

# NOISE IMPACT ASSESSMENT

BS 4142:2014+A1:2019


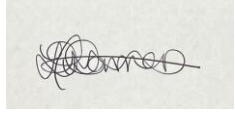
**Commercial Noise:  
Restaurant**



**REPORT DETAILS**

<b>Site Address</b>	157 Whitby Road, Ruislip, HA4 9EB
<b>Report Title</b>	Noise Assessment: Commercial Noise, Restaurant
<b>Project No.</b>	NALPRO050526.01
<b>Consultant Contact</b>	<a href="mailto:jonathan@noiseassessments.co.uk">jonathan@noiseassessments.co.uk</a>

**QUALITY ASSURANCE**

Issue No.	Status	Issue Date	Comments	Author	Approved
1	FINAL	18/05/26	-		
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## **1. Proposal**

- 1.1 A ground floor commercial property is seeking approval for a Change of use from Office (Use Class E) to Restaurant (Use Class E) and Hot Food Restaurant (Sui Generis) with installation of rear flue system (herein referred to as the site) and is required to confirm the new external flue with external noise guidance at the nearest residential dwelling. The client has completed a noise assessment at 157 Whitby Road, Ruislip, HA4 9EB.
- 1.2 The purpose of the acoustic assessment and recommendations is to ensure that the requirements of the local council are met with respect to operational noise from the continued use of the proposed restaurant affecting existing residential use on the upper floor flat and adjacent dwellings.
- 1.3 The primary internal noise source from the ground floor is customers/staff voices, chopping of food within the restaurant. An assessment for the ceiling has also been undertaken.
- 1.4 The extract fan and most ducting will be inside the rear single storey, with the flue exiting on the ground floor flat roof, and the discharge ducting is rigid in construction and installed with anti-vibration mountings. Large section ducts may include bracing or stiffeners to prevent drumming. Lined or lagged ducts, including bends, elbows or spigots, may be required if additional noise reduction is necessary.

### **Consultant**

- 1.5 Jonathan has experience in environmental, noise and vibration monitoring, acoustic consultancy and impact assessment gained over a period of 21 years in the industry, across the UK, Australia, Brunei, Turkey and the Middle East. He has a Degree in Environmental Science, Postgraduate Diploma in Environmental Monitoring. He has also completed the IOA Certificate in Environmental Noise, from the University of Liverpool.
- 1.6 Jonathan specialises in the measurement and assessment of noise and vibration for a wide range of planning applications, including those requiring EIA, across the industrial, commercial, residential, and mineral extraction sectors. Jonathan is also involved in undertaking various aspects of indoor occupational monitoring and reporting for projects relating to worker health.

## **2. Existing Context**

- 2.1 The site (ground floor level) is set within an attached property. The site is surrounded by commercial properties/apartments.

- 2.2 The environmental health department of the local planning authority is likely to raise concerns of noise emissions from the use of the fan extraction unit venting on sensitive residential properties during the daytime at the rear of the site.

### 3. Criteria

- 3.1 The following targets have been selected in accordance with 'BS 4142:2014+A1:2019 – Methods for rating and assessing industrial and commercial sound.' This will be achieved when the Rating Level is below the representative background sound level.
- 3.2 The local council require that operational noise from the Restaurant space on the ground floor should not exceed NR15 Leq,T, within the existing residential apartments.
- 3.3 The NR15 criterion are spectrum-based criterion, which require that the maximum noise level at a range of frequencies should not be exceeded as indicated in the tables below.

Table 1: NR15

	Octave Centre-Frequency Band, Hz						
	63	125	250	500	1k	2k	4k
NR15	47.0	35.0	26.0	19.0	15.0	12.0	9.0

- 3.4 Whilst there are no prescribed standards for the assessment of noise impact where human voice is the primary source, reference can be made to 'BS8233:2014 – Guidance on sound insulation and noise reduction for buildings' [British Standards Institution] which gives guideline criteria for internal ambient noise levels in residential dwellings.

### 4. Noise Policy and Guidance

#### Noise Policy Statement for England (NPSE)

- 4.1 The NPSE sets out the Government's policy on noise and includes the long-term vision of promoting good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development.
- 4.2 This long-term vision is supported by the following aims:
- 4.3 Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:
- avoid significant adverse impacts on health and quality of life;

- mitigate and minimise adverse impacts on health and quality of life; and
- where possible, contribute to the improvement of health and quality of life.

4.4 There are two established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organisation. They are:

- 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;
- LOAEL (Lowest Observed Adverse Effect Level) – this is the level above which adverse effects on health and quality of life can be detected.

4.5 Extending these concepts further, NPSE leads to the concept of a significant observed adverse effect level:

- SOAEL (Significant Observed Adverse Effect Level) – this is the level above which significant adverse effects on health and quality of life occur.

4.6 NPSE acknowledges that it is not possible to have a single objective noise-based measure that defines NOEL, LOAEL and SOAEL that is applicable to all sources of noise in all situations. It is therefore suggested that more specific advice from other applicable noise standards and guidance could be employed to determine suitable noise level criteria within the overall principles of the NPSE.

#### National Planning Policy Framework (NPPF)

4.7 The revised NPPF was updated in December 2024 and sets out the government’s planning policies for England and how these are expected to be applied. This document replaces the first NPPF published in March 2012 and includes minor clarifications to the revised version published in July 2018, February 2019, July 2021, and 2023.

4.8 Where issues of noise impact are concerned the NPPF provides brief guidance in Chapter 15

*‘Conserving and enhancing the natural environment’* as follows:

Paragraph 170:

Planning policies and decisions should contribute to and enhance the natural and local environment by preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability.

Paragraph 180:

Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

- a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;
- b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and
- c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.

Paragraph 182:

Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or ‘agent of change’) should be required to provide suitable mitigation before the development has been completed.

#### Planning Practice Guidance (PPG)

4.9 PPG is written in support of the NPPF and provides an increased level of specific planning guidance.

4.10 It suggests that noise needs to be considered when new developments may create additional noise and when new developments would be sensitive to the prevailing acoustic environment. It is also suggested that noise should not be considered in isolation and separately from issues such as the economic, social and other environmental dimensions of proposed development.

4.11 Local planning authorities’ plan-making and decision taking should take account of the acoustic environment and in doing so consider:

- whether or not a significant adverse effect is occurring or likely to occur;
- whether or not an adverse effect is occurring or likely to occur; and
- whether or not a good standard of amenity can be achieved.

## Technical Guidance

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

- 4.12 BS4142 Is a recognised standard for assessing the noise impact of fixed plant machinery via relation of noise emissions to current background noise levels.

Carried out in accordance with BS 7445 (2003) - Description and Measurement of Environmental Noise.

## 5. Nearest Sensitive Receptor Locations

- 5.1 The nearest noise sensitive receptors (NSRs) have been identified as residential apartments above the site and dwellings opposite.

