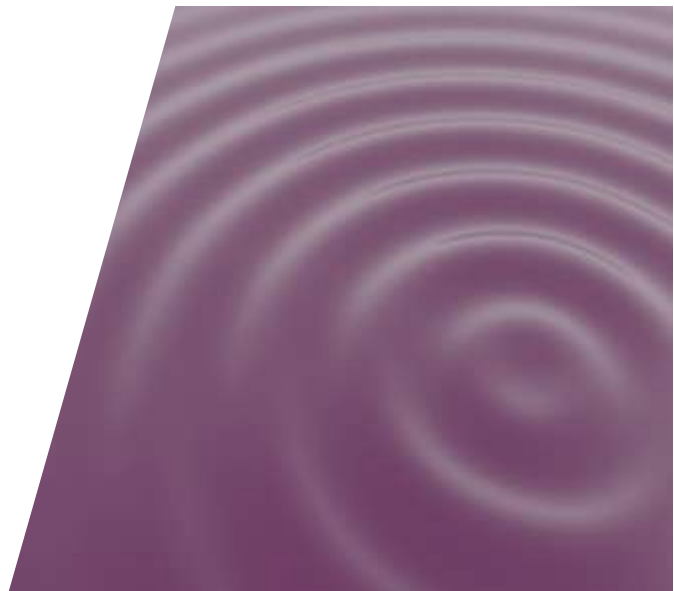


# Plant Noise Assessment Report

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PROJECT:  
123 Holborn  
London

CLIENT:  
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## 1. Executive Summary

New items of building services plant are proposed at the rear of the proposed Sainsbury's Local at 123 Holborn in London, noise from which will be subject to limits imposed by Camden Council.

Hilson Moran has undertaken an environmental noise survey at the site, in order to determine prevailing background noise levels that are representative of the nearest identified noise sensitive properties to the plant, which are the commercial offices located at first floor level, the nearest windows of which are 1-2m from the proposed plant location.

The results of the noise survey were considered reasonable, considering the location of the measurement position and the existing dominant nearby noise sources.

External plant noise limits have been proposed based on the requirements of Camden Council and BS 4142.

Calculations have been undertaken to predict noise emissions from the proposed plant at the nearest noise sensitive properties.

The total noise level due to all relevant plant operating simultaneously is not predicted to exceed the proposed noise limits at the nearest noise sensitive properties. The plant is therefore predicted to achieve the external noise requirements of Camden Council.



## 2. Introduction

A site has been identified for a Sainsbury's Local Store at 123 Holborn in London. The proposed store will include external building services plant, noise from which will be subject to limits imposed by Camden Council.

Hilson Moran has undertaken an environmental noise survey at the site, in order to determine prevailing background noise levels that are representative of the nearest noise sensitive properties.

The purposes of this report are:

- To determine prevailing environmental noise levels affecting surrounding properties due to prevailing nearby noise sources (e.g. road traffic, aircraft)
- Based on the above, to determine a plant noise emission limit in accordance with the requirements of Camden Council and BS 4142
- To undertake calculations to predict noise emissions from the proposed plant and compare these with the noise limit at the nearest noise sensitive properties

Following this introductory section, a description of the site is given in Section 3. Section 4 gives a description of the environmental noise survey methodology, with results presented in Section 5 and Appendix B. External plant noise limits are presented in Section 6 and plant noise calculations are presented in Section 7.

Appendix A presents an explanation of the acoustic terminology used in this report.

