auricl
acoustic consulting

63-66 Hatton Garden

London

Noise Impact Assessment Report

25 November 2024

Contents

SUMMARY

New items of roof plant and an external terrace are proposed at roof level as part of the refurbishment of 63-66 Hatton Garden in London.

auricl has been undertaken an assessment of noise emissions associated with the proposed plant and terrace.

A background noise survey has been undertaken to determine background noise levels at the nearest noise sensitive properties, against which the potential noise emissions can be compared.

The results of the assessment show that noise emissions associated with the proposed plant are not predicted to exceed the proposed noise limits at the nearest noise sensitive properties and therefore achieve the Camden Council requirement.

Noise emissions associated with the proposed terrace are predicted to be negligible, when both the worst-case and typical cases are compared with the IEMA noise impact assessment guidelines.

As such, the noise impact on the nearest noise sensitive properties is predicted to be negligible, therefore use of the proposed terrace should be acoustically acceptable and should not restrict the granting of planning permission.

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1.0 Introduction

New items of roof plant and an external terrace are proposed at roof level as part of the refurbishment of 63-66 Hatton Garden in London.

auricl has been appointed to carry out an assessment of noise emissions associated with the proposed plant and terrace.

The following report presents the methodology and results of the survey, and an assessment of noise emissions from the proposed terraces.

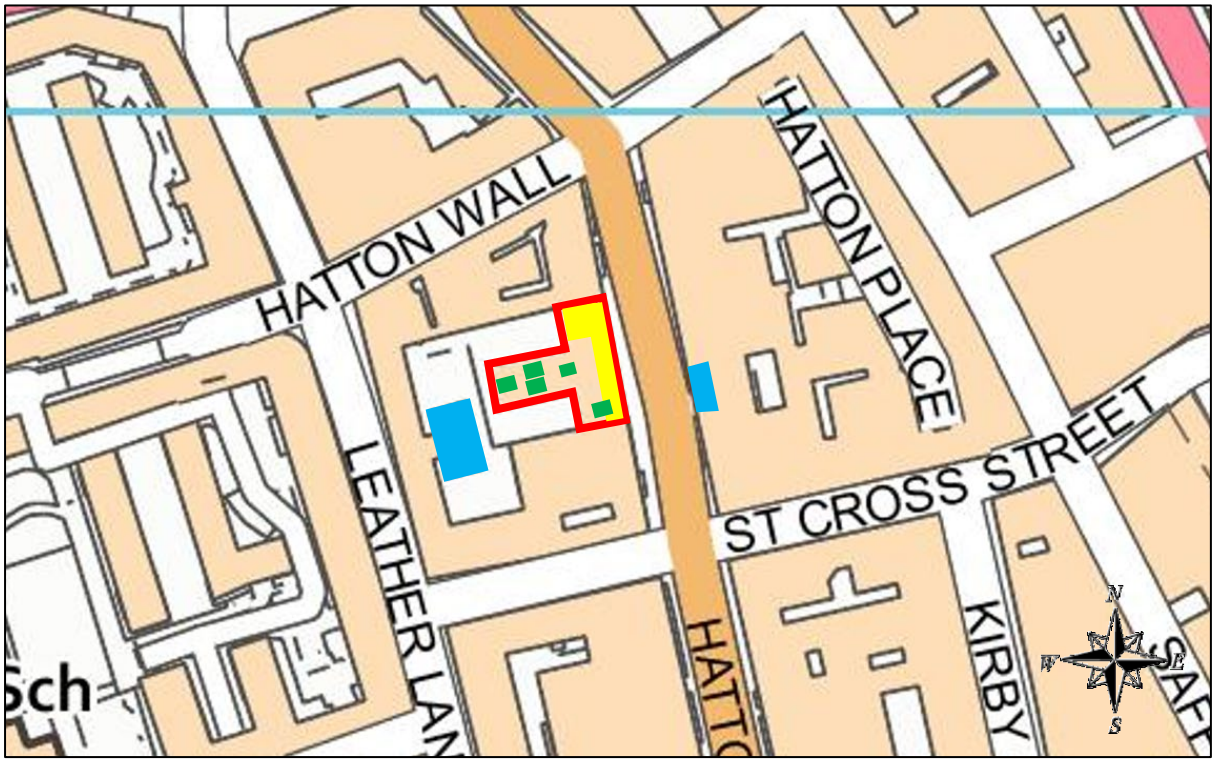
The report is technical in nature, and such, a summary of noise units and acoustic terminology are included in Appendix A for reference.