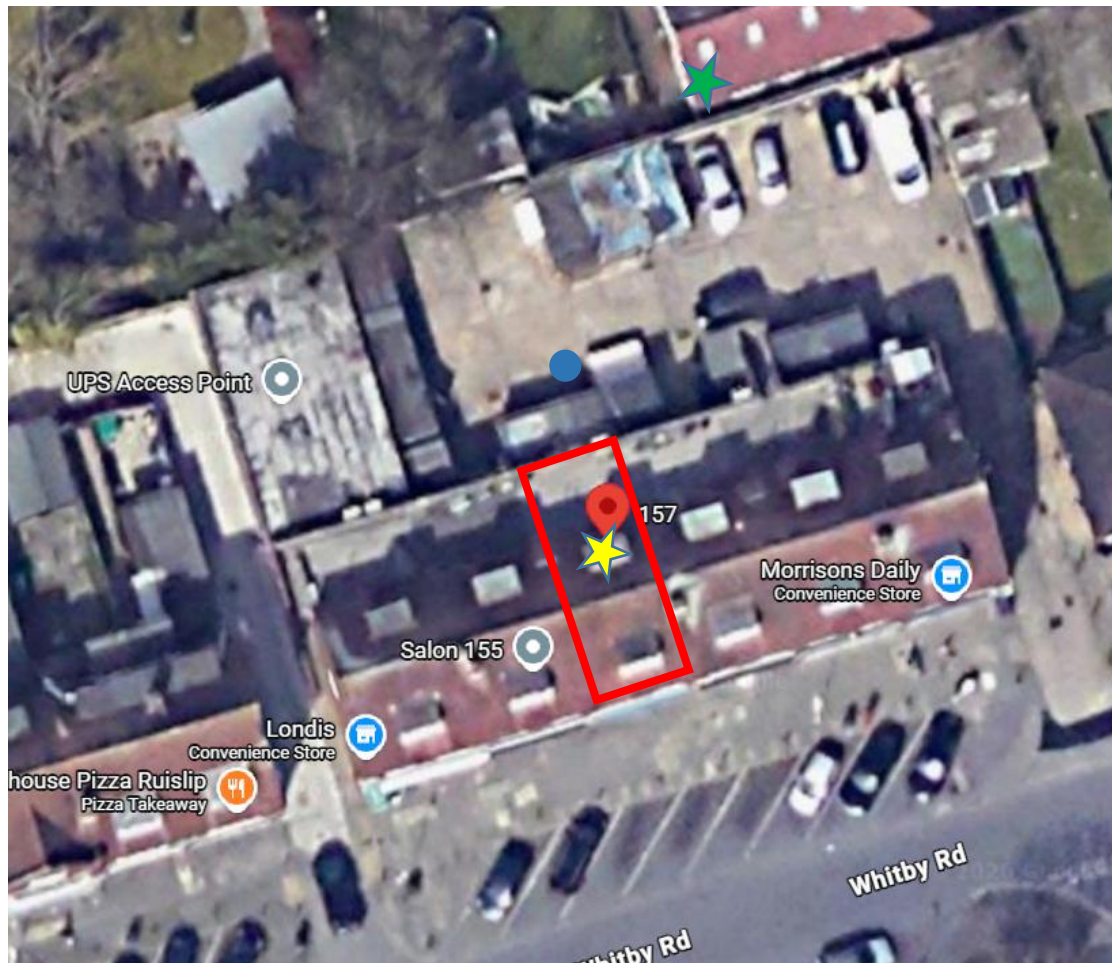
## 6. Subjective Impressions

- 6.1 The noise climate around the site is dominated by occasional road traffic throughout the day and night, including cars and HGVs / LGVs where tyre / road interaction noise. Secondary noise sources have been identified as other commercial noise, and people chatting.

## 7. Measurement Locations

- 7.1 Background noise measurements were undertaken outside the side of the nearest sensitive receptor. The data collected during this period has been used to characterise the existing acoustic environment around the site.
- 7.2 Measurement and NSR locations are shown in figure 1 below:

Figure 1: Site & Measurement Location



Background measurement location ● M1

Site location  
 ★ NSR1 (6m to flue)

★ NSR2 (18m)

## 8. Measurement Procedure

8.1 Unattended/attended noise levels were measured on 13<sup>th</sup> May 2026. Full measurement times and durations can be found in **Appendix B**.

## 9. Measurement Equipment

9.1 Measurements were undertaken using a calibrated, Pulsar N45 class 1 sound level meter. Full equipment details can be found in **Appendix C**.

9.2 Measurements at the monitoring location was ‘free field’ (no vertical reflective surfaces within 3.5 metres of the microphone) and at a height of between 1.2 – 1.5 metres above ground level. During all measurements the microphone was protected with an outdoor windshield.

- 9.3 The calibration level of the meters was checked before and after the survey with a sound calibrator with no variation in the levels observed.
- 9.4 The sound level meters were set to measure various noise parameters including LAeq and LMax values using a 'fast' time weighting.
- 9.5 Full calibration details can be provided upon request.

## 10. Weather Conditions

- 10.1 Weather conditions were deemed acceptable for background noise measurement. Full meteorological conditions are detailed in **Appendix E**.

## 11. Noise Source Levels

- 11.1 The noise level of the extraction has been provided by the manufacturer.
- 11.2 The outlet noise level is tabulated below:

Table 2: Manufacturer Noise Level

Equipment	LAeq (dB)	r, m
Extractor fan outlet	67	3.0

## BS4142:2014 Assessment

## 12. Specific Sound Levels

- 12.1 The specific sound level is denoted LAs and is the A-weighted, equivalent noise level at the NSR locations over the reference time period.
- 12.2 See Figure 1 for the location of sensitive receptors. Full calculations are shown in **Appendix F**:
- 12.3 The overall Specific Sound Level of the air vented from the extractor fan flue and intake, at the nearest NSR locations are summarised below:

Table 3: Specific Sound Levels

NSR	Specific Sound Level, dBLAs
1	51
2	51

### 13. Background Sound Level

13.1 Environmental noise levels were measured on site 13<sup>th</sup> May 2026.

13.2 The lowest day-time background sound level (M1) recorded from all daytime noise was between 19:30-19:45 as 43 dB LA90,15min.

### 14. Rating Level

14.1 The specific sound level may be corrected for certain characteristics that make a sound more noticeable at the NSR locations. Corrections for tonality, impulsivity and intermittency may be applied.

14.2 The associated rating penalties for tone and resultant sound rating levels, dB L<sub>Ar</sub>, are tabulated below:

Table 4: Rating Penalties, dB, and Sound Rating Levels

NSR	dB L <sub>As</sub>	Tonality	Impulsivity	Intermittency	dB L <sub>Ar</sub>
1	51	3	0	0	54
2	51	3	0	0	54

### 15. Rating Level Vs Background

15.1 The rating level is to be compared to the background sound level to determine the resultant noise impact in accordance with BS4142:

A Sound Rating Level at or below the background noise level is indicative of *Low Impact*;

A Sound Rating Level that exceeds the background noise level by around + 5dB is likely an indication of *Adverse Impact*, depending on the context;

A Sound Rating Level that exceeds the background noise level by around + 10dB is likely an indication of *Significant Adverse Impact*, depending on the context.

15.2 The noise impact during the daytime is tabulated below:

Table 5: Noise Impact

NSR	Rating Level, dB L <sub>Ar</sub>	Difference, dBA	Impact
1	54	+11	<b>Significant Adverse Impact</b>
2	54	+11	<b>Significant Adverse Impact</b>

- 15.3 **Significant Adverse Impact** has been identified at the NSRs therefore additional mitigation is required.
- 15.4 It is recommended to install silencer/s with a reduction in noise level of  $\geq 16$  dBA which would result in the sound rating level being approximately 5 dBA below the lowest background noise level and be indicative of a Low Impact at the NSR locations.
- 15.5 The results of the noise assessment demonstrate that, noise from the use of the extractor unit, flue venting near sensitive receivers will be considered low impact.

## 16. Internal Noise Level

### From Voices and Background Music internal extraction and Chopping of Food

- 16.1 Whilst there are no prescribed standards for the assessment of noise impact where human voice is the primary source, reference can be made to 'BS8233:2014 – Guidance on sound insulation and noise reduction for buildings' [British Standards Institution] which gives guideline criteria for internal ambient noise levels in residential dwellings.
- 16.2 The primary noise source within the proposed restaurant will be customer's/employee voices, background music, breakout fan noise and chopping of food. Spectral noise data from *American Standard ANSI 3.5 1997* (Appendix A) has been utilised within the calculations.
- 16.3 The Octave Band noise levels from the source data have been normalised. This figure is assumed as a worst-case scenario for internal noise levels. The Octave Band noise levels from the source data have been normalised to an overall A-Weighted internal noise level of 77 dB(A).

