Cole Jarman

125 Shaftesbury Avenue

Plant Noise Assessment

10/5220/R1

125 Shaftesbury Avenue

Plant Noise Assessment

10/5220/R1

Buckler Environmental

Aldwych House
Madeira Road
West Byfleet
Surrey
KT14 6ES

Issue	Date
1st Issue	23/11/2010

Prepared by	Checked by
Matthew Heyes	Vernon Cole

Cole Jarman Limited Reg. in England and Wales No. 7102436
t +44 (0)1932 829007 **f** +44 (0)1932 829003

John Cree House, 24B High Street, Addlestone, Surrey, KT15 1TN
e info@colejarman.com **w** www.colejarman.com

Table of Contents 23/11/2010

1 Introduction 1

2 Site Description 1

3 Noise Survey Methodology and Instrumentation 1

4 Results 2

5 Plant Noise Limits 2

6 Plant Noise Assessment 3

6.1 **Plant Details** 3

6.2 **Assessment** 3

7 Conclusion 4

Attachments

10/5220/SP1
Site plan showing noise measurement position

10/5220/TH01
Time history showing noise measurement results

10/5220/PNS1
Plant noise schedule

Glossary of Acoustic Terms

1 Introduction

1.1 It is proposed to install 6 new condensing units at 125 Shaftesbury Avenue.

1.2 Cole Jarman have been commissioned to conduct a noise survey in order to establish the lowest background noise level at the nearest noise sensitive façade and to conduct a plant noise assessment to show that the new plant items will meet the noise requirements of Camden council.

1.3 This report provides details of the noise survey and plant noise assessment along with any mitigation measures necessary to meet the noise requirements set by Camden council.

2 Site Description

2.1 125 Shaftesbury Avenue is a 9 storey, detached building with commercial elements on all floors.

2.2 Running along the western boundary of the site is Charing Cross Road, and along the southern boundary is Shaftesbury Avenue.

2.3 Running along the northern boundary is Phoenix Street and beyond that is a six storey residential building. Running along the eastern boundary is Stacey Street and beyond that is an Odeon Cinema.

2.4 The proposed condenser units are to be located on the north east corner of the 6th floor roof; the nearest residential dwellings to this are located at 6th floor level on Phoenix Street.

2.5 The background noise at the measurement position was dominated by road traffic noise from local roads and mechanical services noise from plant on the roof of 125 Shaftesbury Avenue and other local buildings.

3 Noise Survey Methodology and Instrumentation

3.1 An unattended noise survey was undertaken between Thursday 18th November and Friday 19th November 2010.

3.2 The noise monitoring equipment was setup in one location as shown on attached site plan 10/5220/SP1 and described below.

- MP1, Façade measurement located 1m from the 7th floor façade, overlooking Stacey Street. This position was chosen to be representative of the noise levels experienced at the nearest residential façade whilst minimising the impact of mechanical services already installed on the 6th floor roof area.

3.3 Measurements of the L_{Amax}, L_{Aeq} and L_{A90} indices were made over sequential 5 minute periods (see the Glossary of Acoustic Terms for an explanation of the noise units used).

3.4 Noise measurements were made the equipment listed in table T1 below.

Item	Manufacturer	Type
Sound Level Analyser	Norsonic	118
Acoustic Calibrator	Norsonic	1251
Outdoor Weather-proof Windshield	Norsonic	1212

T1 Equipment used during unattended noise survey.

3.5 The microphone was fitted with a weatherproof windshield and was calibrated before and after the survey to ensure a consistent and acceptable level of accuracy was maintained throughout. No significant drift in levels was noted.

3.6 The weather conditions when setting up and picking up the noise monitoring device were dry and cold with no wind.

4 Results

4.1 The results of the noise measurements are shown in attached time history 10/5220/TH01.

4.2 The time history shows that that background noise levels experienced at the noise logging position was very steady, this is due to the existing mechanical services items located on both 125 Shaftsbury Avenue and also on the roofs of surrounding buildings.

4.3 The lowest background noise level (L_{A90}) measured during the day time period from 0700 to 2300 was 53 dB(A), the quietest noise level measured during the night time period, 2300 to 0700 was 52 dB(A).

5 Plant Noise Limits

5.1 Plant noise limits have been taken from Camden Councils UDP as 5 dB(A) below the minimum measured background noise level.

5.2 The noise limits apply to the combined effect of all plant items that run during any particular period. Plant that has a distinctive tonal or intermittent nature should be subject to a further 5 dB(A) penalty.

