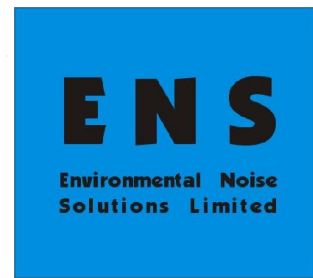


Our ref: NIA/5367/14/5109/

7<sup>th</sup> August 2014

Sent by email only : [gebina@cooleyarchitects.com](mailto:gebina@cooleyarchitects.com)

Mr Gebina Ham  
Director  
Cooley Architects



Dear Mz,

**NOISE ASSESSMENT FOR EXISTING AIR HANDLING UNITS (AHU)  
ROOFTOP OF NO. 5-7 TOTTENHAM STREET FITZROVIA, LONDON**

**1.00 INTRODUCTION**

1.01 Environmental Noise Solutions Limited (ENS) has been commissioned by Cooley Architects to carry out a noise impact assessment in relation to existing air handling units, on the rooftop of No. 5-7 Tottenham Street, Fitzrovia, London (hereafter referred to as the subject site).

1.02 This report has been prepared for Cooley Architects for the sole purpose described above and no extended duty of care to any third party is implied or offered. Third parties making reference to the report should consult Cooley Architects and ENS as to the extent to which the findings may be appropriate for their use.

1.03 During the pre-application phase, a cumulative noise assessment was agreed to satisfy Camden Council's (the Local Planning Authority) noise condition as follows;

*"Noise levels at a point 1 metre external to sensitive facades shall be at least 5dB(A) less than the existing background measurement (LA90), expressed in dB(A) when all plant/ equipment (or any part of it) is operational unless the plant/ equipment hereby permitted will have a noise that has a distinguishable, discrete continuous note (whine, hiss, hum) and/or if there are distinct impulses (bangs, clicks, clanks, clatters, thumps), then the noise levels from that piece of plant/equipment at any noise sensitive façade shall be at least 10dB(A) below the LA90, expressed in dB(A)"*

1.04 It is understood that a previous noise report was completed in order to discharge the above condition. This report was however deemed to be insufficient in its methodology and the following requirements were provided by the Local Planning Authority;

- Background noise survey (LA90) from 00:00 – 05:00 to provide a baseline background level (LA90);
- Provide a 15 minute (specific) ambient noise level for each plant system;
- Provide a 15 minute residual noise measurement; and
- Utilize a BS4142 methodology to ascertain the specific noise level for each respective plant to provide a rating level over background (LA90).

1.05 This report has therefore been completed in order to assess the requested requirements outlined by the local planning authority (point 1.04 above)

1.06 A glossary of acoustic terms used in the main body of the text is contained in Appendix 1.

## **2.00 SITE SETTING**

- 2.01 The subject site is located in a heavily built up, mixed use residential and commercial area located in the circa 250 metres to the north-north-east of Fitzrovia centre, in central London.
- 2.02 It is understood that the owners of the freehold property have installed various items of plant on the rooftop of No. 5-7 Tottenham Street including 2 no. condenser units providing ventilation to the tea shop below. Also 2 no. condenser units and a single cold room condenser are installed to provide ventilation and refrigeration to the Pod café below.
- 2.03 There was also noted to be a number of items of plant installed along the western side of the rooftop, these operate to serve various other commercial units within the surrounding buildings and include numerous condenser units and a discharge extract vent.
- 2.04 It is understood that the cold room condenser associated with the Pod café is the only item of associated plant at the subject site that operates during the considered night time period (00:00-05:00).
- 2.05 The nearest noise sensitive receptors (NSRs) are considered to be the dwellings located to the north of the considered plant.
- 2.06 A location plan is contained in Appendix 2 for reference.

### 3.00 BASELINE NOISE MONITORING

- 3.01 In order to assess the ambient and background noise climate in the vicinity of the subject site, noise monitoring was undertaken between 19:38 hours on Tuesday 9<sup>th</sup> and 08:00 hours on Wednesday 10<sup>th</sup> July 2014. Monitoring was undertaken at a single monitoring position (MP1) situated at a distance of 1 metre from the nearest residential dwelling. This position was considered to be representative of background noise levels at the nearest residential dwellings.
- 3.02 Measurements were predominantly un-manned, and were undertaken using a Bruel & Kjaer 2260 Type 1 integrating sound level meter. A windshield was fitted for all measurements.
- 3.03 Measurements consisted of A-weighted broadband parameters together with linear third-octave band  $L_{eq}$  levels.
- 3.04 The measurement system calibration was verified immediately before the commencement of the measurement sessions and again at the end, using a Bruel & Kjaer Type 4231 calibrator. No drift in calibration level was noted. Weather conditions throughout the survey were appropriate for monitoring.
- 3.05 Tables 3.1 contains a summary of the representative measurement data rounded to the nearest decibel. Noise data was post processed using Bruel & Kjaer Evaluator software.