Table 6: Internal Noise Within Ground Floor Area

	Octave Centre-Frequency Band, Hz							Equivalent A-Weighted Sum, dB L <sub>Aeq</sub>
	63	125	250	500	1k	2k	4k	
Noise Level (Normalised), dB L <sub>Aeq</sub>	63	65	68	70	74	69	63	77

## 17. Current Building Insulation

- 17.1 The floor/ceiling partition separating the ground-floor from the residential dwellings and commercial units has been determined as shown below.

### Current Building Ceiling Insulation

- 17.2 The weighted sound reduction index (R<sub>w</sub>) for a typical ceiling composed of:

- 12.5–15 mm plasterboard ceiling,
- No added insulation between joists,
- Wooden floorboards above

## 18. Internal Noise Transfer

### Ceiling Breakout

18.1 Ground floor ceiling specifications have been observed and modelled in InsulTM (Marshall Day Acoustics) as shown below.

18.2 The initial model of the current ground floor ceiling showed a performance of  $R_w$  34 this will be inadequate in attenuating internal noise transfer to within the target criteria therefore one of the following mitigations (minimum additional 45db reduction) is necessary to reduce the noise levels within the receiving room. An example system could include:

- **SoundBlocker Quilt SBQ2** consists of a laminate of 25mm sound absorbing mineral wool, high density acoustic membrane and another layer of 25mm sound absorbing mineral wool. The Quilt exceeds the new Part E Resistance to the Passage of Sound when used in conjunction with other soundproofing materials for separating floors. When used as the acoustic infill, SoundBlocker Quilt can improve the sound insulation of a suspended timber floor by up to 13dB.
- **SoundMat 2 Plus** is a tried and tested soundproofing mat designed to reduce unwanted impact and airborne. SoundMat 2 Plus is an exceptionally thin soundproofing solution which is easily installed directly to an existing timber or concrete floor. At 12mm the SoundMat 2 Plus offers a slimline solution to help reduce unwanted noise for privacy between floors.
- Overall Airborne Performance: 67dB ( $D_{nT,w+Ctr}$ ) Includes correction for low frequency performance.

18.3 Noise breakout from customer voices, background music, breakout from extraction and chopping of food will occur through the ceiling into the above dwelling. Based on a standard ceiling plus acoustic ceiling, the result of the proposed noise in the above dwelling is shown below.

Table 7: NR15 via the acoustic ceiling

Frequency, Hz	63	125	250	500	1000	2000	4000
Source Noise Level, dB Lz	63.0	65.0	68.0	70.0	74.0	69.0	63.0
Wood Joist Ceiling plus acoustic ceiling	30.0	48.0	58.0	64.0	67.0	74.0	77.0
Break-in, dBz	32.0	16.0	9.0	5.0	6.0	-6.0	-15.0
A-Weighting	-26.2	-16.1	-8.6	-3.2	0.0	1.2	1.0
Break-in, dBA	5.8	-0.1	0.4	1.8	6.0	-4.8	-14.0
NR15	47.0	35.0	26.0	19.0	15.0	12.0	9.0
Difference NR15	-41.2	-35.1	-25.6	-17.2	-9.0	-16.8	-23.0
Receiver Room Level, dB LA	10.7						

18.4 With reductions afforded by the current ceiling and acoustic ceiling, the noise level within the dwelling will be below the NR15.

## 19. Summary

- 19.1 A ground floor commercial property is seeking approval for a Change of use from Office (Use Class E) to Restaurant (Use Class E) and Hot Food Restaurant (Sui Generis) with installation of rear flue system (herein referred to as the site) and is required to confirm the new external flue with external noise guidance at the nearest residential dwelling. The client has completed a noise assessment at 157 Whitby Road, Ruislip, HA4 9EB.
- 19.2 The purpose of the acoustic assessment and recommendations is to ensure that the requirements of the local council are met with respect to operational noise from the continued use of the proposed restaurant affecting existing residential use on the upper floor flat and adjacent dwellings.
- 19.3 The primary internal noise source from the ground floor is customers/staff voices, chopping of food within the restaurant. An assessment for the ceiling has also been undertaken.
- 19.4 The extract fan and most ducting will be inside the rear single storey, with the flue exiting on the ground floor flat roof, and the discharge ducting is rigid in construction and installed with anti-vibration mountings. Large section ducts may include bracing or stiffeners to prevent drumming. Lined or lagged ducts, including bends, elbows or spigots, may be required if additional noise reduction is necessary.

### Flue extraction

- 19.5 The noise level of the extraction unit has been provided by the manufacturer.
- 19.6 The outlet noise level is tabulated below:

Manufacturer Noise Level

Table 2: Manufacturer Noise Level

Equipment	L <sub>Aeq</sub> (dB)	r, m
Extractor fan outlet	67	3.0

- 19.7 The associated rating penalties and resultant sound rating levels, dB L<sub>Ar</sub>, are tabulated below:

Rating Penalties, dB, and Sound Rating Levels

NSR	dB L <sub>As</sub>	Tonality	Impulsivity	Intermittency	dB L <sub>Ar</sub>
1	51	3	0	0	54
2	51	3	0	0	54

- 19.8 The lowest day-time background sound level (M1) was measured between 19:30-19:45 as 43 dB LA90,15min.

19.9 The noise impact during the daytime is tabulated below:

Noise Impact

NSR	Rating Level, dB L <sub>Ar</sub>	Difference, dBA	Impact
1	54	+11	<b>Significant Adverse Impact</b>
2	54	+11	<b>Significant Adverse Impact</b>

19.10 **Significant Adverse Impact** has been identified at the NSRs therefore additional mitigation is required.

19.11 It is recommended to install silencer/s with a reduction in noise level of  $\geq 16$  dBA, which would result in the sound rating level being approximately 5 dBA below the lowest background noise level and be indicative of a Low Impact at the NSR locations.

19.12 The results of the noise assessment demonstrate that, noise from the use of the extractor flue venting near sensitive receivers will be considered low impact.

#### Internal and external noise

19.13 The noise impact through a proposed acoustic ceiling on the ground floor is deemed to comply with a minimum NR15 requirement.

## **20. Uncertainties**

20.1 Uncertainty can arise when a calculation method, such as distance correction, is used to determine an overall noise level at an NSR location; however, it is an accepted method when the noise sources are yet to be introduced to the site.

20.2 The monitoring equipment is subject to a 1dB error margin, however calibration before and after measurements allows the drift within the margin to be monitored and thus demonstrates that minimal drift occurred throughout the measurements.