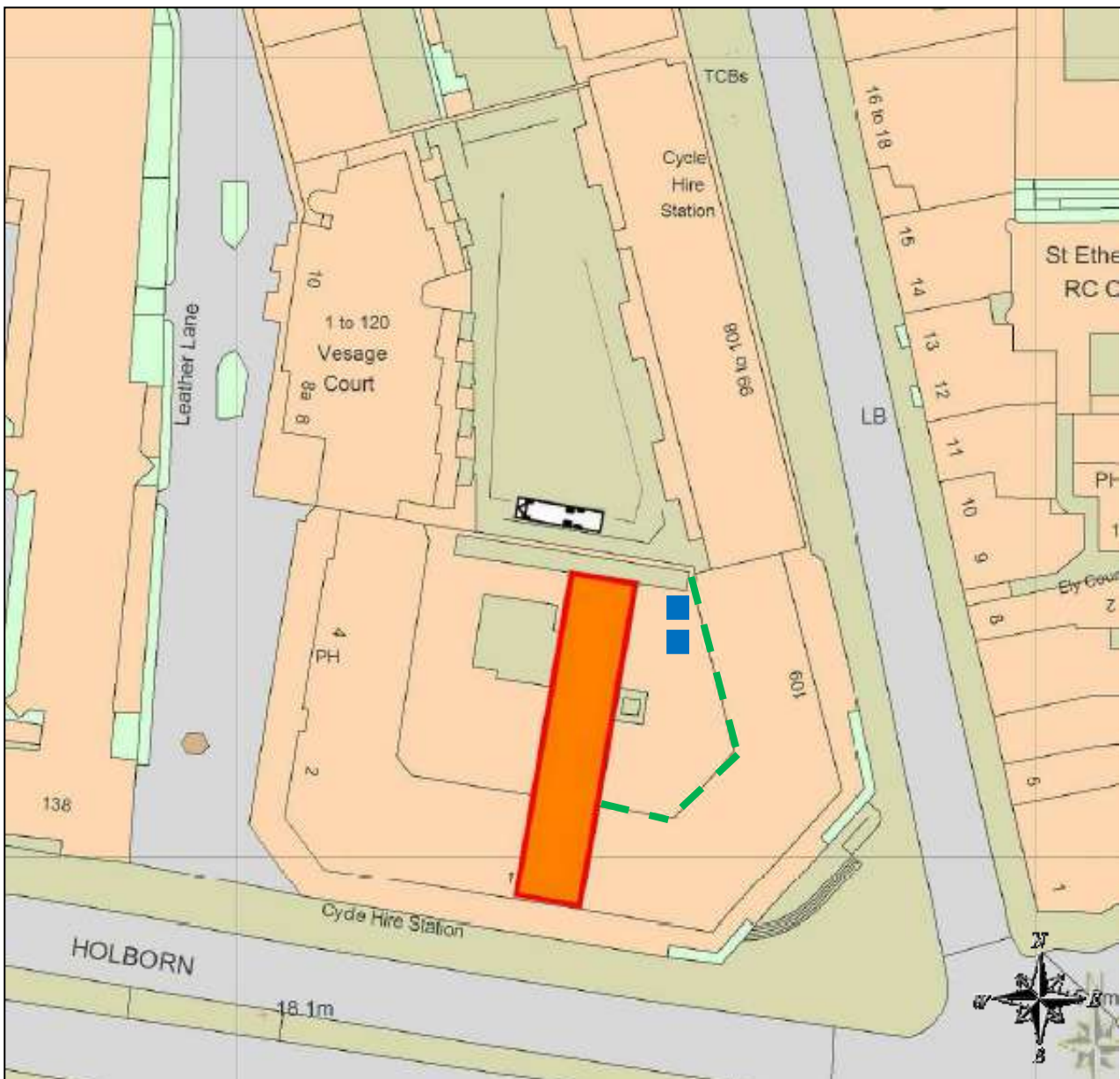
### 3. Site Description

The identified site is an existing retail unit at ground floor level within the 123 Holborn development in London. The site is surrounded by predominantly commercial properties, with a residential development located to the north east. High Holborn, a busy main road, is located to the south of the site.

The nearest noise sensitive property to the proposed plant will be the commercial offices, located at first floor level above the proposed store, within the 123 Holborn development. The nearest windows will be approximately 1-2m from the proposed plant location.

Figure 3.1 shows the site and its surroundings, with the approximate proposed plant location highlighted in blue and the nearest identified noise sensitive windows highlighted in green.

