



Acoustic Consultancy Report

Environmental Noise Survey Results and Noise Impact Assessment for Fixed Plant

Restaurant, 74 Southampton Row

Client: Barack Holdings Ltd

Project: Restaurant
74 Southampton Row
London
WC1B 4AR

Our Ref: 11132

Revision: B

Report Prepared By N. Fowler M.I.O.A.

Date: 13th December 2017



1.0 Introduction

- 1.1 Acoustic Consultancy Partnership Ltd were appointed by Barack Holdings Ltd to undertake an environmental noise survey and carry out a noise impact assessment for the new fixed plant at the proposed restaurant at 74 Southampton Row, London.
- 1.2 This report provides the results of our environmental noise survey and establishes the resultant plant noise levels for the proposed plant in accordance with the requirements of the London Borough of Camden for noise levels from new plant and machinery.
- 1.3 The predicted plant noise levels for the proposed plant have been established based on the latest plant selections and noise data provided to us. A plant noise assessment has been included within this report detailing the resultant noise levels at the nearest affected noise sensitive properties, which for this site are the residential located above the premises in Southampton Row and the residential to the rear that front onto Old Gloucester Street.
- 1.4 In accordance with the London Borough of Camden requirements, the target noise levels determined within this report have been used to complete a plant noise assessment, taking into account the operational period of the plant items and their location in relation to the nearest noise sensitive facades.

2.0 Environmental Noise Survey Measurement Procedure

- 2.1 The environmental noise survey adopted the procedure and methodology stated within BS4142:2014. This report has been prepared to provide the Local Planning Authority with existing ambient and background noise levels covering the periods of operation of the proposed plant at the rear of the premises.

3.0 Site Description and Nearest Noise Sensitive Buildings

- 3.1 The ground floor premises had been occupied by La Roccia but are now un-occupied. There are five floors of residential above the premises.
- 3.2 At the rear of the premises is an existing single storey rear projection comprising basement floor space. This area also faces the rear façade of the residential fronting onto Old Gloucester Street.
- 3.3 It should be noted that we were not able to gain access to the premises or the rear yard area because the landlords had secured the property and no access authority could be obtained.



3.4 The proposed plant would be as follows:

- a) The 2no proposed condensers, reference CU1 and CU2 serving the kitchen and restaurant will be installed at ground floor level on the roof of the existing single storey rear projection.
- b) The kitchen extract fan (EF1) would be located internal to the building and will be connected to the existing extract duct riser passing up the rear of the building to discharge at the roof level.
- c) The main kitchen canopy supply fan (SF1) and the general extract fan serving the toilets and general areas (EF2) would both be mounted internally with external wall mounted louvred openings.
- d) There will be 2no proposed condensers, reference CR1 and CR2 serving the cold rooms but these will be installed internal to the building with no external openings required.

3.5 Full details of the individual plant items and operating periods are given in section 6.0.

4.0 Receptor Positions

4.1 From photographs previously taken at the rear of the premises the nearest existing noise sensitive receptors, with line of sight to the condenser plant CU1 and CU2, would be the upper three floors of flats above the proposed restaurant. These windows will view the condenser units in the rear courtyard. These windows will only have partial line of sight to the wall mounted louvres serving SF1 and EF2 or the internal kitchen extract (EF1) discharge opening at roof level. The distance from the centre of the plant area to the nearest residential windows would be approximately 8m.

4.2 The nearest windows to the rear of the properties fronting Old Gloucester Street would have line of sight to the condenser units CU1 and CU2 in the rear courtyard, the wall mounted louvres serving SF1, EF2 and the kitchen extract duct, although the discharge opening faces away from the properties. The nearest windows are approximately 15m from the centre of the plant area.

4.3 Based on the above, we confirm the receptor positions adopted for this report are as follows:

RPA Fourth floor rear windows of the residential above the proposed restaurant.

RPB Rear façade of the residential fronting Old Gloucester Street.