2.0 Description of Site and Proposals

The site is occupied by a commercial office building on the western side of Hatton in central London and is bounded by adjacent buildings to the north and south, external courtyards to the west/north-west/south-west and Hatton Garden to the east.

Figure 2.1 shows the approximate existing site extent in **red** in relation to the surrounding area, with the approximate proposed plant locations indicated in **green**, the proposed terrace location indicated in **yellow** and the nearest noise sensitive properties indicated in **blue**.

Figure 2.1 Existing Site Extent and Surroundings



The maximum occupancy of the terrace area would be 50 people, although in reality only 24 people would be expected to use the area at any one time, with the proposed usage hours being 08:00 – 21:00 hours, Monday to Friday.

3.0 Noise Impact Assessment Criteria

A background noise survey and noise assessments have been undertaken to address the following.

3.1 Plant Noise

Camden Council's typical requirements relating to external plant noise emissions for normal-operating plant are as follows:

"A*n independent noise assessment including details of the external noise level emitting from plant/machinery/equipment and mitigation measures as appropriate shall be submitted to and approved in writing by the local planning authority. The design and installation of new items of fixed plant shall be such that when operating the cumulative noise level* L_{Aeq} *arising from the proposed plant, measured or predicted at 1m from the façade of the nearest noise sensitive premises, shall be a rating level of at least 10 dB(A) below the typical background noise level* L_{AF90} *(15 dBA where tonality of impulsivity is perceptible). The measurement and/or prediction of the noise should be carried out in accordance with the methodology contained within BS 4142: 2014.*"

For plant items that are intended to operate only in an emergency and during short periods of testing (e.g. generators, smoke extract fans, etc.), Camden Council's typical requirements are as follows:

"*Emergency equipment such as generators which are only to be used for short periods of time will be required to meet the noise criteria of no more than 10dB above the background level (*$L_{90\ 15\ minutes}$*).*"

3.2 Terrace Noise

We have reviewed the Camden Planning Guidance document (January 2021) which states that an acoustic report should accompany the application where potential noise-generating uses are proposed.

The document does not specifically consider outdoor terraces associated with office buildings, however for outdoor standing/seating areas and smoking areas associated with leisure uses it states that "*the Council expects the noise impacts of these uses to be considered within an acoustic report*".

As such, the noise impact will be assessed against the criteria shown in Table 3.1, which are based on the IEMA document "*Guidelines for Environmental Noise Impact Assessment*" (November 2014).

Table 3.1 Noise Impact Assessment Criteria

Noise Level Change (dB, L_{Aeq})	Noise Impact
< 3	Negligible
3 – 5	Moderate
5 – 10	Substantial
> 10	Very Substantial

4.0 Noise Survey Methodology and Results

4.1 Methodology

An unmanned environmental noise survey was undertaken between Monday 29 July 2024 and Tuesday 30 July 2024. The noise survey period was selected to assess ambient and background noise levels at the nearest noise sensitive properties.

The approximate measurement positions are shown in **purple** on Figure 4.1 and described in Table 4.1.

Figure 4.1 Noise Measurement Positions in Relation to Site Extent and Surroundings

