Acoustics

5-7 Buck Street
Camden Town
London
NW1 8NJ

ENVIRONMENTAL NOISE SURVEY
REPORT 14571/ENS1

For :

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1 February 2008

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1.0 INTRODUCTION

A residential and commercial development is proposed at 5-8 Buck Street, Camden, London. The site lies within the jurisdiction of the Camden Council, and is surrounded by residential and commercial premises.

Hann Tucker Associates have therefore been commissioned to undertake a detailed environmental noise survey of the site, propose suitable plant noise emission criteria based on the results of the survey and the requirements of the Local Authority, and to undertake a plant noise assessment.

This report presents the survey methodology and findings and plant noise assessment.

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 a selected accessible roof level position on the site.

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 in conjunction with the Local Authority, to recommend suitable plant noise emission criteria and undertake a plant noise assessment.

3.0 SITE DESCRIPTION

5-7 Buck Street is surrounded by commercial and residential properties. It is bound by Buck Street to the South, Hawley Primary School to the East, residential premises to the West and the Open University to the North.

4.0 ACOUSTIC TERMINOLOGY

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

5.0 METHODOLOGY

5.1 Procedure

Fully automated environmental noise monitoring was undertaken from approximately 12:00 hours on 31 January 2008 to 12:00 hours on 1 February 2008.

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 light. 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 15 minute periods.

5.2 Measurement Position

The noise level measurements were undertaken at 1 position on the development site. The position was selected in order to assess typical noise levels at the development site for subsequent use in setting plant noise emission criteria.

The microphone was attached to railings approximately 1m above roof level, overlooking residential properties to the South West.

The measurement position's approximate location is indicated on the enclosed Site Plan 14571/SP1.

5.3 Instrumentation

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

Description	Manufacturer	Type	Serial Number	Latest Verification
Type 1 Data Logging Sound Level Meter	Larson Davis	824	3157	LD calibration on 14/05/2007
Type 1 ½" Condenser Microphone	Larson Davis	4189	2470596	LD calibration on 14/05/2007
Type 1 Calibrator	Larson Davis	CAL200	3082	LD calibration on 28/10/2007

The sound level meter, including the extension cable, was calibrated prior to and on completion of the surveys. No significant changes were 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 14571/TH1 to 14571/TH2 enclosed presenting the 15 minute A-weighted (dBA) L_{10}, L_{90}, L_{eq} and L_{max} levels at the 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 road traffic and the noise of school children during breaktimes at the school next door.

8.0 PLANT NOISE EMISSION CRITERIA

5-7 Buck Street lies within the London Borough of Camden's jurisdiction. We have been informed that Camden Council make no distinction between commercial and residential premises.

We therefore understand that the requirements of Camden Borough Council are as follows:

> *Noise levels at a point 1 metre external to sensitive facades shall be at least 5dB(A) less than the 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 façade to at least 10dB(A) below the L_{A90} expresses in dB(A).*

However we believe that the noise levels measured have been elevated by neighbouring building services noise, especially at night. It is not advisable to set plant noise emission criteria based on these elevated levels. To do so would involve a significant risk of possible enforcement by the Local Authority. Criteria should only be based on "true" background noise levels in the absence of building services plant. Typical minimum L_{90} background noise levels in this area of Central London are around 55dBA during the daytime and 45dBA during the night time.

If the measured noise levels do represent the true background noise levels we would propose the following future plant noise emission criteria (with all relevant plant operating simultaneously) at one metre from the window of the nearest noise sensitive property based on the minimum measured L_{A90} noise level.

Noise Emission Limit (dBA)	
Daytime (07:00 – 23:00 hours)	**Night (23:00 – 07:00 hrs)**
51	50

However, since we believe the measured noise levels were above the true background noise levels, we have estimated the true background (as detailed above) and instead proposed the following estimated criteria. To avoid a risk of justifiable complaints in the future, we believe these criteria to be more appropriate than those based on the measured levels alone.

Minimum $L_{A90,\ 15min}$ (dBA)	
Daytime (07:00 – 23:00 hours)	**Night Time (23:00 – 07:00 hours)**
45	35

These should be achieved at 1m from the nearest noise sensitive façade.

It should be noted that the above criteria are subject to final approval by the London Borough of Camden.

9.0 PLANT NOISE ASSESSMENT

We understand that due to the current progress of the design no plant has yet been selected. We further understand that when the plant is selected it will be in order to comply with the plant noise emission criteria as set above.

