Pepe's
109 Coldharbour Lane
Hayes

Plant Sound
Assessment Report
1497/PSA1

24 October 2025

For:

MA Hayes Ltd

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Contents

Appendices

Lighthouse Acoustics is the trading name of Lighthouse Enterprises UK Limited
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1.0 Introduction

Lighthouse Acoustics has been appointed by MA Hayes Ltd to undertake environmental sound measurements at Pepe's, 109 Coldharbour Lane, Hayes and to assess atmospheric sound emissions from the 1No. existing extract fan and 1No. existing supply fan for the proposed extended operating hours from 23:00 to 01:00 hours Sunday to Thursday and to 02:00 hours Friday and Saturday.

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

2.0 Objectives

To establish the Local Authority's acoustic requirements for the 1No. existing extract fan and 1No. existing supply fan.

To visit site to undertake measurements of atmospheric sound emissions from the 1No. existing extract fan and 1No. existing supply fan.

To undertake measurements of representative background sound levels at the nearest noise sensitive receptors during the proposed extended operating hours.

To undertake an assessment of atmospheric sound emission levels from the 1No. existing extract fan and 1No. existing supply fan upon the nearest noise sensitive receptors and to propose mitigation measures where required in order to minimise the impact.

3.0 Site Description

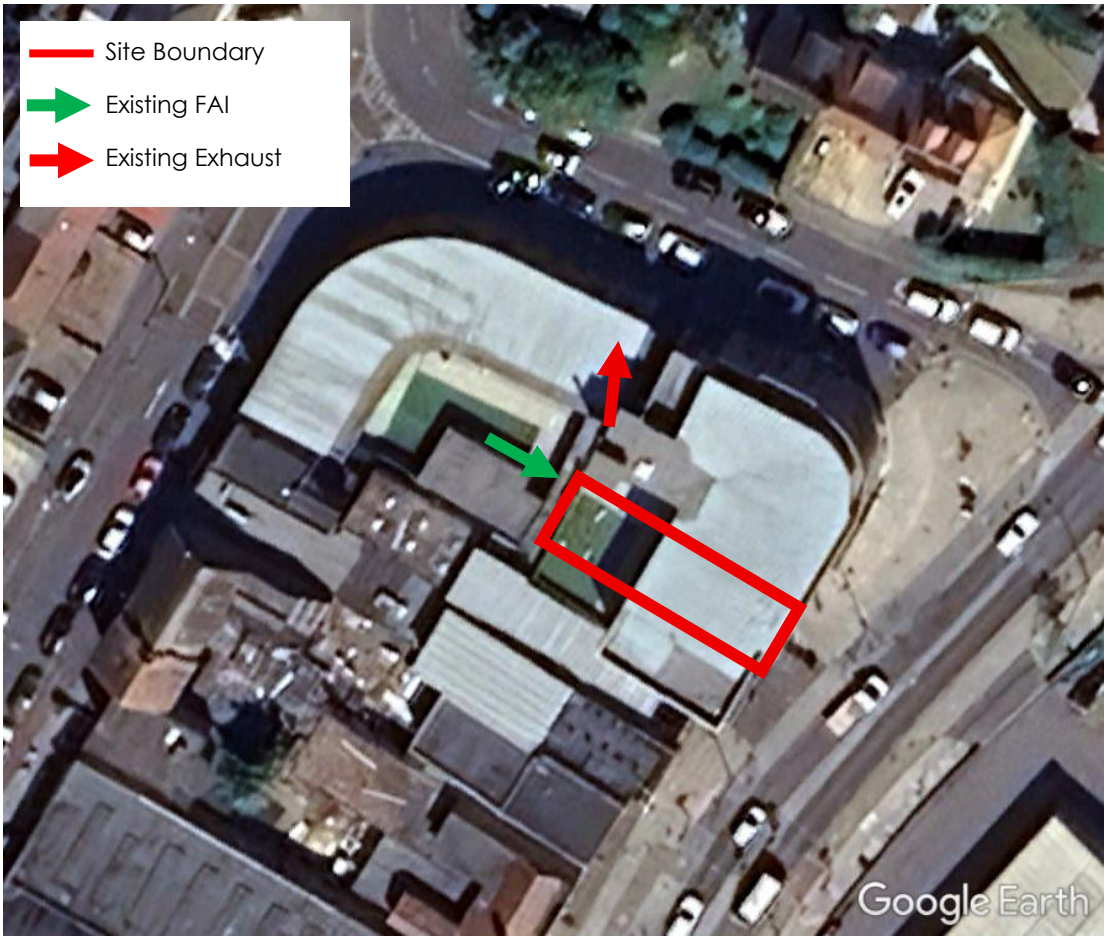
Pepe's, 109 Coldharbour Lane, Hayes comprises a ground floor commercial unit in a 4 storey building with other commercial units at ground floor and residential flats at 1st to 3rd floor levels.

