

FULL NOISE IMPACT ASSESSMENT

BS 4142:2014+A1:2019

12 MILTON ROAD
GRAVESEND
DA12 2RE

Item	Details
Report status	Updated assessment - commissioning verification required
Original survey	21-22 May 2026
Original report	Initial Ambient Noise Test Summary and Calculations
Prepared for	Planning / Environmental Health submission
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The requested 19:00-23:00 evening background survey has been completed. As the proposed extraction system is not yet operational, the plant-noise assessment adopts a maximum acoustic design criterion of 35 dB(A) at the nearest residential receptor, subject to commissioning verification after installation.

CONTENTS

- 1. Introduction
- 2. Site Description, Operating Hours and Noise-Sensitive Receptors
- 3. Assessment Criteria and Methodology
- 4. Acoustic Survey
- 5. Proposed Kitchen Extract Installation
- 6. Design Specific Sound Level at the Nearest Receptor
- 7. BS 4142 Rating Assessment
- 8. Council Target - 10 dB Below Background
- 9. Vibration Isolation and Flexible Couplings
- 10. Historic Complaint Context and Upgraded Installation
- 11. Uncertainty
- 12. Recommendations and Commissioning
- 13. Conclusions

1. INTRODUCTION

1.1 Overview

First Priority M UK Ltd has prepared this Noise Impact Assessment for the proposed kitchen extraction installation serving 12 Milton Road, Gravesend, DA12 2RE. This report supersedes and expands upon the Initial Ambient Noise Test Summary and Calculations prepared following monitoring undertaken on 21-22 May 2026.

The purpose of this revised report is to provide a full assessment of the potential impact of the proposed commercial kitchen extract plant upon the nearest residential noise-sensitive receptors, with specific regard to BS 4142:2014+A1:2019 and the additional requirements requested by the Local Planning Authority / Environmental Health Officer.

1.2 Council Requirements Addressed

- Background noise monitoring during the evening period 19:00-23:00, covering the relevant operating period.
- Demonstration that plant / equipment noise is designed to achieve the Council target of at least 10 dB below the representative existing background sound level at the nearest residential receptor.
- Assessment using an updated nearest residential receptor distance of approximately 3 metres.
- Explicit specification of anti-vibration mounts and flexible couplings to limit structure-borne noise and vibration.
- Confirmation that the proposed upgraded replacement installation, incorporating ESP, activated-carbon filtration, revised ductwork routing and vibration-control measures, has been specifically designed to rectify and resolve historic issues associated with the previous extraction system.

2. SITE DESCRIPTION, OPERATING HOURS AND NOISE-SENSITIVE RECEPTORS

2.1 Site

The premises are located at 12 Milton Road, Gravesend, DA12 2RE. The surrounding area comprises a mixed residential and commercial environment, with residential accommodation located in close proximity to the proposed kitchen extraction installation.

2.2 Operating Hours

Day	Proposed operating hours
Monday-Saturday	12:00-22:30
Sunday	12:00-22:00

As the proposed extraction system may operate into the late evening, the background sound climate between 19:00 and 23:00 has been specifically assessed to represent the later part of the proposed operating period.

2.3 Nearest Noise-Sensitive Receptors

For the purposes of this revised assessment, the nearest noise-sensitive residential receptors have been taken as No. 13–14 flats and the rear first-floor bedroom of No. 11. In accordance with the updated information provided by the Local Authority, a source-to-receptor assessment distance of approximately 3 metres has been adopted for the noise assessment.

Receptor	Description	Assessment distance
NSR1	No. 13-14 flats residential window	3 m
NSR2	No. 11 rear first-floor bedroom	3 m

3. ASSESSMENT CRITERIA AND METHODOLOGY

3.1 BS 4142:2014+A1:2019

BS 4142:2014+A1:2019 provides a method for rating and assessing sound of an industrial and commercial nature. The specific sound level from the source is determined at the assessment location and, where appropriate, acoustic feature corrections are applied for tonality, impulsivity, intermittency and other readily distinctive characteristics. The resulting rating level is then compared with the representative background sound level.