Location	Measured Minimum Background Noise Level ($L_{A90, 10min}$)		Noise Emission Limit, dB	
	Daytime (0700-2300 only)	Night time (24-hour)	Daytime (0700-2300 only) ($L_{Aeq,1hr}$)	Night time (24-hour) ($L_{Aeq,5mins}$)
Flats on Phoenix Street	53	52	48	47

T2 Plant noise emission limits at the nearest noise sensitive properties

6 Plant Noise Assessment

6.1 Plant Details

6.1.1 It is proposed to install 6 condensing units on the 6th floor roof of 125 Shaftesbury Avenue, details of the units to be installed have been provided by Buckler Environmental and are shown below;

- 2x Mitsubishi PUHZ-RP71VHA4
- 4x Mitsubishi PUHZ-RP140VKA

6.1.2 Noise data for the units have been provided by the manufacturer and are shown in attached plant noise schedule 10/5220/PNS1. It can be seen from the octave band noise data provided that none of the units are tonal in nature; they also have no other distinct acoustic characteristics.

6.2 Assessment

6.2.1 We have calculated the noise level generated by the proposed new plant 1m from the existing 6th floor façade of the nearest residential property on Phoenix Street.

6.2.2 Our assessment has taken into account of radiation, distance losses along with screening losses provided by the roof of 125 Shaftesbury Avenue and façade correction.

6.2.3 The calculated noise levels and plant noise limits are shown in the table below;

Location	Noise Emission Limit, dB		Calculated Noise Levels	
	Daytime (0700-2300 only)	Night time (24-hour)	Daytime (0700-2300 only) ($L_{Aeq,1hr}$)	Night time (24-hour) ($L_{Aeq,5mins}$)
1m from the 6th floor façade of the flats on Phoenix Street	48	47	40	40

T3 Predicted noise levels at the nearest residential façade

6.2.4 Table T3 above shows that the predicted noise levels at the nearest residential façade will be 7 dB below the plant noise limits so are acceptable.

7 Conclusion

7.1 It is proposed to install 6 new condensing units on the 6th floor roof of 125 Shaftesbury Avenue.

7.2 This report has provided details of a background noise survey conducted at the site and has provided plant noise limits which meet the requirements set out in Camden Councils UDP.

7.3 This report has also provided details of an assessment of the new plant and has shown that the noise levels generated by the plant at the nearest residential façade are significantly lower than the noise limits set.

