

# Acoustic Consultancy Partnership Ltd

Ground Floor, Building 1000, Lakeside North Harbour Western Road, Portsmouth, Hampshire, P06 3EZ Tel: 023 9270 4133 | Fax: 023 9270 4001 | info@acpltd.org.uk

# Acoustic Consultancy Report

# Environmental Noise Survey Results and Noise Impact Assessment for Proposed Fixed Plant

## **Hot Food Takeaway**

Client:	Tahir Group
Project:	325, Kentish Town Road London NW5 2TJ
Our Ref:	11809
Revision:	E
Report Prepared By	N. Fowler M.I.O.A.
Date:	10th January 2024

Registered Office: Acoustic Consultancy Partnership Ltd, Appledram Barns, Birdham Road, Chichester, West Sussex, PO20 7EQ. Registered No. 6799097



#### 1.0 Introduction

- 1.1 This report is to be read in conjunction with our previous Noise Impact Assessment Report 11809B dated 24<sup>th</sup> August 2023.
- 1.2 Acoustic Consultancy Partnership Ltd have been requested by the planning officer to include the impact on the neighbouring properties windows. **It must be noted that the proposed plant is not yet installed.**
- 1.3 Following this request, we have revisited the site to undertake a dimensional check of the neighbouring windows and provide a drawing showing their location. We have, where possible, calculated the plant noise levels based on our latest site visit. The plant that has not been re-assessed is the Kitchen Supply KSF01, Customer WC, EF01 and Staff WC EF02. These systems intake or discharge at the front or rear of the premises.
- 1.4 The attached drawing shows the reference numbers for the windows. We were unable to get dimensions for 6no windows as no access was available to them. The windows are 3, 5, 9, 10, 13 and 14.

Window	View of Extract Stock	Distance to window from	View of Condensors	Distance to window	
No	VIEW OF EXITACT STACK	Extract Stack, m	view of Condensers	from Condensers, m	
1	YES	2.6	YES	4.3	
2	YES	2.6	YES	6.1	
3	YES-Not assessed	N/A	YES-Not assessed	N/A	
4	NO	N/A	YES	7.9	
5	YES-Not assessed	N/A	YES-Not assessed	N/A	
6	NO	N/A	YES	4.5	
7	NO	N/A	YES	5.5	
8	NO	N/A	YES	8.1	
9	NO	N/A	YES-Not assessed	N/A	
10	NO	N/A	YES-Not assessed	N/A	
11	NO	N/A	YES	8.9	
12	NO	N/A	YES	10.3	
13	YES-Not assessed	N/A	NO	N/A	
14	YES-Not assessed	N/A	NO	N/A	
15	YES	12.1	YES	12.1	
16	YES	16.9	YES	11.4	
17	YES	10.3	NO	N/A	
18	NO	N/A	YES	10.2	
19	NO	N/A	NO	N/A	
20	NO	N/A	NO	N/A	
21	NO	N/A	NO	N/A	

1.5 The following window schedule is given below:



**Note 1:** The windows identified as **"YES-Not Assessed"** will see the plant item but we were unable to obtain dimensions due to no access availability.

**Note 2:** The windows identified as **"NO"** will not see the plant item. Therefore, no dimensions can be obtained.

Note 3: The windows identified as "YES" have been measured with a Leica Disto D510 laser measure.

- 1.6 Combined calculations have been carried out for the Extract Stack and the 4no Condensers for the windows marked YES. The cumulative un-attenuated plant noise levels for the Extract Stack and the 4no Condensers have been calculated and are provided later in this report.
- 1.7 This report provides a noise assessment and mitigation proposals that will achieve the requirements of the London Borough of Camden at 1metre from the façade of the windows detailed in Section 1.5.

#### 2.0 Environmental Noise Survey Measurement Procedure

2.1 The initial environmental noise survey adopted the procedure and methodology stated within BS4142:2014. This report confirms the 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 premises would occupy the ground floor area within a parade of retail, commercial and food/drink premises fronting the west side of Kentish Town Road. The rear of the premises does have a locked access from York Mews.
- 3.2 The proposed air conditioning and refrigeration condensers will be located on the rear wall facing towards Kentish Town Road. The Kitchen extract fan, KEF01, is internal to the premises with the discharge ductwork rising up the external wall and discharging at roof level.