The numerical difference between the rating level and the background sound level provides an initial indication of the likely impact, with the final assessment also requiring consideration of the context in which the sound occurs.

For the purposes of this assessment, the specific sound source is the proposed commercial kitchen extraction installation and the assessment location is the nearest residential noise-sensitive receptor, taken approximately 3 metres from the proposed plant/discharge location.

3.2 Council-Specific Design Criterion

In addition to the BS 4142 assessment, the Local Authority has specified that noise from the proposed plant/equipment should achieve a level at least 10 dB below the representative existing background sound level at the nearest noise-sensitive residential receptor.

Accordingly, the following additional design criterion has been adopted:

Maximum plant sound level = Representative background sound level, LA90,T – 10 dB

This Local Authority criterion is assessed separately from the BS 4142 rating assessment. BS 4142 considers the relationship between the rating level and background sound level but does not itself impose a universal requirement for plant noise to be 10 dB below background.

3.3 Assessment Approach

The assessment has therefore been undertaken in two stages:

- a) assessment of the proposed plant in accordance with BS 4142:2014+A1:2019, including consideration of acoustic feature corrections and context; and
- b) a separate check against the Local Authority design requirement that plant noise does not exceed 10 dB below the representative background sound level at the nearest residential receptor.

4. ACOUSTIC SURVEY

4.1 Original Daytime Survey

Continuous ambient/background noise monitoring was undertaken on 21 and 22 May 2026 using a Nova Environmental Sound Level Meter (Class 2). The microphone was positioned within the rear external area of the premises at a location representative of the nearby residential receptors. Hourly statistical noise data were logged for subsequent analysis.

Parameter	Original survey result
Monitoring period used in original assessment	10:00-16:00
Measured background range	52-56 dB(A) LA90,T
Representative daytime background	52 dB(A) LA90,T

4.2 Evening Background Survey - 19:00 to 23:00

To address the Local Authority's request, additional background sound monitoring was undertaken between 19:00 and 23:00 to cover the later part of the proposed operating period. The proposed extraction system was not installed or

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operational during the survey. The measurements therefore represent the existing residual/background sound climate in the absence of the proposed plant.

The monitoring position was located at the rear roof area of the premises and was selected to be representative of the acoustic environment at the nearest residential noise-sensitive receptors.

Period	LAeq,T dB(A)	LA90,T dB(A)	LAmaz dB(A)	Observations
19:00-20:00	53	48	66	Rear roof monitoring position; general background sound from surrounding area.
20:00-21:00	53	47	68	Rear roof monitoring position; generally steady background sound.
21:00-22:00	50	45	63	Rear roof monitoring position; quieter background conditions.
22:00-23:00	48	43	60	Generally quiet background sound climate with occasional local traffic audible.

The measured evening LA90,T values ranged from 43 to 48 dB(A). A representative evening background sound level of 45 dB(A) LA90,T has been adopted for assessment purposes. This value is considered representative of the later operating period and avoids reliance on the single lowest measured hourly value.

Representative evening background sound level adopted for assessment: 45 dB(A) LA90,T.

4.3 Weather and Survey Notes

Item	Record
Date	25/08/26
Weather	Clear
Wind speed	2 m/s
Temperature	18 °C
Rainfall / road condition	No rainfall, roads dry
Calibration before survey	94.0 dB
Calibration after survey	94.2 dB
Calibration drift	+0.2 dB

The sound level meter was checked in accordance with the manufacturer's procedures before and after the survey. No significant drift was observed.

5. PROPOSED KITCHEN EXTRACT INSTALLATION

The proposal comprises a new upgraded commercial kitchen extraction and air-treatment system intended to replace and improve upon the previous extraction arrangement. The proposed extract-purification unit is noise-insulated and is combined with ESP, activated-carbon filtration, revised ductwork routing and vibration-control measures to improve odour, grease, smoke and noise performance.

