Portland House
Kentish Town
London

ENVIRONMENTAL NOISE SURVEY
AND PPG24 ASSESSMENT
REPORT 13640/PPG24.1

For :

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1.0 INTRODUCTION

A residential development is proposed at the site of Portland House, Ryland Road, Kentish Town, London.

The site is exposed to road traffic noise on Wilkin Street to the North and Ryland Road to the South East of the site. To the West of the site there are overground railway lines leading to the nearby Kentish Town Station. Hann Tucker Associates have therefore been commissioned to undertake a detailed environmental noise survey and PPG24 assessment of the site.

This report presents the survey and PPG24 assessment methodology and findings.

2.0 OBJECTIVES

To establish, by means of detailed 72 hour 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 positions around the site.

To establish by means of detailed 8 hour night time fully automated environmental noise monitoring, the number of L_{max} noise events which exceed 82dBA.

Based on the results of the noise survey data, to determine in to which of the four Noise Exposure Categories (NECs) the development site falls.

3.0 SITE DESCRIPTION

The site currently consists of a 5 storey commercial building which is surrounded by Wilkin Street to the North, commercial premises to the East, and residential properties across Ryland Road to the South East. There are further commercial premises to the South and to the West there are overground railway lines leading to the nearby Kentish Town Station.

4.0 ACOUSTIC TERMINOLOGY

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.

5.0 METHODOLOGY

5.1 Procedure

Fully automated environmental noise monitoring was undertaken from approximately 15:00 hours on Friday 5 January 2007 to 11:30 hours on Monday 8 January 2007.

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 and the sky was generally overcast. We understand that generally throughout the survey period the weather conditions were similar to this.

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 Positions

The noise level measurements were undertaken at 3 positions around the development site. The positions were selected in order to assess typical noise levels at the proposed building façades. The measurement positions are described below, and their approximate locations are indicated on the enclosed Site Plan 13640/SP1.

Position No	Description
1	The microphone was attached to a pole approximately 3m above ground level and 1.5m from the building façade. The microphone overlooked the railway approximately 5m from the measurement position.
2	The microphone was attached to a pole at the Northwest corner of the site, approximately 3m above ground level and approximately 2m from Wilkin Road.
3	The microphone was positioned at approximately 2m from the ground in free-field conditions. This position was approximately 1m from Ryland Road at the South East of the site.

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	820	0975	LD calibration on 22/09/2006
Type 1 ½" Condenser Microphone	Larson Davis	2541	4839	LD calibration on 22/09/2006

Description	Manufacturer	Type	Serial Number	Latest Verification
Type 1 Data Logging Sound Level Meter	Larson Davis	820	0978	LD calibration on 22/09/2006
Type 1 ½" Condenser Microphone	Larson Davis	2541	4878	LD calibration on 22/09/2006
Type 1 Data Logging Sound Level Meter	Larson Davis	820	0740	LD calibration on 03/09/2005
Type 1 ½" Condenser Microphone	Larson Davis	2541	7488	LD calibration on 03/09/2005
Type 1 Calibrator	Larson Davis	CAL200	3082	LD calibration on 23/10/2006

Each 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 0.1 dB).

Each sound level meter was located in an environmental case with the microphone connected to the sound level meter via an extension cable. Each microphone was fitted with a Larson Davis windshield.

6.0 RESULTS

The results have been plotted on Time History Graphs 13640/TH1 to 13640/TH6 enclosed presenting the hourly A-weighted (dBA) L_{10}, L_{90}, L_{eq} and L_{max} levels at each measurement position throughout the duration of the survey.

The following Table presents the number of L_{max} events which exceeded 82dBA during the night time period.

Time	Number of Events		
	Position 1	Position 2	Position 3
23:00-00:00	1	0	0
00:00-01:00	1	0	0
01:00-02:00	0	0	0
02:00-03:00	0	0	0
03:00-04:00	1	0	0
04:00-05:00	0	0	0
05:00-00:00	0	0	0
06:00-07:00	0	0	0

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 sources were noted to be traffic on surrounding roads and trains on the nearby railway.

8.0 PPG24 ASSESSMENT

8.1 PPG24 Planning Policy Guidance

The noise exposure categories indicated below are derived from Annex 1 of PPG24, 1994 as follows:

Noise Exposure Categories for Dwellings

When assessing a proposal for residential development near a source of noise, local planning authorities should determine into which of the four noise exposure categories (NECs) the proposed site falls, taking account of both day and night-time noise levels. Local planning authorities should then take into account the advice in the appropriate NEC, as below:

NEC	
A	Noise need not be considered as a determining factor in granting planning permission, although the noise level at the high end of the category should not be regarded as a desirable level.
B	Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to ensure an adequate level of protection against noise.
C	Planning permission should not normally be granted. Where it is considered that permission should be given, for example because there are no alternative quieter sites available, conditions should be imposed to ensure a commensurate level of protection against noise.
D	Planning permission should normally be refused.

