



# Acoustic Survey and Odour Assessment for Proposed hot food takeaway at 51 Tweedale Street, Rochdale, OL11 1HH.

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Prepared for:

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## **1. Introduction**

- 1.1. Martin Environmental Solutions has been commissioned to undertake an acoustic survey and odour assessment to support a planning application for a hot food takeaway on the ground floor of 51 Tweedale Street, Rochdale, OL11 1HH.

### **Site Location and Context**

- 1.2. The development site is situated to the south of Tweedale Street and forms an end terrace property. The properties stretch to the east and are residential while to the west is an open plot of land. A community centre and bursary are located opposite the site to the north and to the south a rear alleyway. Residential properties are also located to either side of the alleyway.
- 1.3. An aerial Photograph is enclosed in Figure 1.
- 1.4. The report has been produced to clarify the potential impact from the proposed development and to identify mitigation measures if required to ensure the development is appropriate in terms of noise and odour impact.



## **2. Policy and Guidance**

### **Noise**

- 2.1. The impact of noise can be a material consideration in the determination of planning applications. The planning system has the task of guiding development to the most appropriate locations. It is recognised that on occasions it will be difficult to reconcile some land uses, such as housing, hospitals, or schools, with other activities that generate high levels of noise. However, the planning system is tasked to ensure that, wherever practicable, noise-sensitive developments are separated from major sources of noise (such as road, rail and air transport and certain types of industrial development).
- 2.2. The Government's publication of the National Planning Policy Framework (NPPF), updated in September 2023, states that planning policies and decisions should prevent new and existing development from contributing to or being put at unacceptable risk from, of being adversely affected by unacceptable levels of noise pollution.
- 2.3. The Government have also issued the Noise Policy Statement for England (NPSE). The NPSE clarifies the Government's underlying principles and aims in relation to noise and sets a vision to promote good health and a good quality of life through the effective management of noise while having regard to the Government's sustainable development strategy. The NPSE aims to mitigate and minimise adverse impacts on health and quality of life through the effective management and control of noise.
- 2.4. The NPSE introduces the following terms, although no sound levels are given to represent these, many authorities have identified the sound level criteria in line with the World Health Organisation, BS8233:2014 and BS4142: 2014 levels. The terms introduced by the NPSE are:  
NOEL – No Observed Effect Level (<30dB(A) inside <50dB(A) outside, 10dB below background)  
LOAEL – Lowest Observed Adverse Effect Level (30-35dB(A) inside 50-55dB(A) outside, background to +5dB)  
SOAEL – Significant Observed Adverse Effect Level (>35dB(A) inside, >55dB(A) outside, >+10dB above background)
- 2.5. The sound levels within the brackets of the previous paragraph are those determined as appropriate levels to indicate the relevant effect levels represented by the NPSE.



- 2.6. Other commonly used examples of standards utilised by Local Planning authorities for the consideration of noise impacts include comparison of the likely noise levels to be experienced at a development, with levels that have been recommended by the World Health Organisation (WHO) as Guidelines for the prevention of Community Noise Annoyance and within BS8233: 2014.
- 2.7. The WHO recommended noise levels for outdoor amenity areas (gardens) that should not be exceeded are 55dB(A)  $L_{Aeq,16hr}$  in order to avoid 'Serious Community Annoyance' or 50dB(A)  $L_{Aeq,16hr}$  to avoid 'Moderate Community Annoyance' during the day. For indoor levels WHO set 35dB(A)  $L_{Aeq,16hr}$  during the day to prevent Moderate Annoyance and 30 dB(A)  $L_{Aeq,8hr}$  at night to prevent sleep disturbance.
- 2.8. The WHO guidance also recommends that maximum sound levels at night should not regularly exceed 45dB(A) within bedrooms to prevent sleep disturbance. Regularly is considered to be more than 10 times during any 8-hour night-time period.
- 2.9. BS 8233:2014 'Guidance on sound insulation and noise reduction for buildings' also specifies desirable noise levels to be achieved inside dwellings.
- 2.10. BS 8233:2014 'Sound insulation and noise reduction for buildings – Code of Practice' also specifies desirable noise levels to be achieved inside dwellings. BS 8233 presents two levels, the first between the hours of 07:00 – 23:00 and the second between 23:00 -07:00.
- 2.11. The daytime period suggests internal noise levels of 35dB  $L_{Aeq,16hr}$ , for resting in living rooms and bedrooms while for night-time a level of 30dB  $L_{Aeq,8hr}$  is recommended. Criteria for external areas mirrors that within the WHO guidance.
- 2.12. Another commonly used standard is British Standard 4142:2014 'Method for rating industrial and commercial sound' compares the sound predicted by the source in question against the background,  $L_{A90}$  sound levels.



