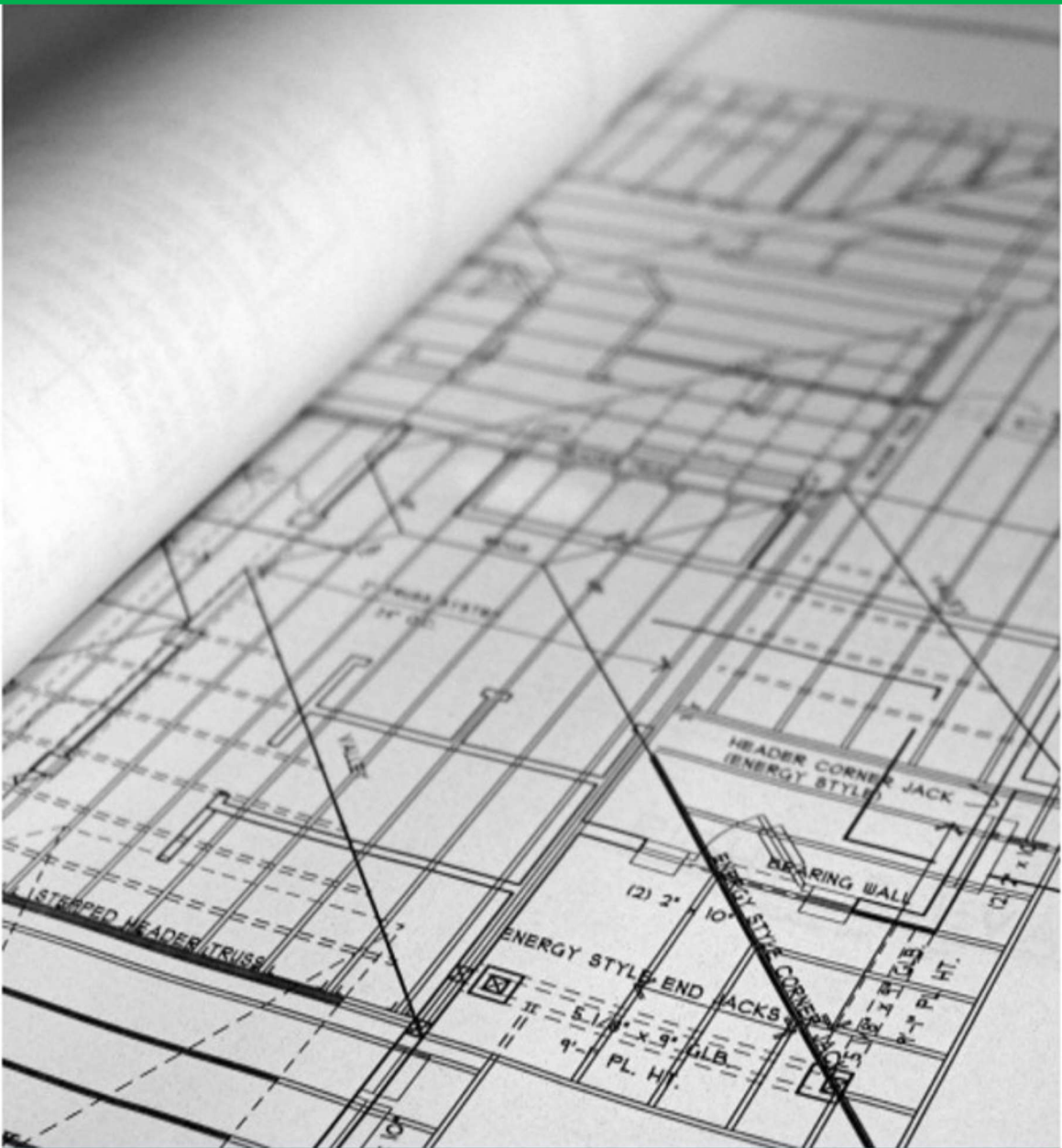


# Environmental Noise Assessment



## Central Air and Sound Testing

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Environmental Noise Assessment Conducted By Central Air and Sound Testing

