47-49 Goodge Street
London

Plant Noise Impact Assessment Report

25987/PNA1

8 May 2019

For:
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Hann Tucker Associates

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Report 25987/PNA1

Document Control

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Attachments

1.0 Introduction

A change of use is proposed at 47-49 Goodge Street, London. The future development will comprise residential dwellings located above a first floor office.

2No. condenser units are proposed to be installed on the rear first floor flat roof to serve the first floor office space.

Hann Tucker Associates have therefore been instructed to undertake an environmental noise survey and plant noise assessment to determine the impact of the new plant items on nearby noise sensitive premises in line with Local Authority requirements.

2.0 Objectives

To establish by means of an unmanned 24 hour survey the existing L_{Amax}, L_{Aeq} and L_{A90} environmental road, rail and air traffic noise levels at selected secure and accessible on-site positions, using fully computerised noise monitoring equipment.

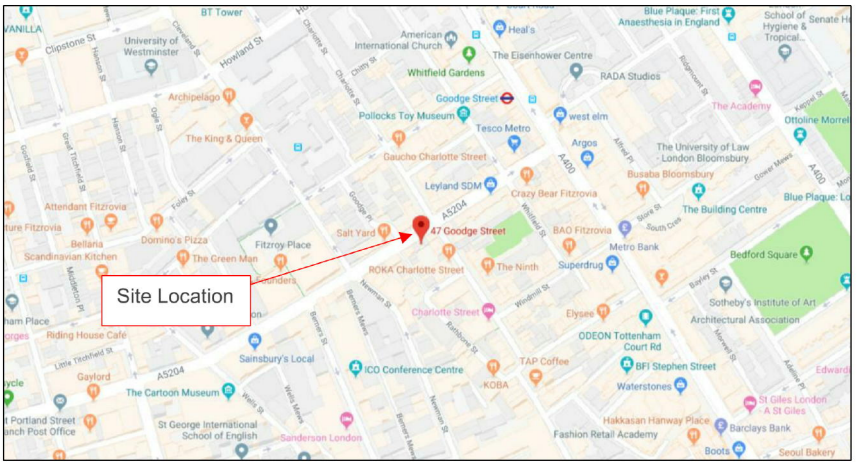
To assess the noise emissions from the proposed plant, based upon data with which we are provided, and comment upon the acceptability.

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 47-49 Goodge Street, and falls within the jurisdiction of London Borough of Camden. The location is shown in the Location Map below.

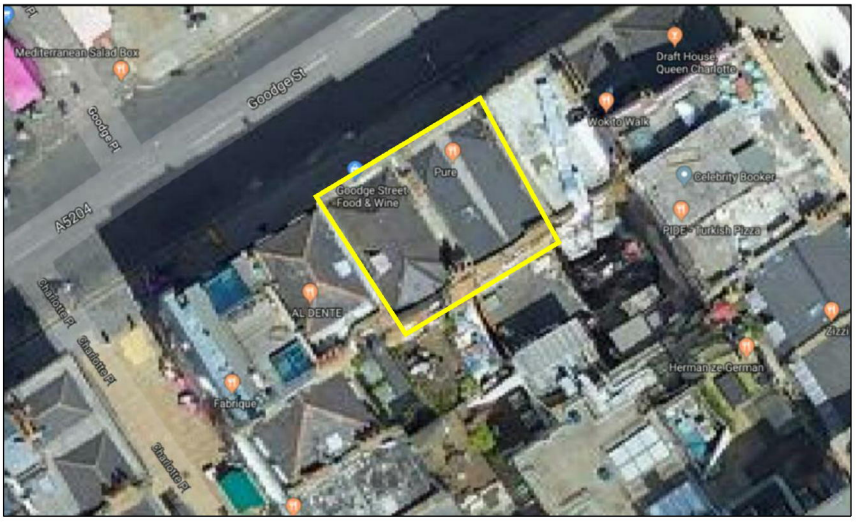


Location Map (maps.google.co.uk)

3.2 Description

The building is a ground plus 3 storey development located on Goodge Street, London. The area is predominantly made up of retail units at ground level and residential/office at upper floors.

The site is shown in the Site Plan below.



Site Plan (maps.google.co.uk)

4.0 Acoustic Terminology

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

5.0 Project Proposals

5.1 Proposed Plant

We understand the proposal comprises the installation of the plant detailed in Section 11 of this report.

5.2 Operating Hours

We understand that the operating hours of the proposed plant are as detailed in Section 11 of this report.

5.3 Drawings

Our acoustic analyses is based on Drawing No. CD02 dated Dec. 2018, provided by Fresson and Tee showing the plant location on the rear first floor flat roof of 47 Goodge Street.

6.0 Survey Methodology

The survey was undertaken by G. De Rienzo BSc (Hons) MIOA.

6.1 Procedure

Fully automated environmental noise monitoring was undertaken from approximately 11:30 hours on Thursday 02 May 2019 to 11:30 hours on Friday 03 May 2019.