The unit is bound by an adjoining commercial unit to the north east, Coldharbour Lane to the south east, car park entrance to the south west and courtyard to the north west.

The 1No. existing extract fan and 1No. existing supply fan are situated within the unit with the extract duct penetrating the roof to the rear and rising up to 3rd floor roof level where it terminates vertically and the supply ducted to a fresh air intake grille situated in the north west façade overlooking the courtyard.

The nearest noise sensitive receptors are understood to be the residential flats at 1st to 3rd floor levels.

The site plan below 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 Hillingdon Council have requested that a noise impact assessment is undertaken of the 1No. existing extract fan and 1No. existing supply fan to the nearest noise sensitive receptors for the proposed extended operating hours from 23:00 to 01:00 hours Sunday to Thursday and to 02:00 hours Friday and Saturday.

As such, atmospheric plant noise emissions from existing plant items are assessed in accordance with BS 4142:2014 "Methods for rating and assessing industrial and commercial sound" at the nearest noise sensitive receptors.

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 $L_{Aeq,Tr}$ 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 $L_{Ar,Tr}$ 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 Atmospheric Plant Sound Emission Measurements

6.1 Plant Location

The 1No. existing extract fan and 1No. existing supply fan are situated within the unit with the extract duct penetrating the roof to the rear and rising up to 3rd floor roof level where it terminates vertically and the supply ducted to a fresh air intake grille situated in the north west façade overlooking the courtyard.

6.2 Measurements

It is understood that the 1No. existing extract fan and 1No. existing supply fan have the potential to operate from 23:00 to 01:00 hours Sunday to Thursday and to 02:00 hours Friday and Saturday during the proposed extended operating hours.

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

Sound measurements were undertaken between 22:30 hours on Thursday 16 October 2025 and 02:00 hours on Friday 17 October 2025. The 1No. existing extract fan and 1No. existing supply fan were understood to be operating at design duty for the duration of the measurements. Measurements were undertaken of the L_{Aeq} sound pressure levels over periods of 2 minutes for the 1No. existing extract fan and 1No. existing supply fan (due to steady noise). Measurements were undertaken of the L_{A90} sound pressure levels over periods of 5 minutes for the background sound level. Atypical noises were excluded as far as reasonably possible.

6.3 Weather Conditions

During the survey period the wind conditions were calm (<1m/s) and the sky was overcast. There was no rainfall and road surfaces were dry. The temperature was approximately 13°C.

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

6.4 Measurement Positions

Measurements were undertaken at the following positions on-site as described in the table below.

Position	Measurement	Location
A	Supply Fan Inlet Louvre	1m from existing inlet louvre at 2.0m above ground level
B	Extract Fan Exhaust Duct Riser	1m from existing exhaust duct riser at 1st floor level
C	Residential Boundary	1m from window of nearest noise sensitive receptor at 1st floor level

The measurement positions are shown on the site plan below.

Site plan showing measurement positions

6.5 Equipment

The following equipment was used to undertake the sound level measurements.

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	G.R.A.S.	GRAS-42AG	280968	09/12/2024

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.

6.6 Results

The results of the sound level measurements are presented in the table below.

Position	Measurement	Plant	Measured Sound Pressure Level (dB)
A	Supply Fan Inlet Louvre	Individual On	$L_{Aeq,2min}$ 48dB
B	Extract Fan Exhaust Duct Riser	Individual On	$L_{Aeq,2min}$ 53dB
C	Background	All Off	$L_{A90,5min}$ 36dB

Subjectively, there was no tonality, irregularity or impulsiveness noted to the atmospheric plant noise emissions from the 1No. existing extract fan and 1No. existing supply fan.