**CLIENT:**

Ref 668 Rochdale Road

HSH Engineering Design Services Ltd

428 Cheetham Hill Road

Manchester

M8 9LE

**Acoustic Survey undertaken by:**

N Bagley IOA CCENM CCBAM

Checked by OAB

Central Air and Sound Testing

**Site Address**

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### Disclaimer

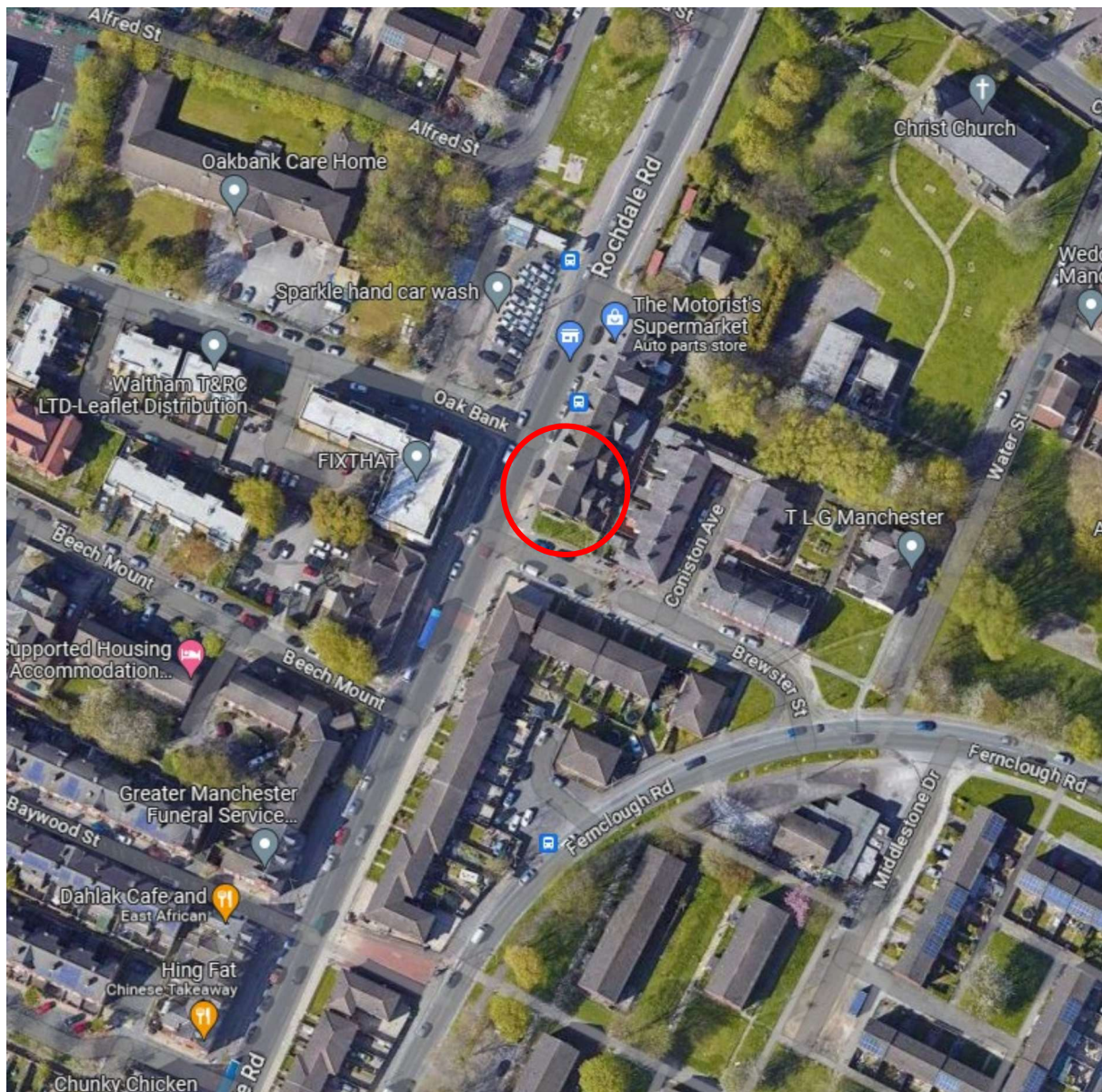
This report has been prepared with all reasonable skill and care in accordance with accepted acoustic consultancy principles for the client only, and solely for the purposes expressly defined herein. We owe no duty of care to any third parties in respect of its content. Statements and conclusion made within this report are based on reasonable assumptions and good industry practice, Therefore, unless expressly agreed by us in signed writing, we hereby exclude all liability to third parties, including liability for negligence.

The consequences of climate change and the effects of future changes in climatic conditions cannot be accurately predicted. This report has been based solely on the specific design assumptions and criteria stated herein.

# 1. INTRODUCTION

Central Air and Sound Testing have been appointed to undertake a Noise Assessment, to satisfy a planning condition requirement by Manchester City Council Planning .the local Planning Authority (LPA) In relation to a planning application for the proposed change of use of the ground floor commercial premises to a Laundrette at 668 Rochdale Road Manchester.

**Planning Reference 137041/FO/2023**



## **Site Location**

Central air and Sound Testing have conducted an Environmental Noise survey in accordance with guidance from, British Standard BS 8233 :2014 (Guidance on Sound Insulation and Noise Reduction from Buildings), BS 4142 (Methods for Rating & Assessing Industrial and Commercial Noise) BS EN 140-7 1998. Sound Insulation Measurements in Buildings, to assess if noise, from the operation of running the proposed commercial business would affect the wellbeing of the neighbouring and upper floor occupiers.

This assessment is taken in accordance with the National Policy Planning Framework (NPPF) The Noise Policy Statement for England (NPSE) THE National Policy planning guidance (NPPG) including British Standard 4142 and ISO 140-7.

## 2. LEGISLATION & GUIDANCE

In order to provide a suitable assessment a number of national planning policies and guidance have been considered, including:

- The National Policy Planning Framework (NPPF),
- The Noise Policy statement for England (NPSE).
- The National Policy Planning Guidance (NPPG).
- British Standards BS 8233: 2014 Guidance on sound insulation for buildings.
- BS4142: Methods for rating and assessing industrial and commercial sound.
- The world health authority (W.H.O) Guidelines for community noise.

**The National Policy Planning Framework states the following with respects to noise.**

- Avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of a development.
- Mitigate and reduce to a minimum other adverse impact on health and quality of life arising from noise from new development, including through the use of conditions.
- Recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established.
- Identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

### Noise Policy Aims

Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.

: The NPPF noise aims widely reflect those in NPSE. The NPSE does however include some context within the explanatory note to assessing noise impact and uses established concepts from toxicology currently being applied to noise impacts, these include:

**1) NOEL**– No Observed Effect Level.

This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

**2) SOAEL**– Significant Observed Adverse Effect Level.

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

**3) LOAEL**– Lowest Observed Adverse Effect Level.

This is the level above which adverse effects on health and quality of life can be detected.