5.0 Plant Information

5.1 The plant models and location are given below.

Unit No	Plant Item	Sound Pressure Level, dB at 1m							
		63	125	250	500	1k	2k	4k	8k
CU1	CU1- Mitsubishi PUHZ-ZRP140YKA	59	57	55	49	46	42	36	29
CU2	CU2-Mitsubishi PUHZ-ZRP140YKA	59	57	55	49	46	42	36	29

Table 1 – Plant Sound Pressure Levels at 1m

Unit No	Plant Item	Sound Pressure Level, dB at 1m							
		63	125	250	500	1k	2k	4k	8k
CR1	Cold Room Condenser	Fully Internal							
CR2	Cold Room Condenser	Fully Internal							

Table 2 – Plant Sound Pressure Levels at 1m

Note: The above noise levels for units CU1 and CU2 are measured in free field conditions over a reflecting plane.

Unit No	Plant Item	Sound Power Level, dB							
		63	125	250	500	1k	2k	4k	8k
EF1	Kitchen extract-Elta SCPP500/4/3	77	77	83	80	80	78	74	68
SF1	Kitchen supply-Elta SCPP450/4/3	71	72	81	78	74	70	64	58
EF2	General extract-Elta SJ250A	65	66	68	70	66	65	61	57

Table 3 – Plant Sound Power Levels

6.0 Plant Operating Periods

6.1 We have been advised the proposed operating hours of the restaurant will be 11.00 to 02.00 hours on Sunday to Thursday and 11.00 to 03.00 hours on Friday and Saturday.

6.2 We have allowed for the HVAC plant to operate for the proposed trading hours. The refrigeration plant, items CR1 and CR2 serving the coldrooms will operate 24 hours a day, 7 days a week upon demand although these units are installed fully internal within the building.



7.0 Environmental Noise Survey Monitoring Position

- 7.1 It should be noted that we were not able to gain access to the premises or the rear yard area because the landlords had secured the property and no access authority could be obtained. We have, therefore, undertaken the environmental readings off site in Old Gloucester Street which runs parallel to the rear of the premises.
- 7.2 The microphone was greater than 3.5m from any vertical reflecting surface and the monitoring position is confirmed on the site plan in Appendix 2.

8.0 Monitoring Equipment

- 8.1 The noise monitoring equipment comprised of a Svantek 957 type 1 real time analyser, serial number 21434, with a weatherproof microphone protection system. The microphone was mounted on a tripod and a weatherproof windshield and bird spike were used.
- 8.2 The meter calibration was verified before and after the measurement period by a Svantek SV31 acoustic calibrator, serial number 24687. Any deviation was within an acceptable tolerance.
- 8.3 The meter and calibrator have current calibration certificates available upon request.

9.0 Noise Monitoring Period and Survey Weather Conditions

- 9.1 The survey was carried out between midnight and 01.15 and between 02.00 and 03.00 hours on Wednesday 25th October 2017.
- 9.2 The weather was dry and still with partial cloud cover. The temperature was 15°C.
- 9.3 The weather was acceptable for environmental noise monitoring.

10.0 Noise Measurement Parameters

- 10.1 The survey established the prevailing L_{AFmax} , $L_{Aeq,T}$, $L_{A10,T}$, and $L_{A90,T}$ noise levels, measured using F time weighting, with a 15 minute reference time period.



11.0 Monitoring Observations and Results

- 11.1 We consider the survey results to be representative of the typical background and ambient noise levels affecting the rear of the residential properties facing the ground floor external seating area of the proposed restaurant.
- 11.2 The dominant noise sources were traffic movement from the surrounding area and occasional pedestrian activity. There were occasional cars along Old Gloucester Street, which is one way.
- 11.3 The results of the survey are confirmed in Appendix 1.

12.0 Local Authority Criteria for Fixed Plant

- 12.1 The London Borough of Camden standard noise requirement is specified in the Camden Local Plan, adopted version dated July 2017. Camden Policy A4: Noise and Vibration makes reference to the Noise and Vibration Thresholds provided in Appendix 3.
- 12.2 Appendix 3 identifies the following thresholds for noise and vibration in terms of the “effect” levels described in the National Planning Policy Framework and Planning Practice Guidance.

NOEL – No Observed Effect Level

LOAL – Lowest Observed Adverse Effect Level

SOAEL – Significant Observed Adverse Effect Level

- 12.3 The Industrial and Commercial Noise Sources section detailed in Appendix 3 state:

“A relevant standard or guidance document should be referenced when determining values for LOAEL and SOAEL for non-anonymous noise. Where appropriate and within the scope of the document it is expected that British Standard 4142:2014 “Methods for rating and assessing industrial and commercial sound (BS4142) will be used. For such cases a Rating Level of 10dB below background (15dB if tonal components are present) should be considered as the design criterion.