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).

A review of the one third octave band sound data for the 1No. existing extract fan and 1No. existing supply fan 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.

6.7 Discussion of Sound Climate

There were 6No. condenser units situated along the north west façade of the building at 1st floor roof level overlooking the courtyard which operated intermittently during the site visit. When operating these were noted to be the dominant source of sound within the courtyard.

As such, measurements of the 1No. existing extract fan, 1No. existing supply fan and background sound level were undertaken during periods when the condenser units were not operating.

At Position A the 1No. existing supply fan was subjectively clearly audible and at Position B the 1No. existing extract fan was subjectively clearly audible. At Position C the 1No. existing supply fan was subjectively inaudible whilst the 1No. existing extract fan was subjectively audible. At Position C with all plant items off, road traffic from the surrounding road network was audible.

7.0 Atmospheric Plant Sound Emission Assessment

7.1 Operating Hours

It is understood that the 1No. existing extract fan and 1No. existing supply fan have the potential to operate from 23:00 to 01:00 hours Sunday to Thursday and to 02:00 hours Friday and Saturday during the proposed extended operating hours.

In order to undertake a worst case assessment, it is assumed that the 1No. existing extract fan and 1No. existing supply fan will operate for the full 15 minute night-time assessment period.

7.2 Nearest Noise Sensitive Receptor

The approximate distances and directivity between the 1No. existing extract fan and 1No. existing supply fan and nearest noise sensitive receptor are presented in the table below.

Receptor	Plant Item	Approximate Distance (m)	Directivity (Degrees)
1st Floor Residential Flat	Extract Fan	3	0
	Supply Fan	6	90

7.3 Assessment

The table below details the calculated rating level at the nearest noise sensitive receptor along with the representative background sound level and the difference between them.

Descriptor	Plant Item	
	Extract Fan	Supply Fan
Specific Sound Level at 1m L_{Aeq} (dB)	53	48
Percentage on-time (%)	100	100
On time correction (dB)	0	0
Sound Pressure Level $L_{Aeq,T}$ at 1m (dB)	53	48
Distance to Receptor (m)	3	6
Distance Attenuation (dB)	-10	-16
Directivity (Degrees)	0	90
Directivity Correction (dB)	0	-3
Specific Sound Level at Receptor L_{Aeq} (dB)	43	29
Character Correction (dB)	0	0
Rating Level $L_{Ar,Tr}$ at Receptor (dB)	43	29
Combined Rating Level $L_{Ar,Tr}$ at Receptor (dB)	43	
Representative Background Sound Level L_{A90} at Receptor (dB)	36	
Difference (dB)	+7	

The calculated rating level at the nearest noise sensitive receptor is 7dB above the representative background sound level.

The assessment therefore indicates that atmospheric plant sound emissions from the 1No. existing extract fan and 1No. existing supply fan are likely to have an adverse impact at the nearest noise sensitive receptors depending on the context.

8.0 Mitigation Measures

To reduce atmospheric plant sound emissions from the 1No. existing extract fan and 1No. existing supply fan in order to minimise the impact at the nearest noise sensitive receptor the 1No. existing extract fan shall be fitted with an additional atmospheric silencer as specified in the Silencer Schedule 1497/SS1 enclosed at the rear of the report.

Since the extract fan unit is situated within the building this may be installed either within the building (if space allows) or externally in the vertical section of exhaust ductwork. If installed externally, any ductwork between the atmospheric silencer and penetration of the roof should be acoustically lagged comprising 50mm (min.) mineral wool slab (min. 16kg/m^3) wrapped with a polymeric heavy mass barrier material of at least 10kg/m^2.

9.0 Repeat Assessment With Mitigation Measures

The table below details the calculated rating level at the nearest noise sensitive receptor along with the representative background sound level and the difference between them.