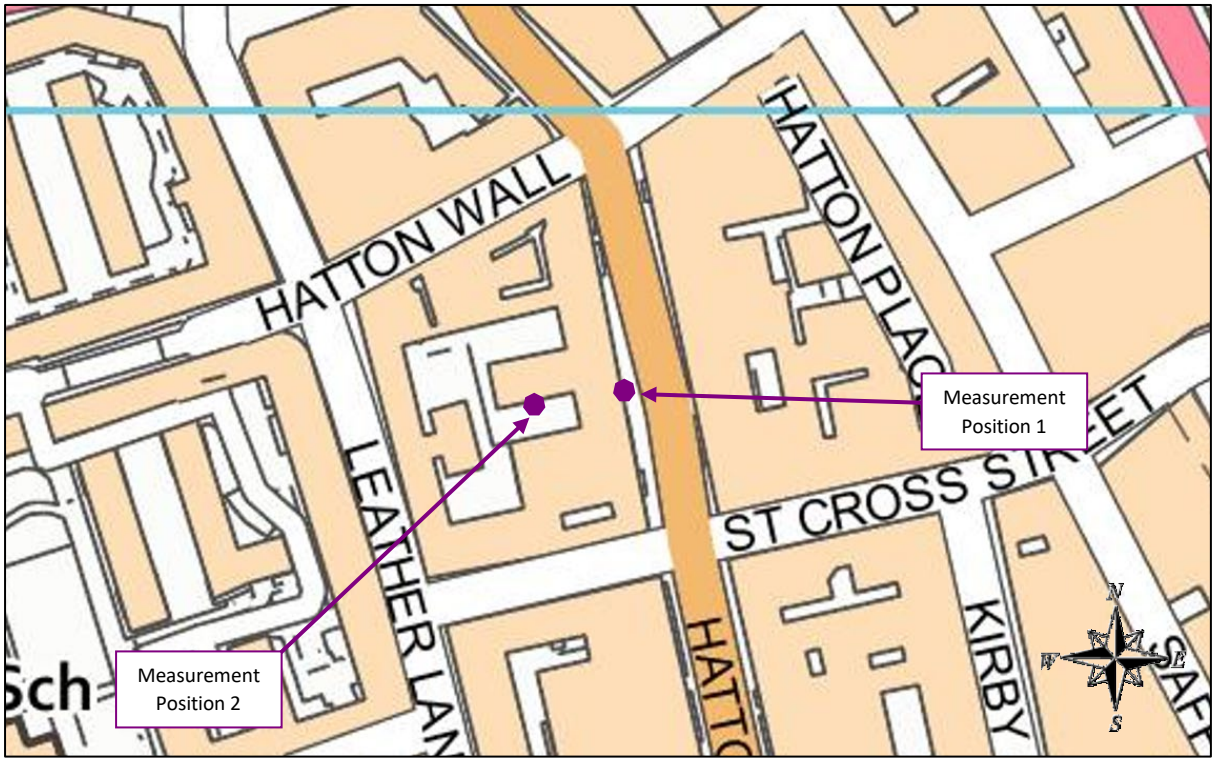


Table 4.1 Description of Measurement Positions

Measurement Position	Description
1	Measurement microphone protruding from a second-floor window in the eastern façade over Hatton Garden
2	Measurement microphone protruding from a first-floor window in the southern façade

The measurement positions were selected as being representative of ambient and background noise levels at the nearest noise sensitive properties.

The equipment used for the noise survey is summarised in Table 4.2.

Table 4.2 Description of Equipment used for Noise Survey

Measurement Position	Item	Make & Model	Serial Number
1	Type 1 automated logging sound level meter	01dB FUSION	12081
	Type 1 ½" microphone	GRAS 40CD	331890
2	Type 1 automated logging sound level meter	01dB FUSION	11891
	Type 1 ½" microphone	GRAS 40CD	330621
Calibrator		01dB CAL21	34375252

L_{Aeq} and L_{A90} sound pressure levels were measured throughout the noise survey at each measurement position.

Due to the nature of the noise survey, i.e. unmanned, we are unable to comment on the weather conditions throughout the entire noise survey period. However, at the beginning and end of the survey period, there was a clear sky, low wind speeds and generally sunny conditions. Weather conditions are not expected to have had any effect on measured noise levels and are considered appropriate for undertaking environmental noise measurements.

The noise monitoring equipment was calibrated before and after the noise survey period. No significant change was found. Laboratory equipment calibration certificates can be provided upon request.

4.2 Noise Survey Results & Observations

Appendix B presents time history graphs showing the measured $L_{Aeq,}$ and L_{A90} sound pressure levels measured throughout the noise survey (shown as 15-minute periods) at each position.

At each of the measurement positions, the measurement microphone was located less than 1m from the façade of the building, therefore measurements have been corrected for the façade reflection effect in accordance with the guidance in BS 8233: 2014.

At the measurement positions, the daytime noise climate at position 1 was noted to be dominated by road traffic using the surrounding roads, whilst at position 2 the noise climate was affected by distant road traffic and building services plant serving nearby buildings.

Table 4.3 presents the typical measured ambient and background noise levels at each position for daytime periods (07:00 – 23:00 hours), when the plant and terrace are proposed to be operational.

Table 4.3 Typical Measured Ambient and Background Noise Levels – Daytime (07:00 – 23:00 hours)

Measurement Position	Typical Ambient Noise Level $L_{Aeq\ (1\ hour)}$ (dB)	Typical Background Noise Level $L_{A90\ (1\ hour)}$ (dB)
1	59	52
2	52	50

We would consider the levels measured to be reasonable, taking into account the locations of the measurement positions and the dominant noise sources.

