



Plant Noise Impact Assessment Report

149 Parrock Street, Gravesend, DA12 1EY

Report Reference: NIA-DA12-149-R00

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Report Title	Plant Noise Impact Assessment Report
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Document Revision History		
Revision Reference	Issue Date	Purpose and/or Description of Revision
1st Issue	8 April 2026	Noise impact assessment of proposed kitchen extraction plant.

Executive Summary

EMC Acoustics was commissioned by Mr Okkes Omalar to undertake a noise impact assessment in relation to a proposed kitchen extract system at 149 Parrock Street, Gravesend. The assessment was carried out to demonstrate compliance with the Local Authority's planning condition, which requires that the rating level of plant noise does not exceed the background sound level by more than -10 dB at the nearest residential receptors.

A baseline noise survey was conducted in accordance with BS 4142:2014+A1:2019, with unattended monitoring undertaken over a 24-hour period. The survey established a representative background sound level of 47 dB $L_{A90,15min}$ during the relevant operational period.

Noise predictions for the proposed extraction system, including the centrifugal fan, ductwork, and attenuator, were carried out using CadnaA noise modelling software. The assessment considered the combined operation of the plant and flue termination.

The predicted noise levels at the nearest noise-sensitive receptors are:

- 37 dB at R1
- 29 dB at R2

These levels are 10 dB and 18 dB below the measured background sound level, respectively.

Based on the assessment, the proposed kitchen extract system complies with the Local Authority's noise condition. In accordance with BS 4142 guidance, the rating level is sufficiently below the background sound level to indicate a low impact. The development is therefore not expected to give rise to adverse effects on nearby residential amenity.

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1. INTRODUCTION

EMC Acoustics has been commissioned by Mr Okkes Omalar to undertake background noise measurements and carry out an environmental noise impact assessment in relation to a proposed kitchen extract system at the site.

The purpose of this assessment is to evaluate the potential noise impact arising from the proposed plant and to demonstrate compliance with the relevant Local Authority noise criteria.

1.1 Site Description

The site is located at 149 Parrock Street, Gravesend, DA12 1EY, on the eastern side of Parrock Street. The building comprises commercial units at ground floor level, with residential flats above.

The surrounding area is characterised by a mixed-use environment, incorporating both commercial and residential premises. The prevailing acoustic climate is primarily influenced by road traffic along Parrock Street, with intermittent contributions from nearby commercial plant and activities. As such, noise levels are governed by a combination of daytime commercial activity and continuous vehicular movement.

1.2 Nearest Noise – Sensitive Receptor

Based on correspondence relating to a previous planning application for the adjoining premises, the Local Authority has advised that the assessment should consider the nearest *independent* residential receptors.

In line with this requirement, the properties at 147 Parrock Street and 49 Edwin Street have been identified as the nearest independent noise-sensitive receptors (NSRs) for the purposes of this assessment.

2. ASSESSMENT CRITERIA

The assessment of noise emissions from the kitchen extract system has been carried out in accordance with the principles and procedures set out in BS 4142:2014+A2:2019 – Methods for rating and assessing industrial and commercial sound. This standard provides a framework for assessing the impact of sound from mechanical plant and equipment on nearby residential premises, taking into account both the measured background noise levels and the specific characteristics of the sound under investigation.

The Local Authority, Gravesham Borough Council, has previously imposed the following condition to ensure adequate protection of residential amenity:

"The rating level of the noise emitted from plant, machinery, or equipment at the premises shall not exceed the existing background noise level by more than –10 dB at the nearest noise-sensitive premises when measured and assessed in accordance with BS 4142:2014."

This requirement represents a stringent criterion, typically applied where equipment is situated in close proximity to residential properties. Achieving a rating level 10 dB below the existing background noise is generally indicative of a low likelihood of adverse impact, thereby providing confidence that the installation will not give rise to noise disturbance at nearby dwellings.

The assessment has therefore been structured to determine compliance with this criterion through representative background noise measurements and prediction of operational noise levels from the installed extract system.

3. BASELINE NOISE SURVEY

3.1 Survey Overview

The purpose of the baseline noise survey is to establish the existing background sound environment at locations representative of the nearest NSRs, and to provide a robust baseline against which the potential noise impact of the proposed mechanical plant can be assessed. The assessment focuses on nearby residential properties considered most likely to be affected due to their proximity to the plant.

EMC Acoustics undertook an environmental noise survey on 23 March 2026 to determine prevailing background noise levels in accordance with the methodology set out in BS 4142:2014+A1:2019. Unattended noise monitoring was conducted over a continuous 24-hour period, commencing at 19:00 on 23 March 2026 and concluding at 19:00 on 24 March 2026. This duration ensured that a representative range of both daytime and night-time conditions was captured, including periods when background noise levels were expected to be at their lowest.

The sound level meter was installed at first-floor window level to the rear of the building. This location is considered representative of the background noise climate experienced at the nearest identified residential receptors. In addition, attended measurements were undertaken to establish the operational noise levels of the existing plant unit.

The monitoring position in relation to the noise source and surrounding receptors is illustrated in Figure 1. The measured data obtained from this survey have been used to derive representative background sound levels (L_{A90}), which form the basis of the subsequent plant noise impact assessment.