### Noise Policy statement for England and National Planning Guidance

The NPSE has stated that the impact of noise be classified according to an “effect level” Shown in the previous table (Table A).

The National Policy Planning Guidance (NPPG) has clarified what this effect level above, means in terms of its perception by people at receptors and what action should be taken. (Ref Table A)

Table A **The National Policy Guidance Noise Exposure Hierarchy**

| Perception                            | Examples of Outcome                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Increasing Effect Level              | Action                            |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-----------------------------------|
| <b>Not noticeable</b>                 | No effect                                                                                                                                                                                                                                                                                                                                                                                                                                                              | No Observed Effect                   | No specific measures required     |
| <b>Noticeable and not intrusive</b>   | Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.                                                                                                                                                                                                                                                               | No Observed Adverse Effect           | No specific measures required     |
|                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Lowest Observed Adverse Effect Level |                                   |
| <b>Noticeable and intrusive</b>       | Noise can be heard and causes small changes in behaviour and / or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.                                                                   | Observed Adverse Effect              | Mitigate and reduce to a minimum. |
|                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Significant Adverse Effect Level     |                                   |
| <b>Noticeable and disruptive</b>      | The noise causes a material change in behaviour and / or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area. | Significant Observed Adverse Effect  | Avoid                             |
| <b>Noticeable and very disruptive</b> | Extensive and regular changes in behaviour and / or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation / awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.                                                                                                                                                                            | Unacceptable Adverse Effect          | Prevent                           |

## **British Standard 8233:2014**

### **(Guidance on Sound Insulation and Noise Reduction for Buildings)**

The latest version of BS 8233 adopts guideline noise values provided by WHO and recommends design criteria for internal ambient noise levels for dwellings providing a reasonable or good level of protection from external noise. It states that it is desirable that ambient noise levels do not exceed the following guidelines.

|                            | Location           | Desirable Internal Ambient Noise Levels |                 |
|----------------------------|--------------------|-----------------------------------------|-----------------|
|                            |                    | 07:00-23:00                             | 23:00-07:00     |
| Resting                    | Living Rooms       | 35dB LAeq,16hour                        | -               |
| Dining                     | Dining Room /Areas | 40dB LAeq,16hour                        | -               |
| Sleeping (Daytime Resting) |                    | 35dB LAeq,16hour                        | 30dB LAeq 8hour |

**Note 1:** the above provides recommended levels for overall noise in the design of a building. However, ground borne noise is assessed separately and is not included as part of these targets, as human response to ground borne noise varies with many factors such as level, character, timing, occupant expectation and sensitivity.

**Note 2:** If relying on closed windows to meet the guide values, there needs to be an appropriate alternative ventilation that does not compromise the façade insulation or the resulting noise level.

**Note 3:** Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved.

**Note 4:** The levels detailed in the table above are based on the existing guidelines issued by the WHO and assume normal diurnal fluctuations in external noise and are not appropriate in all locations. Where atypical external noise levels are measured (i.e. high levels of traffic during certain times of the night) an appropriate alternative assessment period (e.g. 1 hour) and an assessment of individual night time events in terms of SEL or LAmax, F may be more suitable.

For Outdoor living spaces BS 8233 States For traditional external amenity areas such as gardens and patios. The Standard states that it is “desirable” that the external noise does not exceed 50 dB LAeq,T with an upper guideline value of 55 dB LAeq,T. However, it is also recognised that these guideline values are not achievable in all circumstances where development is desirable in more noisier environments a compromise between elevated noise level and other factors, such as the convenience of living these locations or making efficient use of buildings or land resources may be warranted. In these situations, development should be designed to achieve the lowest practicable levels but should not be prohibited.

### World Health Authority (W.H.O) Guidelines for Community Noise.

These guidelines entitled “Guidance for Community Noise”; were approved by the World Health Organisation and consider guideline values for annoyance in the community. These have been set at 50 or 55 dBA, representing daytime levels below which a majority of the adult population will be protected from becoming moderately or seriously annoyed, respectively.

See below an extract of Table 4.1 from Section 4.4 Guideline values for community noise in specific environments.

| Specific Environment                 | Critical Health effect (s)                                         | LAeq (dB) | Time base (hours) | LA max fast (dB) |
|--------------------------------------|--------------------------------------------------------------------|-----------|-------------------|------------------|
| Outdoor Living Area                  | Serious annoyance, daytime and evening                             | 55        | 16                | -                |
|                                      | Moderate annoyance, daytime and evening                            | 50        | 16                | -                |
| Dwelling, indoors<br>Inside bedrooms | Speech intelligibility and moderate annoyance daytime and evening. | 35        | 16                | 45               |
|                                      | Sleep disturbance, night-time                                      | 30        | 8                 |                  |
| Outside bedrooms                     | Sleep disturbance, window open (outdoor values)                    | 45        | 8                 | 60               |

The guidelines also suggest that; “At night, sound pressure levels at the outside façades of the living spaces should not exceed 45 dB LAeq and 60 dB L<sub>A</sub>max, so that people may sleep with bedroom windows open. These

values have been obtained by assuming that the noise reduction from outside to inside with the window partly open is 15 dB.” LAeq for daytime is for 16 h and for night-time 8h. It is also noted that the WHO suggest “where a development is deemed necessary or desirable despite external noise levels above recommended guidelines, the internal LAeq target levels may be relaxed by up to 5dB and reasonable internal conditions still achieved.

