

**Pepe's
170-171 Parrock Street
Gravesend**

Plant Sound Assessment Report
1554/PSA1
Revision 1

25 March 2026

For:

Sri Neelakanta Ltd
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Gravesend
Kent



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1.0 Introduction

Lighthouse Acoustics has been appointed by Sri Neelakanta Ltd to undertake an assessment of atmospheric noise emissions from the proposed 1No. extract fan, 1No. supply fan and 2No. condenser units at Pepe's, 170-171 Parrock Street, Gravesend to the nearest existing noise sensitive receptor.

The survey methodology, results and assessment are presented in this report.

2.0 Objectives

To establish the Local Authority's plant sound requirements for the proposed 1No. extract fan, 1No. supply fan and 2No. condenser units.

To visit site to undertake manned environmental sound measurements during critical periods in order to establish existing representative background sound levels at the nearest noise sensitive receptor.

To undertake an assessment of atmospheric plant sound emission levels from the proposed 1No. extract fan, 1No. supply fan and 2No. condenser units to the nearest noise sensitive receptor and to propose mitigation measures where required in order to achieve the requirements of the Local Authority.

3.0 Site Description

Pepe's, 170-171 Parrock Street, Gravesend comprises a ground floor commercial unit in a 3 storey terrace building. The building is bound by an adjoining commercial property to the north, residential properties to the east, an adjoining commercial property to the south and Parrock Street (A226) to the west.

The proposed 1No. extract fan is situated internally within the ground floor kitchen with the exhaust duct penetrating the ground floor flat roof and rising up the east façade to 2nd floor roof level where it terminates vertically whilst the 1No. supply fan is situated externally on the ground floor flat roof to the rear of the building with the supply duct penetrating the ground floor flat roof to inside and the fresh air intake grille facing to the east. The proposed 2No. condenser units are situated externally on the northern façade at ground floor level.

The nearest noise sensitive receptors are understood to be residential flats situated at 1st and 2nd floor level above the proposed Pepe's unit.

The site plan overleaf indicates the extent of the site and the surrounding environment.



Site plan indicating the extent of the site and the surrounding environment.

4.0 Local Authority Requirements

It is understood that Gravesham Borough Council require building services noise to be assessed in accordance with the guidance provided in BS 4142:2014, "Methods for rating and assessing industrial and commercial sound" and that the rating level should not exceed 5dB below the existing background sound level at the nearest noise sensitive receptor.

5.0 BS 4142: 2014

BS 4142: 2014 "Methods for rating and assessing industrial and commercial sound", describes methods for rating and assessing sound of an industrial and/or commercial nature, which includes:

- sound from industrial and manufacturing processes;
- sound from fixed installations which comprise mechanical and electrical plant and equipment;
- sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and

- sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train or ship movements on or around an industrial and/or commercial site.

Sound of an industrial and/or commercial nature does not include sound from the passage of vehicles on public roads and railway systems.

It should be noted that the determination of noise amounting to a nuisance is beyond the scope of BS 4142.

The likely impact is indicated by subtracting the existing background sound level from the rating level of the industrial and/or commercial sound. The standard states that:

- "a) Typically, the greater this difference, the greater the magnitude of the impact.*
- b) A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.*
- c) A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.*
- d) 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.*

Note 2 Adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact."

The industrial and/or commercial sound is expressed as the specific sound level and given as a L_{Aeq,T_r} sound level. Should the specific sound level exhibit any acoustic features (i.e. tonality, irregularity or impulsiveness) a character correction is applied. The rating level is the specific sound level with character correction applied (if applicable) and is given as a L_{A,r,T_r} sound level.

The existing background sound level is given as a $L_{A90,T}$ sound level. The reference time interval, T_r , is 1 hour during the daytime period (07:00 to 23:00 hours) and 15 minutes during the night-time period (23:00 to 07:00 hours).

6.0 Environmental Sound Survey

6.1 Measurements

It is understood that the proposed 1No. extract fan, 1No. supply fan and 2No. condenser units have the potential to operate between 11:00 and 23:00 hours Monday to Sunday.

Fully manned environmental sound measurements were undertaken during the critical period when environmental sound levels may typically be expected to be at their lowest.

The measurements were undertaken between 23:00 to 00:00 hours on Tuesday 20 January 2026.

During this period the L_{Amax} , L_{Aeq} and L_{A90} sound levels were measured over 5 minute periods.

6.2 Weather Conditions

During the survey period there was a light south easterly breeze (<3m/s) and the sky was overcast. There was no rainfall and road surfaces were damp. The temperature was approximately 8°C.

The weather conditions during the survey period are therefore considered to be suitable for undertaking measurements of sound levels.