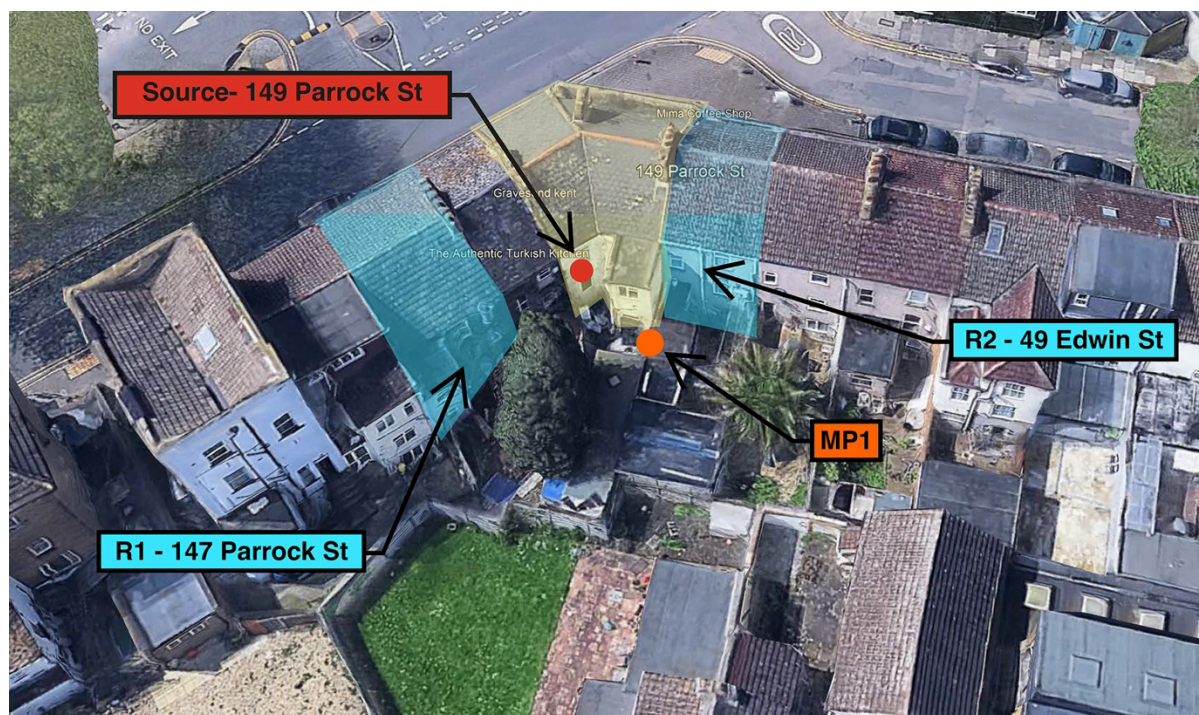


Figure 1 – Site location and measurement position (MP1), and Nearest NSRs (R1 & R2)

3.2 Background Noise Levels

BS 4142:2014+A1:2019 states that there is no single, fixed value of background sound level, as this parameter naturally fluctuates over time. The background sound level adopted for assessment purposes should therefore be representative of the specific assessment period and determined from a series of measurements covering the relevant operational times of the plant.

To obtain a representative value, sequential attended measurements were undertaken over the periods of interest, taking into account the range and variability of background conditions. The chosen background level should reflect typical conditions and should not automatically be assumed to be either the minimum or the modal value.

BS 4142 further notes that the mean average of multiple measured background levels is not necessarily equivalent to the overall background sound level derived from a continuous long-term measurement over the same period. Accordingly, a statistical analysis of 15-minute measurement intervals was carried out to identify an appropriate representative value.

The most frequently occurring background level was $L_{A90,15min}$ 47 dB, and has been adopted as the representative background sound level. This approach reflects the operation of kitchen extractor at all times during the proposed trading hours.

Full measurement data, including time history plots and statistical indices, are presented in Appendix C of this report. Figure 2 presents a statistical analysis of the 24-hour measurement results.

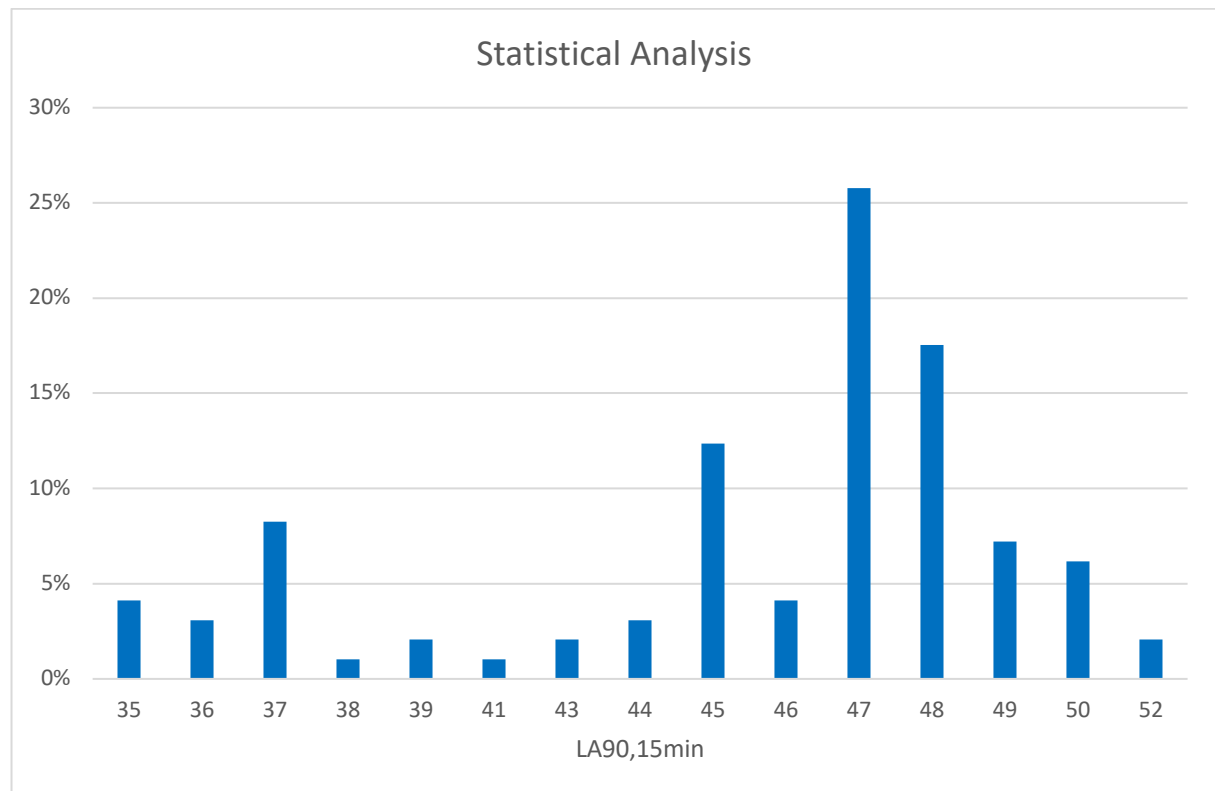


Figure 2 – Background Noise Level Analysis

A summary of the measured ambient sound levels over the proposed operating period is presented in Table 1 below.