- 2.13. The "residual"  $L_{Aeq}$  measurement is then subtracted from the "ambient"  $L_{Aeq}$  measurement (with the sound source) to calculate the sound level created by the "problem" sound alone -termed the "specific" sound level.
- 2.14. If the "problem" sound is tonal, such as whine or hum, or if it is impulsive such as bangs or clatters or if it is irregular enough to attract attention a correction is added to the "specific level" to produce the "rating level". The "background"  $L_{A90}$  measurement is then compared against the "rating level".
- 2.15. If the "rating level" exceeds the "background" by around 10dB(A) or more this "indicates a significant adverse impact". A difference of around 5dB(A) 'indicates an adverse impact. The lower the commercial noise level is, the lower the likely impact.
- 2.16. In addition, the 'ProPG Planning & Noise, Professional Practice Guidance on Planning & Noise, New Residential Development' provides a 4-staged approach to undertaking a risk assessment in relation to anticipated sound levels at new residential development and the provision of mitigation measures. The guidance is principally aimed at sites exposed predominantly to noise from transportation sources.
- 2.17. The first stage consists of an initial noise risk assessment, based on indicative day and night-time *noise* levels. Simply put, the higher the ambient noise in an area the greater the impact. The levels given are shown below although it should be noted that these are in excess of both the WHO and BS 8233: 2014 guidance.

| Noise Risk Category*                                                                            | Potential Effect if Unmitigated                                       | Pre-Planning Application Guidance                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>0 – Negligible</b><br>$L_{Aeq,16hr} < 50dB$<br>$L_{Aeq,8hr} < 40dB$                          | May be noticeable but no adverse effect on health and quality of life | In this category the development is likely to be acceptable from a noise perspective, nevertheless a good acoustic design process is encouraged to improve the existing environment and/or safeguard against possible future deterioration and to protect any designated tranquil areas. A noise assessment may be requested to demonstrate no adverse impact from noise. Application need not normally be delayed on noise grounds.                                         |
| <b>1 – Low</b><br>$L_{Aeq,16hr} 50-63dB$<br>$L_{Aeq,8hr} 40-55dB$                               | Adverse effect on health and quality of life                          | In this category the development may be refused unless a good acoustic design process is followed and is demonstrated via a Level 1 Acoustic Design Statement which confirms how the adverse impacts of noise on the new development will be mitigated and minimised and that a significant adverse impact will not arise in the finished development. Planning conditions and other measures to control noise may be required.                                              |
| <b>2 – Medium</b><br>$L_{Aeq,16hr} 63-69dB$<br>$L_{Aeq,8hr} 55-60dB$<br>$L_{AFmax} > 80dB^{**}$ | Significant adverse effect on health and quality of life              | In this category the development is likely to be refused unless good acoustic design process is followed and is demonstrated via a Level 2 Acoustic Design Statement which confirms how the adverse impacts of noise on the new development will be mitigated and minimised, and clearly demonstrates that a significant adverse noise impact will not arise in the finished development. Planning conditions and other measures to control noise will normally be required. |
| <b>3 – High</b><br>$L_{Aeq,16hr} > 69dB$<br>$L_{Aeq,8hr} > 60dB$<br>$L_{AFmax} > 80dB^{**}$     | Unacceptable adverse effect of health and quality of life             | In this category the development is very likely to be refused on noise grounds, even if a good acoustic design process is followed and is demonstrated via a Level 2 Acoustic Design Statement. Applicants are advised to seek expert advice on possible mitigation measures. Advice on the circumstances when the refusal of a new housing on noise grounds should normally be anticipated is included in the ProPG.                                                        |

2.18. Stage 2, consists of a full assessment of the prevailing ambient noise and requires 4 elements to be considered:

- I. Element 1 – Good Acoustic Design
- II. Element 2 – Internal Noise Level Guidelines
- III. Element 3 – External Amenity Area Noise Assessment
- IV. Element 4 – Assessment of Other Relevant Issues

2.19. A good acoustic design is implicit in meeting the requirements of the NPPF and can help to resolve many potential acoustic issues.

2.20. Details of the criteria considered suitable are provided above for both internal and external sound levels. Element 4 includes such issues as local and national policy, likely occupants, wider planning objectives.



## **Odour**

- 2.21. The Government sets out its policy in relation to planning in the National Planning Policy Framework (NPPF). The NPPF states that planning policies and decisions should “preventing new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability”; and “In preparing plans to meet development needs, the aim should be to minimise pollution and other adverse effects on the local and natural environment”.
- 2.22. While Odour is not specifically mentioned in is implied by the above and the Planning Practice Guidance (PPG) note issued by the government on Air Quality states “odour and dust can also be a planning concern, for example, because of the effects on local amenity” it continues to state, “mitigation options where necessary, will depend on the proposed development and should be proportionate to the likely impact”.
- 2.23. Before an odour can be present an adverse effect, there must be exposure to the odour and therefore a source, a pathway, and a receptor without these three links no exposure can occur. In the case of this application the source is the take-away. The pathway is the air, and the receptor are the occupants of the nearby existing dwellings.
- 2.24. In assessing the impact of odour on or from a development the scale of the exposure and therefore impact is determined by the parameters collectively known as the FIDO factors (Frequency, Intensity, Duration and Offensiveness) In addition the sensitivity of the receptor (location) will determine the magnitude of the exposure. Factors that influence the magnitude of a commercial odour problem include the size/volume of the cooking facility, the type of food being prepared, and the type of cooking appliances being used.
- 2.25. Furthermore, updated guidance on assessing the impact of extraction systems from commercial kitchens has been published by EMAQ ‘*Control of Odour and Nose from Commercial Kitchen Extraction Systems*’ 2018.



- 2.26. This document details a methodology which should be followed to assess the potential impact from commercial kitchen extraction systems on nearby land uses and how to identify suitable control and mitigation measures as required.