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 environmental noise climate at the site.

Plant noise emission criteria have been recommended based on the results of the noise survey and in conjunction with the Local Authority.

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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.

dB(A) : 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 dB(A) level.

Because of being a logarithmic scale noise levels in dB(A) do not have a linear relationship to each other. For similar noises, a change in noise level of 10dB(A) represents a doubling or halving of subjective loudness. A change of 3dB(A) 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.

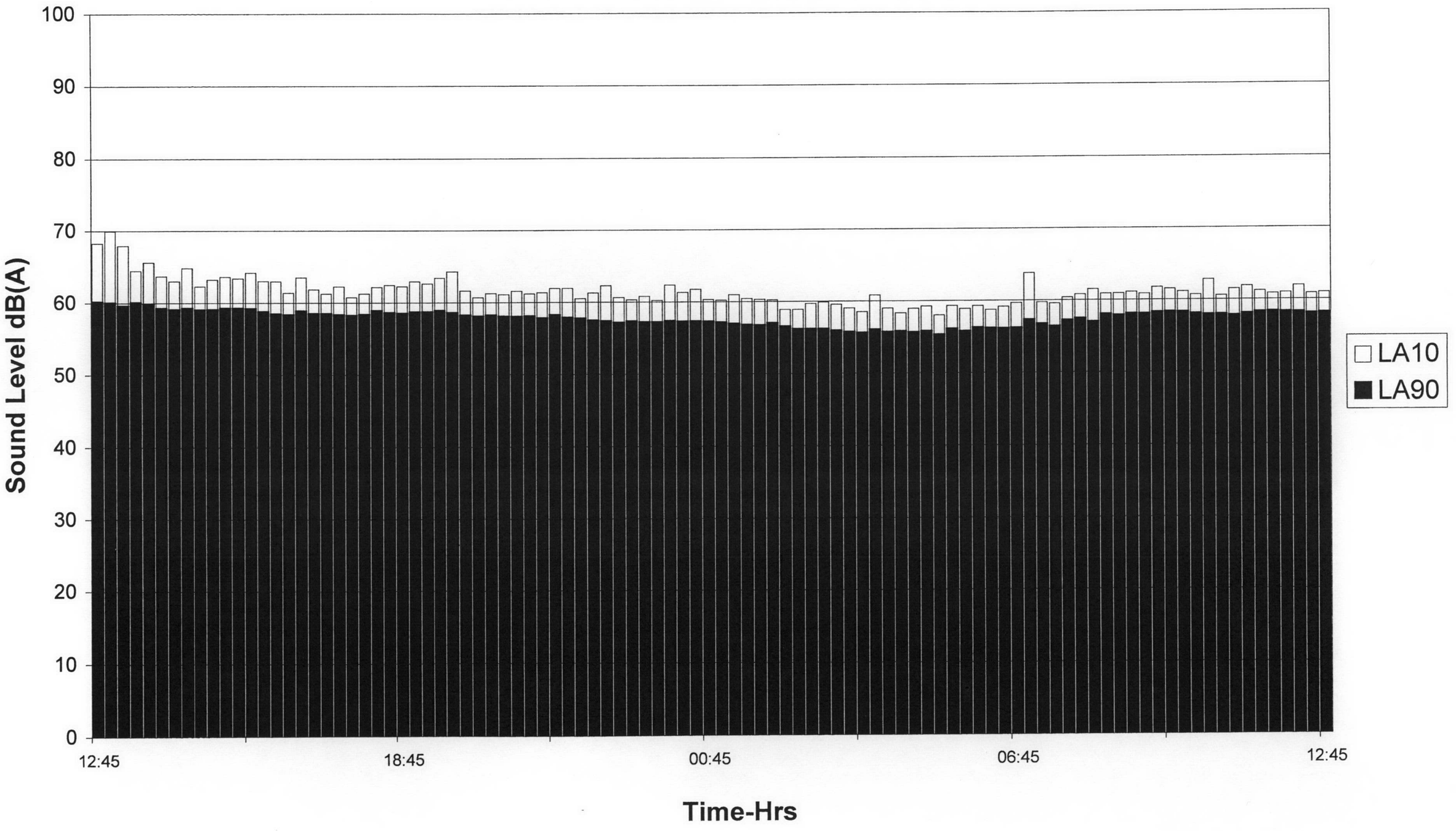
L_{max} : L_{max} is the maximum sound pressure level recorded over the period stated. L_{max} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the L_{eq} noise level.