6.3 Measurement Position

Environmental sound levels were measured at a single position on-site as described in the table below.

Position	Description
A	Microphone situated to the east of the site along Edwin Street at 1.2m above ground level in free field conditions.

The measurement position is shown on the site plan below.



Site plan showing measurement position

Measurement Position A was selected in order to assess typical environmental sound levels representative of those at the nearest noise sensitive receptors.

6.4 Equipment

The following equipment was used to undertake the environmental sound survey.

Equipment	Manufacturer	Model	Serial No.	Calibration Date
Class 1 Sound Level Meter	Casella	CEL-633C	1057028	11/07/2025
Preamplifier	Casella	CEL-495	004728	11/07/2025
Microphone	G.R.A.S.	GRAS-40AE	49590	07/07/2025
Class 1 Sound Calibrator	Casella	CEL-110/1	095710	01/12/2025

Field calibration checks were performed on the sound level meter prior to and on completion of the survey and were found to be within acceptable tolerance limits.

6.5 Results

The results of the environmental sound survey are presented below.

Position	Time	L _{Amax,15min} (dB)	L _{Aeq,15min} (dB)	L _{A90,15min} (dB)
A	23:00-23:15	60	46	41
	23:15-23:30	65	45	39
	23:30-23:45	61	44	38
	23:45-00:00	68	44	39

The lowest representative L_{A90} background sound level at Position A is 38dB.

6.6 Discussion of Sound Climate

At Position A, the dominant sound sources during the survey period were occasional road traffic along Parrock Street (A226) and distant road traffic from the surrounding road network.

7.0 Atmospheric Plant Sound Emissions Impact Assessment

7.1 Plant Sound Data

Atmospheric building services sound levels have been assessed based on the manufacturers sound data for the proposed 1No. extract fan, 1No. supply fan and 2No. condenser units which indicates octave band sound data as detailed in the tables below.

Extract Fan – Flakt Woods MaXfan 63 Compac - 2.06m³/s at 695Pa

Induct Outlet Sound Power Level (dB) at Octave Band Centre Frequency (Hz)								dBA
63	125	250	500	1k	2k	4k	8k	
91	101	100	101	99	96	92	89	104

Supply Fan – Elta SEL355/2-1AC – 1.32m³/s at 100Pa

Induct Inlet Sound Power Level (dB) at Octave Band Centre Frequency (Hz)								dBA
63	125	250	500	1k	2k	4k	8k	
-	47	64	70	75	74	71	64	79

Condenser Unit – NFR100DL

Sound Pressure Level at 1m (dB) at Octave Band Centre Frequency (Hz)								dBA
63	125	250	500	1k	2k	4k	8k	
-	55	57	54	42	41	31	30	54

Condenser Unit – NFR200DL

Sound Pressure Level at 1m (dB) at Octave Band Centre Frequency (Hz)								dBA
63	125	250	500	1k	2k	4k	8k	
-	57	59	56	48	43	32	29	56

Whilst it is not possible to assess plant irregularity or impulsiveness based on manufacturer's sound data, BS 4142: 2014 provides an objective method for assessing the audibility of tones in sound. The one-third octave method states that if the level of a one third octave band exceeds the level of both adjacent one third octave bands by the following amounts, then a tonal component may be identified as present:

- 15dB in the low-frequency one-third-octave bands (25Hz to 125Hz);
- 8dB in the mid-frequency one-third-octave bands (160Hz to 400Hz);
- 5dB in the high-frequency one-third-octave bands (500Hz to 10kHz).

However, one third octave band sound data is rarely available from manufacturers as is the case in this instance.

By applying the same principal to the octave band sound data in the table above, a review indicates that these items are unlikely to exhibit a tonal component. As such, no character correction has been applied to the specific sound level for these items.

Should one third octave band sound data become available a revised assessment should be undertaken.

7.2 Plant Locations

The locations of the proposed 1No. extract fan, 1No. supply fan and 2No. condenser units have been taken from the following drawings.

Author	Drawing No.	Revision	Date
KRS Steel Services Ltd	C7426(P)/M01	-	18/01/2026
Architecture & Interiors	2025-241 5	-	19/03/2026
	2025-241 6	-	19/03/2026

These indicate that the proposed 1No. extract fan is situated internally within the ground floor kitchen with the exhaust duct penetrating the ground floor flat roof and rising up the east façade to 2nd floor roof level where it terminates vertically whilst the 1No. supply fan is situated externally on the ground floor flat roof to the rear of the building with the supply duct penetrating the ground floor flat roof to inside and the fresh air intake grille facing to the east. The proposed 2No. condenser units are situated externally on the northern façade at ground floor level.