5.0 Plant Noise Assessment

5.1 Nearest Noise Sensitive Properties

The nearest noise sensitive properties are considered to be the residential apartment block located to the west of the site (at a distance of approximately 12m from the proposed plant) and the flats within 47-48 Hatton Garden to the east of the site (at a distance of approximately 40m from the proposed plant), as indicated on Figure 2.1 above.

5.2 Plant Noise Limits

Based on the lowest measured background noise level presented in Section 4.2 and the Camden Council standard requirements outlined in Section 3.1, the noise limits for plant noise emissions when measured 1m from the façades of the nearest noise sensitive properties are as presented in Table 5.1.

Table 5.1 Plant Noise Limits

Noise Sensitive Property	Normal Operating Plant – Daytime (07:00 – 23:00 hours) Noise Limit $L_{Ar,Tr}$ (dB)	Emergency Plant Noise Limit $L_{Ar,Tr}$ (dB)
47-48 Hatton Garden, East of Site	42	69
Residential Apartment Block, West of Site	40	62

5.3 Proposed Plant

An air source heat pump and an ASHP/chiller are proposed on the level 8 roof of the building. The proposed units and manufacturer's noise data are as follows:

Climaventa ERACS2-Q /SL-CA 1162 Air Source Heat Pump — 87 dB L_{wA} sound power level

Mitsubushi EAHV-M1500YCL(-N) ASHP /7 ASHP/Chiller — 69 dB L_{pA} at 1m sound pressure level

The air source heat pump will be fitted with acoustic attenuation, capable of reducing its noise emissions by at least 22 dB L_{wA}. The ASHP/chiller will be fitted with acoustic attenuation, capable of reducing its noise emissions by at least 25 dB L_{wA}.

Examination of the manufacturer's octave band noise data (in accordance with the methodology described in Annex C of BS 4142: 2014) confirmed that the noise is not tonal. The plant will not operate intermittently and is not expected to be impulsive in nature.

Two air handling units are also proposed at level 8 roof level, with associated condenser units, the details of which are presented in Tables 5.2 and 5.3 below.

Table 5.2 Air Handling Unit Atmospheric Noise Data

AHU	Source	In-Duct Sound Power Level (dB) at Octave Band Centre Frequency (Hz)							
		63	125	250	500	1k	2k	4k	8k
1	Supply Intake	79	81	80	74	69	68	70	67
	Extract Exhaust	82	81	81	79	76	76	73	69
	Casing	43 dB L_{pA} at 3m							
2	Supply Intake	75	72	83	77	73	74	69	66
	Extract Exhaust	79	74	82	81	82	80	74	70
	Casing	45 dB L_{pA} at 3m							

Table 5.3 Air Handling Unit Condenser Unit Noise Data

Unit	Sound Power Level (L_{wA} dB)
AHU 1 Condenser Unit	83
AHU 2 Condenser Unit	83

The AHU condenser units are to be fitted with acoustic attenuation, capable of reducing the levels in Table 5.3 by at least 20 dB for AHU condenser unit 1 and 12 dB for AHU condenser unit 2.

Two smoke extract fans (1 run / 1 standby) are also proposed at level 9 roof level in the centre of the building, sound power levels for which are shown in Table 5.4 below.

Table 5.4 Smoke Extract Fan Noise Data

In-Duct Sound Power Level (dB) at Octave Band Centre Frequency (Hz)							
63	125	250	500	1k	2k	4k	8k
95	97	94	92	91	89	89	87

The in-duct calculations for the air handling units and smoke extract fans have included the minimum insertion loss performance of the proposed in-duct attenuators.

5.4 Plant Noise Assessment – Normal Operating Plant

We have undertaken calculations to predict noise emissions associated with the proposed plant at the nearest noise sensitive properties.

As previously noted, noise from the units is not expected to be tonal, intermittent or impulsive, therefore no feature corrections have been applied in the calculations.

The plant noise calculation results at the nearest noise sensitive properties are presented in Tables 5.5 to 5.14 and summarised in Table 5.15 below.

