

# Hampstead Heath London

## Environmental Noise Survey and Plant Noise Assessment Report

23697/PNA1

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For:  
Paragon  
7 Swallow Place  
London  
W1B 2AG



**Hann Tucker Associates**


Consultants in Acoustics Noise & Vibration

Head Office: Duke House, 1-2 Duke Street, Woking, Surrey, GU21 5BA (t) +44 (0) 1483 770 595  
Manchester Office: First Floor, 346 Deansgate, Manchester, M3 4LY (t) +44 (0) 161 832 7041  
(w) [hanntucker.co.uk](http://hanntucker.co.uk) (e) [enquiries@hanntucker.co.uk](mailto:enquiries@hanntucker.co.uk)



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## Document Control

Rev	Date	Comment	Prepared by	Authorised by
0	03/10/2016	-	<i>Ryan fernandez</i>	
			Ryan Fernandez	Andrew Fermer Director BSc(Hons), MIOA

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### **Attachments**

Appendix A – Acoustic Terminology



## **1.0 Introduction**

As part of a refurbishment, new building services plant is proposed to be installed at Apartment D, Mount Tyndal. The plant noise emissions will be subject to the requirements of the Local Authority.

Hann Tucker Associates have therefore been commissioned to undertake a detailed environmental noise survey of the site and propose suitable plant noise emission criteria based on the results of the survey and the requirements of the Local Authority.

The data has been used to assess the effects of the existing plant and subsequently make recommendations for the plant noise emissions to ensure the criteria of the Local Authority is met.

This report presents the survey methodology and findings.

## **2.0 Objectives**

To establish the existing noise levels by means of fully automated noise monitoring over a period of approximately 24 hours at one secure and accessible position.

To assess the noise emissions from the proposed plant, based upon data with which we are provided, and comment upon the acceptability.

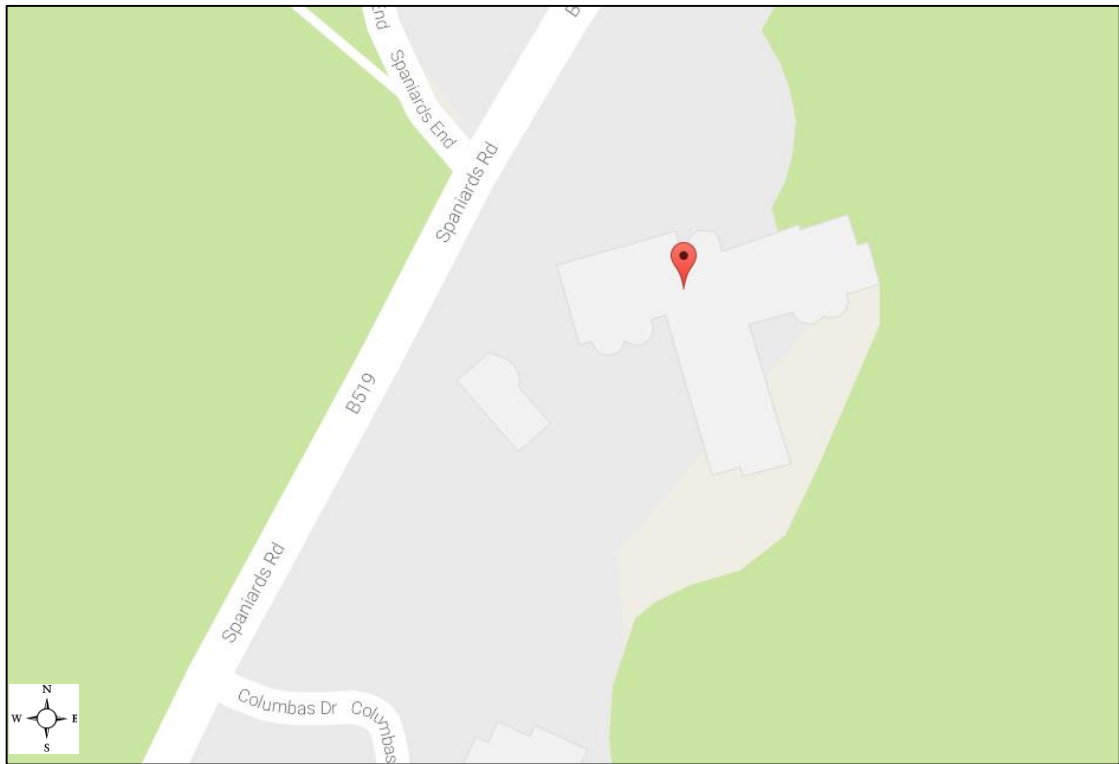
To present our results in a Report to support the planning application as far as reasonably possible.

