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51-53 FAIRFAX ROAD, LONDON

NOISE IMPACT ASSESSMENT

Report **7648-NIA-01**

Prepared on 12 October 2012

Issued For:

Interni Ltd

51-53 Fairfax Road

London

NW6 4EL

Contents

List of Attachments

1.0 INTRODUCTION

Clement Acoustics has been commissioned by Interni Ltd to undertake a noise impact assessment of a proposed air conditioning unit at 51-53 Fairfax Road, London NW6 4EL in agreement with the planning requirements of the London Borough of Camden.

This report presents the noise impact calculations and outlines any necessary mitigation measures.

2.0 NOISE CRITERIA

An environmental noise survey has previously been undertaken at 51-53 Fairfax Road, London NW6 4EL by Practical Acoustics Ltd (Ref: 4412.NIA.01) for the proposed kitchen extract system at the property. As the previously undertaken survey was done recently, it has been deemed appropriate to use the previously measured noise levels when setting noise emissions criteria for this assessment.

The previous survey was undertaken between 17:30 on 1 March 2012 and 17:30 on 2 March 2011 and the measurement procedure generally complied with BS7445:1991. *Description and measurement of environmental noise, Part 2- Acquisition of data pertinent to land use*.

Minimum background noise levels measured during the survey are shown in Table 2.1.

	Minimum background noise level $L_{A90,\ 5min}$ dB(A)
Daytime (07:00 - 23:00)	43
Night-time (23:00 - 07:00)	35

Table 2.1: Minimum background noise levels

The London Borough of Camden's general criterion for noise emissions of a new plant installation are as follows:

> *"Design measures should be taken to ensure that specific plant noise levels at a point 1 metre external to sensitive façades are at least 5dB(A) less than the existing background measurement (L_{A90}) when the equipment is in operation. Where it is anticipated that equipment will have a noise that has distinguishable, discrete continuous note[...], special attention should be given to reducing the noise at any sensitive façade by at least 10dB(A) below the L_{A90} level."*

In order to provide a more robust assessment, it is proposed that criteria are set at 10dB below the exiting minimum background noise levels, as shown in Table 2.2.

	Daytime (07:00 to 23:00)	Night-time (23:00 to 07:00)
Noise criterion at nearest residential receiver (10dB below minimum L_{A90})	33 dB(A)	25 dB(A)

Table 2.2: Proposed Noise Emissions Criteria

As the proposed plant unit will only be used during daytime hours between 07:00-23:00 the daytime hours criterion of 33 dB(A) will be used in this assessment.

3.0 DISCUSSION

The proposed plant installation comprises a new air conditioning condenser unit, selected as follows:

- 1 No. Mitsubishi Air Conditioning Unit, type FDC71VNX

The sound pressure levels as provided by the manufacturer for the unit are shown in Table 3.1*.

	Sound Pressure Level (dB) at 1m, in each Frequency Band							
Unit	**63Hz**	**125Hz**	**250Hz**	**500Hz**	**1kHz**	**2kHz**	**4kHz**	**8kHz**
Mitsubishi Air Conditioning Unit, type FDC71VNX	35	39	42	48	47	44	40	34

Table 3.1 Manufacturer's Sound Pressure Levels at 1m

*Worst case operational modes have been used in order to provide a more robust assessment

The proposed location of the units is on the ground floor rear wall of 51-53 Fairfax Road. The nearest noise sensitive receiver has been identified as window on the rear facade of Fairfax Place, approximately 6 metres away as shown on indicative site plan 7648-SP1. This window, belonging to a residential premises, has been selected as it is the nearest residential window with a direct line of sight to the proposed plant unit and therefore presents a worst-case scenario.

Taking into account all necessary acoustic corrections including distance corrections, the resulting noise level at the window of the nearest noise sensitive receiver would be as shown in Table 3.2. Detailed calculations are shown in Appendix B.

