HALIFAX BANK PLC
96 CAMDEN HIGH STREET
LONDON

ENVIRONMENTAL NOISE SURVEY
AND PLANT NOISE ASSESSMENT
REPORT 17741/PNS1

For:

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26 October 2011

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1.0 INTRODUCTION

A redevelopment of a Halifax Bank branch is currently proposed at 96 Camden High Street in London. As part of the redevelopment, new items of outdoor building services plant are proposed.

The plant area is overlooked by commercial premises on the second floor above the bank. Residential premises may also be located nearby. The plant noise emissions will have to comply with the requirements of the Local Authority.

Hann Tucker Associates have therefore been commissioned to undertake a detailed fully automated environmental noise survey in order to establish the currently prevailing noise levels at the site and propose plant noise emission criteria based on the requirements of the Local Authority.

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

2.0 OBJECTIVES

To establish, by means of detailed 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 position.

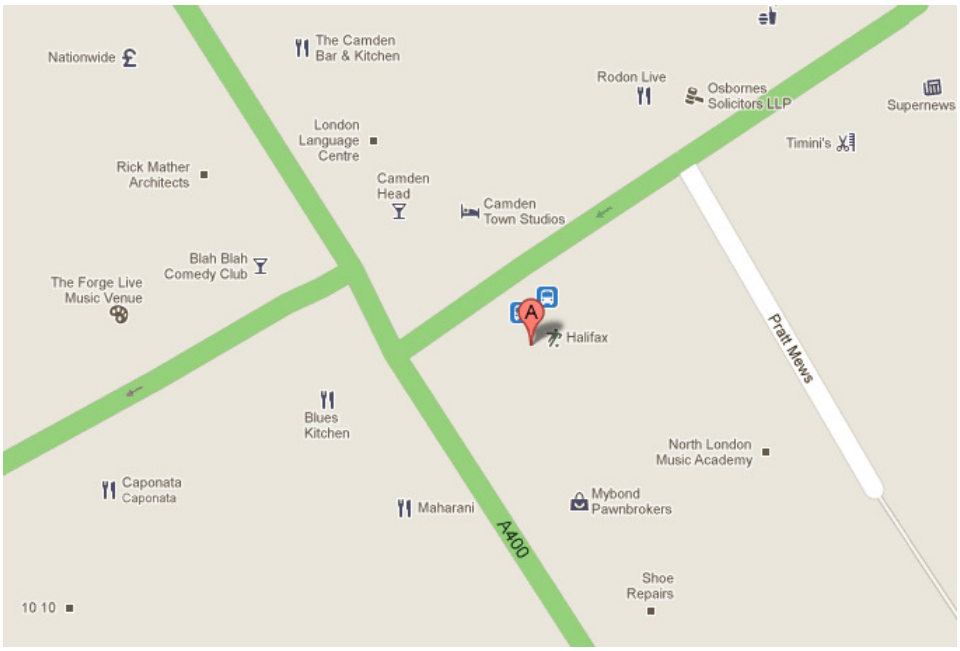
Based on the results of the noise survey and in conjunction with the requirements of the Local Authority to propose suitable plant noise emission criteria.

To undertake a plant noise assessment based on the manufacturer's declared plant noise emissions.