#### 4.0 Plant Information

4.1 The noise data for the plant models given in this report are given below.

Plant	Plant Item	Sound Pressure Level, dBA
CU01	HVAC Condenser Daikin RXM50R	49 dBA at 1m (Day)
CU02	HVAC Condenser Daikin RZASG125	57 dBA at 1m (Day)
CU03	Chiller Condenser Fosters Duet 1-1H	33 dBA at 10m
CU04	Freezer Condenser Fosters Duet 1-1L	42 dBA at 10m

Table 1 – Refrigeration and HVAC Plant Sound Pressure Levels at 1m

4.2 The above manufacturers noise data for units CU1, CU2, CU3 and CU04 are measured under free field conditions over a reflecting plane. These units will be located on the flat roof at first floor level.

Linit No	Diant Itom	Sound Power Level, dB								
Unit NO	Plant Item	63	125	125 250 500 1k 2k 4k 8						
KEF01	MUBT560 Kitchen Extract	79	88	84	83	81	77	76	69	
Table 2 – Plant Sound Power Level										

4.3 The Kitchen Extract fan would be mounted internal to the premises.

#### 5.0 Plant Operating Periods

- 5.1 We have been advised the proposed operating hours of the premises will be 09.00-01.00.
- 5.2 We have allowed for the Kitchen Extract fan and the 2no HVAC condensers, CU01 and CU02, to operate for the proposed trading hours. The refrigeration plant, items CU03 and CU04 serving the Freezer and Chiller coldrooms, will operate 24 hours a day, 7 days a week upon demand.

#### 6.0 Environmental Noise Survey Monitoring

6.1 Our initial report confirms the monitoring position, which is indicated on the site plan.

#### 7.0 Noise Monitoring Period and Survey Weather Conditions

7.1 The initial survey was carried out between 22.15 to 23.15 hours on Tuesday 8<sup>th</sup> August 2023 and between 01.00-03.00 hours on Wednesday 9<sup>th</sup> August 2023.



7.2 The results of the survey are provided in Appendix 1 and the lowest measured background noise levels for the operating periods of the plant are summarised below.

All plant (trading hours up to 01.00)45dB L\_{A90,15min}Plant CU03 and CU04(continuous operation)43dB L\_{A90,15min}

#### 8.0 Local Authority Criteria for Proposed Plant

8.1 We note that the London Borough of Camden do provide plant external noise requirements as follows.

"Noise levels at a point 1 metre external to sensitive facades shall be at least 10dB(A) less than the existing background measurement (LA90), expressed in dB(A) when all plant/equipment (or any part of it) is in operation unless the plant/equipment hereby permitted will have a noise that has a distinguishable, discrete continuous note (whine, hiss, screech, thumps), then the noise levels from that piece of plant/equipment at any sensitive façade shall be at least 15dB(A) below the LA90, expressed in db(A)"

8.2 Based on the requirements given above, and the results of our environmental noise survey given in our previous report, the plant noise criteria to be achieved at 1m from the façade of the nearest noise sensitive properties would be:

All plant (trading hours up to 01.00)	35dB LA90,15min
Plant CU03 and CU04(continuous operation)	33dB LA90,15min

8.3 Achievement of these external criteria at the residential windows would ensure compliance with the requirements of the London Borough of Camden.



#### 9.0 Predicted Plant Noise Levels

9.1 The predicted **un-attenuated** plant noise levels at the window locations are given below. The results are based on the premises trading until 01.00 hours and the plant operating until 01.30 hours with the exception of the Chiller and Freezer Condensers (CU03 and CU04) that can operate continuously.

#### Kitchen Extract Stack

Window No	Distance to window from Extract Stack, m	Resultant Noise Level
1	2.6	78
2	2.6	78
15	12.1	64
16	16.9	61
17	10.3	66

#### **Condensers**

Window No	Distance to window from condensers, m	Resultant Noise Level All units operating
1	4.3	54
2	6.1	51
4	7.9	49
6	4.5	54
7	5.5	52
8	8.1	49
11	8.9	48
12	10.3	47
15	12.1	45
16	11.4	46
18	10.2	47

9.2 It can be seen from 13.1 above that the plant criteria to be achieved is exceeded at all window locations with the Condensers and the Kitchen Extract fan operating. The highest unattenuated noise levels, with the 4no Condensers and the Kitchen Extract fan operating, occur at windows 1, 2 and 6.

#### 10.0 Mitigation

10.1 To achieve the design criteria required by the London Borough of Camden, at all window locations, it will be necessary to provide mitigation measures to the following plant items.