7.3 Operating Hours

It is understood that the proposed 1No. extract fan, 1No. supply fan and 2No. condenser units have the potential to operate between 11:00 and 23:00 hours Monday to Sunday.

In order to undertake a worst case assessment, it is assumed that the proposed 1No. extract fan, 1No. supply fan and 2No. condenser units operate for the full 1 hour daytime assessment period.

7.4 Nearest Noise Sensitive Receptors

The nearest noise sensitive receptors to the proposed 1No. extract fan, 1No. supply fan and 2No. condenser units are understood to be the residential flats situated at 1st and 2nd floor level above the proposed Pepe's unit. The table below details the approximate distance between the proposed 1No. extract fan, 1No. supply fan and 2No. condenser units and the window of the nearest noise sensitive receptors.

Nearest Noise Sensitive Receptors	Plant Item	Approximate Distance (m)
East Facade	Extract Fan Exhaust	1
	Supply Fan Inlet	3
	Condenser Units	6

7.5 Calculation

The assessment has been undertaken in accordance with generally accepted acoustic principles for building services plant items and includes corrections for duct dimensions, grille dimensions, end reflections, directivity and distance loss.

7.6 Attenuation Proposals

The proposed 1No. extract fan and 1No. supply fan shall be fitted with an atmospheric silencer as specified in the Silencer Schedule 1554/SS1 enclosed at the rear of the report.

Any exhaust ductwork between the penetration of the ground floor flat roof and any externally mounted atmospheric silencers should be acoustically lagged comprising 50mm (min.) mineral wool slab (min. 16kg/m³) wrapped with a polymeric heavy mass barrier material of at least 10kg/m².

The supply fan unit and any ductwork between the atmospheric silencer and penetration of the ground floor flat roof should be acoustically lagged comprising 50mm (min.) mineral wool slab (min. 16kg/m³) wrapped with a polymeric heavy mass barrier material of at least 10kg/m².

The proposed 2No. condenser units shall be fitted with an acoustic enclosure which can provide a reduction of at least 10dB.

In order to achieve this reduction, an acoustic louvred enclosure should be considered around the proposed 2No. condenser units. Acoustic louvres with a depth of 300mm would typically be expected to provide ~16dB attenuation, as specified in the Acoustic Specification for Acoustic Louvred Enclosure which is enclosed at the rear of the report.

In addition, all building services should be mounted on appropriate anti-vibration mounts in order to minimise structure borne noise to the residential flats situated at 1st floor level above the unit.

7.7 Assessment

The results of the assessment are summarised in the following tables.

Extract Fan

Nearest Noise Sensitive Receptor	Cumulative Rating Level $L_{Ar,15min}$ at Receptor (dB)	Lowest Representative L_{A90} Background Sound Level at Nearest Noise Sensitive Receptor (dB)	Difference (dB)	Local Authority's Requirements Achieved
East Facade	30	38	-8	Yes

Supply Fan

Nearest Noise Sensitive Receptor	Cumulative Rating Level $L_{Ar,15min}$ at Receptor (dB)	Lowest Representative L_{A90} Background Sound Level at Nearest Noise Sensitive Receptor (dB)	Difference (dB)	Local Authority's Requirements Achieved
East Facade	26	38	-12	Yes

Condenser Units

Nearest Noise Sensitive Receptor	Cumulative Rating Level $L_{Ar,15min}$ at Receptor (dB)	Lowest Representative L_{A90} Background Sound Level at Nearest Noise Sensitive Receptor (dB)	Difference (dB)	Local Authority's Requirements Achieved
East Facade	30	38	-8	Yes

The assessment indicates that the L_{Ar} rating levels are likely to achieve 8dB to 12dB below the lowest representative L_{A90} background sound level L_{A90} at the nearest noise sensitive receptors.

As such, atmospheric plant sound emissions from the proposed 1No. extract fan, 1No. supply fan and 2No. condenser units are likely to have a low impact at the nearest noise sensitive receptors and achieve the requirements of the Local Authority with the incorporation of the proposed mitigation measures.

8.0 Context

BS 4142: 2014 states the following with regard to the context of the industrial/commercial sound:

"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. An effective assessment cannot be conducted without an understanding of the reason(s) for the assessment and the context in which the sound occurs/will occur. When making assessments and arriving at decisions, therefore, it is essential to place the sound in context."

In order to place the industrial/commercial sound in context the following points have therefore been considered:

- Atmospheric plant sound emissions from the proposed 1No. extract fan, 1No. supply fan and 2No. condenser units are likely to have a low impact at the nearest noise sensitive receptor;
- The proposed 1No. extract fan, 1No. supply fan and 2No. condenser units operate during daytime hours only (11:00 to 23:00 hours);
- BS 4142:2014 only uses outdoor sound levels to assess the likely effects of sound.