20.3 Insul<sup>TM</sup> sound insulation software states an error margin of +/- 3dB for RW values

## Appendices

<b>APPENDIX A - Measurement Details</b>				
Measurement	Start Date	Start Time	End Date	End Time
M1	13/05/26	14:00	14/05/26	13:30

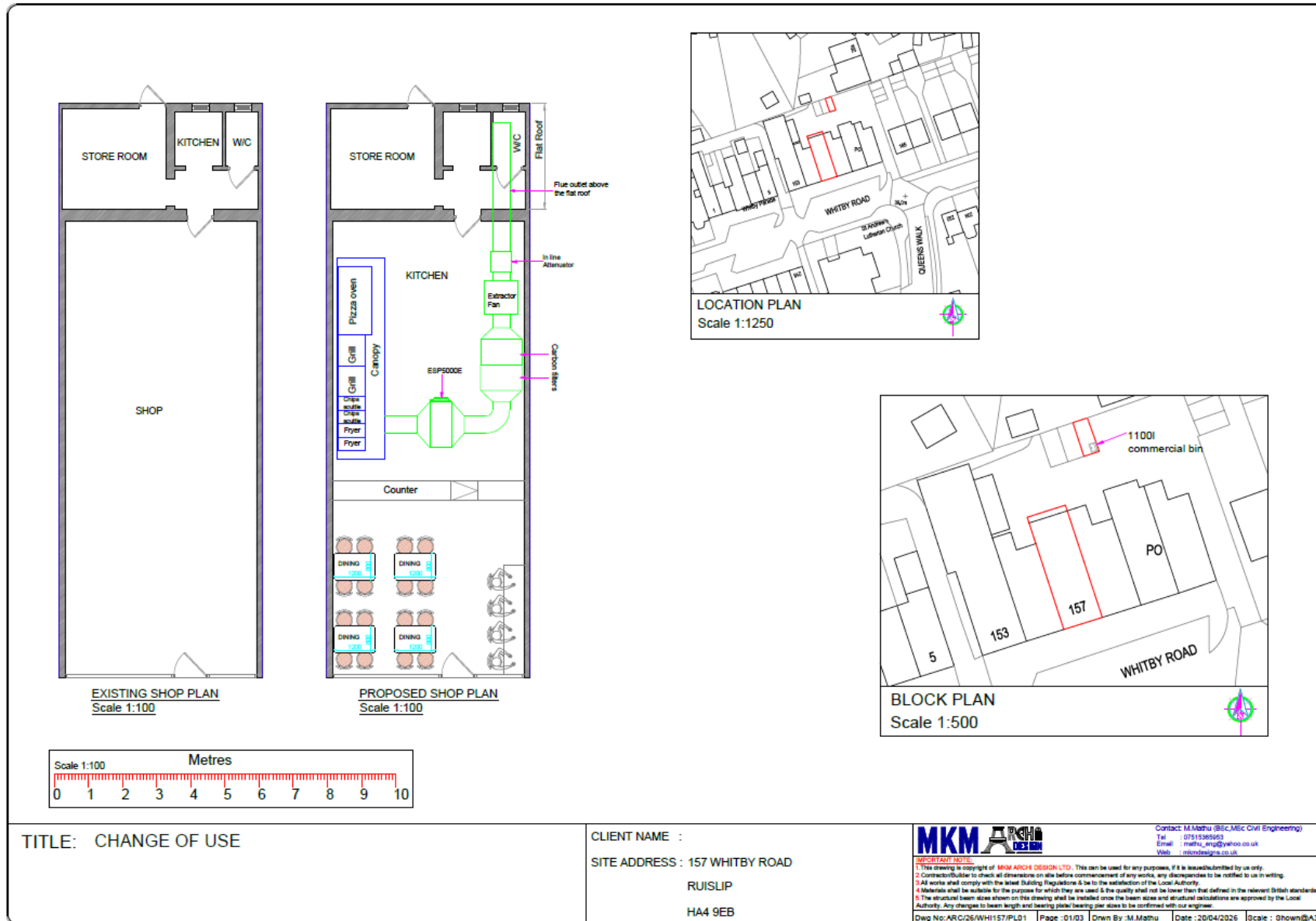
<b>APPENDIX B - Equipment Details</b>				
Equipment	Make	Model	Class	Serial Number
Sound Meter	Pulsar	N45	1	1425
Calibrator	Pulsar	PM1	1	011254A

<b>APPENDIX C - Calibration Details</b>					
Measurement	Calibrator Ref Level (dB)	Level Before (dB)	Deviation Before (dB)	Level After (dB)	Deviation After (dB)
M1	94.0	94.0	0	94.0	0

<b>APPENDIX D - Meteorology Details</b>						
Date	Temp C	Wind Speed m/s*	Wind Direction	Humidity %	Precipitation mm	Cloud Cover (Oktas)
13/05/26	14	1.1	s	80	0.0	5/8

\*Windspeeds measured on site using a Skywatch Xplorer 2 Anemo-Thermometer.