**Figure 3.1 Site Location and Surrounding Land Use**



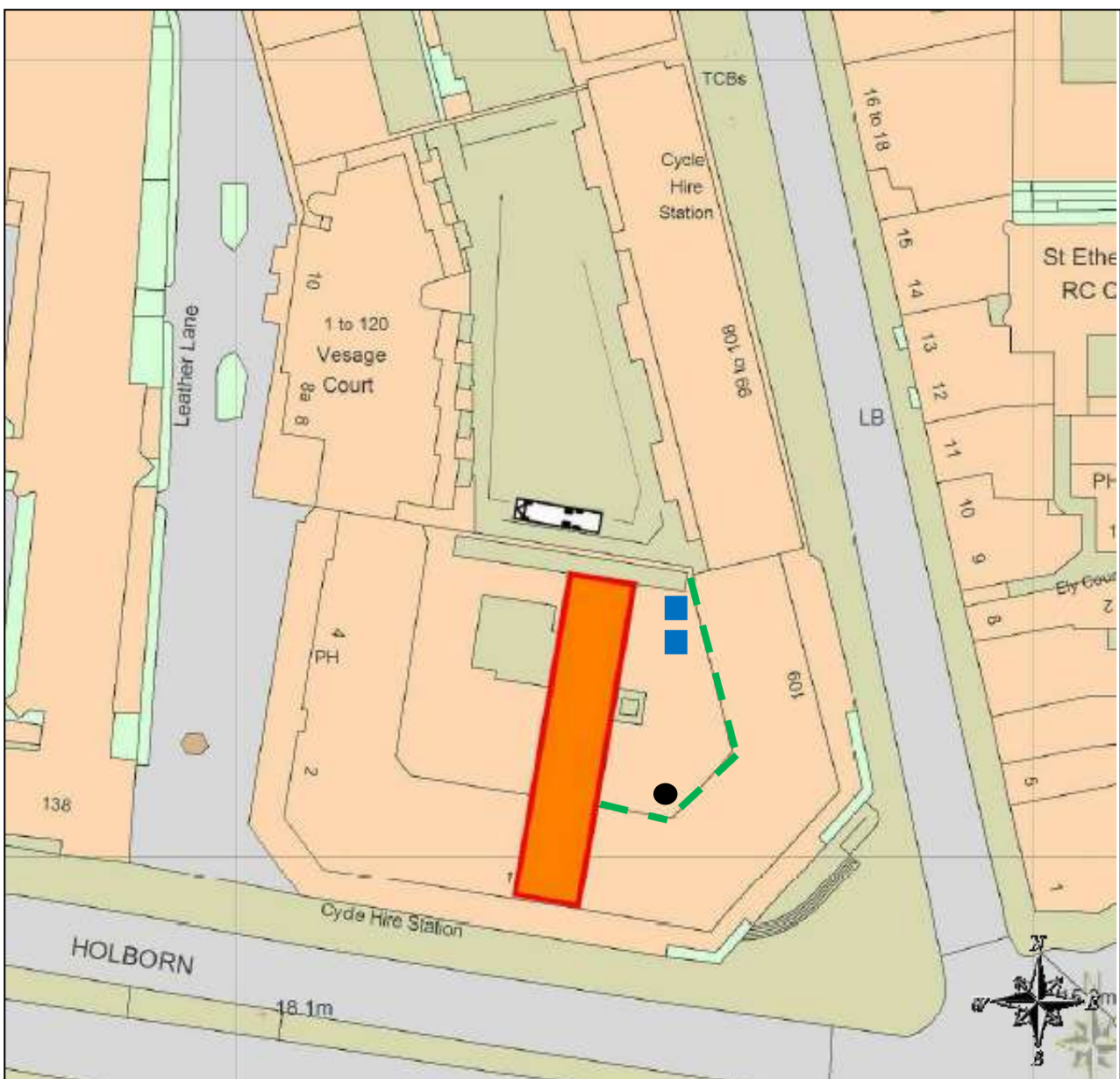
## 4. Survey Methodology

An unmanned environmental noise survey was undertaken at a single measurement location at the proposed site. The survey was undertaken between approximately 15:30 hours on Monday 15 December 2014 and 12:30 hours on Tuesday 16 December 2014.

$L_{Amax}$ ,  $L_{Aeq}$  and  $L_{A90}$  noise levels were measured throughout the noise survey.

The measurement position is indicated in **black** on Figure 4.1 below.

**Figure 4.1 Site Plan Showing Approximate Location of Measurement Position**



The measurement microphone was secured to a hand rail within the first floor level terrace/courtyard at the north of the site, approximately 1.5m above floor level. This measurement position was the most secure and safely accessible location that was representative of the background noise climate at the nearest noise sensitive windows.



The equipment used for the noise survey is summarised in Table 4.1.