3.0 SITE DESCRIPTION

3.1 Location

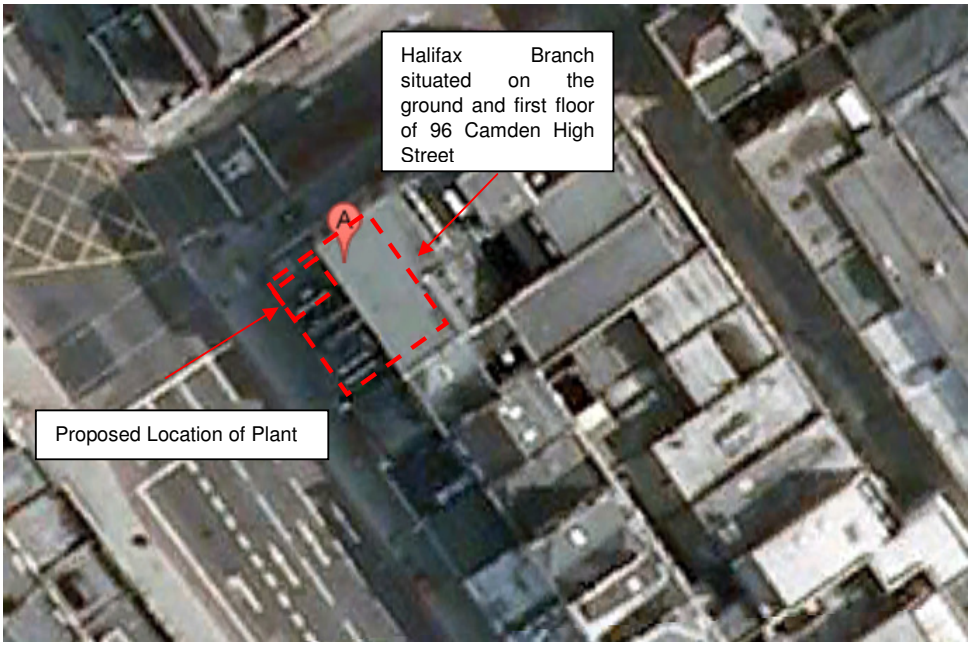
The Halifax bank branch is going to be expanded into the nearby corner ground floor and first floor of the commercial building at 96 Camden High Street which falls within the London Borough Of Camden's jurisdiction. See Location Map below.



Location Map (maps.google.co.uk)

3.2 Description

The Halifax branch currently occupies a ground and first floor area within the commercial building at 96 Camden High Street. The current proposals allow the branch to expand into the next door ground floor and first floor space. The proposed outdoor items of plant will be located on the first floor flat roof space which overlooks Camden High Street.



Site Plan (maps.google.co.uk)

The nearest neighbouring premises are located at the second floor of the building. Based on our visual inspection, residential premises may be located on the first floor of the neighbouring premises. Please see annotated screen capture below:

Street view elevation (maps.google.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

5.1 Procedure

Fully automated environmental noise monitoring was undertaken from 12:30 hours on 18 October 2011 to 11:30 hours on 19 October 2011.

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 and the sky was generally clear. We understand that generally throughout the survey period the weather conditions were as described above with minimal rainfall. At the beginning and end of the survey, the nearby plant were not operational.

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 a single position at the boundary with the potential residential premises to the South overlooking Camden High Street. The microphone was secured on a pole and was positioned around 1.5m from first floor flat roof level.

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	3542	LD calibration on 24/02/2010
Type 1 ½" Condenser Microphone	PCB	377B02	104675	LD calibration on 24/02/2010

The sound level meter, including the extension cable, was calibrated prior to and on completion of the survey. No significant change was found to have occurred (no more than 0.2 dB).

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 17741/TH1 to 17741/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 traffic from Camden High Street.

8.0 PLANT NOISE EMISSION CRITERIA

Camden Development Policies Document, Section 3, Table E states the following requirements

Table E: Noise levels from plant and machinery at which planning permissions will not be granted			
Noise description and location of measurements	*Period*	*Time*	*Noise Level*
Noise at 1 metre external to a sensitive facade	*Day, Evening, and night*	*0000-2400*	*5dB(A)<LA90*
Noise that has a distinguishable discrete continuous note (whine, hiss, screech, hum) at 1 metre external to a sensitive facade.	*Day, Evening, and night*	*0000-2400*	*10dB(A)<LA90*
Noise that has distinct impulses (bangs, clicks, clatters, thumps) at 1 metre external to a sensitive facade.	*Day, Evening, and night*	*0000-2400*	*10dB(A)<LA90*
Noise at 1 meter external to sensitive facade where LA90>60	*Day, Evening, and night*	*0000-2400*	*55dB LAeq*

The results of the environmental noise survey show that the noise levels incident at the neighbouring premises only fall below 60dB LA90 between the hours of 00:30-06:15. The proposed plant will operate during normal branch opening hours i.e. 8.30am to 5.30pm with the exception of the comms unit (Cu-5) which will operate continuously. The following table presents the proposed plant noise emission criteria which are based on the results of the environmental noise survey and Camden's plant noise emission requirements.