**APPENDIX E - Layout Plans**



TITLE: CHANGE OF USE

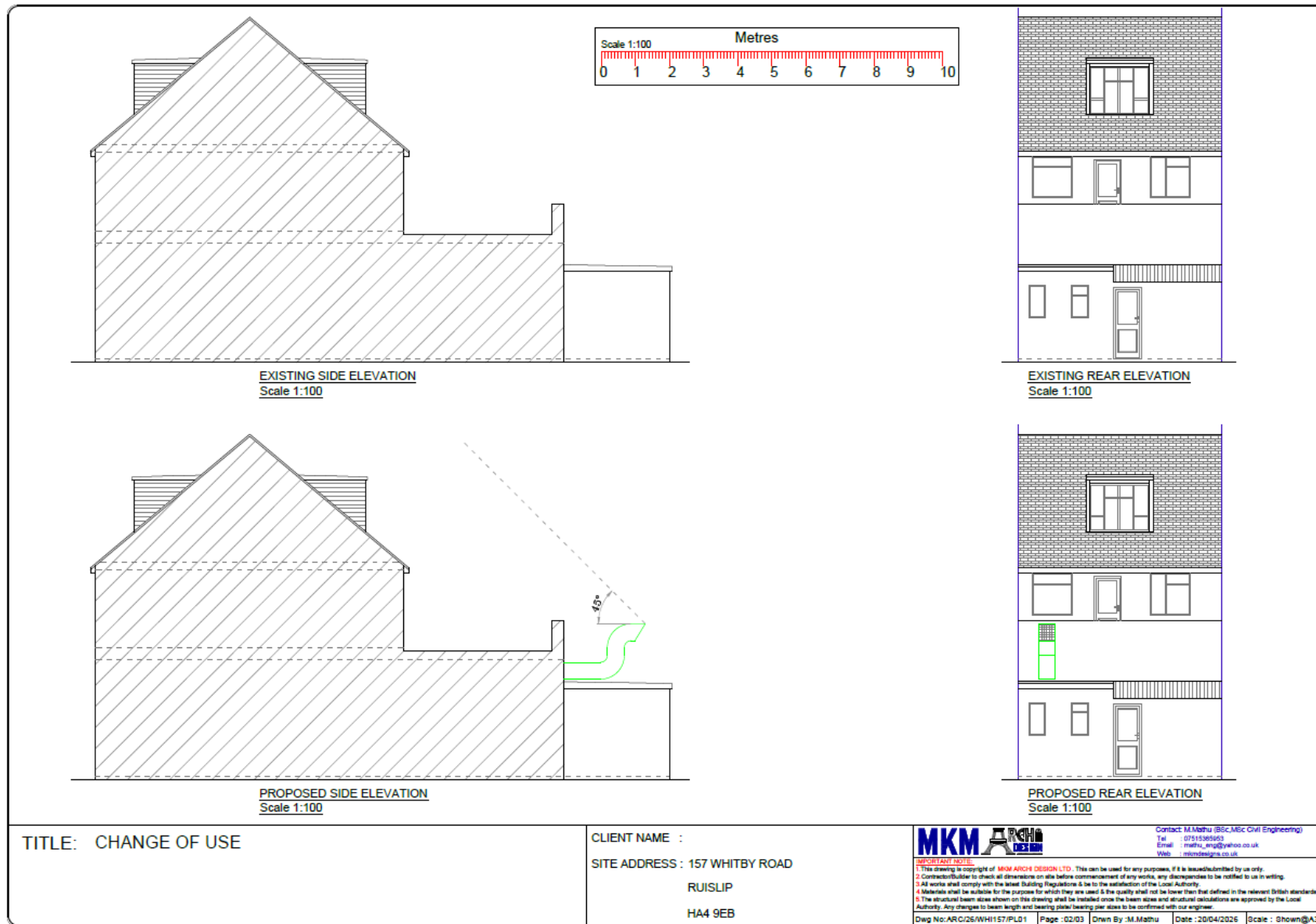
CLIENT NAME :  
 SITE ADDRESS : 157 WHITBY ROAD  
 RUISLIP  
 HA4 9EB

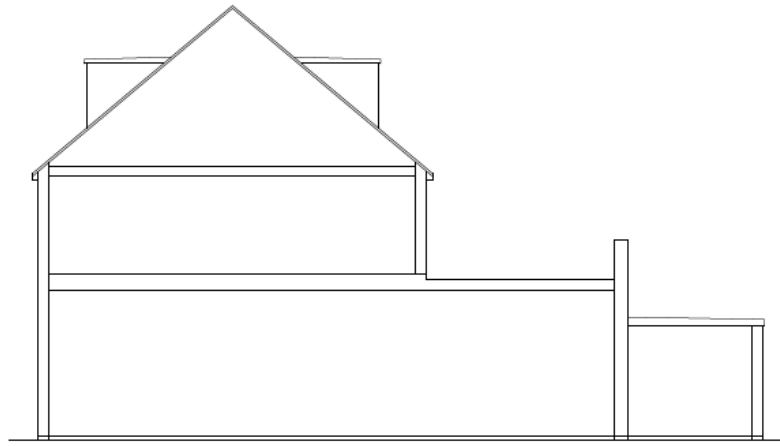


Contact: M.Mathu (BSc, MSc Civil Engineering)  
 Tel : 0753395993  
 Email : mathu\_eng@yahoo.co.uk  
 Web : m10mdesign.co.uk

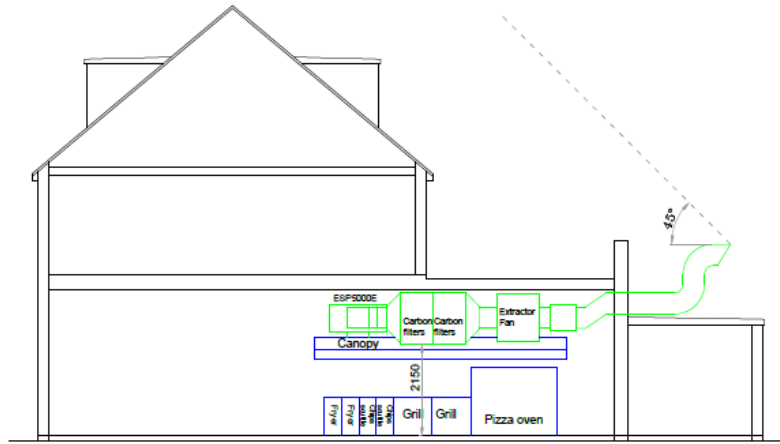
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 3. All works shall comply with the latest Building Regulations & be to the satisfaction of the Local Authority.  
 4. Materials shall be suitable for the purpose for which they are used & the quality shall not be lower than that defined in the relevant British standards.  
 5. The structural beams shown on this drawing shall be installed once the beam sizes and structural calculations are approved by the Local Authority. Any changes to beam length and bearing plate/bearing pier sizes to be confirmed with our engineer.

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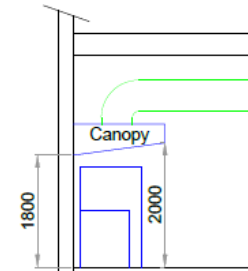




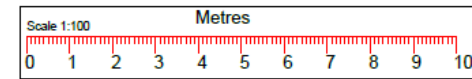
EXISTING SECTIONAL ELEVATION  
Scale 1:100



PROPOSED SECTIONAL ELEVATION  
Scale 1:100



Section of canopy & appliances  
Scale 1:100



TITLE: CHANGE OF USE

CLIENT NAME :  
SITE ADDRESS : 157 WHITBY ROAD  
RUISLIP  
HA4 9EB



Contact: M.Mathu (BSc, MSc Civil Engineering)  
Tel : 07513305013  
Email : mathu\_eng@yahoo.co.uk  
Web : mkmdesigns.co.uk

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3. All works shall comply with the latest Building Regulations & be to the satisfaction of the Local Authority.  
4. Materials shall be suitable for the purpose for which they are used & the quality shall not be lower than that defined in the relevant British standards.  
5. The structural beam sizes shown on this drawing shall be installed once the beam sizes and structural calculations are approved by the Local Authority. Any changes to beam length and bearing plate/bearing pier sizes to be confirmed with our engineer.

Dwg No: ARC/26/WHI157/PL01 Page : 03/03 Dwnn By : M.Mathu Date : 20/04/2026 Scale : 0shown@A3

## APPENDIX F - Noise Attenuation

Utilising Noise Levels

Source	LAeq	r1	r2	Barrier	dBA At NSR 1	Window open
Flue	67	6	3	-10	51	39
		18	3	0	51	39

Barrier attenuation assumed as 5 dB and 10 dB for the partial and complete blockage of the line of sight respectively between source and receiver as per 'BS5228-1:2009 – Noise and vibration control on construction and open sites' pg. 130.

Point source distance attenuation

$$L_y = 20 \times \log \frac{r_1}{r_2}$$

Where  $L_y$  is the distance attenuation factor and  $r_{1,2}$  are the source -> measurement distance and source -> NSR distance in metres respectively

## APPENDIX G – Terminology and Definitions

### Noise

Sound only becomes noise (often defined as ‘unwanted sound’ or sound that is considered undesirable or disruptive) when it causes or contributes to some harmful or otherwise unwanted effect, like annoyance or sleep disturbance.

### Acoustic Environment

Sound from all sound sources as modified by the environment.

### Equivalent continuous A-weighted sound pressure level $L_{Aeq,T}$

Value of the A-weighted sound pressure level of a continuous, steady sound that, within a specified time interval T, has the same mean square sound pressure as a sound under consideration whose level varies with time.

### A-weighting

The human ear is most sensitive to frequencies in the range 1 kHz to 5 kHz. On each side of this range the sensitivity falls off. A-weighting is used in sound level meters to replicate this sensitivity and respond in the same way as the human ear.

### Octave Band

Band of frequencies in which the upper limit of the band is twice the frequency of the lower limit.

### Maximum Sound Pressure Level $L_{Amax,T}$

Highest value of the A-weighted sound pressure level with a specified time weighting that occurs during a given event or measuring period.

### The $L_{A10,T}$ Sound Level

The A-weighted sound pressure that is exceeded for 10% of a given time interval, T. It is often used to evaluate road traffic noise.

### The $L_{A90,T}$ Sound Level

The A-weighted sound pressure that is exceeded for 90% of a given time interval, T, measured using time weighting F. It is often referred to as the background noise level and which might in part be an indication of relative quietness at a given location

### Free-field Level

The sound pressure level away from reflecting surfaces.

NOTE Measurements made 1.2 m to 1.5 m above the ground and at least 3.5 m away from other reflecting surfaces are usually regarded as free-field. To minimize the effect of reflections the

measuring position has to be at least 3.5 m to the side of the reflecting surface (i.e. not 3.5 m from the reflecting surface in the direction of the source).

#### Façade Level

The sound pressure level 1 m in front of the façade.