Recommended Noise Exposure Categories for New Dwellings Near Existing Noise Sources

Noise Levels Corresponding to the Noise Exposure Categories for New Dwellings $L_{Aeq,T}$ dB				
Noise Source	Noise Exposure Category			
	A	B	C	D
Road Traffic 07.00 – 23.00 23.00 – 07.00	<55 <45	55 - 63 45 - 57	63 - 72 57 - 66	>72 >66
Rail Traffic 0700 – 2300 2300 – 0700	<55 <45	55 - 66 45 - 59	66 - 74 59 - 66	>74 >66
Mixed Sources 0700 – 2300 2300 – 0700	<55 <45	55-63 45-57	63-72 57-66	>72 >66

In addition to the above, PPG 24 also states that during the night (23:00 - 07:00 hrs):

> "Sites where individual noise events regularly exceed 82dB L_{Amax} several times in any hour should be treated as being in NEC C, regardless of the $L_{Aeq(8\text{-hour})}$ (except where the $L_{Aeq(8\text{-hour})}$ already puts the site into NEC D)."

8.2 Local Authority Discretion

The table in Section 8.1 contains the recommended range of traffic noise levels for each NEC covering daytime and night-time periods. However, as stated in paragraph 7.2 of PPG24, "in some cases it may be appropriate for local planning authorities to determine the range of noise levels, which they attribute to any or each of the NEC's". For example, where there is a clear need for new residential development in an already noisy area some or all NEC's may be increased by up to 3dB(A).

8.3 Measured L_{eq} Noise Levels

In order to compare the results of our survey with the guidelines stated within PPG24, it is necessary to convert the measured $L_{Aeq(15\ minute)}$ noise levels into single figure daytime $L_{Aeq(16\text{-}hour)}$ (07:00-23:00 hours) and night-time $L_{Aeq(8\text{-}hour)}$ (23:00-07:00 hours) levels. This is done by logarithmically averaging the $L_{Aeq(1\text{-}hour)}$ levels over the relevant time periods.

The daytime $L_{Aeq(16\text{-}hour)}$ and night-time $L_{Aeq(8\text{-}hour)}$ noise levels for each position are presented in the Tables below.

Position	Daytime $L_{Aeq(16\text{-}hour)}$	Night Time $L_{Aeq(8\text{-}hour)}$
1	60dB	55dB
2	60dB	52dB
3	61dB	53dB

8.4 Measured NECs

With reference to the above noise exposure categories for mixed noise sources, the measured noise levels fall within the following categories for daytime and night-time periods.

Noise Exposure Category		
Position	Daytime	Night time
1	B	B
2	B	B
3	B	B

8.5 Discussion

With reference to the noise exposure categories for dwellings, as detailed in Section 8.1 above, when assessing planning application for sites which fall into Noise Exposure Category B, noise should be taken into account when determining planning applications, and where appropriate, conditions imposed to ensure an adequate level of protection against noise.

9.0 SUITABLE INTERNAL NOISE LEVELS

9.1 BS 8233

British Standard 8233: 1999: "Sound insulation and noise reduction for buildings" states that reasonable resting and sleeping conditions in living rooms and bedrooms can be achieved by the following target $L_{Aeq,T}$ internal noise levels:

Room Type	$L_{Aeq,T}$	
	Good	Reasonable
Living Room	30dB	40dB
Bedrooms	30dB	35dB

The Standard also states "For a reasonable standard in bedrooms at night, individual noise events (measure with F time-weighting) should not normally exceed 45dB L_{Amax}."

9.2 World Health Organisation

The World Health Organisation document on "Guidelines for Community Noise" states the following guideline values for community noise in specific environments.

Specific Environment	Critical Health Effect(s)	L_{Aeq}	$L_{Amax,fast}$
Dwelling, indoors	Speech intelligibility and moderate annoyance	35dB	-
Inside Bedrooms	Sleep disturbance, night-time	30dB	45dB

The document also states "For a good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45dBA L_{Amax} more than 10-15 times per night, (Vallet & Varnet 1991)."

10.0 AMELIORATION MEASURES

In order to ensure a commensurate level of protection against noise we would recommend the external envelope of the new residences are designed and constructed to achieve the BS 8233 and WHO criteria summarised above. We would advise the above criteria are likely to be achievable with suitably specified double glazed windows.

11.0 CONCLUSIONS

A detailed 72 hour environmental noise survey has been undertaken in order to establish the currently prevailing environmental noise climate around the site.

From the measured environmental noise levels the corresponding noise exposure category of the site has been determined.

All façades fall into Noise Exposure Category B. With reference to the noise exposure categories for dwellings, noise should be taken into account when determining planning applications and, where appropriate conditions imposed to ensure an adequate level of protection against noise.