Noise Survey Summary			
Fixed Microphone Position	Time, T	Ambient Noise $L_{Aeq,T}$	Background Noise $L_{A90,15mins}$
First-floor window level	Operational hours 06:00 – 23:00	66	47

Table 1 – Noise Survey Summary

3.3 Measurement Equipment

The measurement equipment illustrated in Table 2 was used during the survey, all equipment complies with IEC 61672-3:2013, Class 1 and IEC 60942:2017, Class 1.

Name	Serial Number	Calibrated	Certificate No
NTI XL2- TA Acoustic Analyser	A2A-10100-E0	08/08/2024	UCRT24/2079
M2230 Measurement Microphone	5478	08/08/2024	UCRT24/2079
Larson Davis Class 1 Calibrator	18892	03/10/2025	UCRT25/2403

Table 2 – Equipment

3.4 Weather Conditions

Weather conditions throughout the noise survey period were noted to be mild (between 3 – 16 degrees Celsius), dry, and partially (%30) cloudy during the measurement period, and a light wind (<5metres per second) generally from southwest during the survey. These conditions were maintained throughout most of the survey period and are considered reasonable for undertaking environmental noise measurements.

4. NOISE IMPACT ASSESSMENT

4.1 Proposed Mechanical Plant

The proposed kitchen extraction system will comprise a Helios GBW 450/4 centrifugal fan, to be installed externally on the rear elevation of the building, as confirmed by the client.

The fan will be connected to rectangular ductwork measuring approximately 300 mm by 300 mm. From the fan outlet, the ductwork will extend vertically for a distance of approximately 3.4 metres, terminating at a flue height of approximately 7.2 metres above local ground level. The flue will discharge vertically to atmosphere.

An acoustic attenuator is proposed on the atmospheric side of the ductwork, as specified by the system designer. This attenuator forms an integral component of the noise control strategy and has been fully taken into account in the noise predictions and assessment presented within this report.

Manufacturer's acoustic performance data for the proposed fan, ductwork, and attenuator have been provided by the client and are included in Appendix D. These data have been used to derive the sound power levels adopted in the BS 4142 assessment and to predict the resultant noise levels at the nearest identified noise-sensitive receptors.

A summary of the calculated sound power levels at the flue termination point is presented in Table 3 below.

	L _{WA} dB						
Hz	125	250	500	1000	2000	4000	8000
Case Breakout	56	56	51	47	44	39	31
Flue Termination	47	57	55	46	41	39	37

Table 3 – Plant Noise Emissions

4.2 Noise Modelling

In order to predict the impact of noise on the identified Noise-Sensitive Receptors (NSRs), the measurement results presented in Section 3.3.6 have been used to produce a detailed three-dimensional, geo-referenced noise model. This model enables the prediction of noise propagation from defined sources across the site and adjacent receptors.

Noise predictions were carried out using the CadnaA environmental noise modelling software, in accordance with ISO 9613-2:2024 – Acoustics: Attenuation of sound during propagation outdoors – Part 2: Engineering method for the prediction of sound pressure levels outdoors.

Both the fan motor and flue termination point measured plant noise levels at the reference position were processed to determine appropriate sound power levels (L_{WA}) required for model input. For the primary plant source, the L_{Aeq,T} levels were derived by calculation and with reference to the measurement position.

The model was then run to validate these assumptions, with predicted results compared against the measured data to ensure that the simulated levels correlated closely with observed sound levels at nearby positions.

Noise contour maps generated by the model illustrate the predicted sound pressure levels at the centre of the second and third-floor windows of the nearest noise-sensitive receptors.



Figure 3 – Noise emissions results at nearest NSRs

4.2 Results

The results of the noise modelling are summarised in Table 4 below, showing the predicted sound pressure levels at the façades of the nearest residential receptors. The target level represents the Local Authority's noise criterion, which requires that the rating level remains at least 10 dB below the measured background noise level of 47 dB L_{A90} .

Location	Rating Level, $L_{Aeq,T}$ dB	Background Level, dB	Target, dB	Difference (Target – Predicted), dB	Assessment Outcome
R1 – 147 Parrock Street	37	47	37	10	Complies
R2 – 49 Edwin Street	29	47	37	18	Complies

Table 4 – Predicted Noise Levels at Nearest Noise-Sensitive Receptors The predicted sound levels at both receptors façades are at least 10 dB below the background level of 47 dB, achieving of 10 dB at R1 and 18 dB at R2, respectively. These results demonstrate compliance with the Local Authority's requirement that the rating level shall not exceed the background noise level at the nearest noise-sensitive premises.

4.3 BS 8223 Assessment

This assessment also considers the guidance provided in BS 8223:2014 – Guidance on sound insulation and noise reduction for buildings, which sets out recommended internal ambient noise levels for residential spaces. For typical living rooms and bedrooms, the guideline internal noise limits are as follows:

- ≤ 35 dB $L_{Aeq,16hr}$ during the daytime (07:00–23:00)
- ≤ 30 dB $L_{Aeq,8hr}$ during the night-time (23:00–07:00)

Assuming windows are partially open, which typically provides 10–13 dB of sound attenuation from external to internal levels, the corresponding external noise levels at the façade should ideally remain:

- Below 45 dB L_{Aeq} during the day
- Around 40 dB L_{Aeq} during the night

Based on the measured and modelled data presented in this report, the predicted plant noise levels at the façades of the nearest residential windows (29 - 37 dB $L_{Aeq,T}$) are well below these external thresholds.