British Standards BS 8223 is based on the WHO Guidelines, and as can be seen, has similar values.

## **British Standards BS 4142:2014**

The BS 4142 is a standard which describes a method for assessing whether noise from an industrial or commercial premises from fixed plant such as , Extract fans, Air conditioning units, commercial deliveries etc is likely to give rise to complaint from residents of the nearby dwellings, the specific noise levels are determined outside dwellings.

The specific noise level is determined for a reference time period of 1hour daytime (7am-11pm) and 15mins night-time (11pm-7am).

Tonal or impulsive characteristics of a noise are likely to increase the scope for complaints and this is taken into account by adding a value to a specific noise source level to obtain a rating level. The value may be between 0 and 15dB depending on objective and subjective measures detailed in the standard.

BS 4142 Requires that the rating level of a noise source is compared with the existing difference between the rating level and the background noise.

- **A difference of 0dB is indicative of a “minor impact”.**
- **A difference of +5dB is indicative of an “adverse impact”.**
- **A difference of +10dB is indictive of a significant “adverse impact “.**

BS4142:2014 states, “Response to sound can be subjective and is affected.

by many factors, both acoustic and non-acoustic. The significance of its impact, for example, can depend on such factors as the margin by which a sound exceeds the background sound level, its absolute level, time of day and change in the acoustic environment, as well as local attitudes to the source of the sound and the character of the neighbourhood.

This British Standard describes methods for rating and assessing sound of an industrial and/or commercial nature.

### 3. SITE DETAILS

The proposed Laundrette is located on Rochdale Road in close proximity to Manchester City centre. Rochdale Road is a busy main road on which there is a mix of shops, fast food takeaway businesses, Estate agents, restaurants, offices and residential houses and flats all located around the immediate area of the proposed Laundrette.

### 4. Environmental Noise Survey BS 8223 :2014

#### Methodology

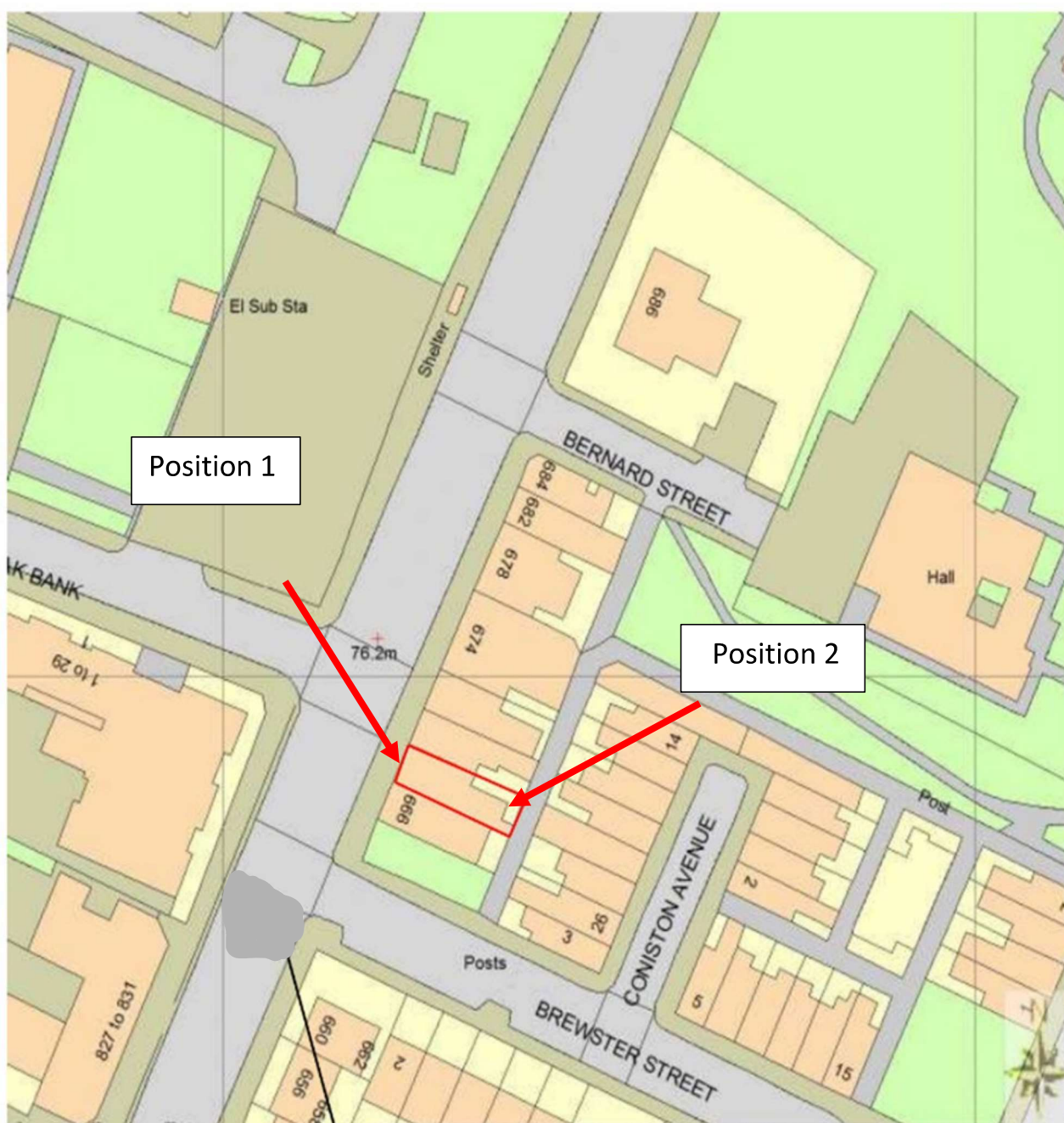
The site was visited at 10am on Wednesday 14<sup>th</sup> June 2023 and a class 1 environmental sound meter installed on a fixed tripod (at least 3.5m away from any reflective surface) at a height of approximately 1.5m from the ground to record external noise data from outside the proposed Laundrette.