Appropriate internal noise criteria have been proposed and these are achievable using conventional constructions.

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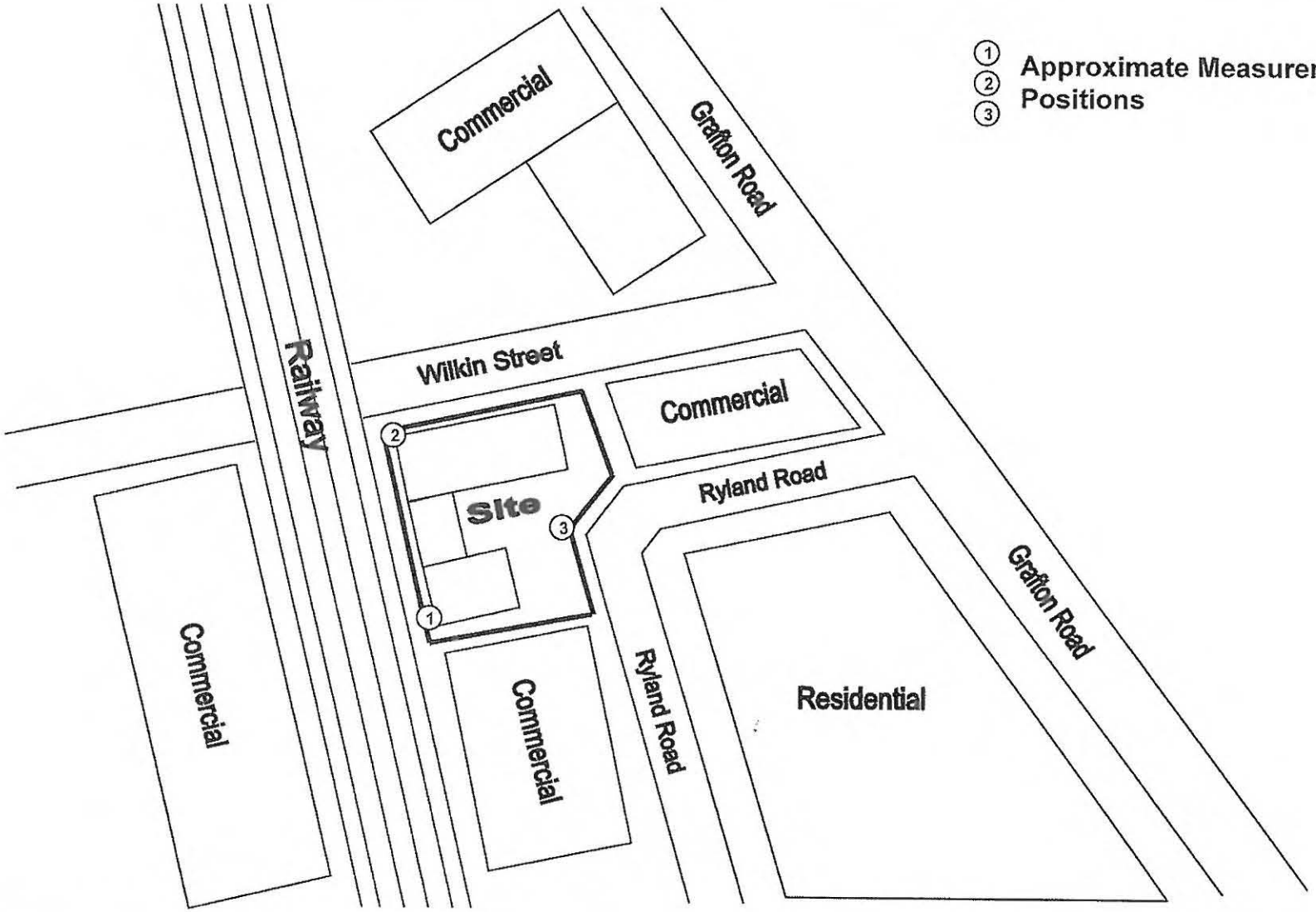

Title :	Project :	Figure :	
Site Plan Showing Approximate Measurement Positions	Portland House Kentish Town London	13640/SP1	
		Date : 15/01/07	Scale : N.T.S