	Plant Noise Emission Limits (dBA)		
	Daytime (07:00 – 23:00 hours)	**Night Time (23:00 – 07:00 hours)**	**24hours**
Residential window	**55**	**40**	**40**

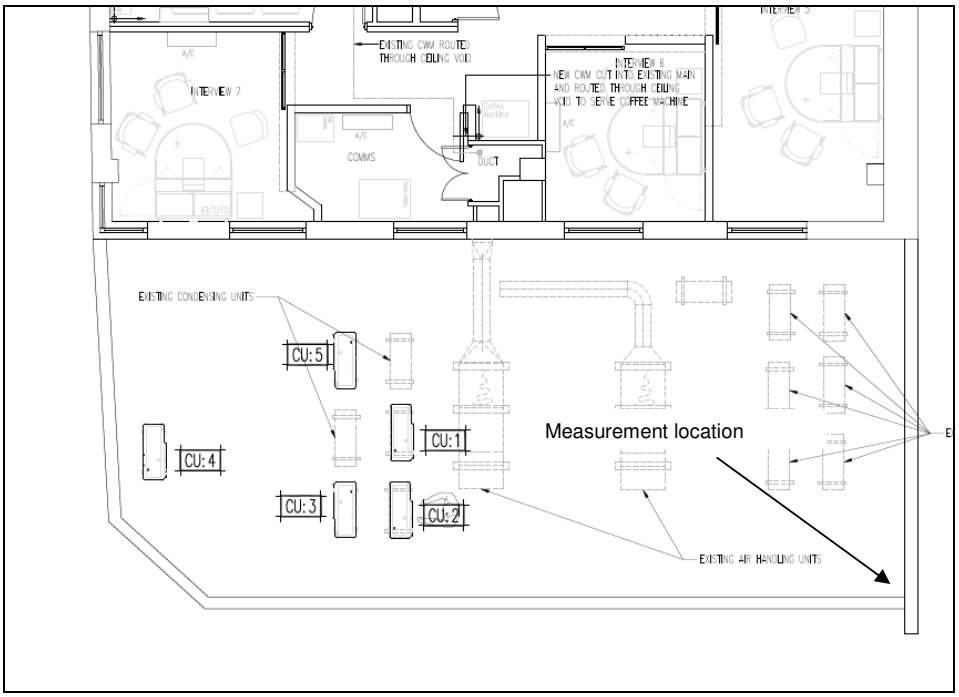
It should be noted that the above criteria are subject to final approval by the Environmental Health Department of Camden Council.

Furthermore, the condenser units and associated pipework should be vibration isolated from the structure.

9.0 PLANT NOISE ASSESSMENT

9.1 Location of Plant

The siteplan drawing below shows the proposed location of the 5 proposed outdoor condensing units. The units will be located at the first floor flat roof which is overlooking Camden high street.



Source: AMD Environmental Ltd

The nearest location of the proposed outdoor unit to the neighbouring residential window is around 8m and around 3m from the nearest commercial window.

9.2 Plant Noise Emissions

AMD Environmental Ltd has provided the following information in relation to the noise emissions from the proposed plant.

Ref	Model	Sound Pressure Level dBA Heating/Cooling
CU-1	PUHZ-RP71\HA4	46/44
CU-2	PUHZ-RP71\HA4	46/44
CU-3	PUHZ-RP71\HA4	46/44
CU-4	MUZ-GE25VA	48/47
CU-5	PUHZ-RP71\HA4	46/44

Please note that we have assumed that the units do not contain any tonal sound characteristics and that the levels above are presented at 1m from each unit under free field conditions.

We understand that only the comms unit (CU-5) will operate continuously.

9.3 Plant Noise Impact Assessment

Our calculations, which allow for facade reflections, show that the combined plant noise emissions will comply with the requirements of Camden Council at the neighbouring windows.

10.0 CONCLUSIONS

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

Suitable plant noise emission criteria have been proposed. The subsequent plant noise emission assessment indicates that the combined plant noise emissions at 1m from the overlooking windows will comply with the requirements of Camden Council.

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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).