Table 5.5 Plant Noise Calculations – Normal Operating Plant – West of Site

Element	Level (dB)					
	ASHP	ASHP/ Chiller	AHU 1 Casing	AHU 2 Casing	AHU 1 Condenser Unit	AHU 2 Condenser Unit
Sound Level	87	69	43	45	83	83
Acoustic Attenuation	-22	-25	0	0	-20	-12
Distance Attenuation	-30	-10	-13	-18	-30	-40
Plant Noise Level at Noise Sensitive Property	**35**	**34**	**30**	**27**	**33**	**31**

Table 5.6 Plant Noise Calculations – Normal Operating Plant – 47-48 Hatton Garden, East of Site

Element	Level (dB)					
	ASHP	ASHP/ Chiller	AHU 1 Casing	AHU 2 Casing	AHU 1 Condenser Unit	AHU 2 Condenser Unit
Sound Level	87	69	43	45	83	83
Acoustic Attenuation	-22	-25	0	0	-20	-12
Distance Attenuation	-40	-20	-24	-18	-41	-36
Plant Noise Level at Noise Sensitive Property	**25**	**24**	**19**	**27**	**22**	**35**

Table 5.7 AHU 1 Supply Intake – Atmospheric Noise Calculation – West of Site

Element	Level (dB) at Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
In-Duct Sound Power Level	79	81	80	74	69	68	70	67
Attenuator Insertion Loss	-14	-25	-39	-50	-50	-50	-50	-49
Grille End Reflection	-3	-1	0	0	0	0	0	0
Distance Attenuation	-33	-33	-33	-33	-33	-33	-33	-33
Directivity	+4.5	+5	+5.5	+6	+6	+6	+6	+6
Level at Receiver	**37**	**30**	**17**	**0**				
	17 dB L_{pA}							

Table 5.8 AHU 1 Extract Exhaust – Atmospheric Noise Calculation – West of Site

Element	Level (dB) at Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
In-Duct Sound Power Level	82	81	81	79	76	76	73	69
Attenuator Insertion Loss	-14	-25	-39	-50	-50	-50	-50	-49
Grille End Reflection	-3	-1	0	0	0	0	0	0
Distance Attenuation	-33	-33	-33	-33	-33	-33	-33	-33
Directivity	+4.5	+5	+5.5	+6	+6	+6	+6	+6
Level at Receiver	**40**	**30**	**18**	**5**	**2**	**2**		
	18 dB L_{pA}							

Table 5.9 AHU 2 Supply Intake – Atmospheric Noise Calculation – West of Site

Element	Level (dB) at Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
In-Duct Sound Power Level	75	72	83	77	73	74	69	66
Attenuator Insertion Loss	-8	-15	-25	-40	-46	-47	-43	-32
Grille End Reflection	-4	-2	0	0	0	0	0	0
Distance Attenuation	-42	-42	-42	-42	-42	-42	-42	-42
Directivity	+4.5	+5	+5.5	+5.5	+6	+6	+6	+6
Level at Receiver	**29**	**21**	**25**	**4**				
	17 dB L_{pA}							

Table 5.10 AHU 2 Extract Exhaust – Atmospheric Noise Calculation – West of Site

Element	Level (dB) at Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
In-Duct Sound Power Level	79	74	82	81	82	80	74	70
Attenuator Insertion Loss	-8	-15	-25	-40	-46	-47	-43	-32
Grille End Reflection	-4	-2	0	0	0	0	0	0
Distance Attenuation	-42	-42	-42	-42	-42	-42	-42	-42
Directivity	+4.5	+5	+5.5	+5.5	+6	+6	+6	+6
Level at Receiver	**33**	**23**	**24**	**8**	**3**	**0**		
	17 dB L_{pA}							

Table 5.11 AHU 1 Supply Intake – Atmospheric Noise Calculation – 47-48 Hatton Garden, East of Site

Element	Level (dB) at Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
In-Duct Sound Power Level	79	81	80	74	69	68	70	67
Attenuator Insertion Loss	-14	-25	-39	-50	-50	-50	-50	-49
Grille End Reflection	-3	-1	0	0	0	0	0	0
Distance Attenuation	-43	-43	-43	-43	-43	-43	-43	-43
Directivity	+4.5	+5	+5.5	+6	+6	+6	+6	+6
Level at Receiver	**26**	**20**	**6**					
	6 dB L_{pA}							

Table 5.12 AHU 1 Extract Exhaust – Atmospheric Noise Calculation – 47-48 Hatton Garden, East of Site