During the periods we were on site the wind conditions were calm. The sky was generally patchy. We understand that generally throughout the survey period the weather conditions were similar to this. 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.

6.2 Measurement Position

The microphone was attached to a pole approximately 2 metres above the first floor flat roof, approximately 1 metre away from the second storey window of 47 Goodge Street. See below.

Plan Showing Measurement Positions (Google Earth, 2019)

6.3 Instrumentation

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

Description	Manufacturer	Type	Serial Number	Calibration
Type 1 ½" Condenser Microphone	ACO Pacific	7052E	68293	Calibration on 15/11/2018
Preamp	Svantek	SV18	72276	Calibration on 15/11/2018
Type 1 Data Logging Sound Level Meter	Svantek	971	72538	Calibration on 15/11/2018

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

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.

7.0 Results

The results have been plotted on Time History Graph 25987/TH1 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:

Lowest Measured $L_{A90(15min)}$ Background Noise Level (dB re 2 x 10^{-5} Pa)		
Daytime (07:00 – 23:00) Hours	**Night-Time (23:00 – 07:00) Hours**	**24 Hours**
60 dBA	54 dBA	54 dBA

8.0 Discussion Of Noise Climate

During the periods we were on site the dominant noise sources were noted to be plant noise from the first floor flat roof of 47 Goodge Street, and general plant noise from other buildings in the area.

There was construction work taking place during working hours, although this does not affect the lowest L_{90} noise levels measured outside of normal working hours.

9.0 Plant Noise Emission Criteria

9.1 Local Authority Criteria

47-49 Goodge Street falls within the London Borough of Camden. Camden's advice is as follows:

"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' (BS 4142) will be used. For such cases a 'Rating Level' of 10 dB below background (15dB if tonal components are present) should be considered as the design criterion)."

9.2 Definition of Tonal Plant

Annex C of BS 4142 provides the following objective methodology for identifying a distinctive tone in a noise source:

"For a prominent, discrete tone to be identified as present, the time-averaged sound pressure level in the one-third-octave band of interest is required to exceed the time-averaged sound pressure levels of both adjacent one-third-octave bands by some constant level difference.

The level differences between adjacent one-third-octave bands that identify a tone are:

• 15 dB in the low-frequency one-third-octave bands (25 Hz to 125 Hz);

• 8 dB in the middle-frequency one-third-octave bands (160 Hz to 400 Hz);

and

• 5 dB in the high-frequency one-third-octave bands (500 Hz to 10 000 Hz)."

9.3 Proposed Criteria

In order to meet the above advice, noise emissions from the proposed plant should not exceed a level of 10dB below the lowest measured $L_{A90(15min)}$. Therefore, based on the results of the noise survey and the advice above, we would recommend the following plant noise emission levels should be achieved with all plant running simultaneously at 1m external to the nearest noise sensitive façade.

Plant Noise Emission Criteria (dBA re:$2x10^{-5}$Pa)		
Daytime (07:00 – 23:00 hours)	**Night-time (23:00 – 07:00 hours)**	**24 Hours**
50 dBA	44 dBA	44 dBA

The above criteria are to be achieved with all plant operating simultaneously.

If plant contains tonal or impulsive characteristics the external design criteria should be reduced by 5dBA.

It should be noted that the above are subject to the final approval of the Local Authority.

10.0 Plant Noise Impact Assessment

We understand the proposed plant comprises a Fujitsu ASYG18LFCA condenser unit, and a Fujitsu ASYG09-12LMCE condenser unit. Both of the condenser units are proposed to serve the first floor office space at 47-49 Goodge Street.

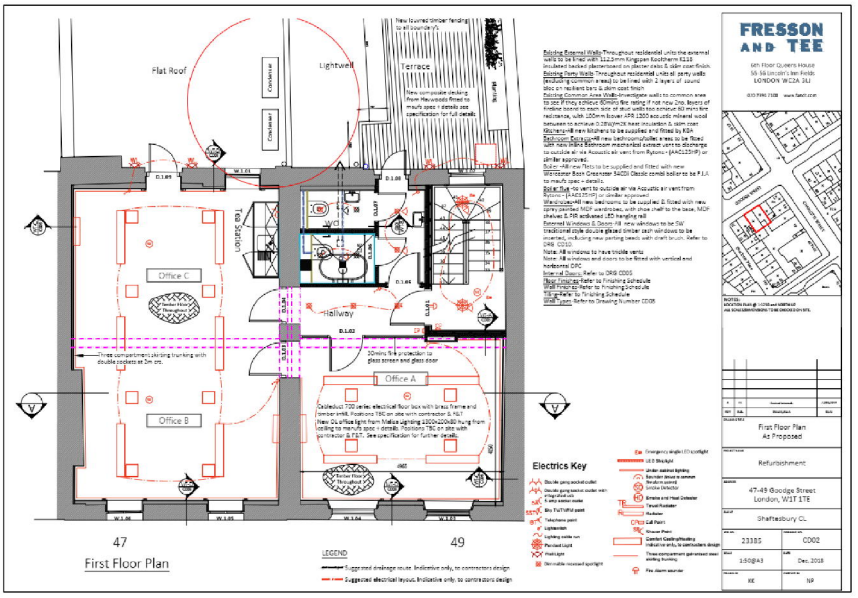
10.1 Plant Noise Data

We understand the manufacturer's noise data for the equipment to be as follows:

Plant Description	Sound Pressure Level (dB re $2x10^{-5}$ Pa) at 1 metre (dBA)
ASYG18LFCA	50
ASYG09-12LMCE	45

10.2 Location of Plant

Both condenser units are proposed to be located on the rear first floor flat roof of 47 Goodge Street as shown below.