Accordingly, internal ambient noise levels within the nearest residential spaces are expected to remain within the BS 8233:2014 guideline limits for both daytime and night-time periods, confirming that the plant operation is not expected to cause disturbance to NSRs.

5. CONCLUSIONS

The purpose of this assessment was to evaluate the noise impact associated with the proposed kitchen extract system serving 149 Parrock Street, Gravesend, and to determine compliance with the Local Authority's planning condition requiring the rating level to be at least 10 dB below the existing background sound level at the nearest residential receptors.

The baseline noise survey undertaken by EMC Acoustics established a representative background sound level of 47 dB $L_{A90,15min}$ during the relevant operational period. Noise predictions for the proposed system, including both the extraction fan and flue termination operating simultaneously, were used to derive the specific sound levels for assessment.

The results of the CadnaA noise model indicate that the combined plant noise is predicted to result in façade levels of:

- 37 dB at receptor R1
- 29 dB at receptor R2

These predicted levels are 10 dB and 18 dB below the established background sound level of 47 dB, respectively.

The assessment demonstrates that the proposed kitchen extract system complies with the noise condition imposed by Gravesham Borough Council. The rating level at the nearest noise-sensitive receptor is at least 10 dB below the background sound level. In accordance with BS 4142:2014+A1:2019, *"The lower the rating level relative to the measured background sound level, the less likely it is that the specific sound source will give rise to adverse impacts. Where the rating level does not exceed the background sound level, this is an indication of a low impact, subject to context."*

It is therefore concluded that the proposed installation meets the relevant planning noise criteria, and that the operation of the plant, in its current configuration, is not expected to give rise to any significant adverse effects on residential amenity.

APPENDIX A

Glossary of Acoustic Terms

- **Annoyance:** A feeling of displeasure associated with any agent or condition known or believed by an individual or a group to be adversely affecting them. Emotion associated with any noise perceived as irritating or a nuisance.
- **Decibel, dB:** A unit of logarithmic ratio between a sound pressure and a known reference pressure.
- **dB(A):** A weighted dB. A-weighting is an electronic frequency weighting network which attempts to build the human response to different frequencies into the reading indicated by a sound level meter, so that it will relate to this loudness of the noise.
- **Background sound level, $L_{A90,T}$:** A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of given time interval T measured using time weighting F and quoted the nearest whole number of decibels.
- **Ambient sound level, $L_{Aeq,T}$:** Equivalent continuous A-weighted sound pressure level of the totally encompassing sound in a given situation at a given time, usually from many sources near and far, at the assessment location over a given time interval, T.
- **Residual sound level, $L_{Aeq,T}$:** Equivalent continuous A-weighted sound pressure level of the residual sound at the assessment location over a given time interval, T.
- **Specific sound level, $L_{Aeq,T}$:** Equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given time interval, Tr.
- **Rating level, $L_{A,T}$:** Specific sound level plus an adjustment for the characteristic features of the sound.

APPENDIX B

Policies and Standards

Local Authority Requirements

Gravesham Local Plan Core Strategy (2014)

The Local Plan Core Strategy is the main planning document within the Gravesham Local Plan. Its role is to:

- Set out a long-term vision for the future of Gravesham, based on evidence of need, to support communities and outline what makes Gravesham a distinctive and attractive place to live and work.
- Support and inform sustainable development through investment in infrastructure, economic development, and regeneration proposals within the borough, while promoting healthy communities.
- Provide a consistent and transparent basis for planning application decisions.

British Standard BS 4142:2014 + A1:2019

Methods for rating and assessing industrial and commercial sound

BS 4142 sets out a method for assessing the likely effect of sound from factories, industrial premises, fixed installations, or other sources of an industrial nature within commercial premises, on people who may be inside or outside dwellings or other residential buildings nearby.

The procedure involves comparing the measured or predicted specific sound level ($L_{Aeq,T}$) from the source with the background sound level ($L_{A90,T}$) at the assessment location.

Where the sound contains tonality, impulsivity, intermittency, or other identifiable characteristics, a correction (penalty) is applied to the specific sound level to obtain the rating sound level ($L_{Ar,T}$). A further correction may be included to account for uncertainty in sound measurements, data, or calculations where appropriate.

BS 4142 states:

"The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs.

- *A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.*
- *A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.*
- *The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact.*
- *Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context."*

BS 8233:2014 - Guidance on Sound Insulation and Noise Reduction for Buildings

This standard provides recommended guideline values for internal noise levels within dwellings which are similar in scope to guideline values contained within the World Health Organisation (WHO) document, Guidelines for Community Noise (1999). These guideline noise levels are shown in Table 5 below.

Activity	Location	$L_{Aeq,T}$	
		07:00 – 23:00	23:00 - 07:00
Resting	Living room	35 dB, $L_{Aeq,16h}$	-
Dining	Dining room/area	40 dB, $L_{Aeq,16h}$	-
Sleeping (daytime resting)	Bedroom	35 dB, $L_{Aeq,16h}$	30 dB, $L_{Aeq,8h}$

Table 5: Target values for ambient noise levels in dBA inside residential rooms. BS 8233 (2014)