### **3. The Assessment**

#### **The development**

- 3.1 The proposed development consists of a change of use to the ground floor of the property from residential to hot food takeaway. This will include a new external extraction system to the rear of the site.
- 3.2 The first floor will be used for storage and staff facilities.
- 3.3 The flue is to terminate 1m above the eaves of the property, discharging vertically and will be 450mm diameter.
- 3.4 The nearest receptor is therefore the adjacent property, the nearest window being 5m horizontal distance from the flue. To the south the nearest property (southeast) is 17m from the flue.
- 3.5 A Flaktwood 45JM/16/4/5/30/1PH Long Cased Axial Fan has been identified for the development and sound level data has been obtained from the manufacturers, Appendix B.
- 3.6 Appendix C details the calculations which identify a sound level of 43.5dB(A) at the nearest receptor window 5m away.

#### **Existing Situation.**

- 3.7 In order to obtain representative background sound levels for the area on site monitoring was undertaken over the 9<sup>th</sup>-11<sup>th</sup> April 2024.
- 3.8 A Cirrus Optimus Green sound level meter was utilised for the monitoring. The meter was placed to the rear of the site at a height of 3m to clear the boundary wall of the yard.
- 3.9 The meter was field calibrated at the start and end of the monitoring period with no significant variation and full laboratory calibration certificates are available on request.
- 3.10 The weather during the monitoring was variable with rain during the first day which then cleared over the second and third. There was little wind <5m/s during the monitoring period.
- 3.11 The full results are shown in Appendix A, with a summary in the tables below.



| Start Time       | End Time         | Duration | L <sub>Aeq</sub> | L <sub>A90</sub> | L <sub>AMax</sub> |
|------------------|------------------|----------|------------------|------------------|-------------------|
| 09/04/2024 14:00 | 09/04/2024 23:00 | 08:59:58 | 54.4             | 49.0             | 82.7              |
| 09/04/2024 23:00 | 10/04/2024 07:00 | 08:00:00 | 50.5             | 41.0             | 81.4              |
| 10/04/2024 07:00 | 10/04/2024 23:00 | 16:00:00 | 56.6             | 51.4             | 91.2              |
| 10/04/2024 23:00 | 11/04/2024 07:00 | 08:00:00 | 50.3             | 40.6             | 76.7              |
| 11/04/2024 07:00 | 11/04/2024 17:00 | 10:00:01 | 54.7             | 48.2             | 94.7              |

- 3.12 Background sound levels were dominated by passing traffic on the nearby road network with night-time maximum sound levels regularly exceeded at identified at 70.6dB(A).
- 3.13 The proposed extraction system will therefore result in sound levels below the prevailing sound level in the area, but slightly above the night-time background L<sub>A90</sub> figure recorded.
- 3.14 It is therefore recommended that a silencer be installed after the fan to reduce the resulting sound level and ensure no adverse impact.
- 3.15 A CDA 450 X1D silencer will reduce sound levels to 30.8dB(A), significantly below the prevailing background L<sub>A90</sub> sound level.
- 3.16 Given a 15dB attenuation<sup>1</sup> for an open window the sound levels to be experienced internally at the nearest property will be 15.8dB(A) significantly below the night-time recommended value of 30dB(A) detailed in section 2 above.
- 3.17 Given the nature of the development it is also appropriate to consider a BS4142:2014+A1:2019 assessment for the extract system. The extraction system will be continuous when the site is operating, with no impact noise associated with it and based on the data provided will not have any tonal components.
- 3.18 The extraction system will however be distinctive against the background sound level and so a correction of +3dB has been applied, a +2dB correction has also been applied for tonality as a precaution. Given the low overall sound level this is considered to be adequate to represent a worse case situation.

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<sup>1</sup> BS8233: 2014; Guidance on sound insulation and noise reduction for buildings

|                                              | Day                                                                        | Night                                                                     |                                                           |
|----------------------------------------------|----------------------------------------------------------------------------|---------------------------------------------------------------------------|-----------------------------------------------------------|
| Measured Ambient sound level                 |                                                                            |                                                                           | No extraction in place so no ambient sound level measured |
| Residual Sound level                         | $L_{Aeq} = 55.2\text{dB}$                                                  | $L_{Aeq} = 49.2\text{dB}$                                                 | Average sound level measured on site.                     |
| Background Sound Level                       | $L_{A90} = 50.2\text{dB}$                                                  | $L_{A90} = 43.3\text{dB}$                                                 | Average sound level measured on site.                     |
| Reference period                             | 60 minutes                                                                 | 15 minutes                                                                | Normal ref period,                                        |
| Specific sound Level                         | $L_{Aeq} = 30.8\text{dB}$                                                  | $L_{Aeq} = 30.8\text{dB}$                                                 | Calculated                                                |
| Acoustic feature                             | +5                                                                         | +5                                                                        | +3dB distinctive<br>+2dB tonality                         |
| Rating level                                 | 35.8dB                                                                     | 35.8dB                                                                    |                                                           |
| Background sound level                       | $L_{A90} = 50.2\text{dB}$                                                  | $L_{A90} = 43.3\text{dB}$                                                 |                                                           |
| Excess of Rating level over background level | (35.8-50.2) dB = <b>-14.4dB</b><br>indicates no significant adverse impact | (35.8-43.3) dB = <b>-7.5dB</b><br>indicates no significant adverse impact |                                                           |
| Uncertainty                                  |                                                                            |                                                                           | Uncertainty over the existence of any tonal component.    |

3.19 The assessment, when considering the above mitigation measures in the form of the CAD 2D silencer, will not result in any adverse impact on the neighbouring receptors.