Noise monitoring equipment was set up at 2 positions to obtain noise data from the front and rear of the proposed Laundrette.

A Daytime assessment was conducted, as the proposed Laundrette will only operate during daytime hours.

Both noise measurements were recorded for a 1 hour period to record the average ambient continuous noise levels, to assess the prevailing environmental noise levels.

Noise Levels were recorded in 15-minute samples to determine equivalent continuous A weighted sound level in dB of the Leq and LA90 and Lmax.



### Microphone Positions

## Meteorology Conditions

Weather was mild and dry with a slight s/sw breeze wind speed 2.7m/s.

(Time history Graph shown located at end of this report)

Temp 9-16 degrees Celsius

The Sound meter has been fully laboratory calibrated within the past 12months and field calibrated before and after the survey. No significant drift was noted for this report (Not more than +/- 0.1dB)

Equipment used.

NTI XL2 Sound Meter Class 1

NTI Sound Calibrator Class 1

## Results

Below is a summary of the results taken time averaged. (dB)

| Position | Daytime<br>(07.00-23.00 hrs) |      |       |
|----------|------------------------------|------|-------|
|          | LA eq T                      | LA90 | Lamax |
| 1        | 58                           | 55   | 85    |
| 2        | 56                           | 53   | 82    |

### **Existing Noise Climate**

Rochdale Road is a busy main high street with road traffic noise being the main noise source, with a mix of buses, cars and commercial vehicles heading to and from the main City of Manchester. Noise Break out has also been taken into consideration, with a view of potential noise exiting the proposed Laundrette frontage, but when compared to the prevailing external, ambient noise climate around the site, we consider noise breakout to be considered minor.

## 5. SOUND INSULATION TESTING

In accordance with BS EN ISO 140-7) 1998 an internal airborne sound insulation test was undertaken to determine the current sound insulation performance levels of the internal floor partitions of the upper floor residential dwellings. (Results below ) The sound test was undertaken to establish the current performance levels of sound insulation between separating floors and how they compared to building regulation standards (Approved Document Part E 2010 Resistance to the passage of sound.) It was not possible to fully assess the adjacent ground floor commercial buildings as they were closed at the time of this survey, but acoustic results from the upper floor tests have indicated sufficient sound insulation between the residential and commercial element below .The neighbouring commercial properties are separated by brick and block construction with the walls then plastered which would generally have a higher level of acoustic insulation .

### Methodology

A calibrated NTI XL 2 sound meter was used to record sound levels from a single source 110 dB dodecahedron speaker, which is used to generate noise to record sound power levels on the opposite partition. Sound readings were taken either side of floor partition to determine the insulation sound level index and expressed as a single figure, using the calculation -  $D_{nT,w} + C_{tr}$  dB

The sound level requirements for Building Regulations Part BS EN 140-7 can be seen in the table below, it is considered the higher the index figure the more efficient the sound insulation is between partitions .

### Sound Insulation sound levels requirements BS EN ISO 140-7

**Table 0.1a Dwelling-houses and flats – performance standards for separating walls, separating floors, and stairs that have a separating function**

|                                                                       | Airborne sound insulation<br>sound insulation<br>$D_{nT,w} + C_{tr}$ dB<br>(Minimum values) | Impact<br>sound insulation<br>$L'_{nT,w}$ dB<br>(Maximum values) |
|-----------------------------------------------------------------------|---------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| <b>Purpose built dwelling-houses and flats</b>                        |                                                                                             |                                                                  |
| Walls                                                                 | 45                                                                                          | -                                                                |
| Floors and stairs                                                     | 45                                                                                          | 62                                                               |
| <b>Dwelling-houses and flats<br/>formed by material change of use</b> |                                                                                             |                                                                  |
| Walls                                                                 | 43                                                                                          | -                                                                |
| Floors and stairs                                                     | 43                                                                                          | 64                                                               |

The existing floor construction separating the ground floor commercial unit and upper residential dwelling is comprised of carpet, 3mm rubber underlay, 22mm floorboards over 175mm timber floor joists with 150mm of Quilted insulation below is a 200mm void with an installed suspended ceiling.

Acoustic data recordings were taken in various positions to obtain an average sound level of each room.

Reverberation time measurements and background recordings were also recorded.

The sound meter was field calibrated before and after testing and any significant drift would be noted in this report. Recorded sound graph at end of this report.

## Airborne Test Results

| Partition | BS EN 140-7<br>Performance Standards<br>(Minimum value) | Air borne Sound<br>insulation Results<br>DnT +Ctr | Measured result<br>over criteria |
|-----------|---------------------------------------------------------|---------------------------------------------------|----------------------------------|
| Floor 1   | 43dB                                                    | 46dB                                              | +3dB                             |
| Floor 2   | 43dB                                                    | 45dB                                              | +2dB                             |

| Partition | Octave Band Measurements |       |       |       |      |      |      | DnT+<br>Ctr<br><br>(dB) |
|-----------|--------------------------|-------|-------|-------|------|------|------|-------------------------|
|           | 63Hz                     | 125Hz | 250Hz | 500Hz | 1KHz | 2KHz | 4KHz | 47<br>(-2)              |
| Floor 2   | 33.1                     | 38.0  | 40.4  | 46.0  | 49.8 | 44.9 | 46.3 | 45                      |

## Measured Octave Band Sound Insulation Performance (DnT dB)

## **Results Discussion**

It can be seen from the Airborne sound insulation test results above , the floor partitions above the proposed Laundrette, separating the residential apartment above from the commercial element on the ground floor to surpass the current sound insulation levels stated in BS EN 140-7 Building Regulations performance values for habitable rooms.

