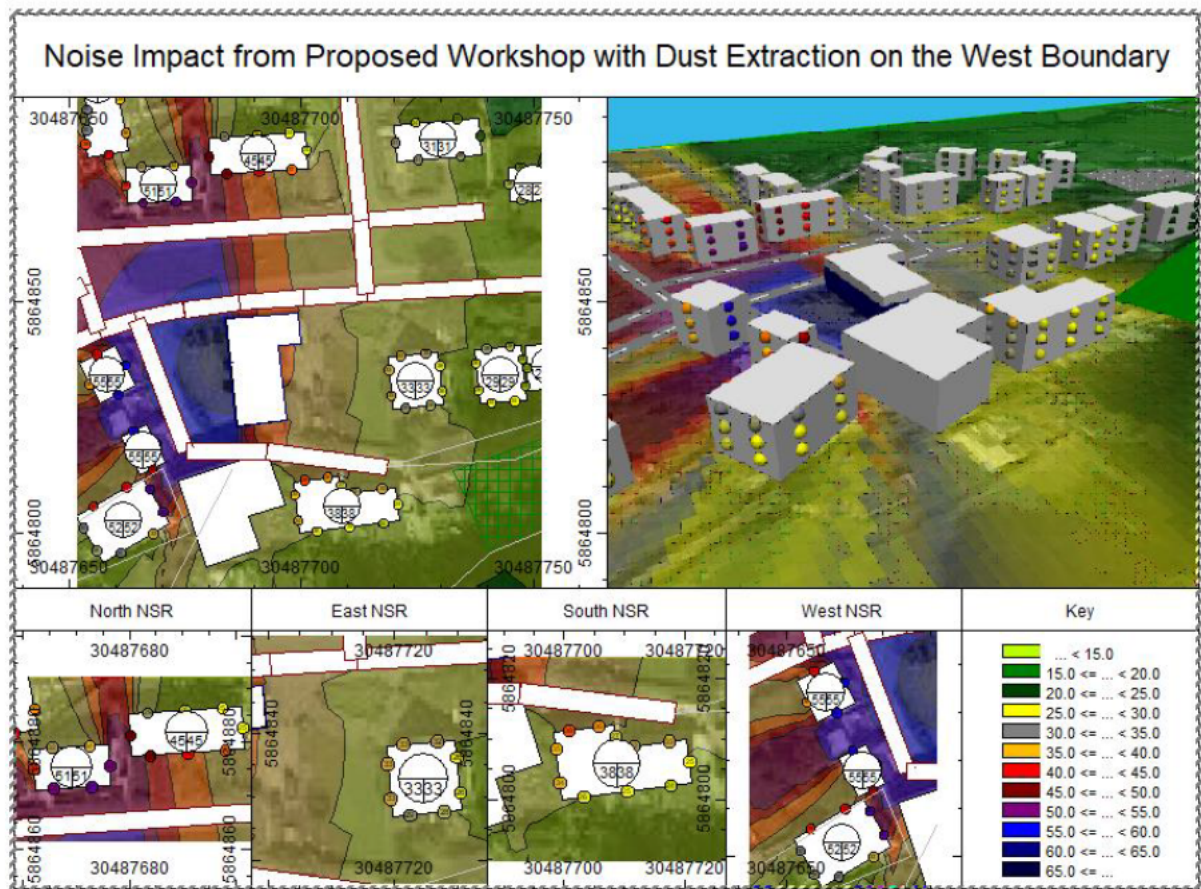


Table 7

| Measurement Type                         | Parameter           | Result | Comment                                 |
|------------------------------------------|---------------------|--------|-----------------------------------------|
| Day                                      |                     |        |                                         |
| Ambient sound                            | L <sub>Aeq</sub>    | 55dBA  | Measured at NSR-Source present          |
| Residual sound level                     | L <sub>Aeq1hr</sub> |        |                                         |
| Background sound level                   | L <sub>A901hr</sub> | 43dBA  | Measured at NSR-Source present          |
| Specific Sound Level                     | L <sub>Aeq1hr</sub> | 52dBA  | Modelled                                |
| Acoustic Feature Correction              | dBA                 | 4      | Extraction system is likely to be tonal |
| Rating Level                             | dBA                 | 56dBA  |                                         |
| Difference of Background vs Rating level | dBA                 | +13dB  |                                         |
| Likelihood of complaints                 |                     |        | Adverse impact Expected                 |