### Internal transfer of sound

3.20 It is also appropriate to consider sound transfer between the party wall with the adjacent property.

3.21 The dividing wall consists of a solid 9inch dividing brick wall plastered on both sides. This provide a 56dB  $R_w$  level of attenuation, see Appendix D.



- 3.22 The internal sound levels within the takeaway will not be significant but a high level of 80dB(A) has been used for this assessment. This will result in a sound level of 28dB(A) in the adjacent property, below the recommended average night-time sound level. As such even at an elevated level the proposed development will not result in any significant adverse impact on the neighbouring property.

## **4 Odour**

### **Prevailing Wind Direction**

- 4.1 The prevailing wind direction for the area, identified from weather station at Manchester Airport as west, south-westerly, see Appendix E, taking odours over the properties towards the northeast and towards receptors to the east of the site located within 20m of the site.

### **Assessment**

- 4.2 The extraction system is to terminate above the eaves of the property, with receptor locations within 20m of the flue. The take-away is considered small in size serving low numbers of customers.
- 4.3 An assessment of the potential impact on the identified receptors has been undertaken in accordance to the EMAQ guidance document. This assessment is shown in Appendix F and includes the following considerations;
- 4.4 The extraction system will terminate above the eaves via a jet cowl, in line with the guidance a score of 10 is applied.
- 4.5 The nearest residential receptor is located within 20m away, as such a score of 10 is applied.
- 4.6 The business has identified as 'small', and therefore score 1 has been applied.
- 4.7 The odour characteristics from the venue are considered to be very high, in line with the guidance document, a score of 10 has therefore been applied.
- 4.8 This results in a score of 31 or high and as such a high level of odour control is required.



4.9 In order to mitigate against this potential impact and to ensure no adverse impact will be experienced by the identified receptors, in line with the guidance, the following measures are recommended as part of the extraction system.

- Prefilters (baffle filters) attached to the extraction hood, reducing grease loading by 65-80%
- An electrostatic precipitator (ESP) unit to remove 98% of oil, grease and smoke particles or carbon filter.
- To remove odour from the extracted air an ozone system is recommended
- A jet cowl increasing the velocity of the discharged air vertically into the atmosphere for dispersion.
- The discharge point will be above the eaves of the building

4.10 The system will need to be maintained and cleaned in line with the manufacturer's instructions and a separate cleaning schedule will be produced and maintained once the unit has been installed.

4.11 The installation of the above mitigation measures will ensure high level of grease and odour removal from the extraction system.



## **4 Conclusion**

### **Noise**

- 4.1 The sound emissions from the proposed extraction system have been obtained from the manufacturer and these have been used to calculate the impact at the nearest sensitive receptor, the adjacent property.
- 4.2 This has shown that the sound levels from the system will be below the identified criterion for both façade and internal sound levels. However to ensure no adverse impact it is recommended that a standard silencer be installed after the fan unit, resulting in even lower sound levels at the nearby receptor.
- 4.3 On-site monitoring has identified existing background sound levels within the area and these have been compared to the manufacturers data, through a BS4142:2014 assessment confirming no adverse impact will be experienced from the development.
- 4.4 The development will ensure that the internal and external sound levels are acceptable and will result in a No Observe Effect on the future residents in line with the Noise Policy Statement for England.
- 4.5 As such the development will meet the objectives of the National Planning Policy Framework in ensuring that no significant adverse impact is experienced by the future residents. The development is therefore considered to be acceptable in terms of noise.
- 4.6 A consideration of the potential sound transfer from within the development to the first floor has been made and the construction of the new ceiling will prevent any adverse impact from the internal activities.



## **Odour**

- 4.7 A consideration of the proposed development has been undertaken and a risk assessment produced in accordance with the EMAQ '*Control of Odour and Noise from Commercial Kitchen Extraction Systems*' 2018 guidance document.
- 4.8 This has identified a high risk of adverse impact from odour and as such control measures in the form of baffles, ESP and an ozone system have been recommended.
- 4.9 The inclusion of the above control measures will treat and remove odour and grease from the extracted air resulting in no adverse impact on the nearby residential receptor locations.
- 4.10 As such the development will meet the objectives of the National Planning Policy Framework in ensuring that no significant adverse impact is experienced by the future residents. The development is therefore considered to be acceptable in terms of odour.