Receiver	Day time Criterion	Noise Level at Receiver (due to proposed plant)
Receiver 1	33 dB(A)	35 dB(A)

Table 3.2: Noise levels and criteria at Receiver 1

As shown in Table 3.3 and Appendix B, the proposed air conditioning plant installation would be expected to marginally exceed the requirements of the London Borough of Camden. However, a 2dB exceedance would not be considered significant and therefore would not be expected to have a negative impact on the nearby residential receivers, based on day time hours operation.

It should also be noted that calculated noise emissions levels of 35 dB(A) are commensurate with the recommendations for internal noise levels as specified by British Standard 8233:1999, without taking the attenuation of the window itself into consideration. We would therefore not expect the proposed air conditioning unit to have a negative impact on the amenity of nearby residential receivers.

4.0 CONCLUSION

A desktop noise impact assessment has been undertaken for a proposed plant unit at 51-53 Fairfax Road, London NW6 4EL. Calculations have been undertaken based on the manufacturer's noise emissions data and the London Borough of Camden's set requirements.

Calculations show that noise emissions from the proposed plant unit would marginally exceed the requirements of the London Borough of Camden to a non-significant degree.

Due to the non-significant nature of this exceedance, the proposed installation would not be expected to have a negative impact on the amenity of residential receivers. This has been confirmed by comparing noise emissions levels with recommended internal noise levels in the relevant British Standard.

Report by

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Checked by

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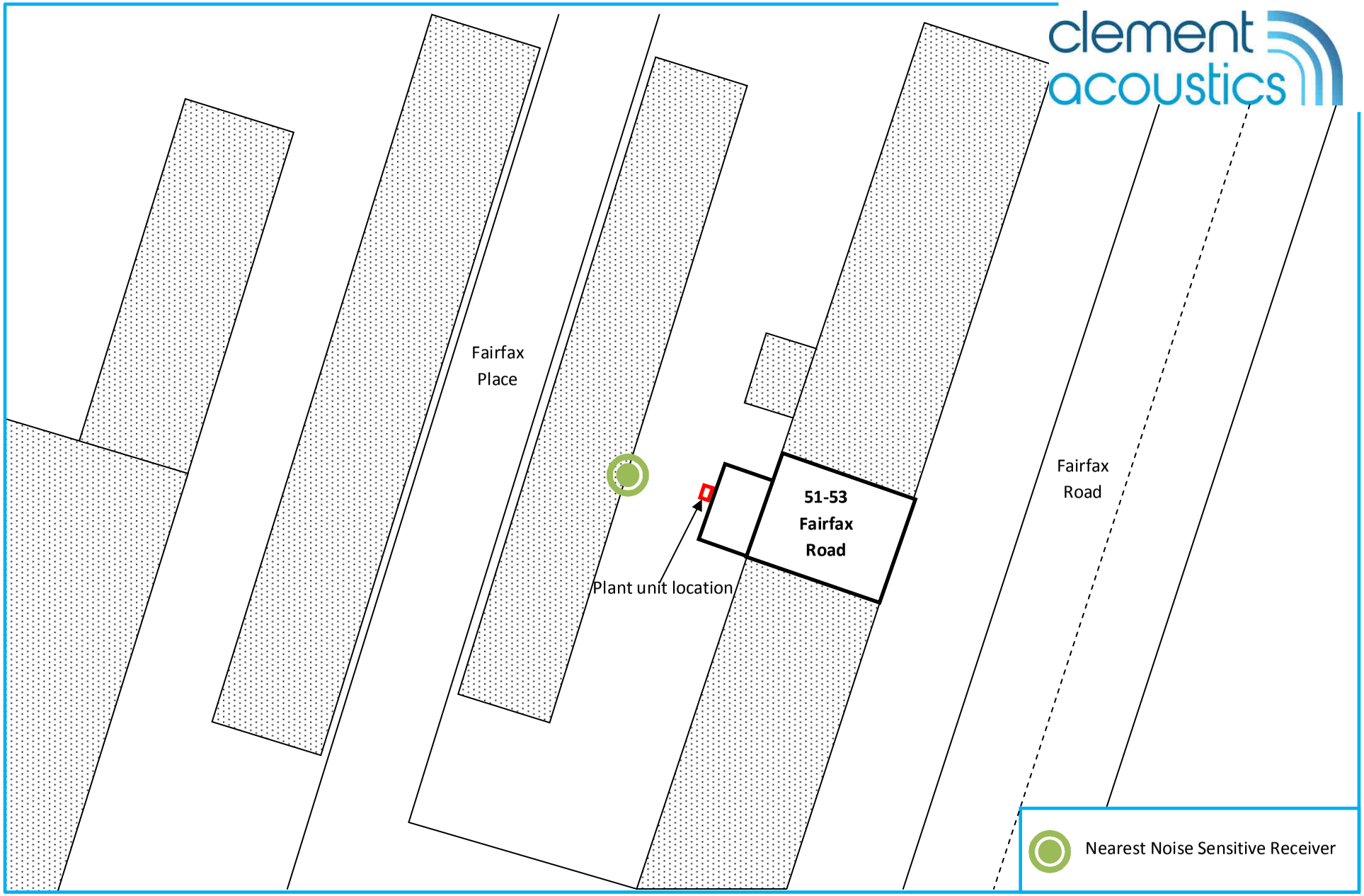