5-7 Buck Street, Camden Town

Position 1

L_{A10} and L_{A90} Noise Levels

Thursday 31/01/2008 - Friday 01/02/2008



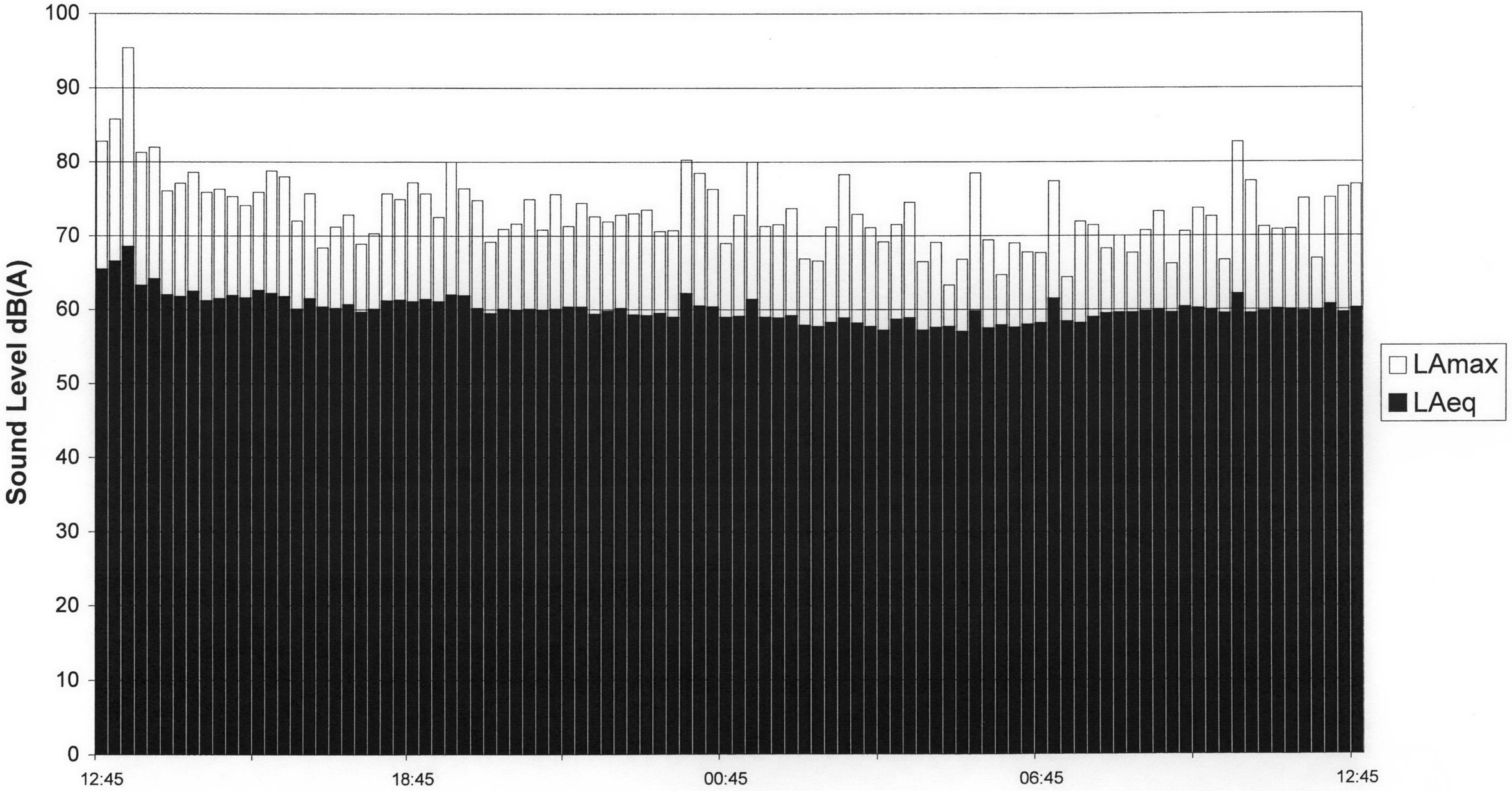
Time History Graph 14571/TH1

5-7 Buck Street, Camden Town

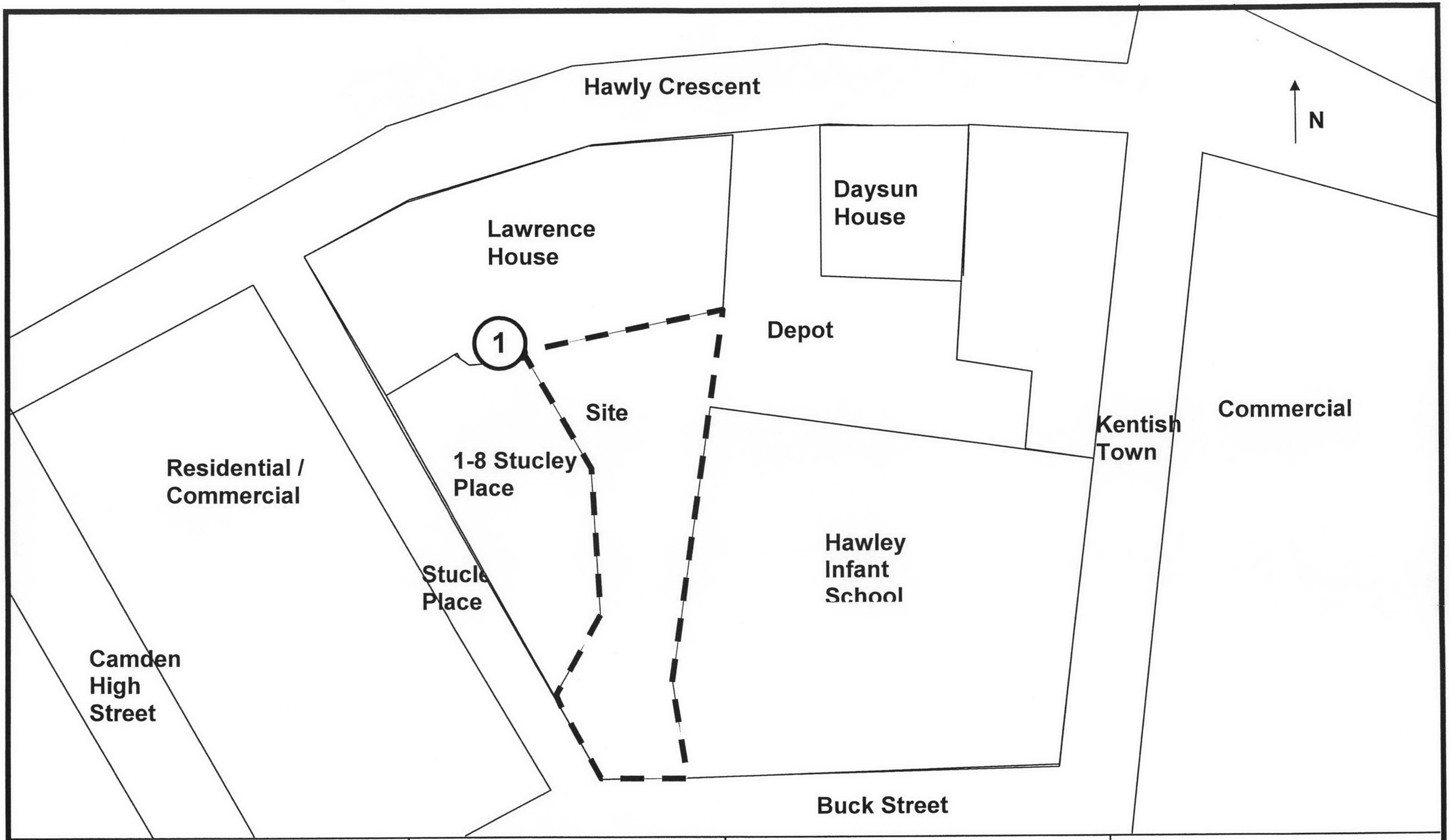
Position 1

L_{Aeq} and L_{Amax} Noise Levels

Thursday 31/01/2008 - Friday 01/02/2008



Time History Graph 14571/TH2



Title : Site plan showing the location of automated monitoring position	Project : 5-7 Buck Street, Camden Town London	Figure : 14571/SP1	
		Date : 01/02/2008	Scale : N.T.S

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