To advise on noise control measures if required with reference to the requirements of the Local Authority.

## **3.0 Site Description**

### **3.1 Location**

The site is located at Flat D, Mount Tyndal, Spaniards Road, London and falls within the London Borough of Camden District Council's jurisdiction.



Location Map (Map Data ©2016 Google)

### 3.2 Description

Flat D is one of seven apartments in Mount Tyndal. It is adjoined to the rest of the building on its East, as well there being another flat below and another flat above. The site is shown in the Site Plan below.



Site Plan (Map Data ©2016 Google)

## 4.0 Acoustic Terminology

For an explanation of the acoustic terminology used in this report please refer to Appendix A enclosed.

## 5.0 Survey Methodology

The survey was undertaken by Robin Honey Robin Honey BA(Hons), MIOA, AMIEnvSc and Ryan Fernandez.

### 5.1 Procedure

Fully automated environmental noise monitoring was undertaken from approximately 11:00 hours on Thursday 21<sup>st</sup> September 2016 to 11:00 hours Friday 22<sup>nd</sup> September 2016.

Due to the nature of the survey, i.e. unmanned, it is not possible to accurately comment on the weather conditions throughout the entire survey period however at the beginning and end of the survey period the wind conditions were calm. The sky was clear and there was hardly any wind. We understand that generally throughout the survey period the weather conditions were similar to this and these conditions are considered suitable for obtaining representative measurement results.

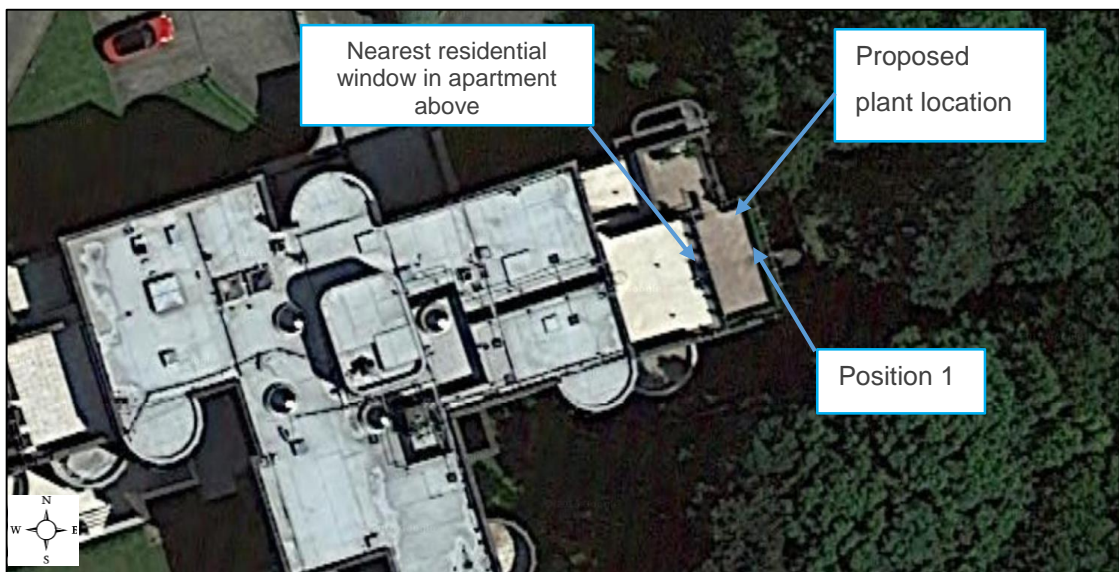


Measurements were taken continuously of the A-weighted (dBA)  $L_{90}$ ,  $L_{eq}$  and  $L_{max}$  sound pressure levels over 15 minute periods.

