30-32 Monmouth Street
London

ENVIRONMENTAL NOISE SURVEY
& PLANT NOISE ASSESSMENT
REPORT 20237/PNA2 RevB

For:

Fresson & Tee
1 Sandwich Street
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WC1H 9PF

30 May 2014

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Revision No.	Date	Description
A	12 May 2014	Project title updated
B	30 May 2014	PNA amended to include silencer as standard

1.0 INTRODUCTION

As part of refurbishment works a duct extension to the current extract fan is proposed at 30-32 Monmouth Street, London WC1.

Accordingly, Hann Tucker Associates have been commissioned to carry out an environmental noise survey and plant noise assessment in order to satisfy the requirements of the Local Authority.

This report presents the survey methodology and findings. The survey data has been used as the basis for acoustic assessment purposes.

2.0 OBJECTIVES

To establish, by means of detailed 24 hour daytime and night-time fully automated environmental noise monitoring, the existing A-weighted (dBA) L_{10}, L_{90}, L_{eq} and L_{max} environmental noise levels at selected accessible roof position, thought to be representative of the noise climate of the nearest affected property.

To measure L_{eq}, L_{90} and L_{max} octave band spectra noise levels for typical daytime and night-time periods at the measurement position in order to obtain a more detailed description of the noise climate.

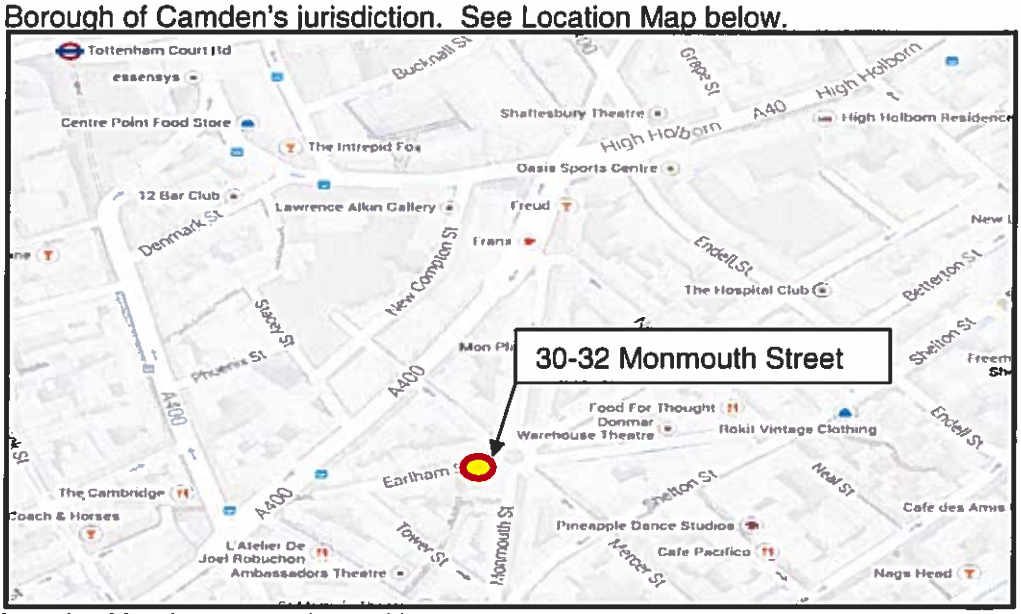
Based on the results of the noise survey, and with reference to the requirements of the Local Authority, to recommend suitable plant noise emission criteria.

To assess the proposed plant and comment on its acceptability.