## **Vibration**

It is important to take into consideration Sound Vibration within buildings from fixed plant or equipment , Modern industrial washing machines are acoustically attenuated to be comparable with most domestic appliances, and when installed professionally, vibration noise is not expected to be observed with any significance , however as a precaution the machinery associated with the operation of a laundrette, are to be installed with suitable type isolators and anti- vibration matting.

## **Extract Ventilation**

The specific manufacturers ventilation detail is currently unknown, other than it would exit the rear of the premises if required, consideration has been applied to potential noise levels for the ventilation system at the nearest noise sensitive receptor. Sound power levels have been based on representative data from similar commercial premises and a typical commercial fan manufactures specification was used for this assessment.

## Calculations Based on Guidance from BS 4142 :2014

|                                                                         |                                        |              |
|-------------------------------------------------------------------------|----------------------------------------|--------------|
| <b><i>Helios Extraction Fan<br/>Model DL400</i></b>                     | <b>64dB</b>                            | <b>64</b>    |
| <b>Distance Attenuation to<br/>nearest Noise Sensitive<br/>receptor</b> | <b>8m</b>                              | <b>-18</b>   |
| <b>Feature Correction for tonal<br/>features BS 4142</b>                | <b>Intermittency</b>                   | <b>+3</b>    |
| <b>Adjustment for Noise<br/>Propagation</b>                             | <b>-8</b>                              | <b>-8</b>    |
| <b>Calculated specific sound<br/>pressure at receptor</b>               |                                        | <b>41</b>    |
| <b>Lowest recorded average<br/>Background Noise( LA 90 )</b>            | <b>Daytime 16hour<br/>0.7.00-23.00</b> | <b>53</b>    |
| <b>Difference (dB)</b>                                                  |                                        | <b>-12dB</b> |

### Survey Results:

Rating Level at nearest sensitive receptor      41   dB

Background Sound level              53dB

Excess of rating over background sound level (41-53 ) = Difference -12dB

In accordance with BS4142: 2014 an indication of a **LOW IMPACT**

## 6. Results summary

- Central Air and Sound Testing , have conducted a detailed environmental noise assessment, taking into consideration noise levels specified in BS8233; 2014, to ensure the occupiers of neighbouring and upper floor residential properties adjacent to the to the proposed laundrette would not receive any unreasonable degree of noise disturbance from activities associated with the proposed laundrette .
- Results from the airborne sound insulation testing conducted in accordance with (BS EN ISO 140.7 : Approved Document Part E 2010.) determined the sound insulation levels between the existing floor partitions to be above of the current Building Regulations requirements.
- Installation of suitable machinery isolators and anti-vibration matting will attenuate both vibration and noise within the building.
- Extraction fan noise levels have been considered using manufactures representative data, and assessed at worst case, to be -12 dB below the existing background noise level to the nearest noise sensitive receptor, following guidance from British Standard BS 4142: 2014 this to be considered be Low Impact
- Uncertainty of the assessment. - The measurements and calculations undertaken for this assessment, were taken under repeatable conditions and the uncertainty in these results would be considered low. The background noise level is quite elevated due to the busy urban environment, any additional noise levels due to the proposed laundrette, would be generally considered unnoticeable against the existing background noise levels .

## 7. CONCLUSION

Central Air and Sound Testing have been appointed to conduct an environmental noise assessment, to submit to the Local Planning Authority, with regards to a planning application for the change of use, of the ground floor commercial premises to a laundrette.

A noise survey has been conducted using guidance from British Standards BS 4142: 2014 to assess what impact, the proposed laundrette may have on the neighbouring properties with respects to noise.

Based on the measured noise levels obtained , appropriate noise levels can be met, so as not to exceed the values specified in BS4142 :2014 and it is considered that the proposed laundrette would have a minimum adverse effect on the health and wellbeing of the neighbouring properties with respect to noise.

**Therefore, it is our conclusion that this Noise assessment indicates , the proposed development conforms to the National Planning policy requirements, and it is recommended that noise should not be a constraint to the approval of planning permission.**

## 8. EQUIPMENT

|                               |                         |                                  |
|-------------------------------|-------------------------|----------------------------------|
| NTI XL2 Class 1 SOUND METER   | <u>SERIAL NO 456778</u> | <u>UKAS Calibration Dec 2023</u> |
| <u>NTI Class 1 MICROPHONE</u> |                         |                                  |
| <u>NTI Class 1 calibrator</u> | <u>69678</u>            | <u>UKAS Calibration Dec 2023</u> |