APPENDIX C

Measurement Data

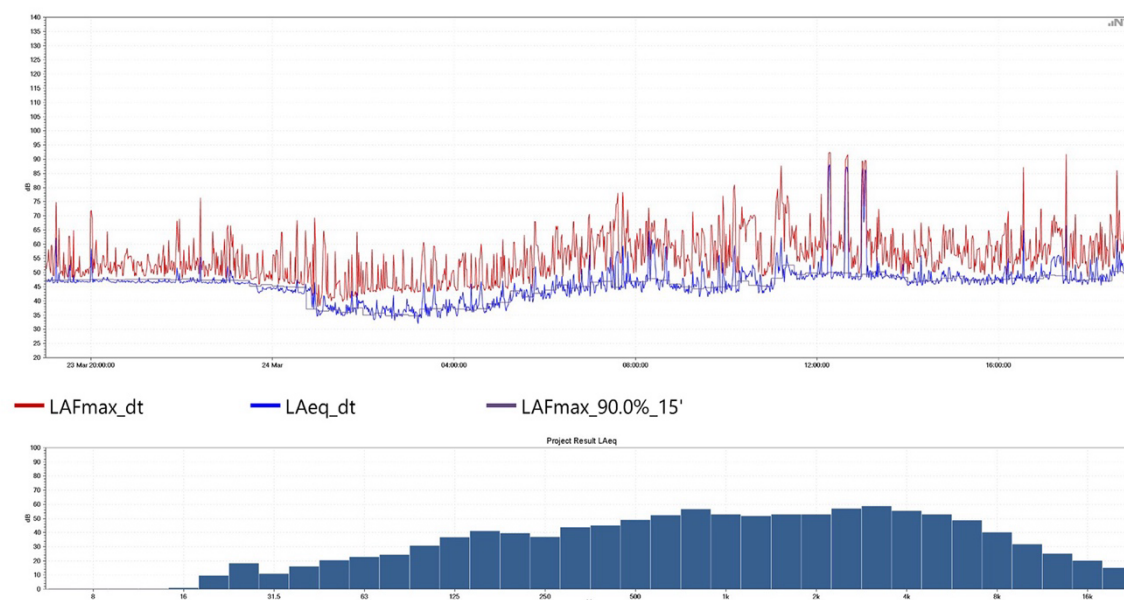


149 Parrock Street, Gravesend, DA12 1EY

Start: 2026-03-23 19:00:08

End: 2026-03-24 19:00:08

Measured Background and Ambient Noise Levels at fixed measurement position.





Results

Type	Start	Duration	LAFmax [dB]	LAeq [dB]	LAFmax 90.0% [dB]
Recorded	2026-03-23 19:00:08	1 00:00:00	92.3	64.9	
Project Result		1 00:00:00	92.3	64.9	41.2

Audit Intervals

Type	Start	Duration	LAFmax [dB]	LAeq [dB]	LAFmax 90.0% [dB]
15'	2026-03-23 19:00:00	00:14:52	74.7	52.0	47.3
15'	2026-03-23 19:15:00	00:15:00	65.7	47.0	47.2
15'	2026-03-23 19:30:00	00:15:00	64.8	47.9	47.4
15'	2026-03-23 19:45:00	00:15:00	71.6	46.9	47.4
15'	2026-03-23 20:00:00	00:15:00	71.8	49.8	47.5
15'	2026-03-23 20:15:00	00:15:00	64.4	47.2	47.5
15'	2026-03-23 20:30:00	00:15:00	58.8	46.8	47.4
15'	2026-03-23 20:45:00	00:15:00	58.6	46.7	47.5
15'	2026-03-23 21:00:00	00:15:00	56.5	46.8	47.5
15'	2026-03-23 21:15:00	00:15:00	56.6	46.6	47.6
15'	2026-03-23 21:30:00	00:15:00	61.4	46.8	47.6
15'	2026-03-23 21:45:00	00:15:00	68.9	47.6	47.4
15'	2026-03-23 22:00:00	00:15:00	59.6	47.0	47.6
15'	2026-03-23 22:15:00	00:15:00	76.3	48.3	47.2
15'	2026-03-23 22:30:00	00:15:00	64.4	46.7	47.2
15'	2026-03-23 22:45:00	00:15:00	64.9	47.0	47.2
15'	2026-03-23 23:00:00	00:15:00	66.7	48.1	47.2
15'	2026-03-23 23:15:00	00:15:00	60.0	46.2	47.1
15'	2026-03-23 23:30:00	00:15:00	56.7	45.1	45.1
15'	2026-03-23 23:45:00	00:15:00	57.9	44.3	45.7
15'	2026-03-24 00:00:00	00:15:00	64.1	44.2	45.2
15'	2026-03-24 00:15:00	00:15:00	57.5	43.6	44.9
15'	2026-03-24 00:30:00	00:15:00	68.4	43.9	44.7
15'	2026-03-24 00:45:00	00:15:00	69.3	42.2	37.1
15'	2026-03-24 01:00:00	00:15:00	64.7	38.0	36.3
15'	2026-03-24 01:15:00	00:15:00	57.5	37.1	36.8
15'	2026-03-24 01:30:00	00:15:00	56.3	37.5	35.9
15'	2026-03-24 01:45:00	00:15:00	64.3	38.9	37.4
15'	2026-03-24 02:00:00	00:15:00	58.2	36.7	34.9
15'	2026-03-24 02:15:00	00:15:00	56.6	36.6	35.6
15'	2026-03-24 02:30:00	00:15:00	56.2	37.0	34.7