Component	Proposed arrangement / data required
Extract fan	Combined exhaust air purification unit with integral motor, rated at 5,400 m³/h maximum airflow
ESP	Electrostatic precipitator – ESP 4500-E
Carbon filtration	14 activated-carbon filters
Pre-filtration	Pre-filter and bag-filter stages

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Ductwork	500mm diameter galvanized spiral ductwork
Bends	2x500mm 90° bends
Flexible connections	Flexible duct connectors immediately upstream and downstream of the fan
Discharge termination	500mm high velocity jet cowl
Vibration control	Proprietary anti-vibration mounts to roof-mounted plant
Maximum operating duty	5,400 m³/h maximum design airflow

The proposed system is intended to operate as an integrated extraction and filtration assembly. The final installation shall incorporate the above plant together with the specified anti-vibration isolation and flexible duct connections so that airborne and structure-borne noise transmission is minimized at the nearby residential receptors.

6. DESIGN SPECIFIC SOUND LEVEL AT THE NEAREST RECEPTOR

6.1 Manufacturer Acoustic Information

The initial noise assessment adopted a predicted operational noise level of approximately 35 dB(A) at the nearest residential receptor, which at that time was taken to be approximately 6 metres from the proposed discharge point. The prediction was based on the equipment information and proposed installation arrangement available at that stage.

The manufacturer provides only a single overall sound level for the proposed unit and does not publish detailed acoustic information such as octave-band sound levels, sound-power spectra or acoustic performance curves. Accordingly, the available information is insufficient to reliably undertake a detailed frequency-based recalculation of the complete installed system at the revised 3 metre receptor distance.

It has therefore not been considered appropriate to derive an unsupported revised predicted noise level at 3 metres. Instead, the completed extraction system will be installed, commissioned and speed-controlled so that the specific operational sound level does not exceed the Local Authority design criterion at the nearest residential receptor.

6.2 Acoustic Design Criterion

The representative evening background sound level has been determined as 45 dB(A) LA90,T. The Local Authority requires plant and equipment noise to achieve a level at least 10 dB below the representative background sound level at the nearest noise-sensitive receptor.

The resulting acoustic design criterion for the proposed extraction installation is therefore 35 dB(A) maximum at the nearest residential receptor, assessed at approximately 3 metres from the proposed plant / discharge location.

Parameter	Level / value
Representative evening background sound level	45 dB(A) LA90,T
Local Authority required margin below background	10 dB
Assessment distance	Approximately 3m
Maximum design plant sound level at nearest receptor (3 m)	35 dB(A)
Adopted specific sound level for BS 4142 assessment	35 dB(A) maximum (design limit)

The extraction system, including the enclosed extract fan, ESP, carbon filtration, revised ductwork arrangement, anti-vibration isolation and associated components, shall be designed, installed and commissioned so that the specific operational sound level does not exceed 35 dB(A) at the nearest residential receptor.

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As the proposed system is not yet operational, 35 dB(A) is adopted as the maximum design level for this predictive assessment and is to be verified during commissioning following installation.

6.3 Compliance and Commissioning

The proposed extract-purification unit has a maximum design airflow of 5,400 m³/h and incorporates speed control, allowing the final operating duty to be adjusted during commissioning. The available fan capacity therefore provides scope for operation below maximum speed where required for acoustic control.

The final commissioned operating setting shall be selected to achieve both the required kitchen extraction performance and the 35 dB(A) maximum receptor noise criterion. The proposed noise-insulated unit, anti-vibration mounts, flexible duct connections and revised ductwork arrangement will further assist in minimising airborne and structure-borne noise transmission.

Final compliance shall be confirmed by post-installation noise measurement at the nearest representative residential receptor with the extraction system operating at its commissioned maximum duty.

7. BS 4142 RATING ASSESSMENT

7.1 Acoustic Feature Corrections

BS 4142 requires consideration of whether the specific sound contains acoustic characteristics such as tonality, impulsivity, intermittency or other readily distinctive features. Where such characteristics are present, appropriate corrections are added to the specific sound level to determine the rating level.