14.3 The proposed mitigation measures are as detailed below:

- a) In duct attenuators on the atmosphere side of the kitchen supply and both extract fans. The minimum attenuation performances figures are detailed below:

Plant	Minimum Required Insertion Loss, dB							
	63	125	250	500	1k	2k	4k	8k
EF1 Kitchen extract discharge	7	10	21	44	41	29	18	13
SF1 Kitchen supply intake	6	9	19	39	37	27	18	13
EF2 General extract discharge	4	6	14	27	24	16	12	9

Table 5– Fans Minimum Attenuator Insertion Loss Requirements

- b) The two external condenser units (CU1 and CU2) are positioned at opposite ends at ground level on the roof of the existing single storey rear projection which comprises the basement floorspace. These units will need to be screened or enclosed, dependent upon recommendations from the mechanical services contractor.

If screened, then this can be manufactured in timber with a solid timber roof or similar complete with a timber end panel. The depth of the screen and end panel will depend on the final layout of the plant, but the roof will provisionally be 1m deep and the full length of each unit. The end panel will need to also be 1m deep and the full height from ground level to the underside of the timber roof.

The screen depth and length will require verification on site when the condensers are installed, and prior to operation, to ensure full line of sight protection is provided to the residential flats at receptor position RPA overlooking the rear area.

The timber screen construction would comprise 18mm thick butt jointed boards. There are to be 50x25 capping sections covering all joints between the boards so there are no gaps. The post construction to be timber or metal depending on the finalised design and closure strips to be provided where boards join the posts to prevent gaps. The inner surface of the timber screen is to be lined with 75mm thick 48kg controlled density resin bonded mineral wool infill with a 0.8mm 30% free area perforated inner skin facing the units. The infill is to be bagged and sealed by “Melinex” sheet to prevent water ingress.

If an enclosure is used for each condenser then this could be manufactured from steel, complete with roof and acoustic louvres for air intake and discharge, final designs to be determined.



The minimum acoustic performance of the enclosure (including louvres) or a screen barrier loss would need to be as follows:

Minimum Sound Reduction of enclosure incl louvres/ Screen Barrier Loss							
63	125	250	500	1k	2k	4k	8k
6	7	8	9	9	9	9	9

14.4 The predicted **attenuated** cumulative free field plant noise levels allowing for the duct attenuation and the enclosures/screening are given below.

Receptor Position	Predicted Total Plant Noise Level $L_{Aeq(15min)}$ dB	Target Plant Noise Level $L_{Aeq(15min)}$ dB
RPA	35	38
RPB	35	38

Table 6 – Cumulative Plant Noise Levels at Receptor Positions

14.5 The plant noise level calculations are given in Appendix 3.

15.0 Vibration Isolation

15.1 All plant items are to be suitably vibration isolated using proprietary mountings or hangers depending on the fixing method to be adopted. The mounting systems are to provide a static deflection suitable to achieve a minimum 98% isolation efficiency.