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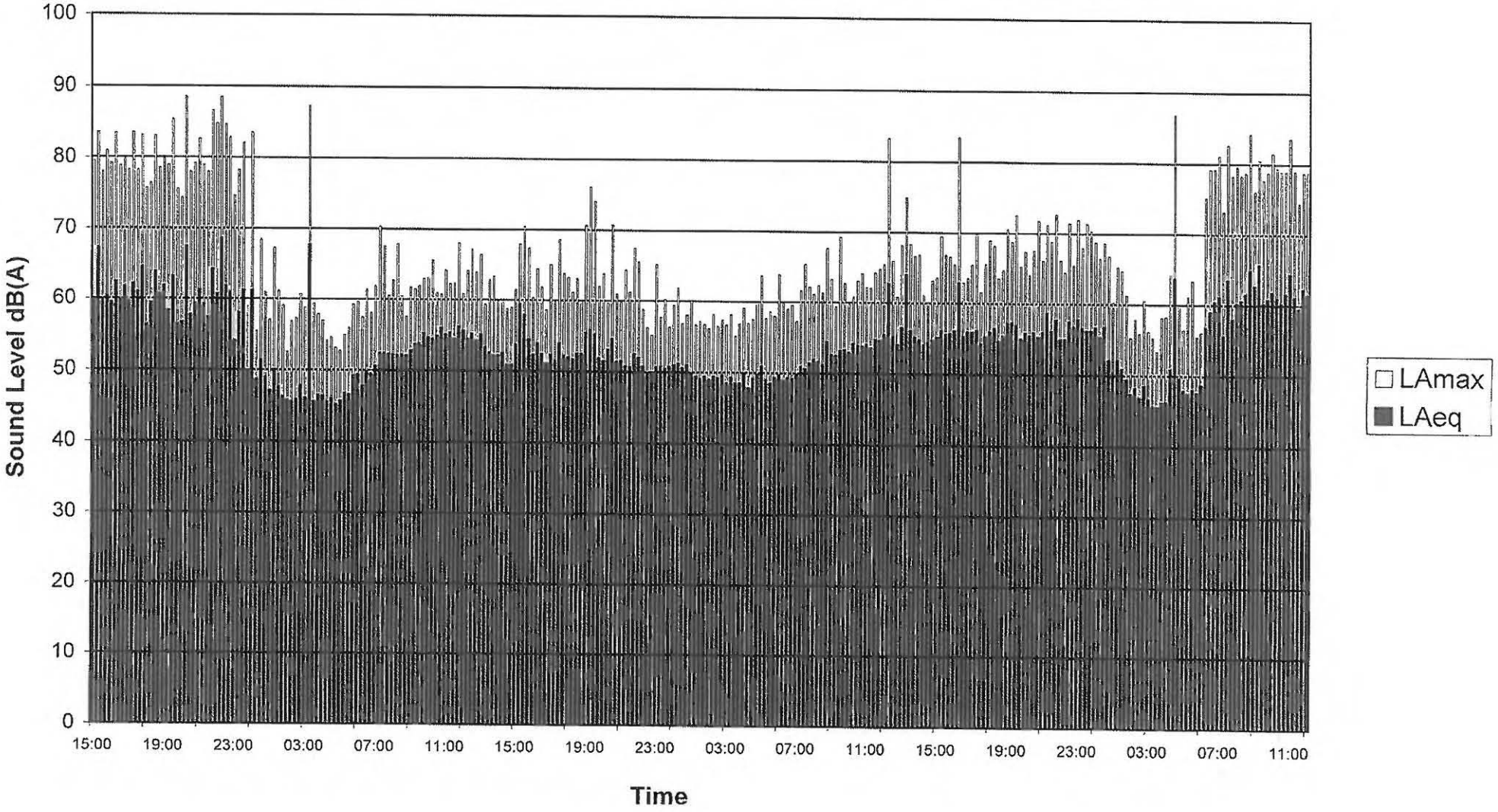
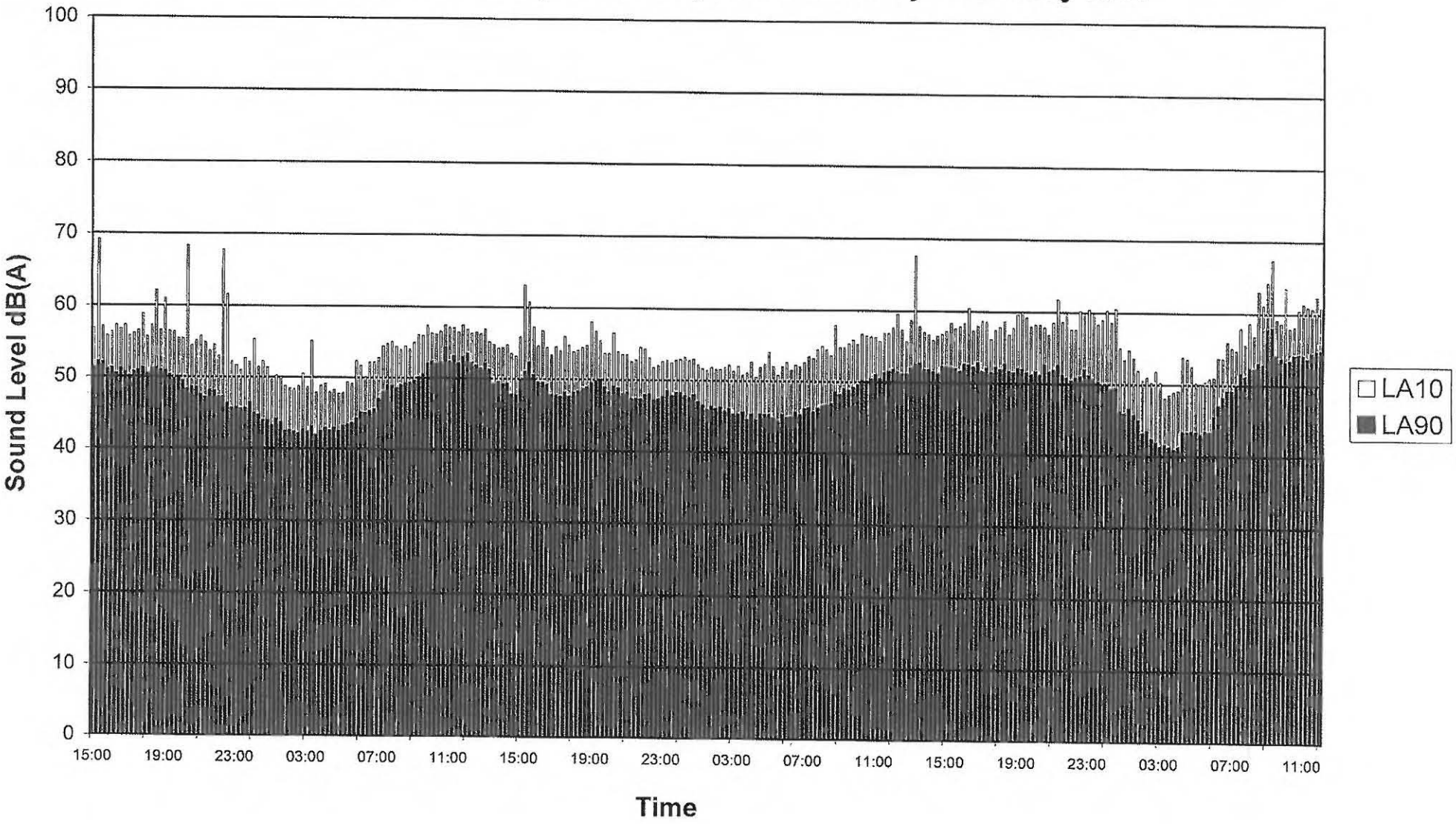
Portland House, Kentish Town, London
Measured L_{Amax} and L_{Aeq} Noise Levels
Position 1: Friday 5 January 2007 - Monday 8 January 2007