NOTE Façade level measurements of LpA are typically 1 dB to 2 dB higher than corresponding free-field measurements because of the reflection from the façade.

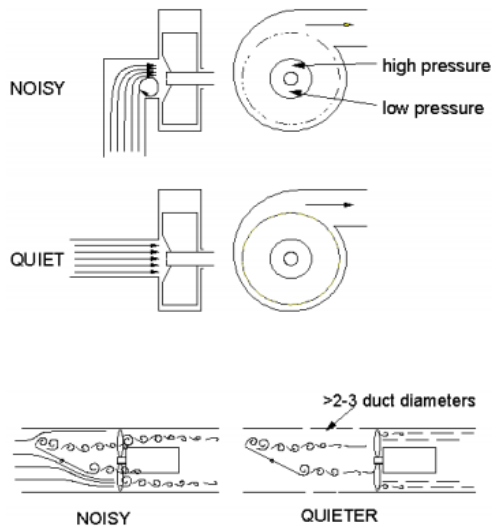
#### Indoor Ambient Noise

Noise in a given situation at a given time, usually composed of noise from many sources, inside and outside the building, but excluding noise from activities of the occupants.

## APPENDIX H – Extraction System and Noise Control

### FAN INSTALLATIONS

Typical applications Axial flow or centrifugal fans. Technique Maximum fan efficiency coincides precisely with minimum noise. Any fan installation feature that tends to reduce fan efficiency is therefore likely to increase noise. Two of the most common examples are bends close to the fan (intake side in particular) and dampers (close to the fan intake or exhaust).



Ideally, for maximum fan efficiency and minimum noise, make sure there is at least 2 - 3 duct diameters of straight duct between any feature that may disturb the flow and the fan itself. Noise reductions of 3 - 12 dB are often possible.

### DUCTWORK

Typical applications Extraction, ventilation, cooling, openings in walls and enclosures. Technique Instead of fitting silencers, it is often possible to achieve a 10 - 20 dB reduction in airborne noise from a duct or opening by lining the last bend in the ductwork with acoustic absorbent (foam or rockwool / fibreglass). Alternatively, construct a simple absorbent lined right-angled bend to fit on the opening. Ideally, either side of the bend should be lined along a length equivalent to twice the duct diameter. Where flow velocities are high (> 3m/s), consider using cloth faced absorbent.

**FlaktWoods Limited**  
Fan Selector - Technical Datasheet



**Project :** \_\_\_\_\_ **Customer :** \_\_\_\_\_ **Project Code :** \_\_\_\_\_  
**Quotation :** \_\_\_\_\_ **Date :** Mon, 15 December 2025



**PowerBox3 - Powerbox3 80-560-3**  
 1 day - (Fan Only)  
 Lead time may vary based on stock availability at time of order. Please refresh the lead time in the project or reselect the fan before placing an order.

**PRODUCT**

Model Code	Powerbox3 80-560-3
Fan Diameter	560 mm
Installation	Type D

**PERFORMANCE**

Requested Duty	2.63 m <sup>3</sup> /s @ 350 Pa (Static)
Outlet Dynamic Pressure	17.3 Pa
Velocity	5.37 m/s

**MOTOR**

Motor Rating	3.14 kW [ Integral Frame ]
Full Load Current	6.15 A
Starting Current	48 A
Electrical Supply	380 - 415 Volts 50 Hz 3 Phase
Motor Winding	Standard
Motor Type	Class F Insulation

**EFFICIENCY GRADES**

<b>Regulation 1253 - 2014</b>	
UVU Efficiency	57.8% (ErP Compliant) ✓
Nominal Flow Rate	2.22 m <sup>3</sup> /s @ 805 Pa
Effective Input Power	3.08 kW
Nominal RPM	1460 rpm

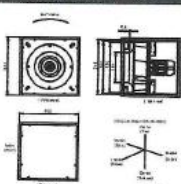
**ENVIRONMENT**

Air Density	1.2 kg/m <sup>3</sup> / 20 °C / 0 m / 40% RH
Smoke Venting	No Smoke Venting
Operating Environment	Normal

**RUNNING COSTS**

Power from mains	2.16 KW
Energy Consumption	4,315.89 kWh (2,000.00 h/Year)
Running Cost / Year	£1,078.97
CO2 per Year	1,517.29 kgCO2e
SFP value	0.82 W/l/s @ Actual Duty

**PRODUCT DIMENSIONS**



This drawing shows dimensions that should be used as a guide only and are subject to change. Certified drawings are available on request.

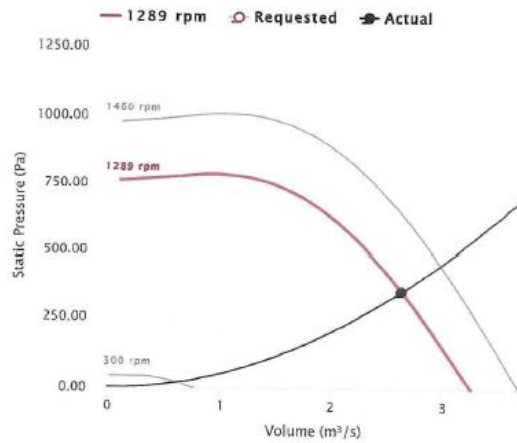
**MECHANICAL**

Operating Temperatures	-20 °C to 50 °C (95% Max Relative Humidity)
Weight	108kg

**COMMENTS**

This product must be used with an Inverter either supplied by Woods or from an external source supplied locally.

**FAN PERFORMANCE CURVE**



**ACOUSTICS**

	Sound Spectrum (Hz)								Overall	Distance (3 m)	
	63	125	250	500	1k	2k	4k	8k	Lw*	LwA*	LpA @ 3 m **
Inlet	87	91	88	82	78	79	76	72	94	86	68
Outlet	93	93	84	86	82	78	77	72	97	88	67
Breakout	72	77	72	60	57	52	53	42	79	67	47

Sound Data At Requested Duty. \* Lw dB re 10<sup>-12</sup> W \*\* dBA re 2x10<sup>-4</sup> Pa