Element	Level (dB) at Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
In-Duct Sound Power Level	82	81	81	79	76	76	73	69
Attenuator Insertion Loss	-14	-25	-39	-50	-50	-50	-50	-49
Grille End Reflection	-3	-1	0	0	0	0	0	0
Distance Attenuation	-43	-43	-43	-43	-43	-43	-43	-43
Directivity	+4.5	+5	+5.5	+6	+6	+6	+6	+6
Level at Receiver	**29**	**20**	**7**					
	8 dB L_{pA}							

Table 5.13 AHU 2 Supply Intake – Atmospheric Noise Calculation – 47-48 Hatton Garden, East of Site

Element	Level (dB) at Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
In-Duct Sound Power Level	75	72	83	77	73	74	69	66
Attenuator Insertion Loss	-8	-15	-25	-40	-46	-47	-43	-32
Grille End Reflection	-4	-2	0	0	0	0	0	0
Distance Attenuation	-38	-38	-38	-38	-38	-38	-38	-38
Directivity	+4.5	+5	+5.5	+5.5	+6	+6	+6	+6
Level at Receiver	**33**	**25**	**29**	**8**				
	20 dB L_{pA}							

Table 5.14 AHU 2 Extract Exhaust – Atmospheric Noise Calculation – 47-48 Hatton Garden, East of Site

Element	Level (dB) at Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
In-Duct Sound Power Level	79	74	82	81	82	80	74	70
Attenuator Insertion Loss	-8	-15	-25	-40	-46	-47	-43	-32
Grille End Reflection	-4	-2	0	0	0	0	0	0
Distance Attenuation	-38	-38	-38	-38	-38	-38	-38	-38
Directivity	+4.5	+5	+5.5	+5.5	+6	+6	+6	+6
Level at Receiver	**37**	**27**	**28**	**12**	**7**	**4**	**2**	**9**
	21 dB L_{pA}							

Table 5.15 Plant Noise Calculations Summary – Normal Operating Plant

Source	Level (dB)	
	West of Site	47-48 Hatton Garden, East of Site
ASHP	35	25
ASHP/Chiller	34	24
AHU 1 Casing	30	19
AHU 2 Casing	27	27
AHU 1 Condenser Unit	33	22
AHU 2 Condenser Unit	31	35
AHU 1 Supply Intake	17	6
AHU 1 Extract Exhaust	18	8
AHU 2 Supply Intake	17	20
AHU 2 Extract Exhaust	17	21
Total Predicted Noise Level at Receptor	**40**	**36**
Noise Limit	**40**	**42**

The results show that noise emissions associated with the proposed plant are not predicted to exceed the proposed noise limits for normal operating plant at the nearest noise sensitive properties and therefore achieve the Camden Council requirement.

5.5 Plant Noise Assessment – Emergency Plant

We have undertaken calculations to predict noise emissions associated with the proposed plant at the nearest noise sensitive properties.

As previously noted, noise from the units is not expected to be tonal, intermittent or impulsive, therefore no feature corrections have been applied in the calculations.

The plant noise calculation results at the nearest noise sensitive properties are presented in Tables 5.16 to 5.19 and summarised in Table 5.20 below.

Table 5.16 Smoke Extract Fan Outlet – Atmospheric Noise Calculation – West of Site

Element	Level (dB) at Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
In-Duct Sound Power Level	95	97	94	92	91	89	89	87
Attenuator Insertion Loss	-4	-6	-19	-29	-34	-28	-18	-11
Grille End Reflection	-3	-1	0	0	0	0	0	0
Distance Attenuation	-39	-39	-39	-39	-39	-39	-39	-39
Directivity	+4.5	+5	+5.5	+6	+6	+6	+6	+6
Level at Receiver	**57**	**56**	**48**	**33**	**27**	**31**	**40**	**46**
	48 dB L_{pA}							

Table 5.17 Smoke Extract Fan Outlet – Atmospheric Noise Calculation – 47-48 Hatton Garden, East of Site

Element	Level (dB) at Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
In-Duct Sound Power Level	95	97	94	92	91	89	89	87
Attenuator Insertion Loss	-4	-6	-19	-29	-34	-28	-18	-11
Grille End Reflection	-3	-1	0	0	0	0	0	0
Distance Attenuation	-43	-43	-43	-43	-43	-43	-43	-43
Directivity	+4.5	+5	+5.5	+6	+6	+6	+6	+6
Level at Receiver	**56**	**56**	**47**	**33**	**27**	**31**	**40**	**46**
	48 dB L_{pA}							

Table 5.18 Smoke Extract Fan Casing – Atmospheric Noise Calculation – West of Site