**Figure 1 – Aerial Photograph**



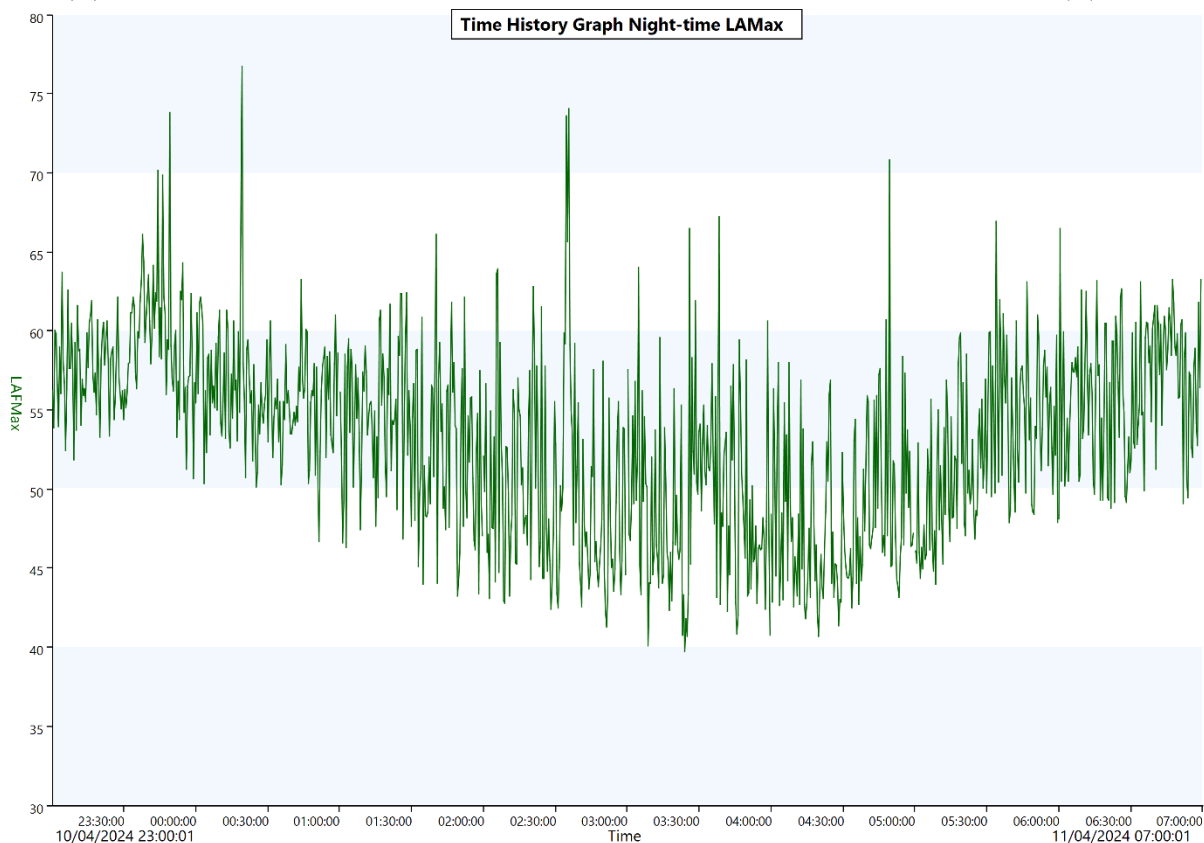
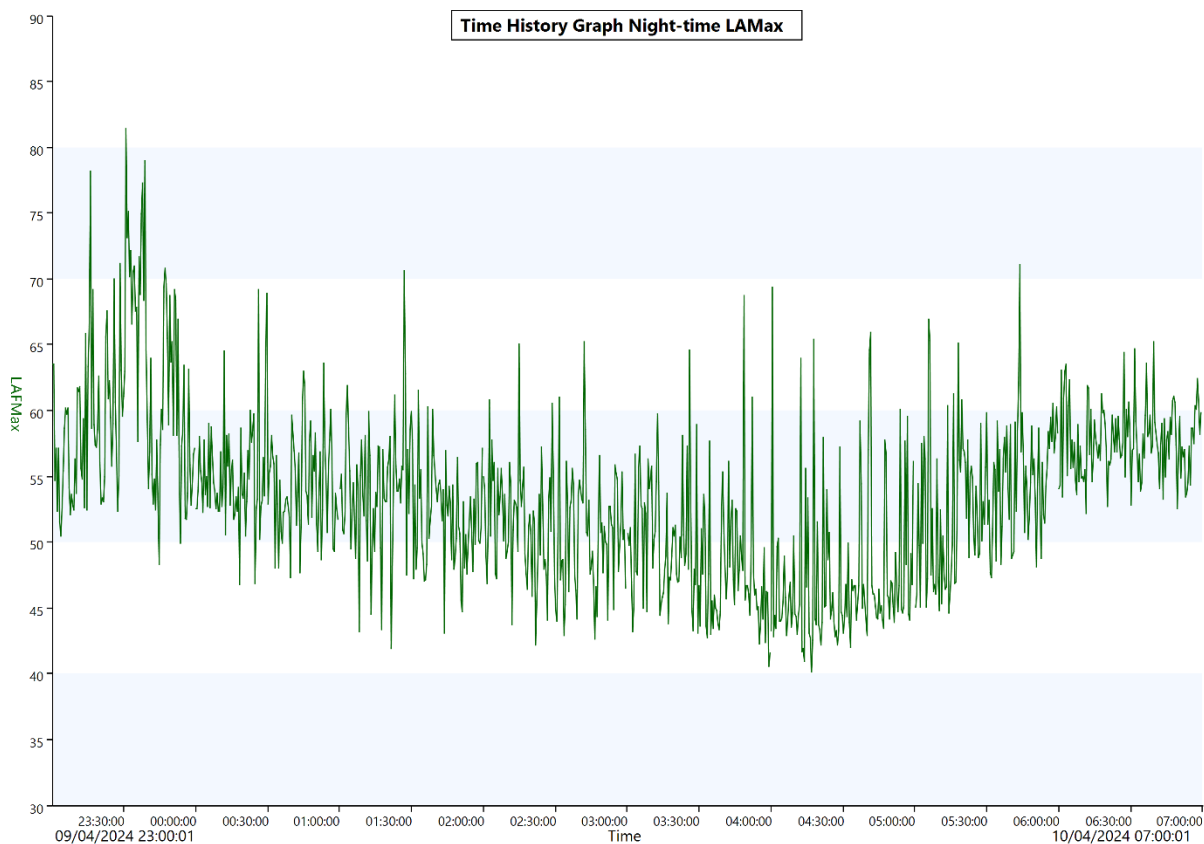