**FAN & ACCESSORIES**

Item Description	Part Number	Qty	Lead-Time
Powerbox3 80-560-3	PB560340	1	1 Day



**SOUND DATA - MAXFAN COMPAC**

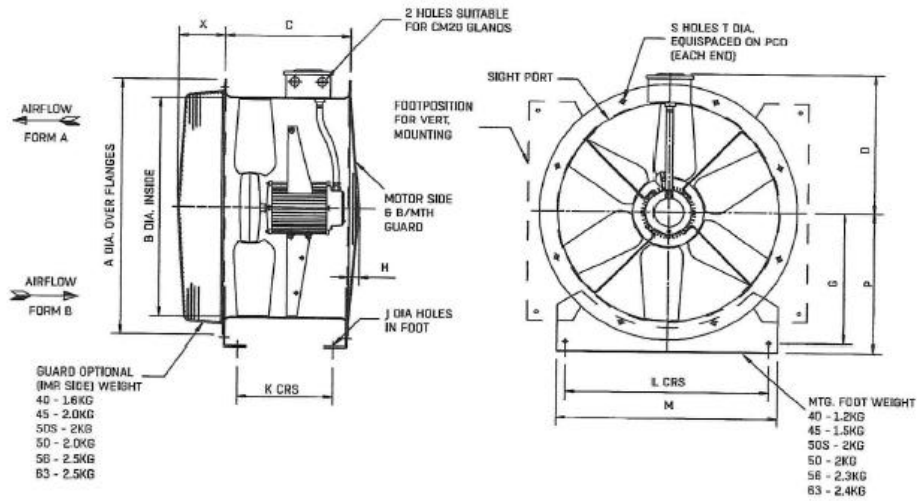
Fan Description	PC Sound rate (l)	Pa Static		Sound Spectrum (1/2)										Overall	
				63	125	250	500	1k	2k	4k	8k	Lw*	LWA @ 3m**		
31 MaxFan Compac	0.53 m3/s	252	Inlet*	81	79	80	82	80	76	71	66	88	83		
31 MaxFan Compac	0.53 m3/s	252	Outlet*	83	80	81	82	80	77	72	67	89	84		
31 MaxFan Compac	0.53 m3/s	252	Breakout*	73	68	64	66	61	53	51	47	75	45		
35 MaxFan Compac	0.84 m3/s	302	Inlet*	82	80	84	83	80	77	73	69	89	85		
35 MaxFan Compac	0.84 m3/s	302	Outlet*	83	80	85	84	81	78	74	69	90	85		
35 MaxFan Compac	0.84 m3/s	302	Breakout*	74	68	69	67	60	54	53	51	76	47		
40 MaxFan Compac	1.32 m3/s	200	Inlet*	75	76	82	79	78	77	74	70	86	83		
40 MaxFan Compac	1.32 m3/s	200	Outlet*	77	77	85	80	78	77	75	71	88	84		
40 MaxFan Compac	1.32 m3/s	200	Breakout*	67	62	65	59	53	46	50	48	70	40		
45 MaxFan Compac	1.86 m3/s	300	Inlet*	78	81	88	82	80	80	78	75	91	86		
45 MaxFan Compac	1.86 m3/s	300	Outlet*	79	81	88	82	81	80	79	77	91	87		
45 MaxFan Compac	1.86 m3/s	300	Breakout*	69	63	66	59	58	52	57	53	72	43		
50 SC MaxFan Compac	2 m3/s	400	Inlet*	81	82	89	85	87	87	83	79	95	72		
50 SC MaxFan Compac	2 m3/s	400	Outlet*	81	82	91	86	87	87	85	81	96	73		
50 SC MaxFan Compac	2 m3/s	400	Breakout*	71	64	69	63	62	59	63	57	76	49		
50 MaxFan Compac	2.53 m3/s	400	Inlet*	83	79	87	88	86	86	81	78	94	71		
50 MaxFan Compac	2.53 m3/s	400	Outlet*	85	79	90	89	86	86	81	79	95	72		
50 MaxFan Compac	2.53 m3/s	400	Breakout*	75	61	68	66	61	58	58	55	77	48		
56 MaxFan Compac	3.22 m3/s	400	Inlet*	86	83	88	90	88	85	79	77	97	72		
56 MaxFan Compac	3.22 m3/s	400	Outlet*	87	85	89	90	88	85	80	78	98	72		
56 MaxFan Compac	3.22 m3/s	400	Breakout*	77	74	83	85	83	58	61	55	79	48		
63 MaxFan Compac	3.4 m3/s	400	Inlet*	85	85	93	91	87	84	83	81	99	72		
63 MaxFan Compac	3.4 m3/s	400	Outlet*	88	88	94	91	87	85	84	83	100	73		
63 MaxFan Compac	3.4 m3/s	400	Breakout*	76	77	68	66	62	58	65	59	80	50		

\*Lw dB re 30<sup>-12</sup> W

\*\*DRA re 2x10<sup>-5</sup> Pa

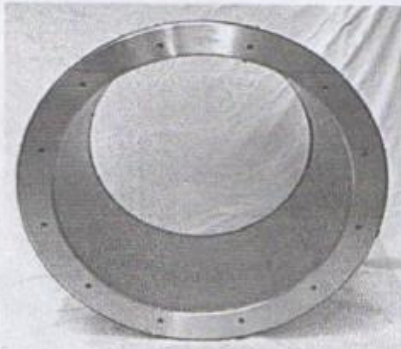


**DRAWING - MAXFAN COMPAC**



Product Code	Motor Frame	A	B	F	G	H	I	J	K	L	M	N	P	S	T	Y	Weight (kg)
31 MaxFan Compac	80	365	315	375	229	200	30	10	285	265	315	200	8	10	137	33	
35 MaxFan Compac	80	435	355	375	248	225	30	10	285	305	355	225	8	10	137	33	
40 MaxFan Compac	80	460	400	375	276	225	30	10	290	350	400	250	8	12	137	36	
45 MaxFan Compac	80	530	450	375	305	255	30	10	290	400	450	280	8	12	137	37	
50 SG MaxFan Compac	80	594	500	375	338	290	30	10	290	450	500	315	12	12	137	39	
50 MaxFan Compac	90	594	500	520	338	290	30	10	290	450	500	315	12	12	137	51	
56 MaxFan Compac	90L	654	560	520	368	330	50	10	434	510	560	355	12	12	137	55	
63 MaxFan Compac	90S	724	630	520	403	375	50	10	434	580	630	400	12	12	137	61	

### Fan Mounted Silencers



*No need to telephone for a price if you have a requirement for an intermediate size in length. See price list for price banding*

A Comprehensive range of cylindrical attenuators, matched to fit directly to all types of metric axial fan flanges or to ducting via optional matching flanges. Two alternative sets of threaded inserts are offered for each silencer to match most fan mounting requirements.

The T<sup>o</sup> Series range is available as standard in two lengths, one x diameter and two x diameter.

Excellent attenuation properties are achieved using sound absorbing acoustic infill, which is glass tissue faced as standard to minimize fibre migration and retained within the silencer casing by a perforated liner.

- Standard sizes 250mm to 1250mm diameter
- Special sizes on request (maximum spun diameter 1850mm)
- Supplied fully packaged to suit transport method and destination
- Maximum temperature 200°C
- Maximum pressure 1500 Pa
- Hexagon mounted drillings giving a higher torque to turn ratio as well as significant thermal expansion and contraction properties reducing the risk of free rotation of the fixings

*Material and Finish.. Casing: galvanized mild steel (BS2989), seams are sealed lockformed type with spun galvanized steel end rings. Inner lining: perforated galvanized mild steel (BS2989). Sound absorbing material: mineral fibre slabs, faced with glass tissue. Manufactured to HVCA specification DW144 class B and M&E 100 for sheet steel thickness and stiffening.*

SIZE ONLY	CENTRE BAND FREQUENCY							
	63	125	250	500	1000	2000	4000	8000
F1000-2	5	10	16	23	23	16	13	11

# Flanged Mountings

Flanged Mountings give high levels of deflection, providing excellent levels of vibration reduction and shock absorption both in the vertical and horizontal planes. They are particularly suited to isolating slow speed equipment.

Stainless Steel metals and Oil / Heat resistant rubbers available on request.