16.0 Conclusions

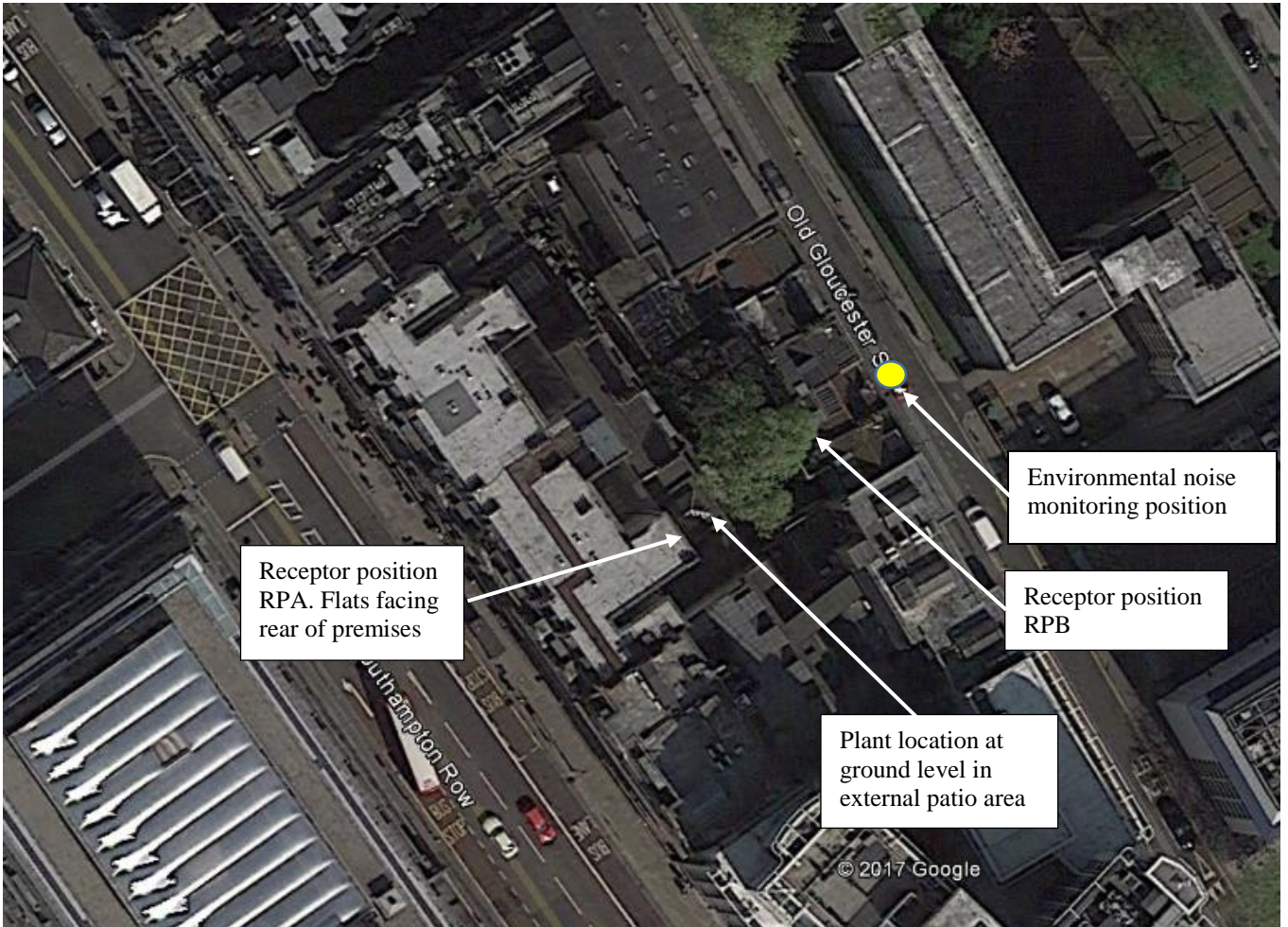
16.1 Providing the mitigation measures detailed in section 14.3 a) and b) are implemented in full, the London Borough of Camden external criteria, as detailed in section 12.0 will be achieved at both receptor positions.



Appendix 1 – Results

Date	Time			Measured Noise Level, dB				
				L _{AFmax}	L _{Aeq,T}	L _{A10}	L _{A90}	
Wednesday 25 th October 2017	00.00	to	00.15	72.8	53.4	54.2	51.0	
	00.15	to	00.30	74.6	54.6	54.8	51.0	
	00.30	to	00.45	72.5	53.5	53.7	50.5	
	00.45	to	01.00	76.9	54.7	54.1	50.5	
	01.00	to	01.15	78.4	55.3	54.7	50.6	
	02.00	to	02.15	73.0	54.5	53.3	48.1	
	02.15	to	02.30	76.7	52.8	52.0	47.9	
	02.30	to	22.45	73.4	53.3	54.1	47.5	
	02.45	to	03.00	87.0	57.3	52.6	47.5	