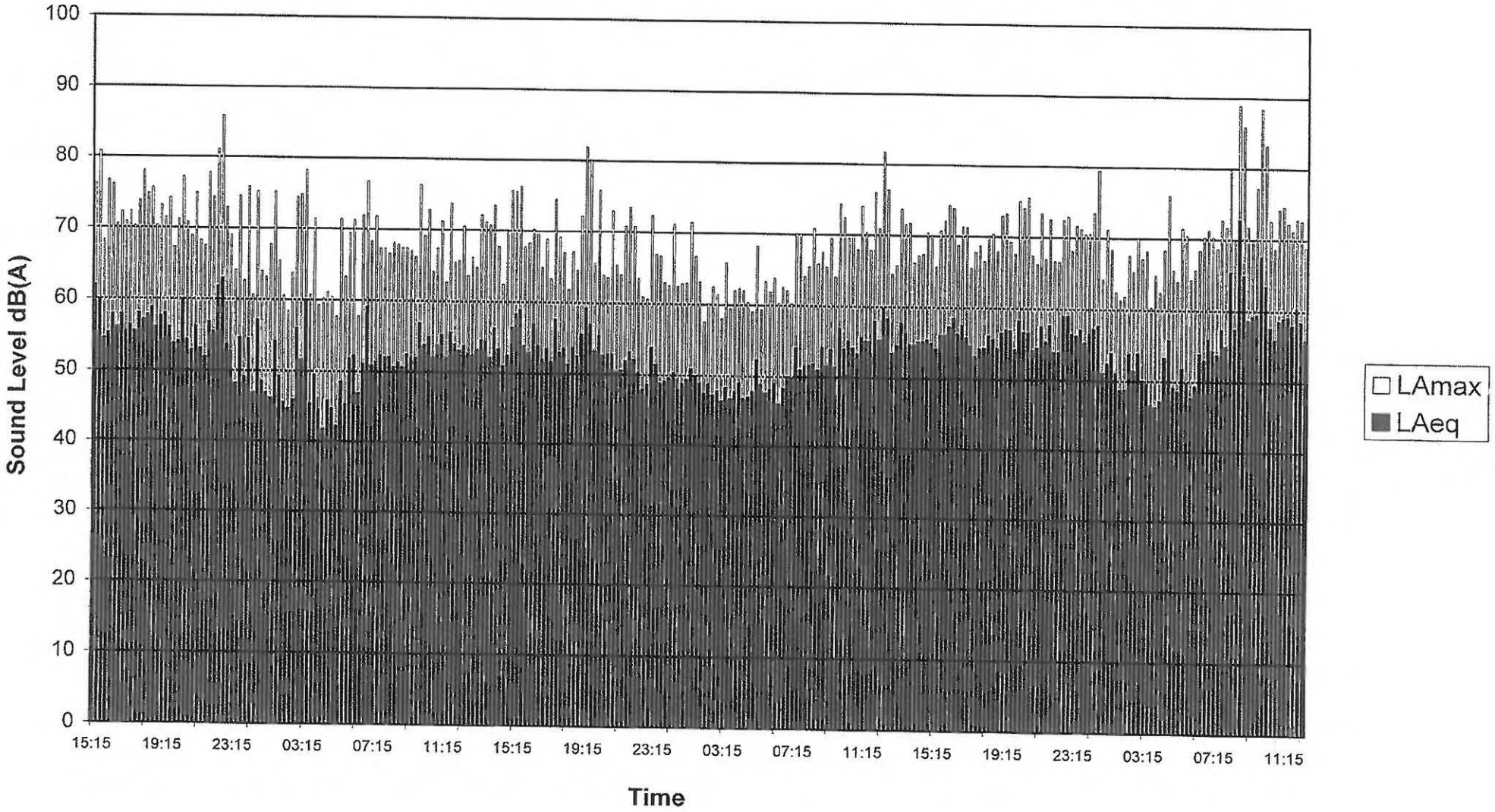
Time History Graph 13640/TH1

Portland House, Kentish Town, London
Measured L_{A10} and L_{A90} Noise Levels
Position 1: Friday 5 January 2007 - Monday 8 January 2007