15'	2026-03-24 02:45:00	00:15:00	58.2	36.8	35.1
15'	2026-03-24 03:00:00	00:15:00	55.3	35.7	34.7
15'	2026-03-24 03:15:00	00:15:00	60.7	39.8	37.0
15'	2026-03-24 03:30:00	00:15:00	59.2	39.8	37.2
15'	2026-03-24 03:45:00	00:15:00	56.4	38.2	37.9
15'	2026-03-24 04:00:00	00:15:00	57.0	39.4	37.0
15'	2026-03-24 04:15:00	00:15:00	56.8	39.3	36.6
15'	2026-03-24 04:30:00	00:15:00	60.1	40.6	37.2
15'	2026-03-24 04:45:00	00:15:00	56.9	38.7	38.8
15'	2026-03-24 05:00:00	00:15:00	61.6	41.4	39.4
15'	2026-03-24 05:15:00	00:15:00	60.7	43.0	43.4
15'	2026-03-24 05:30:00	00:15:00	63.1	42.3	41.4
15'	2026-03-24 05:45:00	00:15:00	67.9	45.1	42.7
15'	2026-03-24 06:00:00	00:15:00	66.4	43.9	43.8
15'	2026-03-24 06:15:00	00:15:00	66.4	45.3	45.5
15'	2026-03-24 06:30:00	00:15:00	67.9	45.7	44.4
15'	2026-03-24 06:45:00	00:15:00	70.6	48.1	45.0
15'	2026-03-24 07:00:00	00:15:00	65.7	46.2	46.5
15'	2026-03-24 07:15:00	00:15:00	68.1	49.3	46.8
15'	2026-03-24 07:30:00	00:15:00	78.3	53.9	44.7
15'	2026-03-24 07:45:00	00:15:00	72.1	49.1	46.8
15'	2026-03-24 08:00:00	00:15:00	68.1	46.5	46.7
15'	2026-03-24 08:15:00	00:15:00	72.8	57.5	47.8
15'	2026-03-24 08:30:00	00:15:00	68.9	51.7	47.2
15'	2026-03-24 08:45:00	00:15:00	61.5	44.9	45.8
15'	2026-03-24 09:00:00	00:15:00	64.9	44.6	44.9
15'	2026-03-24 09:15:00	00:15:00	71.4	48.3	44.2
15'	2026-03-24 09:30:00	00:15:00	66.6	44.7	44.6
15'	2026-03-24 09:45:00	00:15:00	77.0	49.6	44.9
15'	2026-03-24 10:00:00	00:15:00	80.9	50.6	45.3
15'	2026-03-24 10:15:00	00:15:00	73.2	49.1	46.9
15'	2026-03-24 10:30:00	00:15:00	70.1	49.3	45.4
15'	2026-03-24 10:45:00	00:15:00	64.0	45.0	45.1
15'	2026-03-24 11:00:00	00:15:00	87.6	54.5	47.9
15'	2026-03-24 11:15:00	00:15:00	77.2	51.7	52.5
15'	2026-03-24 11:30:00	00:15:00	66.7	48.6	49.2
15'	2026-03-24 11:45:00	00:15:00	70.8	49.1	49.8
15'	2026-03-24 12:00:00	00:15:00	85.1	59.7	49.4
15'	2026-03-24 12:15:00	00:15:00	92.3	79.3	50.1
15'	2026-03-24 12:30:00	00:15:00	91.5	80.3	49.8
15'	2026-03-24 12:45:00	00:15:00	89.3	72.1	48.5
15'	2026-03-24 13:00:00	00:15:00	89.6	79.1	49.3



15'	2026-03-24 13:15:00	00:15:00	72.4	50.1	50.2
15'	2026-03-24 13:30:00	00:15:00	65.7	48.7	48.8
15'	2026-03-24 13:45:00	00:15:00	63.8	48.5	48.2
15'	2026-03-24 14:00:00	00:15:00	65.1	47.4	46.6
15'	2026-03-24 14:15:00	00:15:00	67.6	49.1	47.0
15'	2026-03-24 14:30:00	00:15:00	62.2	47.2	47.0
15'	2026-03-24 14:45:00	00:15:00	67.0	49.2	48.0
15'	2026-03-24 15:00:00	00:15:00	60.4	48.4	48.7
15'	2026-03-24 15:15:00	00:15:00	66.8	47.2	47.3
15'	2026-03-24 15:30:00	00:15:00	59.5	47.0	47.2
15'	2026-03-24 15:45:00	00:15:00	64.9	47.6	47.2
15'	2026-03-24 16:00:00	00:15:00	71.6	49.8	47.5
15'	2026-03-24 16:15:00	00:15:00	66.6	48.3	47.9
15'	2026-03-24 16:30:00	00:15:00	87.0	54.1	48.0
15'	2026-03-24 16:45:00	00:15:00	72.4	49.3	47.8
15'	2026-03-24 17:00:00	00:15:00	70.3	52.0	49.1
15'	2026-03-24 17:15:00	00:15:00	91.6	57.0	48.8
15'	2026-03-24 17:30:00	00:15:00	70.5	48.3	47.4
15'	2026-03-24 17:45:00	00:15:00	63.3	47.3	47.2
15'	2026-03-24 18:00:00	00:15:00	67.8	50.7	47.7
15'	2026-03-24 18:15:00	00:15:00	70.6	48.4	47.0
15'	2026-03-24 18:30:00	00:15:00	86.0	54.2	50.3
15'	2026-03-24 18:45:00	00:15:00	64.6	50.1	49.8
15'	2026-03-24 19:00:00	00:00:08	52.0	50.0	52.0