### 5.2 Measurement Position

The noise level measurements were undertaken at one position at the development site. The microphone was positioned on the northeast part of the building on a metal terrace railing.

The position was selected in order to assess the lowest noise levels at the development site for subsequent use in setting plant noise emission criteria and the approximate location is shown on the plan below.



Site Plan (Map Data ©2016 Google)

### 5.3 Instrumentation

The instrumentation used during the survey is presented in the Table below:

Description	Manufacturer	Type	Serial Number	Calibration
Position Type 1 Data Logging Sound Level Meter	Larson Davis	824	3444	HT calibration on 11/07/2016
Position Type 1 1/2" Condenser Microphone	PCB	377B02	122885	HT calibration on 11/07/2016
Type 1 Calibrator	Larson Davis	CAL200	3082	LD calibration on 09/06/2016



The sound level meter, including the extension cable, was calibrated prior to and on completion of the surveys. No significant changes was found to have occurred (no more than 0.1dB).

The sound level meter was located in an environmental case with the microphone connected to the sound level meter via an extension cable.

The microphone was fitted with a windshield.

## 6.0 Results

The results have been plotted on a Time History Graphs 23697/TH1 and enclosed, presenting the 15 minute A-weighted (dBA)  $L_{90}$  and  $L_{eq}$  noise levels at each measurement position throughout the duration of the survey.

The lowest  $L_{A90}$  (15 min) measurements recorded during the survey are presented in the table below:

Position	Lowest Measured $L_{A90(15min)}$ Background Noise Level (dB re $2 \times 10^{-5}$ Pa)		
	Daytime (07:00 – 23:00) Hours	Night-Time (23:00 – 07:00) Hours	24 Hours
1	52	42	42

## 7.0 Discussion Of Noise Climate

Due to the nature of this survey, i.e. unmanned, it is not possible to accurately describe the dominant noise sources, or specific noise events throughout the entire survey period. However at the beginning and end of the survey period the dominant noise sources were noted to be local road traffic.

## 8.0 Plant Noise Emission Criteria

Mount Tyndal falls within the London Borough of Camden. Following an email dated 27 March 2015 we understand the London Borough of Camden's advice relating to noise emissions from air conditioning plant is 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 ( $L_{A90}$ ), expressed in dB(A) when all plant/equipment are in operation. Where it is anticipated that any plant/equipment will have a noise that has a





distinguishable, discrete continuous note (whine, hiss, screech, hum) and/or if there are distinct impulses (bangs, clicks, clatters, thumps) special attention should be given to reducing the noise levels from that piece of plant/equipment at any sensitive façade to at least 10dB(A) below the  $L_{A90}$ , expressed in dB(A)".

In order to meet the above advice, noise emissions from the proposed plant should not exceed a level of 5dB below the lowest measured  $L_{A90(15min)}$ . Therefore, based on the results of the noise survey and the advice above, we recommend the following plant noise emission levels to be achieved with all plant running simultaneously at 1m external to the nearest noise sensitive façade.

Plant Noise Emission Criteria (dBA re:2x10 <sup>-5</sup> Pa)		
Daytime (07:00 – 23:00 hours)	Night Time (23:00 – 07:00 hours)	24 Hours
47 dBA	37 dBA	37 dBA

## 9.0 Plant Noise Impact Assessment

We understand the proposed plant to be installed on the terrace of Mount Tyndal, comprises of one Daikin RXY5CQ4TV1 condenser. The manufacturer specifies a sound pressure level for the unit of 51dBA at 1 metre. However, no octave band noise data has been made available.

### 9.1 Location of Plant

We understand that the proposed plant will be positioned in the north east corner of the terrace as shown in Section 5.2. The nearest noise sensitive residential window is approximately 6m away and 2m higher than the proposed plant.