### 5.3 Summary of Results

| Location of Dust Extraction System | Predicted Highest Level at a NSR | Background Noise Level | Level above Background |
|------------------------------------|----------------------------------|------------------------|------------------------|
| East Façade                        | 55dBA                            | 43dBA                  | +16dB                  |
| South Façade                       | 59dBA                            | 43dBA                  | +20dB                  |
| West Façade                        | 52dBA                            | 43dBA                  | +13dB                  |

- 5.3.1 As can be seen in Table 8 above – there is no façade placement for this type of extraction fan that will be permitted under the guidance from BS4142:2014, or that given by the council. The initial request was that no value was to be above the measured background levels at any of the closest Noise Sensitive Receptor points.

## 6.0 Conclusion and Further Comments

### 6.1 Discussion of Levels

- 6.1.1 The internal levels from the current workshop would not produce any adverse comment to any of the closest NSRs.
- 6.1.2 The introduction of the proposed extraction system provides a much higher noise source to compete with the current noise climate in the area if it was to be added to one of the external buildings.
- 6.1.3 The best position for the extraction system would be on the West façade – but there would need to be noise mitigation measures that brought the noise levels down by at least 13dB. This could be achieved by creating an acoustic enclosure around the extraction system but would cause further expense to the development.
- 6.1.4 Further advice would be to look at either placing the extraction system within the building and applying a silencer to the unit, or indeed seeking a quieter extraction system that would be used in its place.
- 6.1.5 The current extraction system was measured internally at 77dBA at 1m. If this remained internal in the new area this would produce a return of no adverse comment at the noise sensitive receptor points in the area.

## 7.0 Credentials

| <b>Name</b>             | <b>Title</b>       | <b>Credentials</b>                               |
|-------------------------|--------------------|--------------------------------------------------|
| James Flitton BSc AMIOA | Technical Director | CSCS Professionally Qualified person             |
|                         |                    | Associate Member<br>Institute of Acoustics       |
|                         |                    | IOA Diploma in<br>Acoustics and Noise<br>Control |
|                         |                    | Affiliate Member of IDE                          |
|                         |                    | Affiliate Member of IOR                          |

## Appendix A – Acoustic Terminology

| Parameter           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ambient Noise Level | The totally encompassing sound in a given situation at a given time, usually composed of a sound from many sources both distant and near ( $L_{Aeq,T}$ ).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Decibel (dB)        | A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds $s_1$ and $s_2$ is given by $20 \log_{10} (s_1/s_2)$ . The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is $20\mu\text{Pa}$ . The threshold of normal hearing is in the region of 0 dB and 140 dB is the threshold of pain. A change of 1 dB is only perceptible under controlled conditions.                                                                                                  |
| dB(A), $L_{Ax}$     | Decibels measured on a sound level meter incorporating a frequency weighting (A weighting) which differentiates between sounds of different frequency (pitch) in a similar way to the human ear. Measurements in dB(A) broadly agree with people's assessment of loudness. A change of 3 dB(A) is the minimum perceptible under normal conditions, and a change of 10 dB(A) corresponds roughly to halving or doubling the loudness of a sound. The background noise in a living room may be about 30 dB(A); normal conversation about 60 dB(A) at 1 metre; heavy road traffic about 80 dB(A) at 10 metres; the level near a pneumatic drill about 100 dB(A). |
| Fast Time Weighting | Setting on sound level meter, denoted by a subscript F, that determines the speed at which the instrument responds to changes in the amplitude of any measured signal. The fast time weighting can lead to higher values than the slow time weighting when rapidly changing signals are measured. The average time constant for the fast response setting is 0.125 (1/8) seconds.                                                                                                                                                                                                                                                                             |
| Free-field          | Sound pressure level measured outside, far away from reflecting surfaces (except the ground), usually taken to mean at least 3.5 metres                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Façade              | Sound pressure level measured at a distance of 1 metre in front of a large sound reflecting object such as a building façade.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| $L_{Aeq,T}$         | A noise level index called the equivalent continuous noise level over the time period T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded.                                                                                                                                                                                                                                                                                                                                                                                                        |
| $L_{max,T}$         | A noise level index defined as the maximum noise level recorded during a noise event with a period T. $L_{max}$ is sometimes used for the assessment of occasional loud noises, which may have little effect on the overall $L_{eq}$ noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.                                                                                                                                                                                                                                                                         |
| $L_{10,T}$          | A noise level index. The noise level exceeded for 10% of the time over the period T. $L_{10}$ can be considered to be the "average maximum" noise level. Generally used to describe road traffic noise. $L_{A10,18h}$ is the A-weighted arithmetic average of the 18 hourly $L_{A10,1h}$ values from 06:00-24:00.                                                                                                                                                                                                                                                                                                                                             |
| $L_{90,T}$          | A noise level index. The noise level exceeded for 90% of the time over the period T. Generally used to describe background noise level.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