Based on the above, it is considered that the proposed industrial/commercial sound is likely to have a have a low impact at the nearest noise sensitive receptor with the incorporation of the proposed mitigation measures. This conclusion is reached by professional judgement, taking context into consideration.

9.0 Uncertainty

Weather conditions were monitored during the survey period and were considered to be suitable for undertaking measurements of sound levels. Measurement positions were selected that were representative of the nearest noise sensitive receptor.

Measurements were undertaken during the critical period when environmental sound levels may typically be expected to be at their lowest during the operational period. Whilst environmental sound levels have the potential to be lower than those measured on some occasions, they are likely to be similar to those measured for the vast majority of the time. As such, uncertainty in the survey methodology is considered to be of marginal significance.

The survey was undertaken using Class 1 equipment which had been calibrated within the required intervals. In addition, field calibration checks were performed on the sound level meters prior to and on completion of the survey and were found to be within acceptable tolerance limits. As such, uncertainty in the survey equipment is considered to be of negligible significance.

Assessment data including sound data and operating hours has been based on manufacturers sound data, measured sound data and information received from others. A character correction has been applied as deemed appropriate. As such, uncertainty in the assessment data is considered to be of marginal significance.

Calculations have been undertaken in accordance with recognised procedures and have been performed in a spreadsheet. As such, uncertainty in the assessment is considered to be of negligible significance.

Based on the above, overall uncertainty in the assessment is considered to be of marginal significance.

10.0 Conclusions

The Local Authority's plant sound requirements for the proposed 1No. extract fan, 1No. supply fan and 2No. condenser units has been established.

Manned environmental sound measurements during critical periods have been undertaken in order to establish existing representative background sound levels at the nearest noise sensitive receptor.

An assessment of atmospheric plant noise emission levels from proposed the 1No. extract fan, 1No. supply fan and 2No. condenser units to the nearest noise sensitive receptor has been undertaken.

The assessment indicates that the proposed 1No. extract fan, 1No. supply fan and 2No. condenser units are likely to have a low impact at the nearest noise sensitive receptor and achieve the requirements of the Local Authority with the incorporation of the proposed mitigation measures.

A handwritten signature in black ink, appearing to read 'Robin Wood', with a large, sweeping horizontal stroke underneath.

Robin Wood
LIGHTHOUSE ACOUSTICS

Ref: 1554/SS1

Date: 25 March 2026

Revision: -

Comments: -

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Plant Ref.	Description	Inlet/Outlet	Vol. (m³/s)	Typical Length (mm)	Face Velocity (m/s)	Pressure Drop (Pa)	Insertion Loss (dB) at Octave Band Centre Frequency (Hz)							
							63	125	250	500	1k	2k	4k	8k
-	Extract Fan Flakt Woods 63 Maxfan Compac	Exhaust 2x Silencers Required in Series	2.06	2400	<4.0	<55	10	22	36	51	53	53	47	31
				2400	<4.0	<55	10	22	36	51	53	53	47	31
-	Supply Fan Elta SEL355/2-1 AC	Fresh Air Inlet	1.32	1200	<4.0	<55	7	12	19	35	40	36	28	17

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Acoustic Specification for Acoustic Louvred Enclosure

Location

The acoustic louvred enclosure shall fully enclose the 2No. condenser units situated externally on the northern façade at ground floor level on all sides. It should extend from ground level up to a height at least equal to that of the highest condenser unit. The lid to the enclosure may be formed from either acoustic louvres or an impermeate construction with a minimum mass per unit area of 15kg/m².

Sound Insulation

The acoustic louvred enclosure shall provide the following minimum sound transmission loss performance when tested in accordance with BS EN ISO 10140-2:2010.

Sound Transmission Loss (dB) at Octave Band Centre Frequency (Hz)							
63	125	250	500	1k	2k	4k	8k
6	7	10	12	18	18	14	13

Construction

The acoustic louvres shall typically have a depth of 300mm and be constructed from galvanised/plastic coated steel or aluminium with perforated galvanised/plastic coated steel or aluminium to the lower blade face.

The sound absorbent infill shall have a density of at least 45kg/m³. It should be non-hygroscopic, incombustible, chemically inert and be faced with a protective membrane to prevent fibre migration.

All joints between the panels of the acoustic louvres and at junctions between the acoustic louvred enclosure and adjacent structures shall be made good and sealed with non-setting mastic.

The acoustic louvred enclosure shall be designed and constructed to withstand appropriate wind and snow loads and shall be suitably weatherproofed.