3.0 SITE DESCRIPTION

3.1 Location

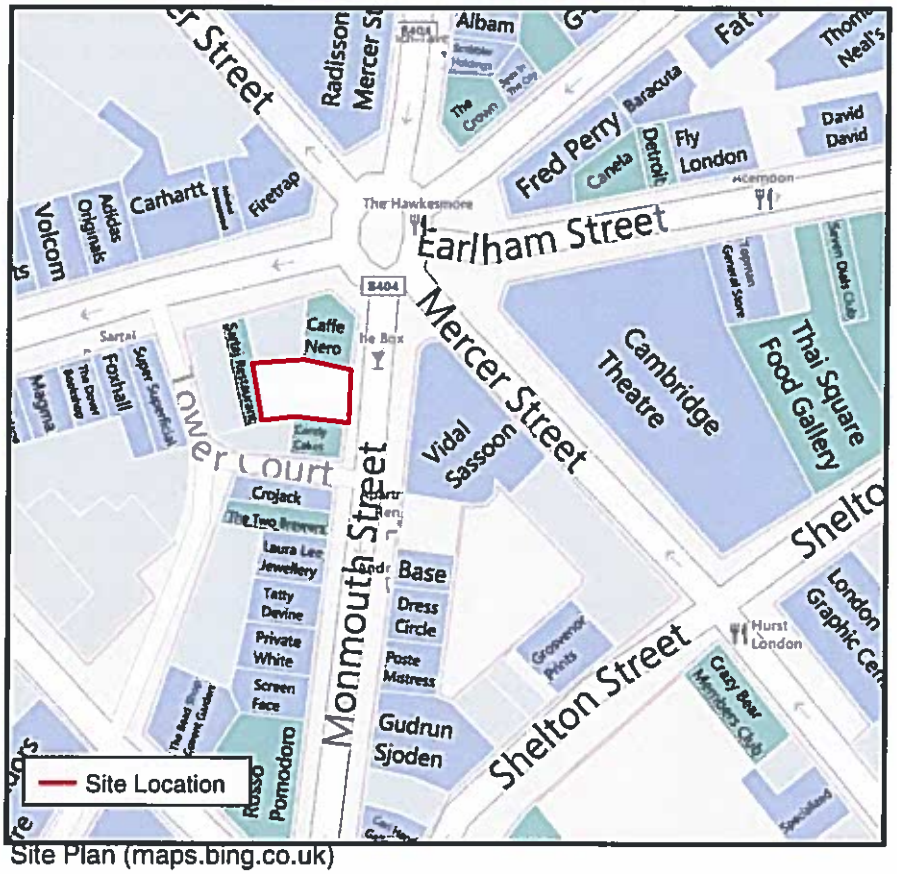
The site is located at 30-32 Monmouth Street and falls within the London Borough of Camden's jurisdiction. See Location Map below.



Location Map (maps.google.co.uk)

3.2 Description

30-32 Monmouth Street is a 4No. storey (plus basement) mixed use building and is bounded by other similar sized mixed use buildings. The site is adjacent to Earlham Street to the north and Monmouth Street to the east. See Site Plan below.



Site Plan (maps.bing.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 METHODOLOGY

The survey was undertaken by Greg Barry MSc AMIOA.

5.1 Procedure

Fully automated environmental noise monitoring was undertaken from approximately 11:00 hours on Wednesday 16 April 2014 to 11:00 hours on Thursday 17 April 2014.

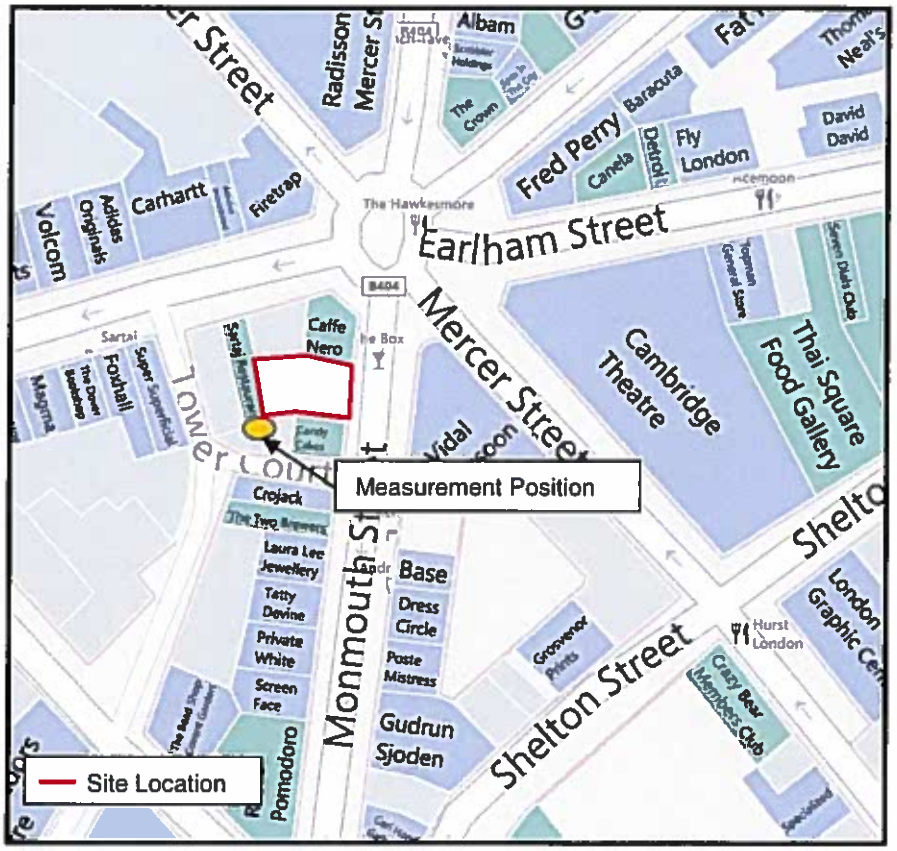
Due to the nature of the survey, i.e. unmanned, it is not possible to accurately comment on the weather conditions throughout the entire survey period. However at the beginning and end of the survey period the wind conditions were calm. The sky was generally clear. We understand that generally throughout 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_{10}, L_{90}, L_{eq} and L_{max} sound pressure levels over full 15 minute periods.