### 9.2 Plant Noise Impact Assessment

We understand that the proposed unit will be operational during daytime/night-time hours.

The following table summarises our predictions of atmospheric noise emissions from the plantroom louvres to the nearest noise sensitive residential window.



	Sound Pressure Level (dB re 2x10 <sup>-5</sup> Pa) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
Sound Pressure Level at 1m	49	53	49	52	47	49	33	25	51
Distance Correction	-13.1	-13.1	-13.1	-13.1	-13.1	-13.1	-13.1	-13.1	-13.1
Façade Reflection	+3	+3	+3	+3	+3	+3	+3	+3	+3
Calculated Noise Level at Receptor	38.9	42.9	38.9	41.9	36.9	38.99	22.9	14.9	43.8

Our calculations indicate that the proposed plant, exceeds the requirements of the Local Authority outlined in Section 8.0; in order to achieve these requirements, an additional 7dB of attenuation is required.

### 9.3 Mitigation Measures

In order to control plant noise emissions in line with the proposed criterion, we recommend locating the condenser inside an acoustic enclosure. This enclosure will need to provide 4dB of attenuation. Please find enclosed our Suitable Suppliers of Acoustic Enclosures For Small Air Conditioning Units.

Alternatively, the condenser could be reselected to a unit that is 7dB quieter.

## 10.0 Conclusions

An environmental noise survey has been undertaken in order to establish the currently prevailing noise levels.

Plant noise emission criteria have been recommended based on the results of the noise survey and with reference to the Local Authority's advice/policy/requirements/planning condition.

An assessment has been carried out to determine the plant noise emissions at the nearest noise sensitive window.

The assessment indicates that the proposed plant, in conjunction with the proposed attenuation, of an enclosure with a 7dB attenuation or reselection of the condenser unit to a 7dB quieter model, should be capable of achieving the proposed environmental noise criteria at the nearest noise sensitive residential window.



## Appendix A

The acoustic terms used in this report are defined as follows:

**dB** Decibel - Used as a measurement of sound level. Decibels are not an absolute unit of measurement but an expression of ratio between two quantities expressed in logarithmic form. The relationships between Decibel levels do not work in the same way that non-logarithmic (linear) numbers work (e.g. 30dB + 30dB = 33dB, not 60dB).

**dBA** The human ear is more susceptible to mid-frequency noise than the high and low frequencies. The 'A'-weighting scale approximates this response and allows sound levels to be expressed as an overall single figure value in dBA. The <sub>A</sub> subscript is applied to an acoustical parameter to indicate the stated noise level is A-weighted

It should be noted that levels in dBA do not have a linear relationship to each other; for similar noises, a change in noise level of 10dBA represents a doubling or halving of subjective loudness. A change of 3dBA is just perceptible.

**L<sub>90,T</sub>** L<sub>90</sub> is the noise level exceeded for 90% of the period *T* (i.e. the quietest 10% of the measurement) and is often used to describe the background noise level.

**L<sub>eq,T</sub>** L<sub>eq,T</sub> is the equivalent continuous sound pressure level. It is an average of the total sound energy measured over a specified time period, *T*.

**L<sub>max</sub>** L<sub>max</sub> is the maximum sound pressure level recorded over the period stated. L<sub>max</sub> is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the L<sub>eq</sub> noise level.

Sound Pressure Level (L<sub>p</sub>) is the sound pressure relative to a standard reference pressure of 2 x 10<sup>-5</sup> Pa. This level varies for a given source according to a number of factors (including but not limited to: distance from the source; positioning; screening and meteorological effects).

Sound Power Level (SWL or L<sub>w</sub>) is the total amount of sound energy inherent in a particular sound source, independent of its environment. It is a logarithmic measure of the sound power in comparison to a specified reference level (usually 10<sup>-12</sup> W).