## 9. Glossary of Terms

| Term                 | Definition                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 $20 \mu\text{Pa}$ . |
| A-weighting, dB(A)   | The unit of sound level, weighted according to the A-scale, which takes into account the increased sensitivity of the human ear at some frequencies.                                                                                                                                                                                                                                          |
| Noise Level Indices  | Noise levels usually fluctuate over time, so it is often necessary to consider an average or statistical noise level. This can be done in several ways, so a number of different noise indices have been defined, according to how the averaging or statistics are carried out.                                                                                                               |
| $L_{eq,T}$           | 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.                                                                                                                                        |
| $L_{max,F}$          | A noise level index defined as the maximum noise level during the 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.                                   |
| $L_{90,T}$           | A noise level index. The noise level exceeded for 90% of the time over the period T. $L_{90}$ can be considered to be the 'average minimum' noise level and is often used to describe the background noise.                                                                                                                                                                                   |
| Free-Field           | Far from the presence of sound reflecting objects (except the ground), usually taken to mean at least 3.5m                                                                                                                                                                                                                                                                                    |
| 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 ( $L_{Aeq,T}$ ).                                                                                                                                                                                                                                     |
| Residual Noise Level | The ambient noise remaining at a given position in a given situation when specified sources are suppressed to a degree such that they do not contribute to the ambient noise level ( $L_{Aeq,T}$ )                                                                                                                                                                                            |
| Specific Noise Level | The equivalent continuous A-weighted sound pressure level at the assessment position produced by the specific noise source (the noise source under investigation) over a given time interval ( $L_{Aeq,T}$ )                                                                                                                                                                                  |
| Rating Noise Level   | The specific noise level plus any adjustment for the characteristic features of the noise ( $L_{A,r,Tr}$ ).                                                                                                                                                                                                                                                                                   |

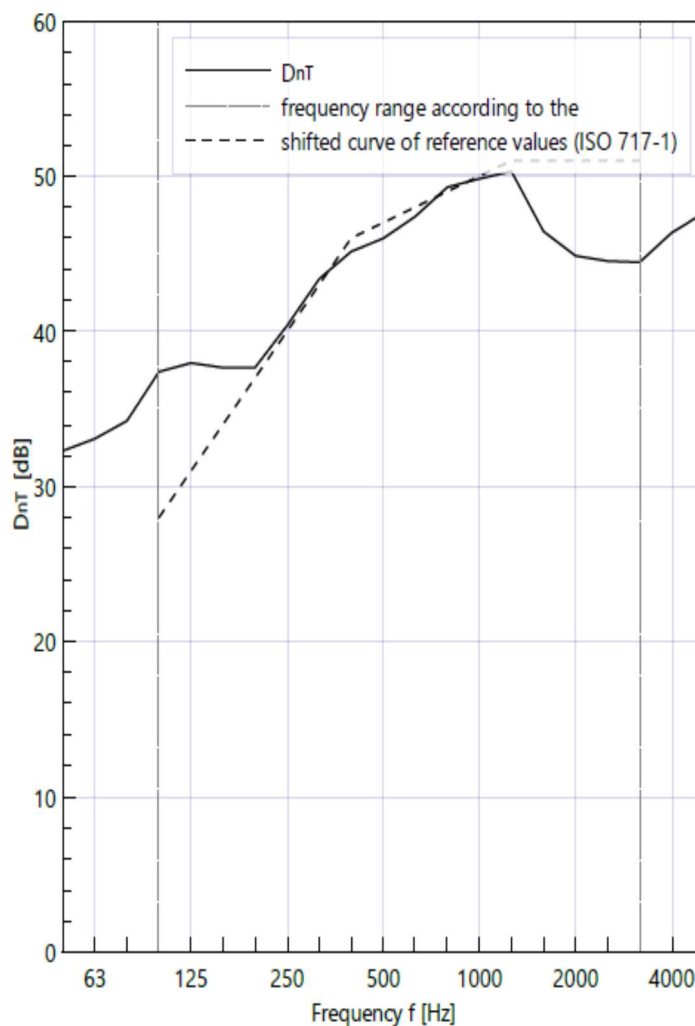
XL2 Sound Level Meter: A2A-19318-E0 (M2230: 10055)

Area of common partition: 40.00 m<sup>2</sup>

Source room volume: 50.00 m<sup>3</sup>

Receiving room volume: 50.00 m<sup>3</sup>

| Frequency<br>f<br>Hz | D <sub>nT</sub><br>1/3 octave<br>dB |
|----------------------|-------------------------------------|
| 50                   | ≥ 32.3                              |
| 63                   | 33.1                                |
| 80                   | 34.2                                |
| 100                  | 37.4                                |
| 125                  | 38.0                                |
| 160                  | 37.7                                |
| 200                  | 37.7                                |
| 250                  | 40.4                                |
| 315                  | 43.4                                |
| 400                  | 45.1                                |
| 500                  | 46.0                                |
| 630                  | 47.4                                |
| 800                  | 49.3                                |
| 1000                 | 49.8                                |
| 1250                 | 50.3                                |
| 1600                 | 46.4                                |
| 2000                 | 44.9                                |
| 2500                 | 44.5                                |
| 3150                 | 44.4                                |
| 4000                 | 46.3                                |
| 5000                 | 47.6                                |



≥: 1.3 dB correction applied,  
value at the limit of measurement

Rating in accordance with ISO 717-1:

$D_{nT,w}(C;C_{tr}) = 47$  (-1; -2) dB

$C_{50-3150} = -1$  dB;

$C_{50-5000} = -1$  dB;