**Table 4.1 Description of Equipment used for Noise Survey**

Equipment	Description	Quantity	Serial Number
01 dB Solo	Type 1 automated logging sound level meter	1	60447
01 dB PRE 21	Type 1 ½" microphone and pre-amplifier	1	13259
01 dB BAP 21	Outdoor microphone casing	1	10935
01 dB CAL 21	Calibrator	1	50441990

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 noted to be no rainfall, a very light wind and approximately 70% cloud coverage. These conditions are understood to be representative of the whole survey period and are considered appropriate for undertaking environmental noise measurements.





## 5. Survey Results and Observations

### 5.1. Results

Appendix B presents a time history graph showing the  $L_{Amax}$ ,  $L_{Aeq}$  and  $L_{A90}$  noise levels measured over contiguous 10 minute periods throughout the noise survey at the measurement position.

We would consider the noise levels measured to be reasonable, considering the location of the measurement position and the dominant nearby noise sources.

### 5.2. Observations

Due to the nature of the unmanned noise survey we are unable to comment on the exact noise climate throughout the entire survey period. However, at the beginning and end of the survey period the daytime noise climate was noted to be predominantly affected by noise from road traffic in the vicinity of the site. We anticipate that this would also be true during night-time periods.



## 6. External Plant Noise Emissions

### 6.1. Local Authority Requirements

The proposed site lies within the jurisdiction of Camden Council, whose requirements regarding external plant noise emissions are understood to be 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 in operation unless the plant/equipment hereby permitted 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), then the noise levels from that piece of plant/equipment at any sensitive façade shall be at least 10dB(A) below the LA90, expressed in dB(A).”*

It should be noted that Camden Council considers office buildings to be noise sensitive.

### 6.2. Proposed External Plant Noise Limit

The lowest measured background  $L_{A90}$  noise level at the measurement position during typical office hours (07:00 – 19:00 hours) is 47 dB  $L_{A90}$  (10 minutes).

Based on the Camden Council requirements given above, we would therefore propose a plant noise limit of 42 dB  $L_{Aeq}$  (10 minutes) during typical office hours (07:00 – 19:00 hours) to be achieved at the commercial offices overlooking the proposed plant location.



## 7. Building Services Plant Noise Assessment

### 7.1. Proposed Plant

The proposed plant items and associated noise levels are understood to be as follows:

Refrigeration Condenser	23 dBA at 10m
VRF Unit	34 dBA at 1m

We understand all plant may operate during office hours (07:00-19:00 hours). The VRF unit will be fitted with an acoustic enclosure so as to limit noise emissions to the level shown above.

### 7.2. Proposed Plant Location and Nearest Noise Sensitive Properties

The approximate location of the proposed building services plant is indicated on Figure 3.1.

The nearest noise sensitive property will be the first floor office to the east, the nearest window of which is located approximately 1-2m from the proposed plant items.

### 7.3. Plant Noise Predictions

Our calculations to predict the cumulative plant noise level due to all plant operating simultaneously are shown in Table 7.1.

**Table 7.1 Plant Noise Calculations**

Plant Item	Noise Data	Distance to Noise Sensitive Property (m)	Distance Correction (dB)	Predicted Noise Level at Noise Sensitive Property (dB)
Refrigeration Condenser	23 dBA at 10m	1	+13	36
VRF Unit	34 dBA at 1m	2	-3	31
<b>Total Cumulative Noise Level (dB)</b>				37
<b>Plant Noise Limit (dB)</b>				42

It can therefore be seen that the total noise level due to all plant operating simultaneously is not predicted to exceed the proposed noise limit at the nearest noise sensitive properties. The plant should therefore achieve the external noise requirements of Camden Council.



## APPENDIX A – ACOUSTIC TERMINOLOGY

Parameter	Description
Decibel (dB)	A logarithmic scale representing the sound pressure or power level relative to the threshold of hearing ( $20 \times 10^{-6}$ 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.
$L_{Aeq,T}$	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.
$L_{n,T}$	The noise level exceeded for n% of the time over a given period T.  e.g. $L_{90}$ , the noise level exceeded for 90% of the time (background noise level).
$L_{max}$	The maximum noise level measured.

## APPENDIX B – NOISE SURVEY RESULTS