Appendix 2 – Site Plan





Appendix 3 – Plant Noise Level Calculations

Plant Calcs for Octave Band Sound Pressure Level										barrier values											
Project: Restaurant 74 Southampton Row																					
Date: 13.12.2017																					
Section Total, dBA					Day	28.6		Nigh	28.6		Section Total, dBA					Day	31.7		Nigh	31.7	
ALL PLANT TOTAL					Day	35.1		Nigh	35.1		ALL PLANT TOTAL					Day	34.9		Nigh	34.9	
RPA										RPB											
Unit 1 - CU1										Unit 1 - CU1											
Lp at 1m, Q=2										Lp at 1m, Q=2											
A weight										A weight											
Directivity										Directivity											
Barrier (enter as +ve)										Barrier (enter as +ve)											
Distance correction										Distance correction											
Other Correction (+ve or -ve)										Other Correction (+ve or -ve)											
Other Correction (-ve or -ve)										Other Correction (-ve or -ve)											
Resultant dBA										Resultant dBA											
Overall dBA										Overall dBA											
360.0509043										722.6488056											
7.5 38.4 108 75 78.5 41.2 9.88 1.22 360.1 360.1										8.49 54.8 194 169 177 93.1 22.3 27.5 722.6 722.6											
RPA										RPB											
Unit 2 - CU2										Unit 2 - CU2											
Lp at 1m, Q=2										Lp at 1m, Q=2											
A weight										A weight											
Directivity										Directivity											
Barrier (enter as +ve)										Barrier (enter as +ve)											
Distance correction										Distance correction											
Other Correction (+ve or -ve)										Other Correction (+ve or -ve)											
Other Correction (-ve or -ve)										Other Correction (-ve or -ve)											
Resultant dBA										Resultant dBA											
Overall dBA										Overall dBA											
370.992799										747.371169											
7.5 38.4 108 75 78.5 41.2 9.88 1.22 371.1 371.1										8.49 54.8 194 169 177 93.1 22.3 27.5 747.4 747.4											
RPA										RPB											

Fan Calcs for In duct Sound Power Levels										barrier values											
Project: Restaurant 74 Southampton Row																					
Date: 13.12.2017																					
Section Total, dBA					Day	33.9		Night	33.9		Section Total, dBA					Day	32.1		Night	32.1	
ALL PLANT TOTAL					Day	35.1		Night	35.1		ALL PLANT TOTAL					Day	34.9		Night	34.9	
RPA										RPB											
EF1										EF1											
Induct Lw										Induct Lw											
End reflection loss (enter +ve)										End reflection loss (enter +ve)											
Directivity (enter +ve)										Directivity (enter +ve)											
Distance correction										Distance correction											
Barrier attenuation										Barrier attenuation											
Other correction (enter + or -)										Other correction (enter + or -)											
Other correction (enter + or -)										Other correction (enter + or -)											
A weighting										A weighting											
Attenuation IL (enter +ve)										Attenuation IL (enter +ve)											
Resultant dBA										Resultant dBA											
Overall dBA										Overall dBA											
794.6908728										100.5213277											
67.1 344 307 1.06 0.7 9.26 44.3 21.7 70.0 70.0										8.48 43.5 38.8 0.13 0.09 1.17 5.61 2.75 10.0 10.0											
RPA										RPB											
SF1										SF1											
Induct Lw										Induct Lw											
End reflection loss (enter +ve)										End reflection loss (enter +ve)											
Directivity (enter +ve)										Directivity (enter +ve)											
Distance correction										Distance correction											
Barrier attenuation										Barrier attenuation											
Other correction (enter + or -)										Other correction (enter + or -)											
Other correction (enter + or -)										Other correction (enter + or -)											
A weighting										A weighting											
Attenuation IL (enter +ve)										Attenuation IL (enter +ve)											
Resultant dBA										Resultant dBA											
Overall dBA										Overall dBA											
746.1596045										671.1587427											
7.49 80.5 83 7.45 12.4 82.2 157 76 74 74										8.74 54.8 308 6.74 11.2 79.5 151 85 87 87											
RPA										RPB											
EF2										EF2											
Induct Lw										Induct Lw											
End reflection loss (enter +ve)										End reflection loss (enter +ve)											
Directivity (enter +ve)										Directivity (enter +ve)											
Distance correction										Distance correction											
Barrier attenuation										Barrier attenuation											
Other correction (enter + or -)										Other correction (enter + or -)											
Other correction (enter + or -)										Other correction (enter + or -)											
A weighting										A weighting											
Attenuation IL (enter +ve)										Attenuation IL (enter +ve)											
Resultant dBA										Resultant dBA											
Overall dBA										Overall dBA											
938.266697										843.9636808											
2.98 30.5 54.3 18.8 39.3 327 312 153 103 103										2.68 27.5 48.8 16.9 35.4 294 281 138 84 84											
RPA										RPB											