**Advantages:**

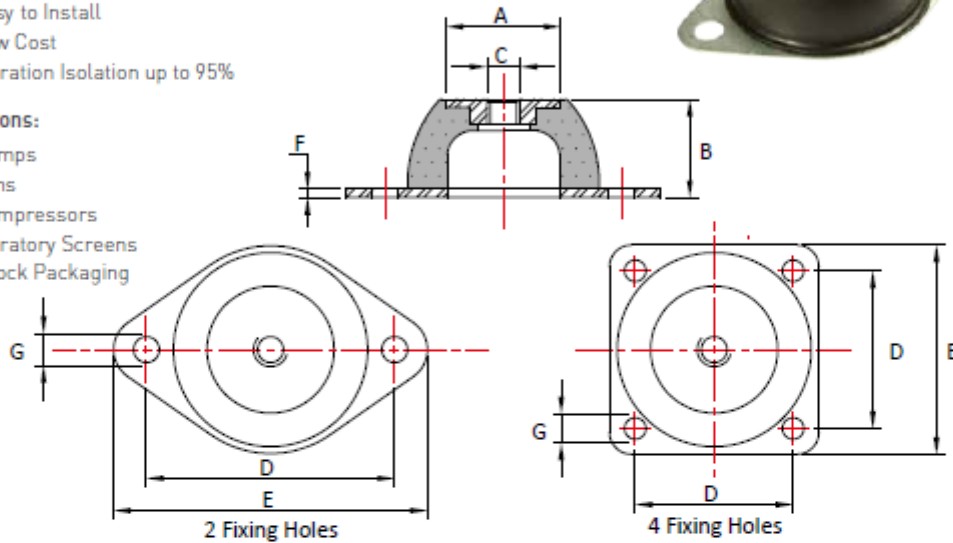
- Ideal for Slow Speed Equipment
- Easy to Install
- Low Cost
- Vibration Isolation up to 95%

**Applications:**

- Pumps
- Fans
- Compressors
- Vibratory Screens
- Shock Packaging



FLANGED MOUNTINGS



Part No	Fixing Holes	A (mm)	B (mm)	C	D (mm)	E (mm)	F (mm)	G (mm)
FM1566	2	26.5	11.6	M6	50	60	1.74	6
FM209	2	31	21.5	M8/M10	60	77	3	9.2
FM007	2	18	20	M6	50	64	2	7
FM25	2	33	25	M8/M10	66-73	85	2	8 x 12
FM50	2	45	35	M10	92	114	2	10
FM100	2	53	40	M10	110	136	2	11.5
FM200	2	58	45	M10	124	151	3	11.5
FM400	4	70	63	M12	120	150	3	14.5
FM600	4	100	85	M16	160	200	4	14.5
FM1500	4	186	160	M24	250	310	6	18

Part No	40 Shore		60 Shore		75 Shore	
	kg	mm	kg	mm	kg	mm
FM1566	10.0	1.4	20.0	1.35	23.0	1.1
FM209	40.0	3.0	76.0	2.8	112.0	2.5
FM007	3.5	3.0	9.0	3.0	13.0	2.7
FM25	20.0	4.5	40.0	4.5	57.0	4.0
FM50	38.0	5.0	69.0	4.8	101.0	4.5
FM100	60.0	7.0	100.0	6.5	147.0	6.0
FM200	130.0	10.0	220.0	9.0	320.0	8.5
FM400	270.0	14.5	540.0	13.0	793.0	9.5
FM600	375.0	17.0	750.0	15.5	1103.0	12.0
FM1500	1150.0	46.0	2300.0	41.5	3381.0	37.0

Max compression load in Kg deflection in mm.  
 This information is for guidance only. Customers are recommended to contact us for further technical information on products and applications.  
 We reserve the right to alter specifications or withdraw products without notice.



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# Suspended Mounts



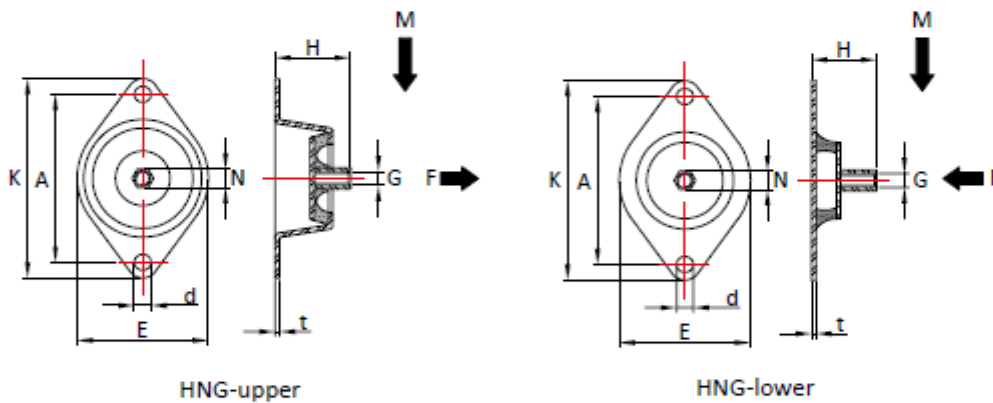
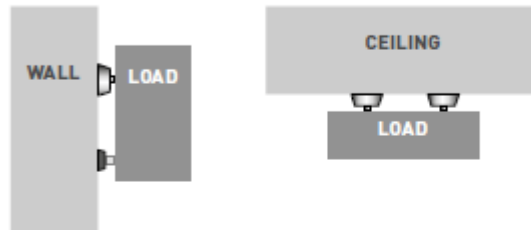
The Suspended Mountings are ideal for hanging or suspending equipment from walls, vertical surfaces, ceilings or supporting structures. The HNG Upper is used to accommodate tensile mounted loads at the top fixing of the equipment, whilst the HNG Lower is used to accommodate the compressive loads at the bottom of the equipment.

**Advantages:**

- Fail Safe Design
- Easy to Install
- Suspends from Ceilings & Walls

**Applications:**

- HVAC
- Ducting and Pipework
- Instrument Cabinets
- Control panels



INSTRUMENT MOUNTINGS

TYPE	E	K	A	H	d	N	t	G
HNG-upper	75	114	96	33	9	15	2.5	M8
HNG-lower	75	114	96	33	9	15	2.5	M8

TYPE	M-Max (KG)		F-Max (KG)	
	40° Sh	60° Sh	40° Sh	60° Sh
HNG-upper	14	25	30	70
HNG-lower	14	25	30	70

Max compression load in Kg deflection in mm.  
 This information is for guidance only. Customers are recommended to contact us for further technical information on products and applications.  
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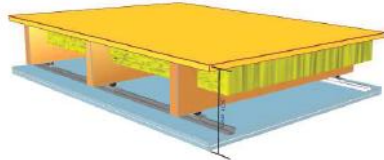
69

Sound Insulation Prediction (v9.0.22)

Program copyright Marshall Day Acoustics 2017  
 Margin of error is generally within  $R_w \pm 3$  dB  
 Noisestop Systems - Key No. 6502  
 Job Name: AcoustiClip Timber Ceiling System  
 Job No: Initials:MC  
 Date:04/06/2024  
 File Name:



Notes:



**R<sub>w</sub> 67 dB**  
 C -2 dB  
 Ctr -6 dB

Mass-air-mass resonant frequency = 31 Hz  
 Panel Size = 2.7 m x 4.0 m  
 Partition surface mass = 58.6 kg/m<sup>2</sup>

System description

Panel 1 : 1 x 22 mm Flooring Particle Board (p:710 kg/m<sup>3</sup>,E:3.4GPa,η:0.03, ps:15.6 kg/m<sup>2</sup>, fc:1344 Hz)

Frame: Solid Joist with rubber isolation clip (2E2 mm x 45 mm ), Stud spacing 600 mm ; Cavity Width 247 mm , 1 x Rockwool (60kg/m<sup>3</sup>) Thickness 100 mm ...  
 Panel 2 : 1 x 15 mm Siniat GTEC dB Board 15mm + 1 x 5 mm ass loaded vinyl  
 + 1 x 12.5 mm Siniat GTEC dB Board 12.5mm (p:880 kg/m<sup>3</sup>,E:3.3GPa,η:0.01, ps:11 kg/m<sup>2</sup>, fc:2680 Hz)

freq.(Hz)	R(dB)	R(dB)
50	27	
63	34	30
80	40	
100	45	
125	49	48
160	53	
200	56	
250	58	58
315	60	
400	62	
500	64	64
630	66	
800	67	
1000	68	67
1250	67	
1600	74	
2000	75	74
2500	75	
3150	74	
4000	79	77
5000	83	