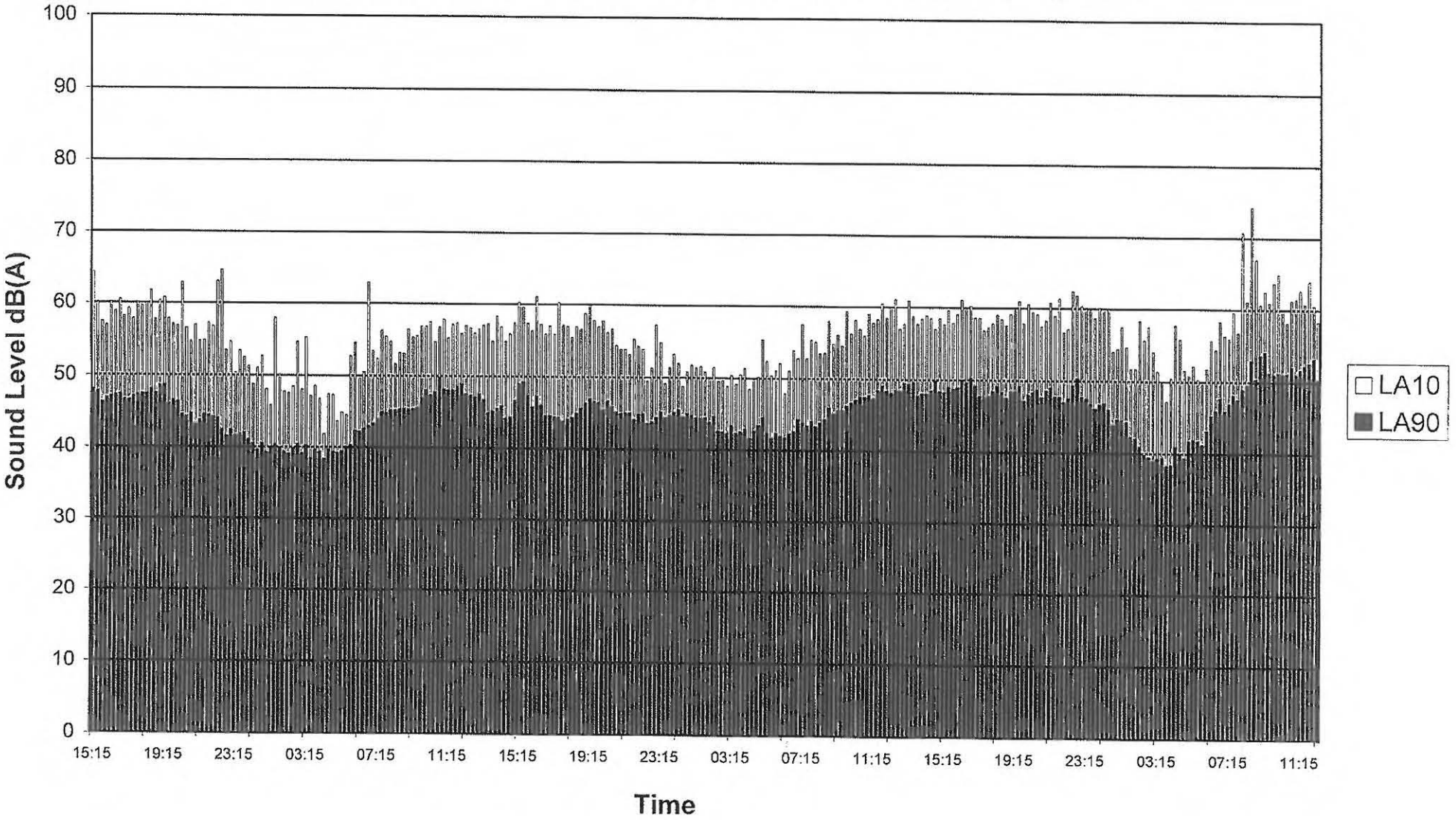
Time History Graph 13640/TH2

Portland House, Kentish Town, London
Measured L_{Amax} and L_{Aeq} Noise Levels
Position 2: Friday 5 January 2007 - Monday 8 January 2007