**Table 3.1 – Summary of noise measurements at MP1**

Position	Date	Time	$L_{Aeq}$ (dB)	$L_{A90}$ (dB)	Comment
MP1	09/07/14	19:38-20:08	57	54	Noise associated with operations of plant and noise from the Pod café through the overlapped glass roof
MP1	09/07/14- 10/07/14	00:00-05:00	49	46	Unmanned monitoring excluding plant (Residual Noise Climate)
MP1	09/07/14- 10/07/14	00:00-05:00	53	47	Unmanned monitoring including plant (Ambient Residual Noise Climate)
<b>Daytime Ambient Noise Level <math>\approx</math> 57 dB <math>L_{Aeq,T}</math> &amp; Daytime background noise level <math>\approx</math> 54 dB <math>L_{A90,15mins}</math></b> <b>Night time Residual Noise Level <math>\approx</math> 49 dB <math>L_{Aeq,T}</math> &amp; Night time Residual Background noise level <math>\approx</math> 46 dB <math>L_{A90,15mins}</math></b>					

- 3.06 During the attended periods of the noise monitoring, the background noise climate at MP1 was noted to be dominated by noise associated with the activities at the Pod café below (as outlined in table 3.1 above). During the night time period, the residual ( $L_{Aeq,T}$ ) noise level was relatively steady. The quietest 15 minute residual background noise level during the night time period was measured at 46 dB  $L_{A90,15mins}$ .
- 3.07 It should be noted that during the course of the noise survey that all the items of plant under consideration were void of any discrete, continuous note (whine, hiss, hum) or distinct impulses (bangs, clicks, clanks, clatters, thumps).

#### 4.0 NOISE IMPACT ASSESSMENT

- 4.01 The noise assessment for the associated plant (outlined in Table 4.1 below) has been conducted in accordance with the requirements of Camden Council.

**Table 4.1 – Night Time (00:00-05:00) Plant Noise Level Calculation**

Description	dB	Details
(A) Plant on (includes façade enhancement & residual noise)	52.5 dB LAeq	As measured by ENS
(B) Plant off (residual noise)	49.3 dB LAeq	-
(C) (= A – B logarithmically) Plant on (specific noise level)	49.7 dB LAeq	-
(D) Time Correction	- 4.0 dB	Plant running 2 mins in any 5 mins
(E) (= C + D) Plant on (specific noise level with time correction)	45.6 dB	-
(F) Residual background noise level	46.0 dB L90	As measured by ENS
<b>(G) (= E – F) excess of specific plant noise level over background</b>	<b>- 0.4 dB</b>	<b>-</b>

- 4.04 As outlined in Table 4.1 above, the plant noise level associated with the activity of the Pod cold room condenser is shown to be – 0.4 dB below the background noise level (with plant off) measured at a distance of 1 metre from the window of the nearest noise sensitive receptor during the hours of 00:00-05:00.

#### 5.00 CONCLUSIONS

- 5.01 A noise impact assessment has been carried out in line with the recommendations of the Local Planning Authority, in relation to existing plant installed on the rooftop of No. 5-7 Tottenham Street, Fitzrovia in Central London.
- 5.02 Plant noise levels have been shown to be 0.4 dB below the background noise level, at a position considered representative of the nearest noise sensitive receptor, between the hours of 00:00-05:00 as requested by Camden Council.
- 5.03 A reduction in noise level of the order of 10 dB(A) is necessary in line with the requirements of the Local Planning Authority. As such it is recommended that an enclosure is fitted around the cold room condenser unit with an acoustic vent.
- 5.04 It should be noted that in order to detail the acoustic specification of the enclosure, input from a ventilation specialist will be required to ensure continued cooling performance to the unit.

If you have any queries concerning the above please do not hesitate to contact me.

Yours sincerely,

Daniel Bailey  
 AMIOA, Dipl. Acoustics and Noise Control, BSc (Hons)  
 Environmental Noise Solutions Limited

cc File

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## APPENDIX 1 GLOSSARY OF ACOUSTIC TERMS

### Sound Pressure Level ( $L_p$ )

The basic unit of sound measurement is the sound pressure level. As the pressures to which the human ear responds can range from 20  $\mu$ Pa to 200 Pa, a linear measurement of sound levels would involve many orders of magnitude. Consequently, the pressures are converted to a logarithmic scale and expressed in decibels (dB) as follows:

$$L_p = 20 \log_{10}(p/p_0)$$

Where  $L_p$  = sound pressure level in dB;  $p$  = rms sound pressure in Pa; and  $p_0$  = reference sound pressure (20  $\mu$ Pa).

### A-weighting Network

A frequency filtering system in a sound level meter, which approximates under defined conditions the frequency response of the human ear. The A-weighted sound pressure level, expressed in dB(A), has been shown to correlate well with subjective response to noise.

### Equivalent continuous A-weighted sound pressure level, $L_{Aeq, T}$

The value of the A-weighted sound pressure level in decibels of continuous steady sound that within a specified time interval, T, has the same mean-square sound pressure as a sound that varies with time.  $L_{Aeq, 16h}$  (07:00 to 23:00 hours) and  $L_{Aeq, 8h}$  (23:00 to 07:00 hours) are used to qualify daytime and night time noise levels.

### $L_{A10, T}$

The A-weighted sound pressure level in decibels exceeded for 10% of the measurement period, T.  $L_{A10, 18h}$  is the arithmetic mean of the 18 hourly values from 06:00 to 24:00 hours.

### $L_{A90, T}$

The A-weighted sound pressure level of the residual noise in decibels exceeded 90% of a given time interval, T.  $L_{A90}$  is typically taken as representative of background noise.

### $L_{AF \max}$

The maximum A-weighted noise level recorded during the measurement period. The subscript 'F' denotes fast time weighting, slow time weighting 'S' is also used.

### Sound Exposure Level (SEL or $L_{AE}$ )

The energy produced by a discrete noise event averaged over one second, no matter how long the event actually took. This allows for comparison between different noise events which occur over different lengths of time.

### Weighted Sound Reduction Index ( $R_w$ )

Single number quantity which characterises the airborne sound insulation properties of a material or building element over a defined range of frequencies ( $R_w$  is used to characterise the insulation of a material or product that has been measured in a laboratory).

APPENDIX 2  
DRAWINGS