Element	Level (dB) at Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
In-Duct Sound Power Level	95	97	95	92	91	90	89	87
Casing Loss	-5	-8	-10	-15	-20	-25	-25	-25
Distance Attenuation	-39	-39	-39	-39	-39	-39	-39	-39
Level at Receiver	**56**	**55**	**51**	**43**	**37**	**31**	**30**	**28**
	46 dB L_{pA}							

Table 5.19 Smoke Extract Fan Casing – Atmospheric Noise Calculation – 47-48 Hatton Garden, East of Site

Element	Level (dB) at Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
In-Duct Sound Power Level	95	97	95	92	91	90	89	87
Casing Loss	-5	-8	-10	-15	-20	-25	-25	-25
Distance Attenuation	-38	-38	-38	-38	-38	-38	-38	-38
Level at Receiver	**55**	**54**	**50**	**42**	**36**	**30**	**29**	**27**
	46 dB L_{pA}							

Table 5.20 Plant Noise Calculations Summary – Emergency Plant

Source	Level (dB)	
	West of Site	47-48 Hatton Garden, East of Site
Smoke Extract Fan Outlet	48	46
Smoke Extract Fan Casing	46	46
Total Predicted Noise Level at Receptor	**50**	**50**
Noise Limit	**62**	**69**

The results show that noise emissions associated with the proposed plant are not predicted to exceed the proposed emergency noise limits at the nearest noise sensitive properties and therefore achieve the Camden Council requirement.

6.0 Terrace Noise Assessment

6.1 Basis of Assessment

As described above, the maximum occupancy of the roof terrace area would be 50 people, although in reality only 24 people would be expected to use the area at any one time, with the proposed usage hours being 08:00 – 21:00 hours, Monday to Friday. Likely activities on the terrace would be conversations, telephone calls, etc. with no amplified music proposed.

Our assessment has assumed a worst-case maximum occupancy of 50 people during a typical daytime hour, with half of the guests (25) talking at typical vocal effort. We have also considered a more typical case of 24 people during a typical daytime hour, again with half of the guests (12) talking at typical vocal effort.

Our calculations have taken into account the approximate distances from the terrace to the nearest noise sensitive properties, which are as follows:

- West of Site 30m
- 47-48 Hatton Garden, East of Site 20m

A sound power level for speech at normal level of 68 dB L_{wA} (per person) has been used as the basis of the assessment, taken from "*Acoustic Design of Schools: A Design Guide*" (November 2015).

6.2 Noise Limits

In our assessment of noise due to users of the terrace, we have considered the existing daytime ambient noise levels presented in Table 4.3.

6.3 Predictions

Our noise impact calculations are shown in Table 6.1 (worst-case) and Table 6.2 (typical case).

Table 6.1 Terrace Noise Calculations – Worst-Case (50 people)

Element	Level (dB)	
	West of Site	East of Site
Sound Power Level	68	68
Quantity Correction	+14	+14
Distance Attenuation	-41	-37
Predicted Noise Level	41	45
Existing Ambient Noise Level	52	50
Total Future Noise Level	52.4	51.2
Predicted Noise Level Difference	**+0.4**	**+1.2**

Table 6.2 Terrace Noise Calculations – Typical Case (24 People)

Element	Level (dB)	
	West of Site	East of Site
Sound Power Level	68	68
Quantity Correction	+11	+11
Distance Attenuation	-41	-37
Predicted Noise Level	38	42
Existing Ambient Noise Level	52	50
Total Future Noise Level	52.2	50.6
Predicted Noise Level Difference	**+0.2**	**+0.6**

It can be seen that the predicted noise level difference due to guests on the external terrace is negligible, when both the worst-case and typical cases are compared with the IEMA criteria described in Section 3.2 above.