Figure 4 – Survey Data

APPENDIX D

Manufacturer's Data



GigaBox centrifugal fan 450 mm ø

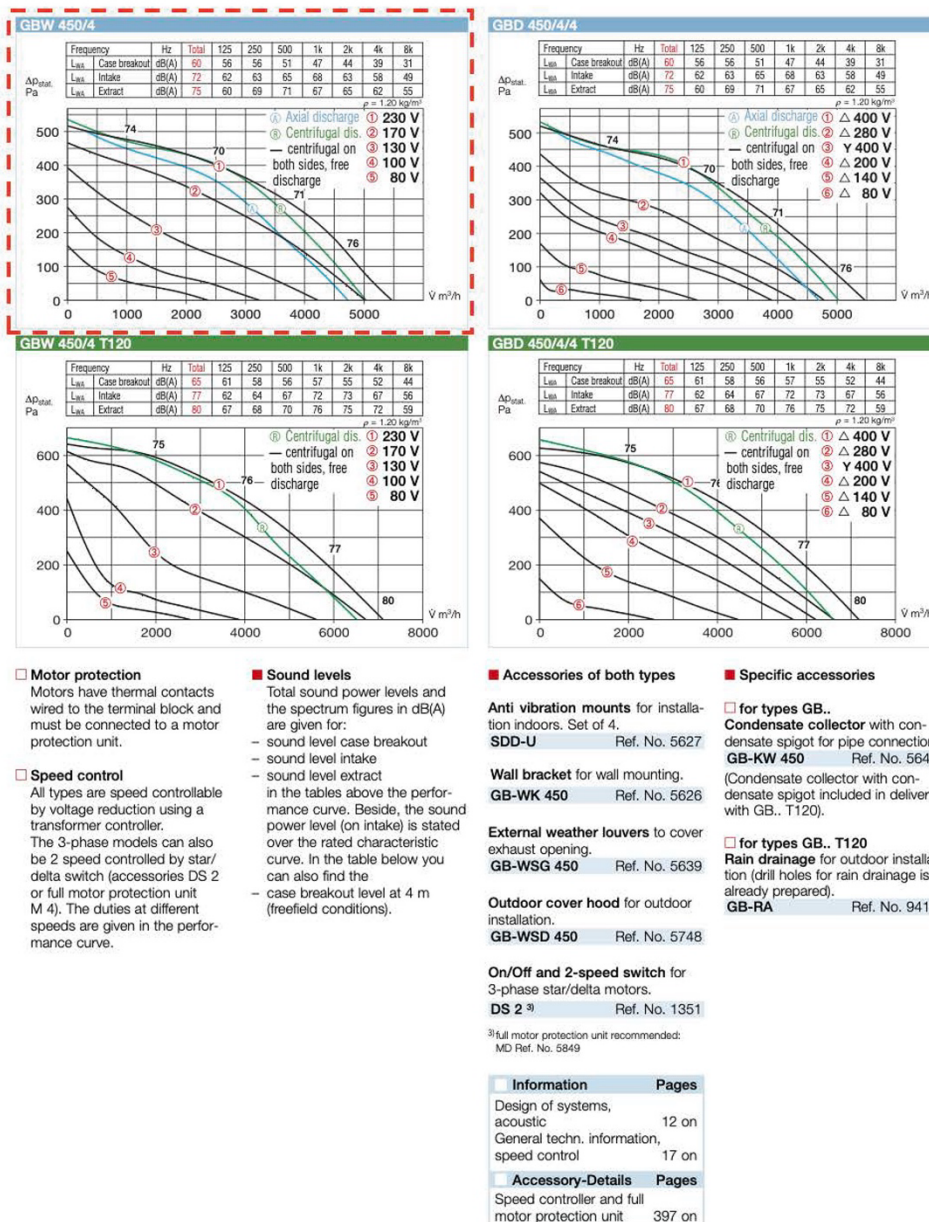


Figure 5 – Kitchen extractor Fan

Cylindrical Silencers

Acoustic Performance

Type B Dynamic Attenuation

Imperial

Bore Dia. Ins (D)	Length	Octave-Band Mid Frequencies Hz							
		63	125	250	500	1K	2K	4K	8K
6	1.5D	0	0	1	6	12	9	10	7
7.5	1.5D	0	0	1	7	11	8	9	6
9.5	1.5D	0	0	2	7	11	7	7	6
12	1D	1	2	4	9	11	10	9	7
	2D	1	2	5	11	16	12	11	10
15	1D	2	3	5	10	13	11	9	8
	2D	3	4	7	14	18	15	11	12
19	1D	2	3	6	13	14	10	10	5
	2D	3	4	8	19	18	14	11	10
24	1D	3	5	7	15	13	8	9	8
	2D	4	6	9	19	19	14	13	12
30	1D	3	5	8	16	12	9	9	8
	2D	4	6	10	19	15	12	11	10
38	1D	4	5	11	16	11	10	8	9
	2D	4	6	13	19	13	12	11	11
48	1D	4	6	12	17	10	9	8	7
	2D	5	7	14	19	14	11	11	9
60	1D	5	7	13	16	10	8	7	6
	2D	6	8	15	18	12	10	9	7

Metric

Bore Dia. mm (D)	Length	Octave-Band Mid Frequencies Hz							
		63	125	250	500	1K	2K	4K	8K
280	1D	1	1	2	8	11	8	8	7
	2D	1	2	4	10	13	10	10	9
315	1D	1	2	4	9	11	10	9	7
	2D	1	2	5	11	16	12	11	10
355	1D	1	2	4	10	12	10	9	7
	2D	2	3	6	13	17	14	11	11
400	1D	2	3	5	10	13	11	9	8
	2D	3	4	7	14	18	15	11	12
450	1D	2	3	6	12	13	11	10	6
	2D	3	4	8	17	18	15	11	11
500	1D	2	3	6	13	14	10	10	5
	2D	3	4	8	19	18	14	11	10
560	1D	2	4	7	14	14	9	10	7
	2D	3	5	9	19	18	14	12	11
630	1D	2	5	7	15	13	8	9	8
	2D	4	6	9	19	19	14	13	12
710	1D	3	5	7	15	13	9	9	8
	2D	4	6	9	19	17	13	12	11
800	1D	3	5	8	16	12	9	9	8
	2D	4	6	10	19	15	12	11	10
900	1D	3	5	10	17	13	11	10	8
	2D	4	6	12	19	15	12	11	10
1000	1D	4	5	11	16	11	10	8	9
	2D	4	6	13	19	14	12	11	11
1120	1D	4	5	11	17	11	9	8	8
	2D	4	6	13	19	14	12	11	8
1250	1D	4	6	12	17	10	9	8	7
	2D	4	6	14	19	14	11	11	9
1400	1D	4	6	12	16	10	8	7	6
	2D	4	7	14	18	13	10	10	8
1600	1D	4	7	12	16	10	8	7	6
	2D	4	8	15	18	12	10	9	7

All performances are derived from tests to BS848.

For increased attenuation use Woods splitter silencers. Attenuation figures shown are typical in-situ Dynamic Performances. For critical applications, particularly high performance fan systems please consult Woods Acoustic Department.