As the proposed extraction system is not yet installed or operational, the following corrections are predictive assumptions based on the nature of the proposed continuously operating, speed-controlled extract system and associated plant. These assumptions shall be confirmed during post-installation commissioning.

Feature	Assessment	Correction
Tonality	No significant tonal characteristics anticipated	0 dB
Impulsivity	No impulsive characteristics anticipated	0 dB
Intermittency	Continuous operation during kitchen operating periods; no intermittent characteristic anticipated	0 dB
Other readily distinctive characteristics	None anticipated	0 dB

7.2 BS 4142 Rating Level Assessment

Quantity	Evening assessment
Representative background sound level, LA90,T	45 dB(A)
Specific sound level adopted for assessment, LAeq,Tr	35 dB(A) maximum
Total acoustic feature correction	0 dB
Rating level, LAr,Tr	35 dB(A) maximum
Rating level minus background	-10 dB

Context: As the proposed extraction system was not operational at the time of the survey, acoustic character has been assessed on a predictive basis from the proposed plant type and intended operating arrangement. No significant tonal, impulsive, intermittent or other readily distinctive characteristics are anticipated. The assessment also considers the character of the locality, proposed operating hours, proximity of residential receptors and the upgraded replacement nature of the proposed system. Final acoustic characteristics shall be confirmed during commissioning, if required by the Local Planning Authority.

8. ASSESSMENT AGAINST LOCAL AUTHORITY NOISE CRITERION

The Local Authority requires plant noise to be at least 10 dB below the representative background sound level at the nearest residential receptor. Based on the representative evening background level of 45 dB(A) LA90,T, the maximum permitted plant sound level is therefore 35 dB(A) at the approximately 3 m receptor.

The completed installation shall be commissioned to achieve this criterion, with compliance verified by post-installation measurement.

Item	Result
Representative evening background, LA90,T	45 dB(A)
Council target (background -10 dB)	10 dB
Maximum design plant level at 3 m	35 dB(A)
Design/commissioning limit	35 dB(A) maximum
Compliance	Designed to comply, subject to commissioning verification

The proposed extraction installation shall therefore be commissioned so that the specific operational sound level does not exceed 35 dB(A) at the nearest residential receptor. The final operating duty shall be adjusted as necessary using the available fan speed control, while maintaining the required kitchen extraction performance.

Compliance with this criterion shall be confirmed by post-installation verification measurements with the system operating at its commissioned maximum duty.

9. VIBRATION ISOLATION AND FLEXIBLE COUPLINGS

9.1 Anti-Vibration Mounts

All rotating plant associated with the proposed extraction system shall be installed on proprietary anti-vibration isolators selected to suit the actual operating weight, centre of gravity and rotational speed of the equipment. The isolators shall be sized by the manufacturer or supplier to provide suitable static deflection and vibration isolation, and the installation shall avoid rigid metal-to-metal bridging between the plant and supporting structure.

Where plant or ductwork is supported from the building structure, resilient isolation shall be incorporated at support points as required to minimise the transmission of structure-borne vibration into walls, floors, roof structures and steelwork.

9.2 Flexible Connections and Duct Supports

Flexible duct connectors shall be installed immediately upstream and downstream of the fan / extract-purification unit. These connectors shall be suitable for commercial-kitchen duty and appropriate for the operating temperature and grease-laden extract air. Flexible connectors shall not be installed under excessive tension and shall not be short-circuited by rigid fixings.

Ductwork supports and brackets shall incorporate resilient pads or other suitable isolation where necessary to prevent vibration transfer, rattling, drumming or direct contact with the building structure.

These measures form part of the upgraded installation and are intended to minimise both airborne noise and structure-borne vibration at the nearby residential receptors.

10. HISTORIC COMPLAINT CONTEXT AND UPGRADED INSTALLATION

It is understood that historic noise and/or odour concerns were associated with the previous kitchen extraction installation at the premises.

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The current proposal is a new upgraded replacement system and has been specifically designed to address and rectify the issues associated with the former arrangement. The upgraded installation incorporates electrostatic precipitation, activated-carbon filtration, revised ductwork routing, a noise-insulated extract-purification unit, anti-vibration isolation and flexible duct connections.