7648-SP1 Indicative site plan showing plant location and nearest noise sensitive receiver **Date:** 12 October 2012

APPENDIX A

GLOSSARY OF ACOUSTIC TERMINOLOGY

dB(A)

The human ear is less sensitive to low (below 125Hz) and high (above 16kHz) frequency sounds. A sound level meter duplicates the ear's variable sensitivity to sound of different frequencies. This is achieved by building a filter into the instrument with a similar frequency response to that of the ear. This is called an A-weighting filter. Measurements of sound made with this filter are called A-weighted sound level measurements and the unit is dB(A).

L_{eq}

The sound from noise sources often fluctuates widely during a given period of time. An average value can be measured, the equivalent sound pressure level L_{eq}. The L_{eq} is the equivalent sound level which would deliver the same sound energy as the actual fluctuating sound measured in the same time period.

L_{10}

This is the level exceeded for not more than 10% of the time. This parameter is often used as a "not to exceed" criterion for noise

L_{90}

This is the level exceeded for not more than 90% of the time. This parameter is often used as a descriptor of "background noise" for environmental impact studies.

L_{max}

This is the maximum sound pressure level that has been measured over a period.

Octave Bands

In order to completely determine the composition of a sound it is necessary to determine the sound level at each frequency individually. Usually, values are stated in octave bands. The audible frequency region is divided into 10 such octave bands whose centre frequencies are defined in accordance with international standards.

Addition of noise from several sources

Noise from different sound sources combines to produce a sound level higher than that from any individual source. Two equally intense sound sources operating together produce a sound level which is 3dB higher than one alone and 10 sources produce a 10dB higher sound level.

Attenuation by distance

Sound which propagates from a point source in free air attenuates by 6dB for each doubling of distance from the noise source. Sound energy from line sources (e.g. stream of cars) drops off by 3dB for each doubling of distance.

Subjective impression of noise

Sound intensity is not perceived directly at the ear; rather it is transferred by the complex hearing mechanism to the brain where acoustic sensations can be interpreted as loudness. This makes hearing perception highly individualised. Sensitivity to noise also depends on frequency content, time of occurrence, duration of sound and psychological factors such as emotion and expectations. The following table is a reasonable guide to help explain increases or decreases in sound levels for many acoustic scenarios.

Change in sound level (dB)	Change in perceived loudness
1	Imperceptible
3	Just barely perceptible
6	Clearly noticeable
10	About twice as loud
20	About 4 times as loud

Barriers

Outdoor barriers can be used to reduce environmental noises, such as traffic noise. The effectiveness of barriers is dependent on factors such as its distance from the noise source and the receiver, its height and its construction.

Reverberation control

When sound falls on the surfaces of a room, part of its energy is absorbed and part is reflected back into the room. The amount of reflected sound defines the reverberation of a room, a characteristic that is critical for spaces of different uses as it can affect the quality of audio signals such as speech or music. Excess reverberation in a room can be controlled by the effective use of sound-absorbing treatment on the surfaces, such as fibrous ceiling boards, curtains and carpets.