Drawing provided by Fresson and Tee

10.3 Plant Noise Impact Assessment

We understand that the proposed first floor office condenser units will be operational during daytime hours only.

The following table summarises our predictions of atmospheric noise emissions from the proposed condenser units to the nearest noise sensitive residential window located on the second floor of 47 Goodge Street.

	dBA
ASYG18LFCA at 1m	50
ASYG09-12LMCE at 1m	45
Cumulative Noise Level of all Plant at 1m	51
Distance Correction to Second Floor Window	-8
Façade Reflection	+3
Calculated Noise Level at Receptor	46

Our calculations indicate that the proposed plant should be capable of achieving the requirements of the Local Authority outlined in Section 8.0.

11.0 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 requirements.

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 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 $_A$ 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.

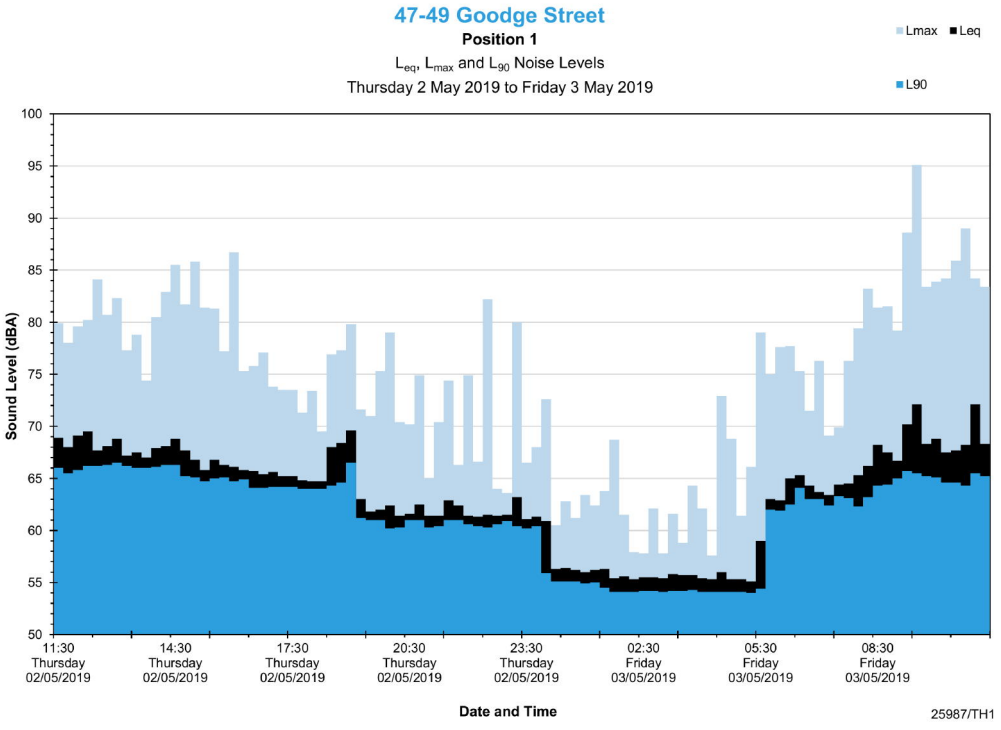
$L_{90,T}$ — L_{90} is the noise level exceeded for 90% of the period *T* (i.e. the quietest 10% of the measurement) and is often used to describe the background noise level.

$L_{eq,T}$ — $L_{eq,T}$ is the equivalent continuous sound pressure level. It is an average of the total sound energy measured over a specified time period, *T*.

L_{max} — L_{max} is the maximum sound pressure level recorded over the period stated. L_{max} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the L_{eq} noise level.

Sound Pressure Level (L_p) is the sound pressure relative to a standard reference pressure of 2×10^{-5} 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_w) 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^{-12} W).


47-49 Goodge Street
Position 1
L_{eq}, L_{max} and L_{90} Noise Levels
Thursday 2 May 2019 to Friday 3 May 2019
Lmax
Leq
L90
Sound Level (dBA)
100
95
90
85
80
75
70
65
60
55
50
11:30 Thursday 02/05/2019
14:30 Thursday 02/05/2019
17:30 Thursday 02/05/2019
20:30 Thursday 02/05/2019
23:30 Thursday 02/05/2019
02:30 Friday 03/05/2019
05:30 Friday 03/05/2019
08:30 Friday 03/05/2019
Date and Time
25987/TH1