Descriptor	Plant Item	
	Extract Fan	**Supply Fan**
Specific Sound Level at 1m L_{Aeq} (dB)	53	48
Percentage on-time (%)	100	100
On time correction (dB)	0	0
Sound Pressure Level $L_{Aeq,T}$ at 1m (dB)	53	48
Distance to Receptor (m)	3	6
Distance Attenuation (dB)	-10	-16
Directivity (Degrees)	0	90
Directivity Correction (dB)	0	-3
Mitigation Measures (dB)	**-23**	**0**
Specific Sound Level at Receptor L_{Aeq} (dB)	20	29
Character Correction (dB)	0	0
Rating Level $L_{Ar,Tr}$ at Receptor (dB)	20	29
Combined Rating Level $L_{Ar,Tr}$ at Receptor (dB)	30	
Representative Background Sound Level L_{A90} at Receptor (dB)	36	
Difference (dB)	-6	

The calculated rating level at the nearest noise sensitive receptor is 6dB below the representative background sound level with the incorporation of the proposed mitigation measures.

The assessment therefore indicates that atmospheric plant sound emissions from the 1No. existing extract fan and 1No. existing supply fan are likely to have a low impact at the nearest noise sensitive receptor depending on the context.

9.0 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 addition, BS 4142: 2014 states the following:

> *"Where the initial estimate of the impact needs to be modified due to the context, take all pertinent factors into consideration, including the following.*
> *1) The absolute level of sound. For a given difference between the rating level and the background sound level, the magnitude of the overall impact might be greater for an acoustic environment where the residual sound level is high than for an acoustic environment where the residual sound level is low.*
>
> *Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night.*
>
> *Where residual sound levels are very high, the residual sound might itself result in adverse impacts or significant adverse impacts, and the margin by which the rating level exceeds the background might simply be an indication of the extent to which the specific sound source is likely to make those impacts worse.*
>
> *2) The character and level of the residual sound compared to the character and level of the specific sound. Consider whether it would be beneficial to compare the frequency spectrum and temporal variation of the specific sound with that of the ambient or residual sound to assess the degree to which the specific sound source is likely to be distinguishable and will represent an incongruous sound by comparison to the acoustic environment that would occur in the absence of the specific sound. Any sound parameters, sampling periods and averaging time periods used to undertake character comparisons should reflect the way in which sound of an industrial and/or commercial nature is likely to be perceived and how people react to it.*

3) The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions, such as:
i) facade insulation treatment;
ii) ventilation and/or cooling that will reduce the need to have windows open so as to provide rapid or purge ventilation; and
iii) acoustic screening."

"The standard is not intended to be applied to the assessment of indoor sound levels."

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

- Rating level at the nearest noise sensitive receptor is $L_{Ar,T}$ 30dB whilst the lowest representative background sound level is $L_{A90,5min}$ 36dB;
- BS 4142:2014 only uses outdoor sound levels to assess the likely effects of sound and does not consider indoor sound levels within nearest receptors which may be significantly lower due to the sound insulation offered by the façade.

Based on the above, it is considered that the 1No. existing extract fan and 1No. existing supply fan are likely to have a low impact during the night-time period 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.

10.0 Uncertainty

Weather conditions were monitored during the survey period and were considered to be suitable for undertaking measurements of sound levels. The measurement position was selected that was 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.

11.0 Conclusion

The Local Authority's acoustic requirements for the 1No. existing extract fan and 1No. existing supply fan have been established.

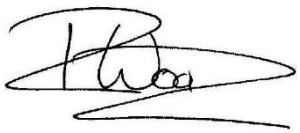
Measurements have been undertaken of atmospheric sound emissions from the 1No. existing extract fan and 1No. existing supply fan.

Measurements have been undertaken of representative background sound levels at the nearest noise sensitive receptors during the proposed extended operating hours.

An assessment has been undertaken of atmospheric sound emission levels from the 1No. existing extract fan and 1No. existing supply fan to the nearest noise sensitive receptors.

The assessment indicates that atmospheric plant sound emissions from the 1No. existing extract fan and 1No. existing supply fan are likely to have an adverse impact at the nearest noise sensitive receptors depending on the context.

Mitigation measures have therefore been proposed to reduce atmospheric plant sound emissions from the 1No. existing extract fan and 1No. existing supply fan in order to minimise the impact at the nearest noise sensitive receptors.



Robin Wood
LIGHTHOUSE ACOUSTICS

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Date: 24 October 2025

Revision: -

Comments: -

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Plant Ref.	Description	Inlet/Outlet	Vol. (m^3/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	Exhaust	-	1200	<4.5	<55	7	12	19	35	40	36	28	17