5.2 Measurement Position

The noise level measurements were undertaken at roof level to the rear of 26 Earlham Street. The microphone was attached to a pole overlooking the light-well at the rear of the building. The microphone was positioned a distance of 1m from the façade and in a non-free field environment.

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 is shown on the plan below.



Plan Showing Unmanned Measurement Positions (maps.google.co.uk)

5.3 Instrumentation

The instrumentation used during the survey is presented in the following Table.

Description	Manufacturer	Type	Serial Number	Latest Verification
Type 1 Data Logging Sound Level Meter	Larson Davis	824	3533	LD calibration on 14/03/2013
Type 1 ½" Condenser Microphone	PCB	377B02	106047	LD calibration on 14/03/2013
Type 1 Calibrator	Larson Davis	CAL200	3082	LD calibration on 21/03/2013

The sound level meter, including the extension cable, was calibrated prior to and on completion of the surveys. No significant change 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 Larson Davis windshield.

6.0 RESULTS

The results have been plotted on Time History Graphs 20237/TH2.1 to 20237/TH2.2 enclosed, presenting the 15 minute A-weighted (dBA) L_{10}, L_{90}, L_{eq} and L_{max} levels at each measurement position throughout the duration of the survey.

7.0 DISCUSSION OF NOISE CLIMATE

Due to the nature of the 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 source was noted to be from the surrounding road network.

8.0 PLANT NOISE EMISSION CRITERIA

We understand that the requirements of London Borough of Camden for both office and residential properties are as follows:

Noise levels at a point 1 meter 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 facade to at least 10dB(A) below the L_{A90}, expressed in dB(A)

Based on London Borough of Camden criteria, and the results of the environmental noise survey, we propose the following future plant noise emission criteria to be achieved at 1 metre from the nearest noise sensitive facades:

Plant Noise Emission Criteria (dB re $2x10^{-5}$ Pa) at Nearest Noise Sensitive Façade		
Daytime (07:00-23:00 hours)	Night Time (23:00 –07:00 hours)	24 Hrs
46	42	42

It should be noted that the above plant noise emission limits are subject to approval from the London Borough of Camden. Hann Tucker Associates understands that the plant is to run during daytime hours only (08:30 hours to 11:00 hours). Accordingly we propose a future plant noise emission criteria to be achieved at 1 metre from the nearest noise sensitive facades of 46dBA.

9.0 PLANT NOISE ASSESSMENT

We understand that the following item of plant is currently installed at 30-32 Monmouth Street.

Plant Description	Location	Qty	Plant Make	Model Number
Kitchen Extract Fan	Basement Kitchen	1	RHF	BW10 500 No.9 Monoblock

9.1 Plant Noise Emissions

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

Plant Description	Manufacturers In-Duct Sound Power Level (dB re $1x10^{-12}$ W) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
Kitchen Extract Fan	101	96	91	86	81	77	74	72	89

We also understand that noise from the extract fan is to be attenuated with the implementation of an inline duct silencer. We understand from a conversation with Chapman Ventilation Ltd that the silencer shall achieve the following sound reduction performance levels:

Plant Description	Sound Reduction Level (dB) at Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
Silencer Losses	-2	-6	-11	-20	-23	-19	-12	-9

The full silencer specification including required dimensions and pressure drop are enclosed in Appendix B.

9.2 Location of Plant

The kitchen extract fan is currently located at basement level and discharges at ground floor level. It is proposed that the duct extension shall begin from ground floor level and continue up to the parapet level. Hann Tucker Associates understands that the nearest noise sensitive façade is approximately 3.5m away.

9.3 Plant Noise Impact Assessment

The following table presents our calculations relating to the proposed plant installation.