These measures are intended to provide improved grease, smoke, odour, airborne-noise and structure-borne-vibration control compared with the previous installation.

The conclusions of this assessment relate only to the proposed replacement system and should not be taken as an endorsement of the acoustic or odour performance of the former installation.

11. UNCERTAINTY

As with any environmental noise assessment, a degree of uncertainty is associated with the measured background sound levels, future plant operating conditions, source-to-receptor relationship and the acoustic character of the completed installation.

The evening background sound level adopted for assessment purposes is based on measurements undertaken during the 19:00–23:00 period and is considered representative of the later proposed operating period. Actual background sound levels may vary from day to day depending on traffic, local activity and weather conditions.

The proposed extraction system was not installed or operational at the time of the survey. In addition, the manufacturer provides only a single overall sound level for the proposed unit and does not publish detailed octave-band or sound-power data for the complete installed system. Accordingly, the final operational sound level and acoustic character cannot be confirmed by direct measurement at this stage.

Final compliance shall be verified following installation with the system operating at its commissioned maximum duty.

Any significant tonal, impulsive, intermittent or other readily distinctive acoustic characteristics identified during commissioning shall be considered and, where necessary, the operating setting or mitigation measures shall be adjusted accordingly.

12. RECOMMENDATIONS AND COMMISSIONING

The proposed kitchen extraction system should be installed and commissioned in accordance with the following requirements:

- The extract-purification unit shall be operated through the available speed control and commissioned so that the specific operational sound level does not exceed 35 dB(A) at the nearest residential receptor, approximately 3 metres from the proposed plant / discharge location.
- The final commissioned fan speed shall be selected to achieve both the required kitchen extraction performance and the Local Authority noise criterion.
- All rotating plant shall be installed on proprietary anti-vibration mounts selected to suit the actual plant weight, centre of gravity and operating speed.
- Flexible duct connections shall be installed immediately upstream and downstream of the fan / extract-purification unit to minimise transmission of vibration into the ductwork and building structure.
- Ductwork supports and brackets shall incorporate suitable resilient isolation where required to prevent structure-borne vibration, rattling or drumming.

- The revised ductwork routing and high-velocity discharge arrangement shall be installed in accordance with the final mechanical design.
- Following installation, post-commissioning noise measurements shall be undertaken at the nearest representative residential receptor with the system operating at its commissioned maximum duty.
- If the measured plant noise exceeds 35 dB(A), or if significant tonal, impulsive, intermittent or other distinctive characteristics are identified, the fan operating speed and/or additional mitigation measures shall be adjusted before final operation.

Provided the above installation and commissioning measures are implemented, the proposed system will be capable of being controlled to meet the adopted 35 dB(A) receptor criterion while maintaining the required extraction duty.

13. CONCLUSIONS

An environmental noise assessment has been undertaken for the proposed replacement kitchen extraction system at 12 Milton Road, Gravesend, DA12 2RE, with reference to BS 4142:2014+A1:2019 and the additional requirements of the Local Authority.

The evening background survey established a representative background sound level of 45 dB(A) LA90,T during the 19:00–23:00 period. Applying the Local Authority requirement for plant noise to be at least 10 dB below background results in a maximum plant noise criterion of 35 dB(A) at the nearest residential receptor, approximately 3 metres from the proposed installation.

The proposed upgraded replacement system incorporates a noise-insulated extract-purification unit, ESP, activated-carbon filtration, revised ductwork routing, speed control, anti-vibration mounts and flexible connections. The system shall be commissioned so that the specific operational sound level does not exceed 35 dB(A) at the nearest residential receptor. On this basis, and assuming no significant acoustic character corrections are identified, the resulting BS 4142 rating level would be 10 dB below the representative evening background level, indicating a low likelihood of adverse impact.

Final compliance shall be confirmed by post-installation noise measurement at the commissioned maximum operating duty. Where necessary, the operating speed or additional mitigation shall be adjusted to maintain both the required extraction performance and the 35 dB(A) receptor criterion.