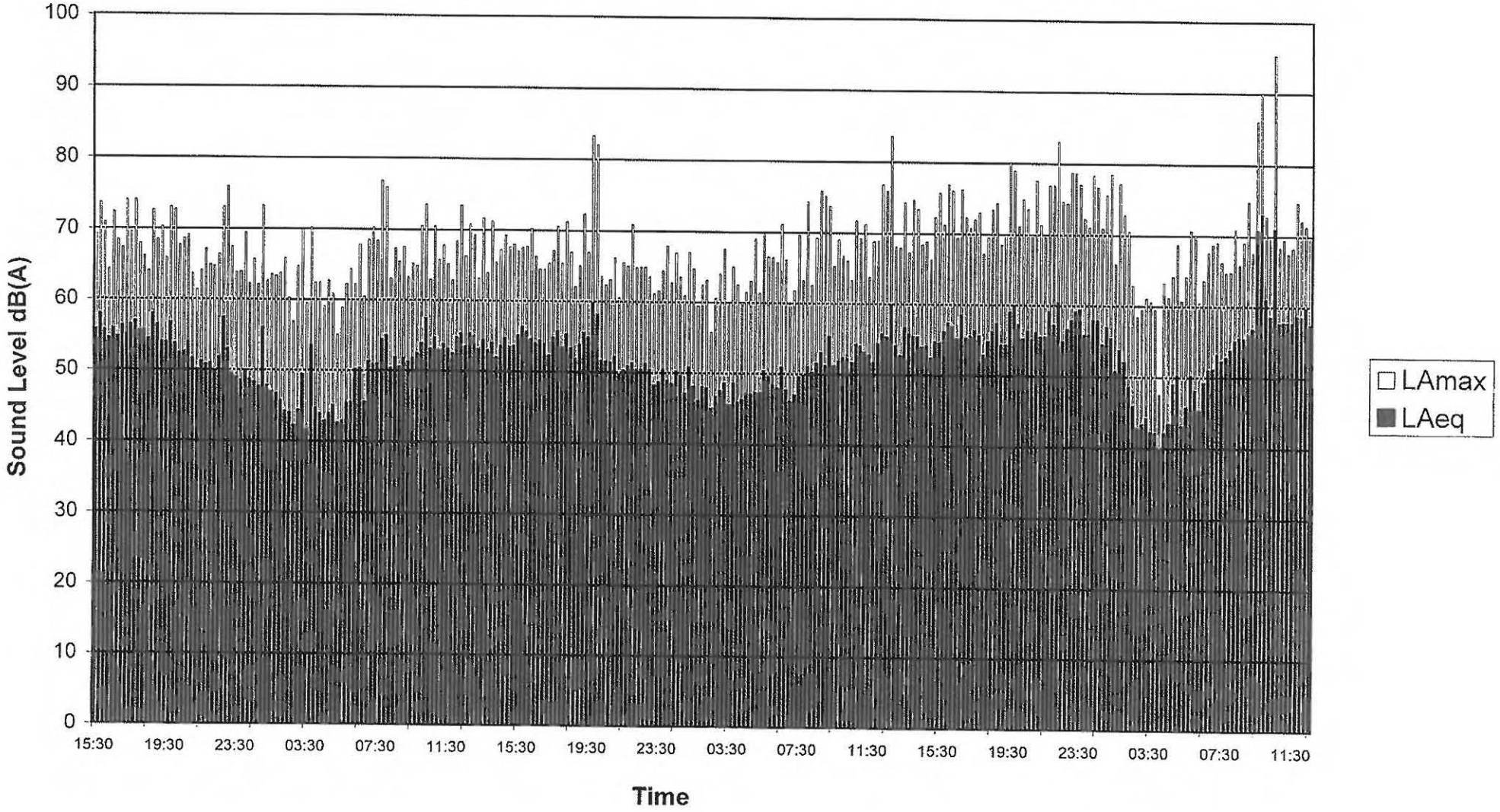
Time History Graph 13640/TH3

Portland House, Kentish Town, London
Measured L_{A10} and L_{A90} Noise Levels
Position 2: Friday 5 January 2007 - Monday 8 January 2007