## Appendix A – Full Monitoring Results

| Time             | L <sub>Aeq</sub> (dB) | L <sub>AMax</sub> (dB) | L <sub>A90</sub> (dB) |
|------------------|-----------------------|------------------------|-----------------------|
| 09/04/2024 14:00 | 55.6                  | 71.1                   | 52.0                  |
| 09/04/2024 15:00 | 56.0                  | 81.3                   | 51.5                  |
| 09/04/2024 16:00 | 55.0                  | 75.6                   | 50.8                  |
| 09/04/2024 17:00 | 54.1                  | 69.9                   | 50.2                  |
| 09/04/2024 18:00 | 55.3                  | 80.6                   | 50.2                  |
| 09/04/2024 19:00 | 52.6                  | 68.5                   | 49.1                  |
| 09/04/2024 20:00 | 53.1                  | 82.7                   | 48.1                  |
| 09/04/2024 21:00 | 53.2                  | 77.0                   | 47.8                  |
| 09/04/2024 22:00 | 53.7                  | 80.1                   | 47.5                  |
| 09/04/2024 23:00 | 54.7                  | 81.4                   | 46.0                  |
| 10/04/2024 00:00 | 49.5                  | 69.2                   | 42.2                  |
| 10/04/2024 01:00 | 48.2                  | 70.6                   | 40.6                  |
| 10/04/2024 02:00 | 46.4                  | 65.2                   | 40.2                  |
| 10/04/2024 03:00 | 45.9                  | 68.8                   | 39.7                  |
| 10/04/2024 04:00 | 46.1                  | 69.4                   | 40.0                  |
| 10/04/2024 05:00 | 50.1                  | 71.1                   | 43.5                  |
| 10/04/2024 06:00 | 53.5                  | 65.2                   | 50.3                  |
| 10/04/2024 07:00 | 55.4                  | 67.5                   | 52.8                  |
| 10/04/2024 08:00 | 54.9                  | 70.5                   | 51.2                  |
| 10/04/2024 09:00 | 54.6                  | 75.9                   | 50.8                  |
| 10/04/2024 10:00 | 54.9                  | 68.9                   | 50.3                  |
| 10/04/2024 11:00 | 57.0                  | 80.6                   | 52.6                  |
| 10/04/2024 12:00 | 57.8                  | 91.2                   | 53.4                  |
| 10/04/2024 13:00 | 57.3                  | 82.3                   | 53.7                  |
| 10/04/2024 14:00 | 58.8                  | 85.4                   | 53.3                  |
| 10/04/2024 15:00 | 56.2                  | 72.2                   | 52.8                  |
| 10/04/2024 16:00 | 56.2                  | 82.7                   | 52.7                  |
| 10/04/2024 17:00 | 56.8                  | 82.9                   | 52.3                  |
| 10/04/2024 18:00 | 56.5                  | 81.5                   | 52.3                  |
| 10/04/2024 19:00 | 56.8                  | 89.9                   | 51.3                  |
| 10/04/2024 20:00 | 58.1                  | 90.8                   | 50.5                  |
| 10/04/2024 21:00 | 56.8                  | 87.6                   | 49.7                  |
| 10/04/2024 22:00 | 54.1                  | 81.9                   | 49.0                  |
| 10/04/2024 23:00 | 53.9                  | 73.8                   | 48.2                  |
| 11/04/2024 00:00 | 51.6                  | 76.7                   | 45.2                  |
| 11/04/2024 01:00 | 49.3                  | 66.1                   | 42.0                  |
| 11/04/2024 02:00 | 48.0                  | 74.1                   | 39.9                  |
| 11/04/2024 03:00 | 46.2                  | 67.2                   | 38.7                  |
| 11/04/2024 04:00 | 45.2                  | 70.8                   | 39.6                  |
| 11/04/2024 05:00 | 49.0                  | 66.9                   | 43.1                  |
| 11/04/2024 06:00 | 52.0                  | 66.4                   | 46.8                  |



|                  |      |      |      |
|------------------|------|------|------|
| 11/04/2024 07:00 | 54.4 | 68.4 | 49.0 |
| 11/04/2024 08:00 | 54.9 | 80.0 | 47.9 |
| 11/04/2024 09:00 | 52.8 | 73.7 | 47.5 |
| 11/04/2024 10:00 | 52.3 | 66.9 | 46.9 |
| 11/04/2024 11:00 | 52.7 | 67.4 | 48.4 |
| 11/04/2024 12:00 | 52.4 | 72.1 | 48.0 |
| 11/04/2024 13:00 | 52.6 | 72.8 | 47.4 |
| 11/04/2024 14:00 | 54.9 | 80.5 | 48.4 |
| 11/04/2024 15:00 | 53.0 | 74.7 | 49.0 |
| 11/04/2024 16:00 | 60.0 | 94.7 | 49.9 |





## Appendix B – Manufactures Sound Level Data

|                                     |                |
|-------------------------------------|----------------|
| Fan Code                            | 45JM/16/4/5/30 |
| Fan Diameter / Size                 | 450 Size / mm  |
| Blades                              | 5              |
| Fan Speed                           | 1420 rpm       |
| Velocity                            | 7.6 m/s        |
| Blade Angle                         | 30°            |
| Installation Type / Form of Running | D / B          |
| Fan Casing                          | Long           |

|           | Sound Spectrum (Hz) |     |     |     |    |    |    |    | Overall |             |
|-----------|---------------------|-----|-----|-----|----|----|----|----|---------|-------------|
|           | 63                  | 125 | 250 | 500 | 1k | 2k | 4k | 8k | Lw*     | LpA @ 3 m** |
| Inlet*    | 75                  | 74  | 70  | 68  | 64 | 63 | 59 | 55 | 79      | 50          |
| Outlet*   | 76                  | 74  | 70  | 68  | 64 | 63 | 60 | 56 | 79      | 50          |
| Breakout* | 66                  | 56  | 48  | 45  | 39 | 35 | 38 | 32 | 67      | 28          |