	Sound Level at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
Kitchen Extract Fan Lw (dB re $1x10^{-12}$ W)	101	96	91	86	81	77	74	72	89
Total Duct and Grille Losses	-17	-11	-8	-8	-10	-10	-10	-10	
Silencer Losses	-2	-6	-11	-20	-23	-19	-12	-9	
Lw at Terminal (dB re $1x10^{-12}$ W)	82	79	72	58	48	48	52	53	
Divergence	-22	-22	-22	-22	-22	-22	-22	-22	
Calculated Lp at Window (dB re $2x10^{-5}$ Pa)	60	57	50	36	26	26	30	31	45

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

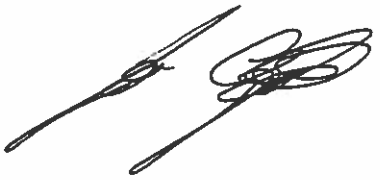
10.0 CONCLUSIONS

A detailed 24 hour daytime and night-time fully automated environmental noise survey has been undertaken in order to establish the currently prevailing roof level environmental noise climate around the site.

Plant noise emission criteria have been recommended based on the results of the noise survey and with reference to the requirements of the Local Authority.

An assessment has been carried out to determine the noise emissions from the in-situ extract fan and the proposed duct extension at the nearest noise sensitive window.

The assessment indicates the noise emissions from the plant should be capable of achieving the requirements of the Local Authority at the nearest noise sensitive window.



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Checked by
John Gibbs
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Appendix A

The acoustic terms used in this report are as follows:

dB : Decibel - Used as a measurement of sound pressure level. It is the logarithmic ratio of the noise being assessed to a standard reference level.

dBA : The human ear is more susceptible to mid-frequency noise than the high and low frequencies. To take account of this when measuring noise, the 'A' weighting scale is used so that the measured noise corresponds roughly to the overall level of noise that is discerned by the average human. It is also possible to calculate the 'A' weighted noise level by applying certain corrections to an un-weighted spectrum. The measured or calculated 'A' weighted noise level is known as the dBA level.

Because of being a logarithmic scale noise 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_{10} & L_{90}: If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The Ln indices are used for this purpose, and the term refers to the level exceeded for n% of the time, hence L_{10} is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, L_{90} is the average minimum level and is often used to describe the background noise.

It is common practice to use the L_{10} index to describe traffic noise, as being a high average, it takes into account the increased annoyance that results from the non-steady nature of traffic noise.

L_{eq} : The concept of L_{eq} (equivalent continuous sound level) has up to recently been primarily used in assessing noise in industry but seems now to be finding use in defining many other types of noise, such as aircraft noise, environmental noise and construction noise.

L_{eq} is defined as a notional steady sound level which, over a stated period of time, would contain the same amount of acoustical energy as the actual, fluctuating sound measured over that period (e.g. 1 hour).

The use of digital technology in sound level meters now makes the measurement of L_{eq} very straightforward.

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.

Appendix B

ALLAWAY ACOUSTICS LTD

EQUIPMENT SCHEDULE

PROJECT NAME: KOPAPA MONMOUTH STREET
DATE: 15/05/2014

PROJECT No: 44860
SCHEDULE No: 20044860Q1

ITEM	SYSTEM REF/DESCRIPTION	CODE	SUFFIX	DWG	L1 mm	L2/ID mm	W mm	H/D mm	VOL m3/s	PD Pa	WT kg	NO Off	£ EACH	£ TOTAL
1	KITCHEN EXHAUST	SPD8	GM1	A02E	1200		1200	400	3.2	30	86	1	264	264
													SUB TOTAL:	£264
													EXTRAS:	+ £0
													TOTAL:	£264

NOTES:
LABEL WITH ITEM NO. & SYSTEM REF.

SPECIFIED WIDTH INCREASED TO 1200mm TO SUIT PERFORMANCE REQUIRED. SMOOTH TRANSFORMATION SECTIONS, MATING FLANGES AND SUPPORTS TO BE PROVIDED BY OTHERS AS NECESSARY TO ACCOMMODATE THIS SELECTION.

SUFFIX M1; ATTENUATOR TO HAVE THE ACOUSTIC INFILL LIONED WITH MELINEX FOR KITCHEN EXHAUST APPLICATION. HIGH TEMPERATURE/FIRE RATED CONSTRUCTION AND/OR SPECIAL MATERIALS (SUCH AS STAINLESS STEEL ETC) HAVE NOT BEEN INCLUDED, BUT CAN BE OFFER AT EXTRA COST IF REQUIRED.