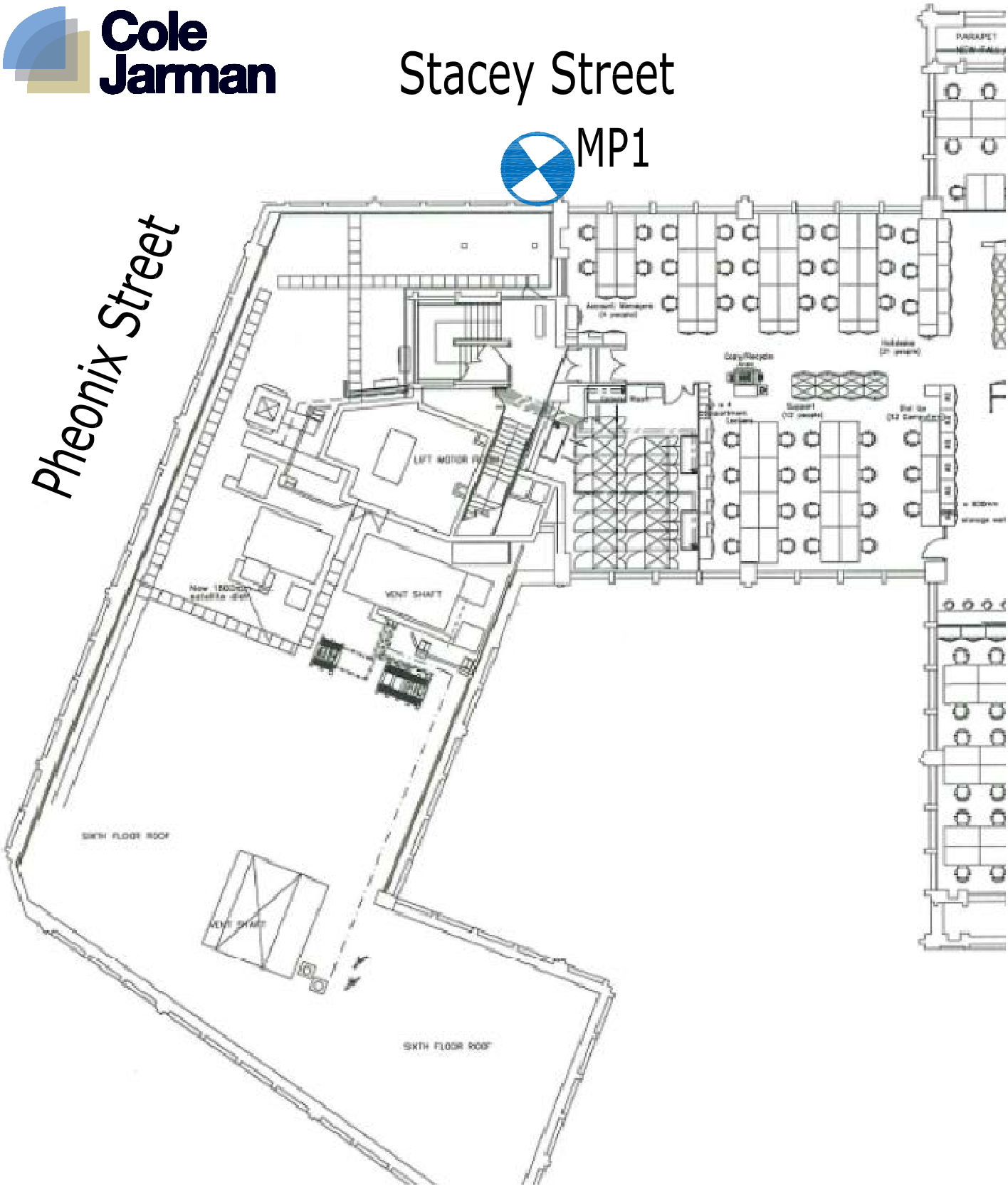
End of Section

Cole Jarman

Stacey Street

MP1

Pheonix Street



Title: Site plan showing noise measurement location

Figure 10/5220/SP1

Project: 125 Shaftesbury Avenue

Date: November 2010 Revision: -

Scale: Not to scale

Cole Jarman Limited
t +44 (0)1932 829007 f +44 (0)1932 829003

John Cree House, 24B High Street, Addlestone, Surrey KT15 1TN
e info@colejarman.com w www.colejarman.com