\* Lw dB re 10<sup>-12</sup> W      \*\* dBA re 2x10<sup>-5</sup> Pa

<https://nfan.co.uk/store/p/45jm1645301ph-long-cased-axial-flow-fan-by-flakt-woods>

| STANDARD CIRCULAR SILENCER INSERTION LOSS DATA |         |     |                                     |     |     |     |    |    |    |    |
|------------------------------------------------|---------|-----|-------------------------------------|-----|-----|-----|----|----|----|----|
| @ +20oC and 5m/sec FACE VELOCITY               |         |     |                                     |     |     |     |    |    |    |    |
| SILENCER SIZE                                  | CODE    | P.A | OCTAVE BAND CENTRE FREQUENCIES (Hz) |     |     |     |    |    |    |    |
|                                                |         |     | 63                                  | 125 | 250 | 500 | 1K | 2K | 4K | 8K |
| 200-550 dia                                    | CDA.1D  | ALL | 2                                   | 4   | 6   | 10  | 14 | 10 | 7  | 8  |
|                                                | CDA.2D  | A   | 4                                   | 8   | 13  | 17  | 23 | 17 | 12 | 11 |
|                                                |         | B   | 4                                   | 8   | 12  | 17  | 23 | 17 | 12 | 10 |
|                                                |         | C   | 4                                   | 7   | 10  | 15  | 19 | 16 | 12 | 9  |
|                                                | CDAP.1D | A   | 4                                   | 6   | 8   | 12  | 21 | 21 | 18 | 15 |
|                                                |         | B   | 4                                   | 6   | 8   | 11  | 18 | 19 | 17 | 14 |
|                                                |         | C   | 4                                   | 6   | 8   | 11  | 14 | 16 | 11 | 10 |
|                                                | CDAP.2D | A   | 7                                   | 10  | 12  | 24  | 29 | 29 | 27 | 23 |
|                                                |         | B   | 7                                   | 10  | 12  | 21  | 26 | 26 | 24 | 22 |
|                                                |         | C   | 7                                   | 10  | 11  | 18  | 21 | 20 | 17 | 15 |



## Appendix C – Calculated Extraction System Sound Level

|                         | 63    | 125   | 250  | 500  | 1000 | 2000 | 4000 | 8000 | Lw   | Lp@3m | Lp@5m |
|-------------------------|-------|-------|------|------|------|------|------|------|------|-------|-------|
| 45JM/16/4/5/30/1PH LON  | 76    | 74    | 70   | 68   | 64   | 63   | 60   | 56   | 79   | 50    |       |
| Directivity             | 1     | 1     | 1    | 1    | 2    | 4    | 6    | 11   |      |       |       |
| silencer - CDA 450 X 1D | 4     | 7     | 10   | 15   | 19   | 16   | 12   | 9    |      |       |       |
| a-weighting             | -26.2 | -16.1 | -8.6 | -3.2 | 0    | 1.2  | 1    | -1.1 |      |       |       |
| resulting sound level   | 44.8  | 49.9  | 50.4 | 48.8 | 43   | 44.2 | 43   | 34.9 | 55.8 | 35    | 30.8  |
|                         |       |       |      |      |      |      |      |      |      |       |       |
| <b>Breakout</b>         |       |       |      |      |      |      |      |      |      |       |       |
| 45JM/16/4/5/30/1PH LON  | 66    | 56    | 48   | 45   | 39   | 35   | 38   | 32   | 67   | 28    | 45.0  |
| a-weighting             | -26.2 | -16.1 | -8.6 | -3.2 | 0    | 1.2  | 1    | -1.1 |      |       |       |
| resulting sound level   | 39.8  | 39.9  | 39.4 | 41.8 | 39   | 36.2 | 39   | 30.9 | 48.1 | 31    | 26.1  |

## Appendix D – Party Wall Attenuation

### Sound Insulation Prediction (v10.0.3)

Program copyright Marshall Day Acoustics 2017 | Margin of error is generally within  $R_w \pm 3$  dB

Date: 16/04/2024

Job Name:



$R_w$  56 dB

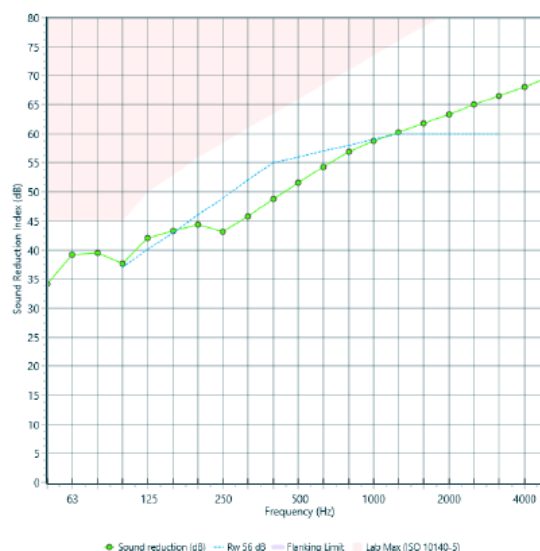
C -2 dB

Ctr -5 dB

### System description

Panel 1 1 x 225 mm Plastered Brick  
Details Panel Size 2.7 m x 4.0 m, Partition surface mass = 360 kg/m<sup>2</sup>