- 10.2 Our proposed mitigation measures are as detailed below:
  - a) In duct attenuators on the atmosphere side of the Kitchen Extract fan. The minimum attenuation performances figures are detailed below:

Plant		Minimum Required Insertion Loss, dB							
		125	250	500	1k	2k	4k	8k	
KEF01-Kitchen Extract – First stage attenuator	12	16	32	55	55	55	33	24	
KEF01-Kitchen Extract – Second stage attenuator	12	16	32	55	55	55	33	24	

Table 3– Fan Minimum Attenuator Insertion Loss Requirements

The acoustic performance for the Kitchen Extract fan is based on a two-stage attenuator system due to the degree of attenuation required. The first stage attenuator must be installed internal to the premises with the second stage attenuator installed where the kitchen extract ductwork rises from below. The attenuators and any flexible connections are to be externally lagged with one layer of Allaway Transmat Acoustic Damping sheet beneath two layers of Transhield acoustic insulation with staggered/overlapped joints.

- b) The extract fan ductwork and any flexible connections should be externally lagged for the full length of the vertical duct section, including the attenuators and any flexible connections, with one layer of Allaway Transmat Acoustic Damping sheet beneath two layers of Transhield acoustic insulation with staggered/overlapped joints.
- We require all condensers to be installed within four-sided acoustic louvre housings complete with a 16g solid steel top.

The internal face of the solid enclosure roof is to be lined with 75mm thick acoustic lining comprising 75mm thick 45kg/m<sup>3</sup> rockwall slab infill material with fibreglass tissue facing retained by 0.8mm thick 35% free area expanded metal. The infill is to be inert, non-hygroscopic, rot proof, vermin proof and have Class 1 fire rating.

The rockwall slab minimum coefficient of absorption is to be as detailed below:

63	125	250	500	1k	2k	4k	8k Hz
0.17	0.54	1.0	1.0	1.0	1.0	1.0	0.84

The acoustic louvres for all condenser housings are to be 304mm deep and manufactured by Gilberts (Blackpool) Ltd type ALDH/30 or similar product of equal specification and acoustic performance. The minimum acoustic performance of the louvres is Rw21dB.



10.3 The predicted **attenuated** cumulative plant noise levels, allowing for the mitigation measures detailed in Section 14.3 above, are given below.

Receptor Position	Plant Operating Period	Predicted Total Plant Noise Level L <sub>Aeq(15min)</sub> dB	Target Plant Noise Level L <sub>Aeq(15min)</sub> dB		
Window 1, 2	Up to 01.00 hours	33	35		
and 6	Continuous	32	33		

 Table 4 – Cumulative Attenuated Plant Noise Levels at Receptor Positions

#### 11.0 Vibration

- 11.1 As the ground floor premises are structurally connected to the flats above, it is necessary to provide suitable vibration isolation to the Kitchen Extract and Supply fans associated with this development and any supports located between the fans and the flexible connections.
- 11.2 The Kitchen Supply (KSF01) and Kitchen Extract (KEF1) fans are to be suitably vibration isolated using proprietary mountings. The mounting systems are to provide a static deflection suitable to achieve a minimum 98% isolation efficiency at the fans running speed.
- 11.3 The supports for the vertical kitchen extract ductwork are to incorporate rubber turret mountings so that the ductwork is fully de-coupled from the support framework.
- 11.4 The Refrigeration and A/C condensers at ground floor roof level are to be supported on small rubber turret mountings with all pipework isolated from the building structure and where associated pipework passes through the enclosures and the adjacent building structure the openings are to be sleeved and backfilled with non- hardening mastic to prevent the pipework coming into contact with the structure.

#### 12.0 Conclusions

12.1 Providing the mitigation measures detailed in sections 10.0 and 11.0 are implemented in full, the requirements of London Borough of Camden would be achieved.



### Appendix 1 – Survey Results

Time			Measured Sound Pressure Level, dB					
			LAFmax	L <sub>Aeq,T</sub>	L <sub>A10,T</sub>	L <sub>A90,T</sub>		
22.15	to	22.30	64.5	49.5	52.6	45.4		
22.30	to	22.45	62.8	47.6	49.6	45.1		
22.45	to	23.00	66.0	50.2	52.8	45.1		
23.00	to	23.15	69.0	48.9	49.8	45.0		
01.00	to	01.15	56.0	45.4	46.7	73.9		
01.15	to	01.30	51.3	45.0	45.9	43.7		
01.30	to	01.45	56.0	45.0	45.9	43.5		
01.45	to	02.00	55.1	44.6	45.6	43.3		
02.00	to	02.15	66.5	51.1	54.9	43.2		
02.15	to	02.30	69.4	46.5	45.6	43.1		
02.30	to	02.45	52.4	44.9	46.1	43.3		
02.45	to	03.00	52.9	44.6	45.7	43.2		



## Appendix 2 – Site Plan





### Appendix 3 – Window Location (to be read in conjunction with Section 1.5)