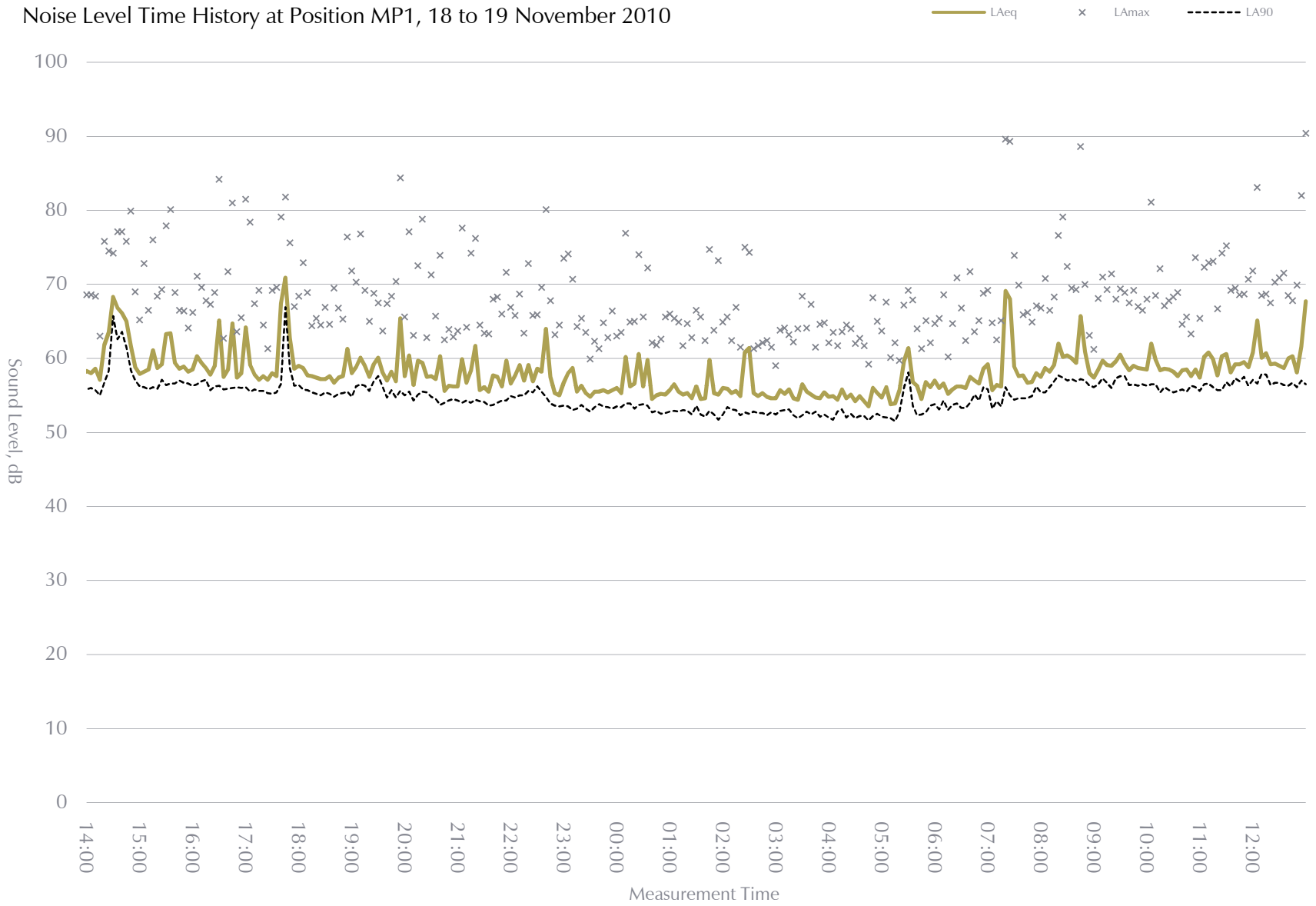


Figure 10/5220/TH01

Schedule of Mechanical Services Equipment Noise Levels, dB

System Ref	Details	Duty[1]	Data Type[2]	Octave Band Centre Frequency, Hz							
				63	125	250	500	1k	2k	4k	8k
CON1 PUHZ-RP71VHA4	RP71VHA4	-	Mfr - Lw	72	70	64	59	58	53	47	43
CON2 PUHZ-RP71VHA4	RP71VHA4	-	Mfr - Lw	72	70	64	59	58	53	47	43
CON3 PUHZ-RP140VKA	RP140VKA	-	Mfr - Lw	73	71	70	64	61	57	51	44
CON4 PUHZ-RP140VKA	RP140VKA	-	Mfr - Lw	73	71	70	64	61	57	51	44
CON5 PUHZ-RP140VKA	RP140VKA	-	Mfr - Lw	73	71	70	64	61	57	51	44
CON6 PUHZ-RP140VKA	RP140VKA	-	Mfr - Lw	73	71	70	64	61	57	51	44

Notes

[1] Duty in flow velocity (m^3/s) @ system pressure (Pa) unless otherwise stated

[2] Mfr refers to data supplied by the equipment manufacturer, Emp refers to data calculated using empirical formulae. Lw indicates noise data is in the form of Sound Power Levels, and Lp, Sound Pressure Levels at specified distance.

Glossary of Acoustic Terms

L_{Aeq}:

The notional steady sound level (in dB) which over a stated period of time, would have the same A-weighted acoustic energy as the A-weighted fluctuating noise measurement over that period. Values are sometimes written using the alternative expression dB(A) L_{eq}.

L_{Amax}:

The maximum A-weighted sound pressure level recorded over the period stated. L_{Amax} is sometimes used in assessing environmental noise when occasional loud noises occur, which may have little effect on the L_{Aeq} noise level. Unless described otherwise, measured using the "fast" sound level meter response.

L_{A10} & L_{A90}:

If non-steady noise is to be described, it is necessary to know both its level and degree of fluctuation. The LAn indices are used for this purpose. The term refers to the A-weighted level (in dB) exceeded for n% of the time specified. L_{A10} is the level exceeded for 10% of the time and as such gives an indication of the upper limit of fluctuating noise. Similarly L_{A90} gives an indication of the lower levels of fluctuating noise. It is often used to define the background noise.

L_{A10} is commonly used to describe traffic noise. Values of dBL_{An} are sometimes written using the alternative expression dB(A)Ln.

L_{AX}, L_{AE} or SEL

The single event noise exposure level which, when maintained for 1 second, contains the same quantity of sound energy as the actual time varying level of one noise event. L_{AX} values for contributing noise sources can be considered as individual building blocks in the construction of a calculated value of L_{Aeq} for the total noise. The L_{AX} term can sometimes be referred to as Exposure Level (L_{AE}) or Single Event Level (SEL).

Cole Jarman Limited Reg. in England and Wales No. 7102436
t +44 (0)1932 829007 **f** +44 (0)1932 829003

John Cree House, 24B High Street, Addlestone, Surrey, KT15 1TN
e info@colejarman.com **w** www.colejarman.com