| freq.(Hz) | R(dB) | Roct (dB) |
|-----------|-------|-----------|
| 50        | 34    | 37        |
| 63        | 39    |           |
| 80        | 39    |           |
| 100       | 38    | 40        |
| 125       | 42    |           |
| 160       | 43    |           |
| 200       | 44    |           |
| 250       | 43    | 44        |
| 315       | 46    |           |
| 400       | 49    |           |
| 500       | 52    | 51        |
| 630       | 54    |           |
| 800       | 57    |           |
| 1000      | 59    | 58        |
| 1250      | 60    |           |
| 1600      | 62    |           |
| 2000      | 63    | 63        |
| 2500      | 65    |           |
| 3150      | 67    |           |
| 4000      | 68    | 68        |
| 5000      | 70    |           |



- Key No. 2594 | Initials:info | File Name:insul

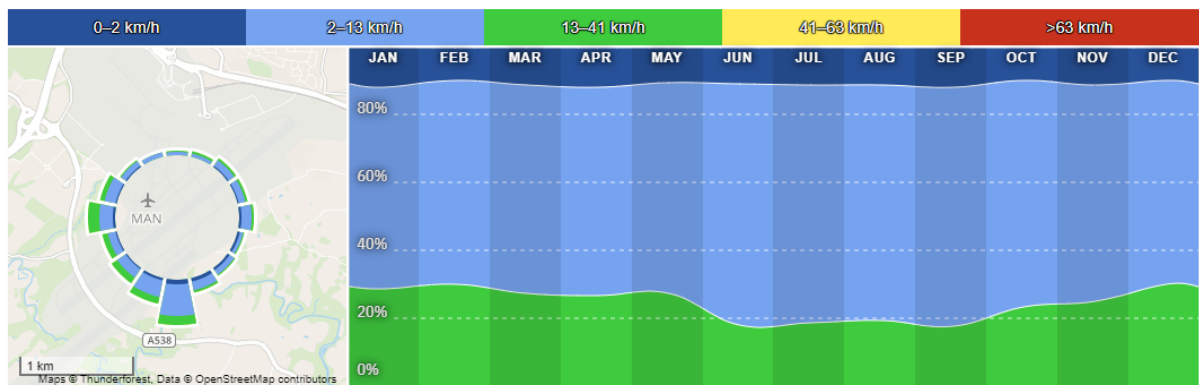


Appendix E – Prevailing Wind Direction

Monthly wind speed statistics and directions for Manchester Airport

|                                                                                                           |                                                                                      |                                                                                      |                                                                                      |                                                                                     |                                                                                       |                                                                                       |                                                                                       |                                                                                       |                                                                                        |                                                                                         |                                                                                         |                                                                                        |
|-----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
|  Dominant wind direction | JAN                                                                                  | FEB                                                                                  | MAR                                                                                  | APR                                                                                 | MAY                                                                                   | JUN                                                                                   | JUL                                                                                   | AUG                                                                                   | SEP                                                                                    | OCT                                                                                     | NOV                                                                                     | DEC                                                                                    |
|                                                                                                           |  SW |  SW |  SW |  W |  WSW |  WSW |  WSW |  WSW |  SW |  SSW |  SSW |  SW |

Monthly wind direction and strength distribution





## Appendix F – EMAQ Odour Risk Assessment

| Impact Risk   | Odour Control Requirement     | Significance Score* |
|---------------|-------------------------------|---------------------|
| Low to Medium | Low level odour control       | Less than 20        |
| High          | High level odour control      | 20 to 35            |
| Very high     | Very high level odour control | more than 35        |

| Criteria                      | Score    | Score     | Details                                                      |
|-------------------------------|----------|-----------|--------------------------------------------------------------|
| <b>Dispersion</b>             | Moderate | 10        | Discharging above the eaves >1m                              |
| <b>Proximity to Receptors</b> | Medium   | 10        | Closest sensitive receptor 5m from kitchen discharge (below) |
| <b>Size of Kitchen</b>        | Small    | 1         | Small takeaway                                               |
| <b>Cooking type</b>           | V.High   | 10        | Fast food                                                    |
| <b>Total</b>                  |          | <b>31</b> |                                                              |



## **Appendix G – Report Author Details**

This report has been produced by Neil Martin, BSc (Hons), PGDip, CEnvH MCIEH, MIOA.

Neil is the principal acoustic consultant at Martin Environmental Solutions Ltd, a consultancy company specialising in Environmental Health disciplines including environmental noise assessment and control. He holds a Bachelor's degree in Environmental Health and Diploma in Acoustics. He is a Chartered Member of the Chartered Institute of Environmental Health and a Full member of the Institute of Acoustics.

Neil has over 20 years' experience working within a Local Authority Environmental Health setting, principally in the Environmental Protection and Public Health areas and has been working as an acoustic consultant since 2011.

Since its formation, Martin Environmental Solutions has advised and assisted many groups including residents, developers and local authorities about the problems of noise & vibration and odour in the environment and the possible solutions. Neil also acts as an expert witness in the area of acoustics.