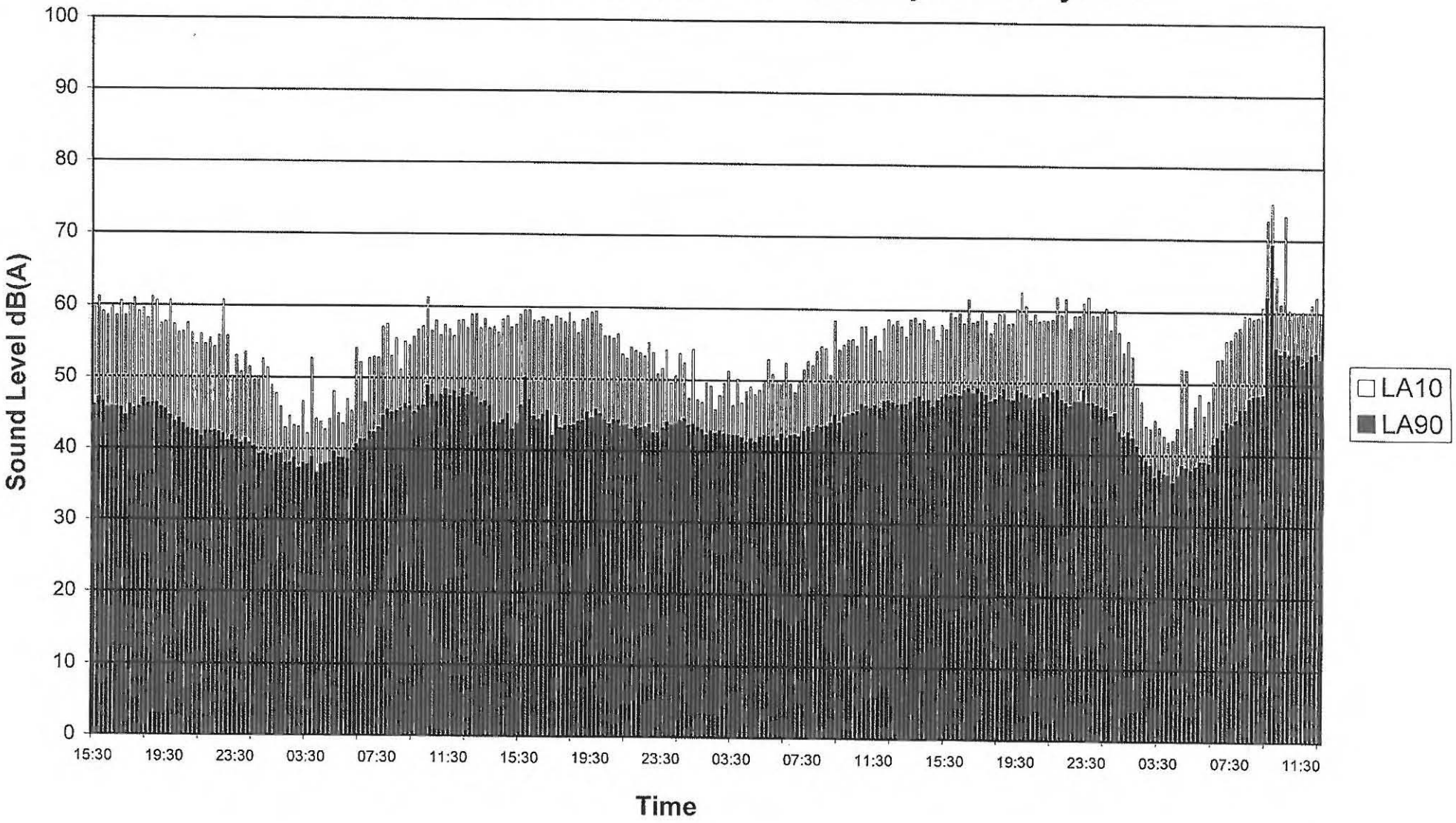
Time History Graph 13640/TH4

Portland House, Kentish Town, London
Measured L_{Amax} and L_{Aeq} Noise Levels
Position 3: Friday 5 January 2007 - Monday 8 January 2007



Time History Graph 13640/TH5

Portland House, Kentish Town, London
Measured L_{A10} and L_{A90} Noise Levels
Position 3: Friday 5 January 2007 - Monday 8 January 2007



Time History Graph 13640/TH6