Type C Dynamic Attenuation

Imperial

Bore Dia. Ins (D)	Length	Octave-Band Mid Frequencies Hz							
		63	125	250	500	1K	2K	4K	8K
12	1D	2	5	5	9	18	20	18	15
	2D	2	6	6	12	20	25	20	17
15	1D	2	6	6	10	19	24	20	17
	2D	3	7	8	14	29	29	23	18
19	1D	2	3	8	16	21	22	21	17
	2D	2	4	10	20	29	30	26	20
24	1D	3	5	8	16	19	14	16	12
	2D	5	6	10	19	29	25	21	20
30	1D	4	5	8	16	19	15	14	13
	2D	5	7	10	20	23	21	17	14
38	1D	5	5	11	18	19	14	14	14
	2D	5	6	13	26	24	20	18	16
48	1D	5	8	12	19	17	14	12	10
	2D	5	8	14	25	23	17	17	12
60	1D	5	8	13	17	16	13	11	8
	2D	6	10	17	21	20	17	14	9

Metric

Bore Dia. mm (D)	Length	Octave-Band Mid Frequencies Hz							
		63	125	250	500	1K	2K	4K	8K
315	1D	2	5	5	9	18	20	18	15
	2D	2	6	6	12	20	25	20	17
355	1D	2	5	6	9	18	22	19	16
	2D	2	6	7	13	25	27	21	17
400	1D	2	6	6	10	19	24	20	17
	2D	3	7	8	14	29	29	23	18
450	1D	2	4	7	13	20	23	22	17
	2D	2	5	9	16	29	29	21	20
500	1D	2	3	8	16	21	22	21	17
	2D	2	4	10	20	29	30	20	26
560	1D	3	5	8	16	20	18	19	15
	2D	4	5	10	20	29	28	21	23
630	1D	3	5	8	15	19	16	14	12
	2D	5	6	10	19	29	25	21	20
710	1D	3	5	8	15	19	15	14	12
	2D	5	6	10	20	26	23	18	17
800	1D	4	5	8	16	19	15	14	13
	2D	5	7	11	22	23	21	16	14
900	1D	4	5	9	17	19	15	14	13
	2D	5	7	12	24	23	21	16	15
1000	1D	5	5	11	18	19	15	14	13
	2D	5	7	13	26	24	20	16	16
1120	1D	5	7	11	19	18	14	13	12
	2D	5	8	13	25	23	18	16	13
1250	1D	5	8	12	19	17	14	12	10
	2D	5	8	14	25	17	17	17	12
1400	1D	5	8	12	18	16	13	11	9
	2D	5	9	15	23	22	17	15	10
1600	1D	5	8	13	17	16	13	11	8
	2D	6	10	17	21	20	17	14	9

For sizes above 60" or 1600 mm please enquire.

Figure 6 – Proposed Attenuator

APPENDIX E

Drawings & Survey Photographs

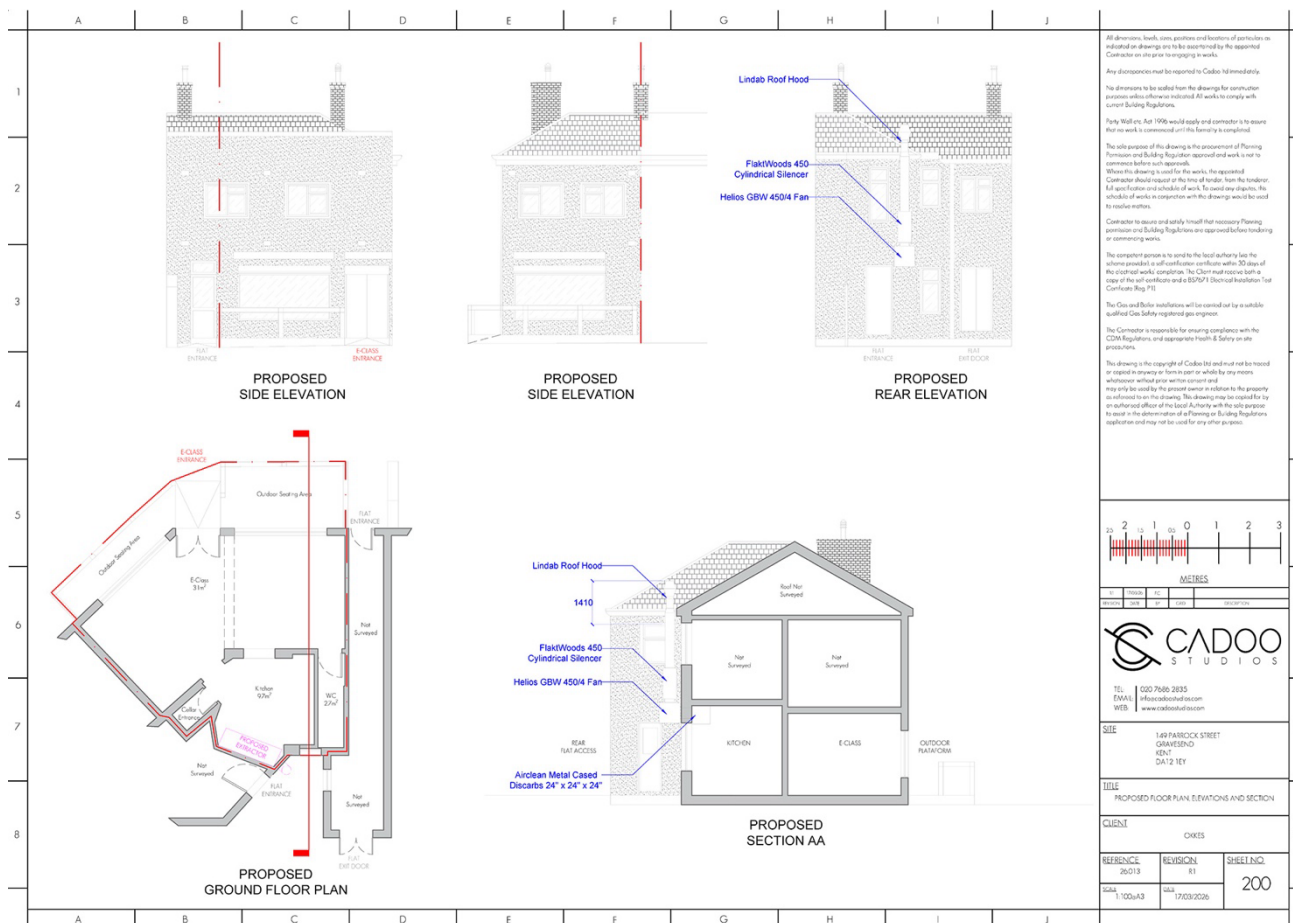


Figure 7 – Site drawing



Figure 8 – Background Measurement Location (MP1)