# Appendix B - Certificates of Calibration



## Manufacturer Calibration Certificate

The sound level meter submitted for testing successfully completed the periodic tests of IEC 61672-3. All tests are traceable in accordance with ISO/IEC 17025.

This model of sound level meter submitted for periodic testing successfully completed the applicable pattern-evaluation tests given in IEC 61672-2. The pattern approval certificate is available at [www.nti-audio.com/XL2](http://www.nti-audio.com/XL2).

### Sound Level Meter

|                        |           |     |              |
|------------------------|-----------|-----|--------------|
| Manufacturer           | NTi Audio |     |              |
| Type                   | XL2-TA    | S/N | A2A-18928-E0 |
| Firmware               | V4.21     |     |              |
| Reference Level Range  | mid       |     |              |
| Microphone Model       | M2230     |     |              |
| Preamplifier           | MA220     | S/N | 9785         |
| Microphone Capsule     | MC230A    | S/N | A20919       |
| Performance class      | Class 1   |     |              |
| Customer Inventory Nr. |           |     |              |

### Customer

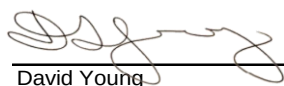
Crimson Remote Services Ltd  
38 Potter Street  
Worksop  
Nottinghamshire  
S80 2AQ

**Date** 26 April 2021

**Certificate** UK-21-029

**Results** **PASSED**  
(for detailed report see next pages)

**Operator**

  
David Young

## Manufacturer Calibration Certificate

The following instrument has been tested and calibrated to the manufacturer specifications.  
The calibration is traceable in accordance with ISO/IEC 17025 covering all instrument functions.

- Device Type: **Class 1 Sound Calibrator CAL200**
- Serial Number: **17656**

- Date of Calibration: **22 December 2021**
- Certificate Number: **44552-17656-CAL200**
- Results: **PASSED**  
(for detailed report see next page)

Tested by: **D.Young**

Signature:

## Appendix C – Weather Conditions Chart Used

| Weather Conditions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |                                                                                  |                     |               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------|---------------------|---------------|
| Measurement Location                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Date/Time | Description                                                                      | Beginning of Survey | End of Survey |
| As indicated on <b>Error! Reference source not found.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |           | Temperature:                                                                     |                     |               |
| <div> <div>Cloud Cover</div> <div> <div>Symbol</div> <div>Scale in oktas (eighths)</div> </div> <div>  0 Sky completely clear<br/>  1<br/>  2<br/>  3<br/>  4 Sky half cloudy<br/>  5<br/>  6<br/>  7<br/>  8 Sky completely cloudy<br/>  (9) Sky obstructed from view </div> </div> |           | Precipitation:                                                                   |                     |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           | Cloud cover (oktas - see guide)                                                  |                     |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           | Presence of fog/snow/ice                                                         |                     |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           | Presence of damp roads/wet ground                                                |                     |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           | Wind Speed (m/s)                                                                 |                     |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           | Wind Direction                                                                   |                     |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           | Conditions that may cause temperature inversion (i.e. calm nights with no cloud) |                     |               |

## Appendix D – Proposed extraction System

Air Plants dust units offer dust control solutions for any workshop. Our range of dust extraction units are ideal for industrial, commercial, or home production workshops.

Providing dust control solutions for dust types such as softwood, hardwood, MDF, chipboard and plastics, Air Plants Dust Control Systems are uncomplicated and clean.

Our dust units offer quality and cost-effective dust control solutions for multiple industries including furniture manufacture, joinery and woodworking, and the automotive industry.



*Dust Unit weather protection for external use*



### Standard Dust Unit

Standard un-clad dust unit, suitable for coarse dust types. These units can be sited inside or clad for external installation.



### CEF Filter Unit

CEF Filter, suitable for fine, low-volume dust applications