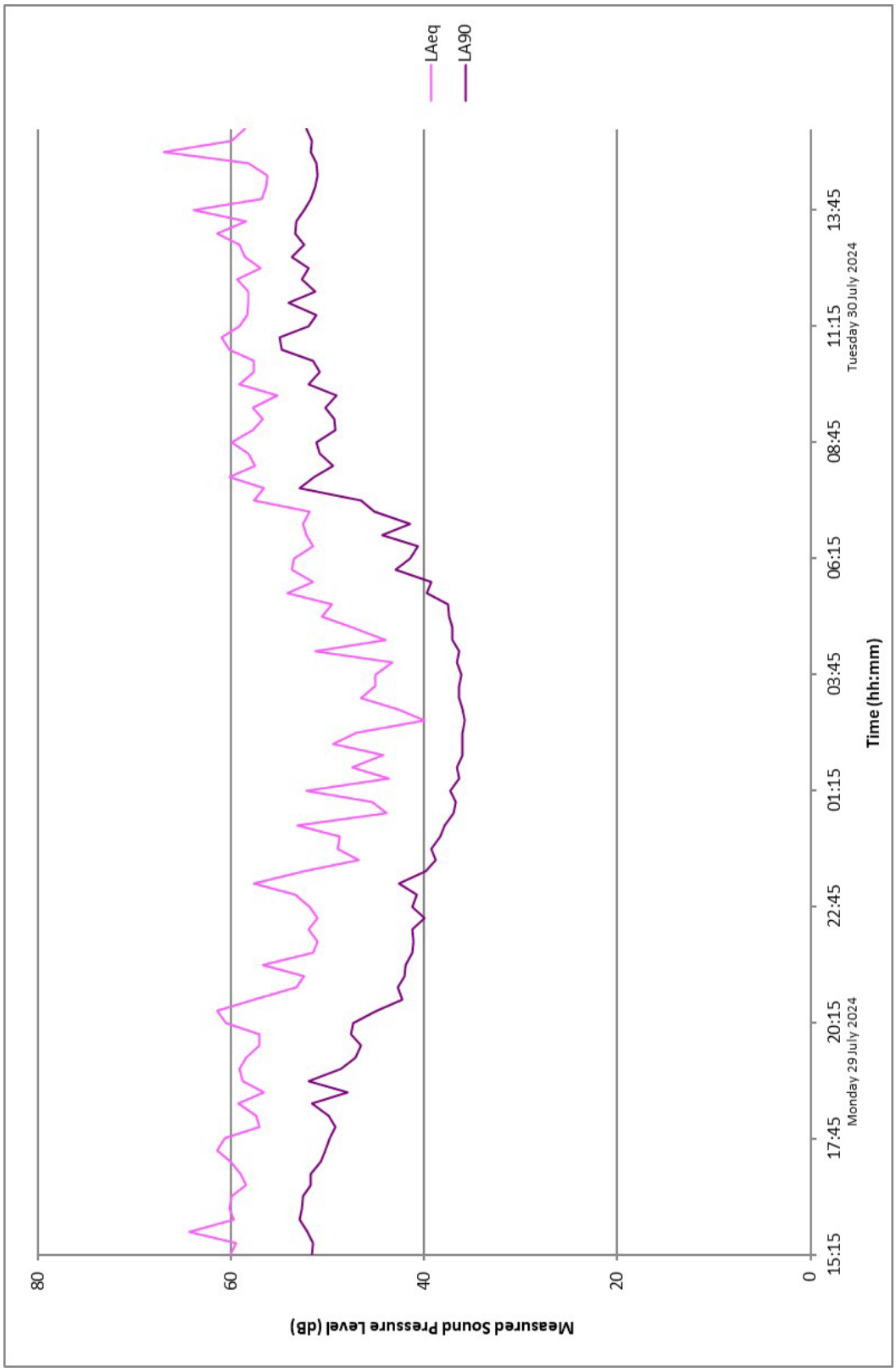
As such, the noise impact on the nearest noise sensitive properties is predicted to be negligible, therefore use of the proposed terrace should be acoustically acceptable and should not restrict the granting of planning permission.

Appendix A – Acoustic Terminology

Parameter	Description
Decibel (dB)	A logarithmic scale representing the sound pressure or power level relative to the threshold of hearing ($20x10^{-6}$ Pascals).
Sound Pressure Level (L_p)	The sound pressure level is the sound pressure fluctuation caused by vibrating objects relative to the threshold of hearing.
A-weighting (L_A or dBA)	The sound level in dB with a filter applied to increase certain frequencies and decrease others to correspond with the average human response to sound.
L_{Amax}	The A-weighted maximum noise level measured during the measurement period.
$L_{Aeq,T}$	The A-weighted equivalent continuous noise level over the time period T (typically T= 16 hours for daytime periods, T = 8 hours for night-time periods). This is the sound level that is equivalent to the average energy of noise recorded over a given period.
$L_{A90\ (15\ min)}$	The noise level exceeded for 90% of the time (also referred to as the background noise level), measured over a 15-minute period

Appendix B – Noise Survey Results

Measurement Position 1



Measurement Position 2