$C_{100-5000} = -1$  dB

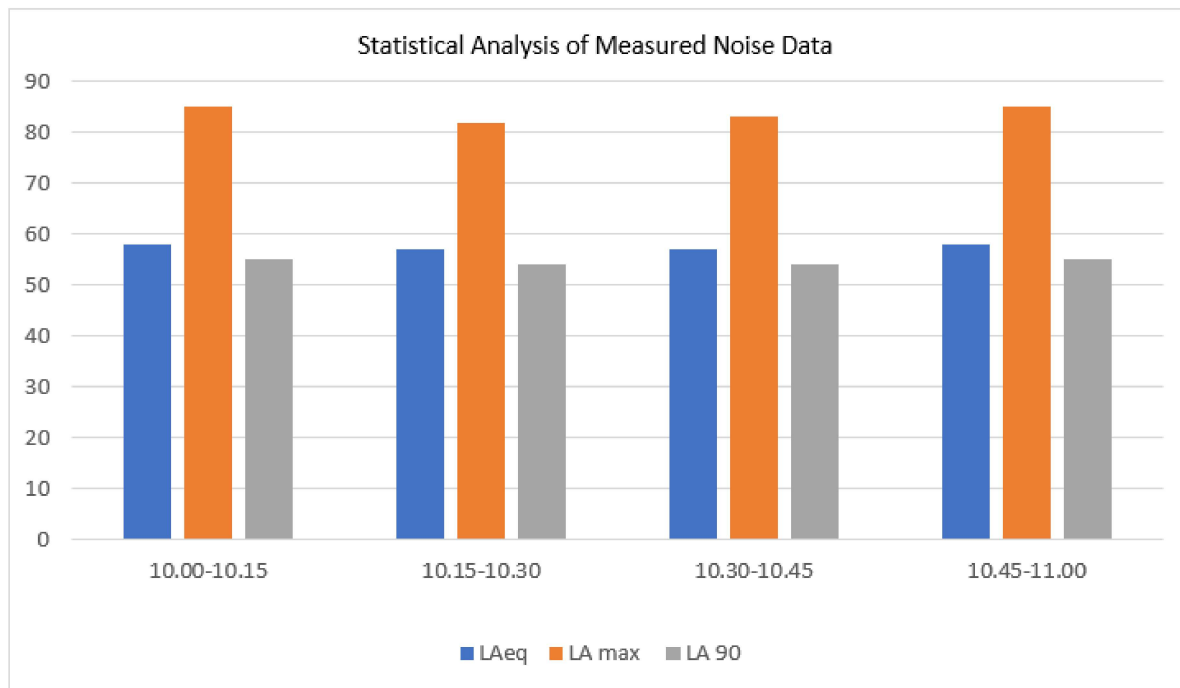
$C_{tr,50-3150} = -3$  dB;

$C_{tr,50-5000} = -3$  dB;

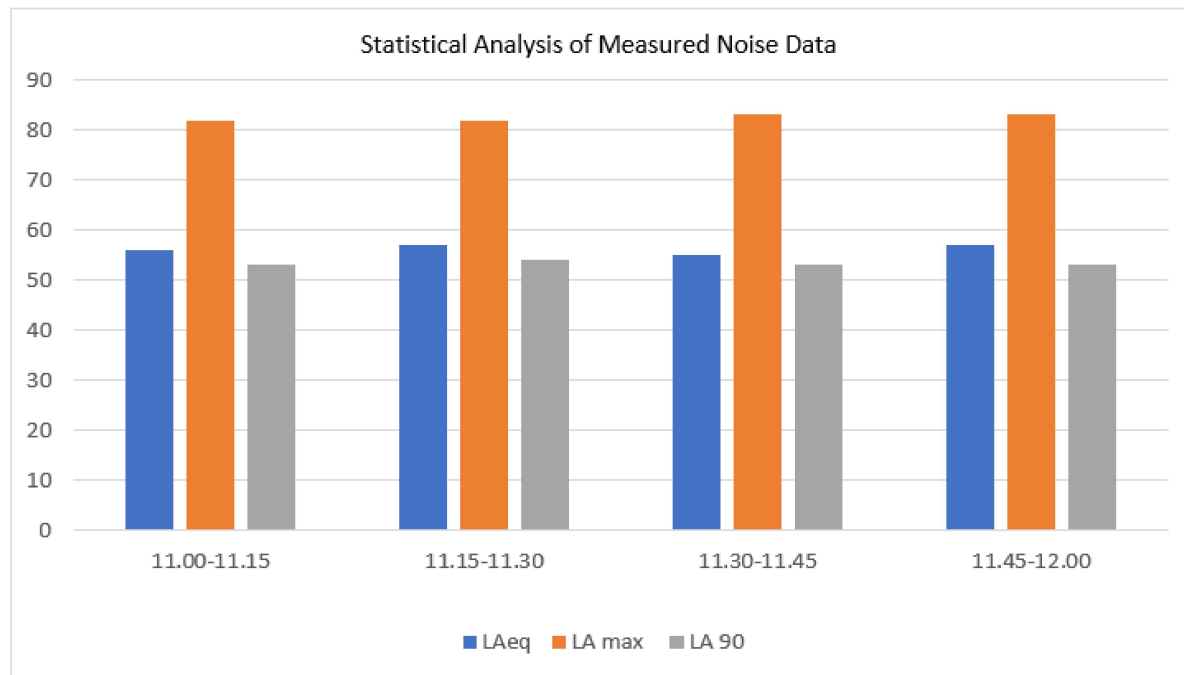
$C_{tr,100-5000} = -2$  dB

Evaluation based on field measurement using results obtained by an engineering method.

## BS EN ISO 140-7 Airborne sound insulation test .



**Position 1 Recorded Noise Data**



**Position 2 Recorded Noise Data**