# Hampstead Heath

## Position 1

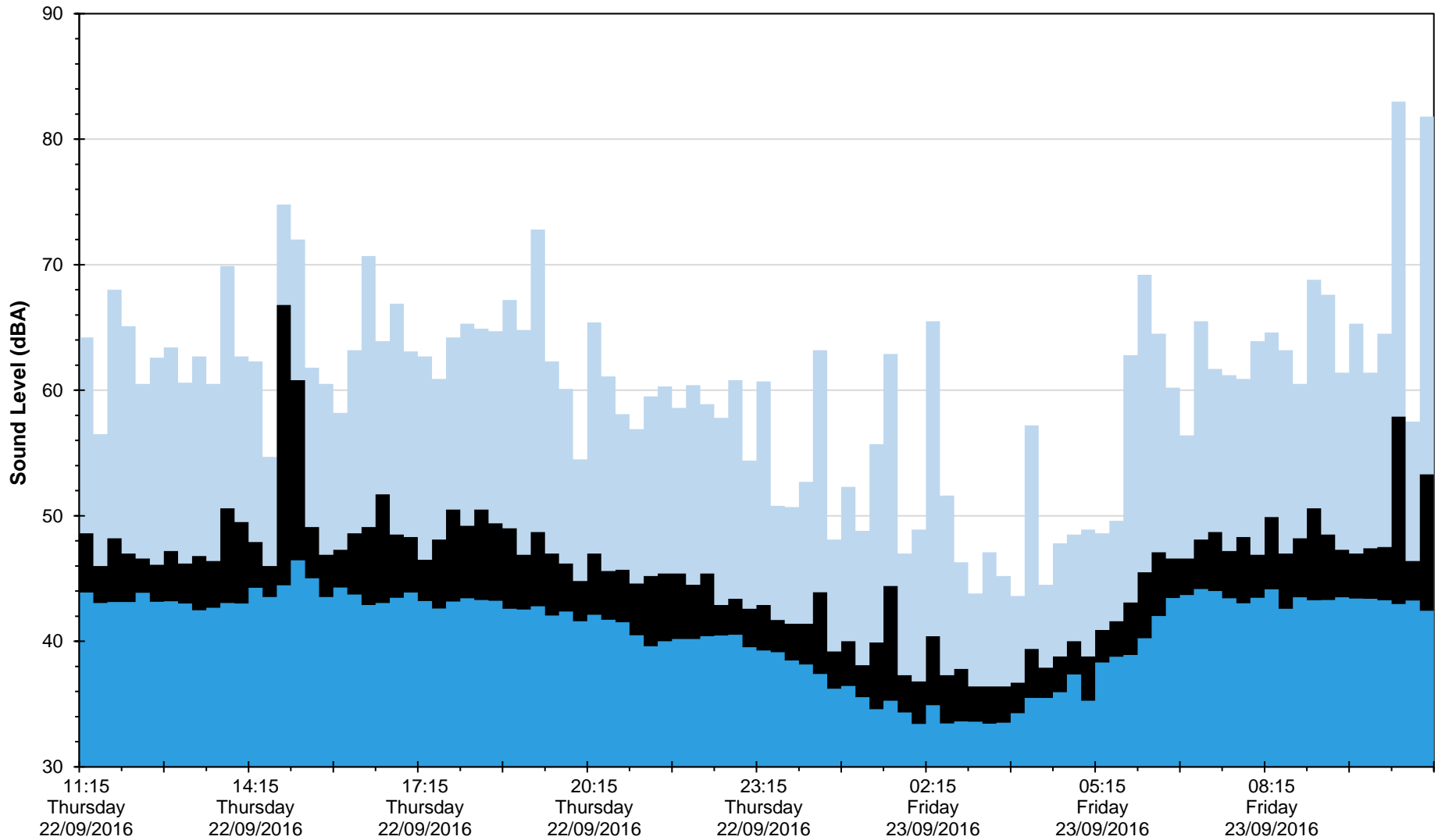
$L_{Aeq}$ ,  $L_{Amax}$  and  $L_{A90}$  Noise Levels

Thursday 22 September 2016 to Friday 23 September 2016

■  $L_{Amax}$

■  $L_{Aeq}$

■  $L_{A90}$



Date and Time

23697/TH1.1