TOTAL PRICE SHOWN IS NETT, DELIVERED (MAINLAND UK).

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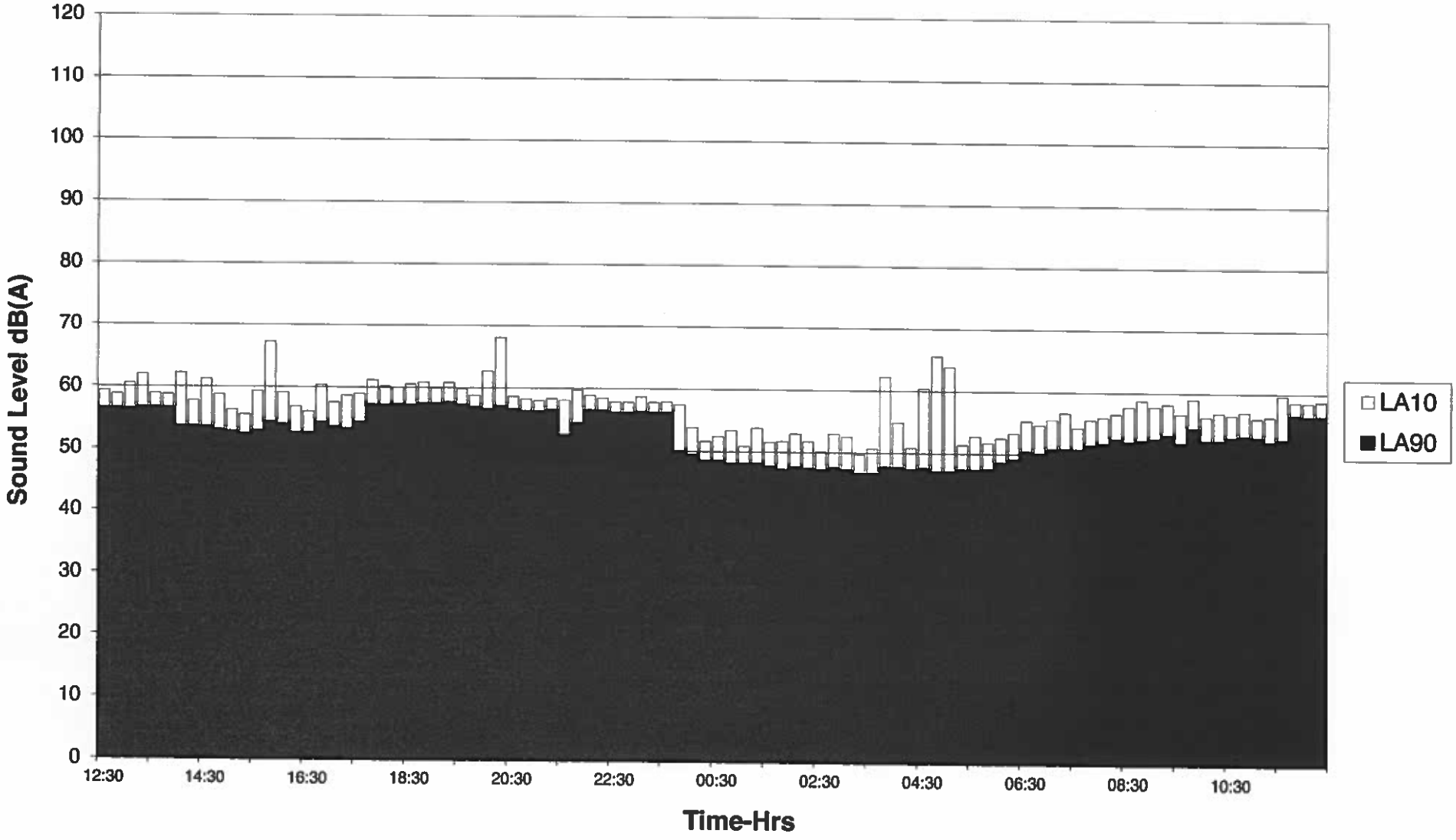
30-32 Monmouth Street, London

L_{A10} and L_{A90} Noise Levels

Wednesday 16/04/2014- Thursday 17/04/2014



Time History Graph 20237/TH2 1

30-32 Monmouth Street, London

L_{Aeq} and L_{Amax} Noise Levels

Wednesday 16/04/2014- Thursday 17/04/2014