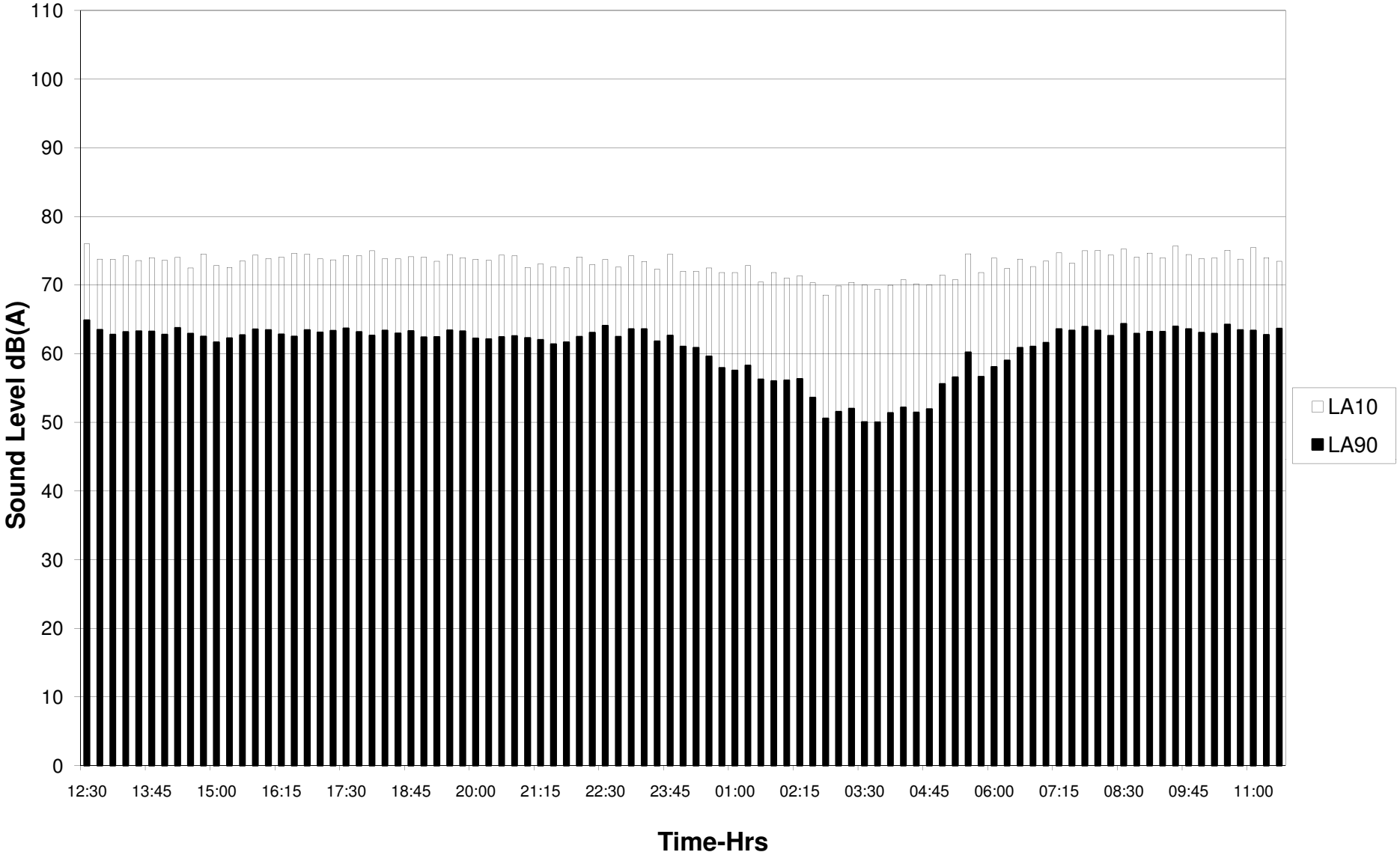
The use of digital technology in sound level meters now makes the measurement of L_{eq} very straightforward.

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.

Halifax Bank Plc, 69 Camden High Street, London

L_{A10} and L_{A90} Noise Levels

Tuesday 18/10/2011 - Wednesday 19/10/2011

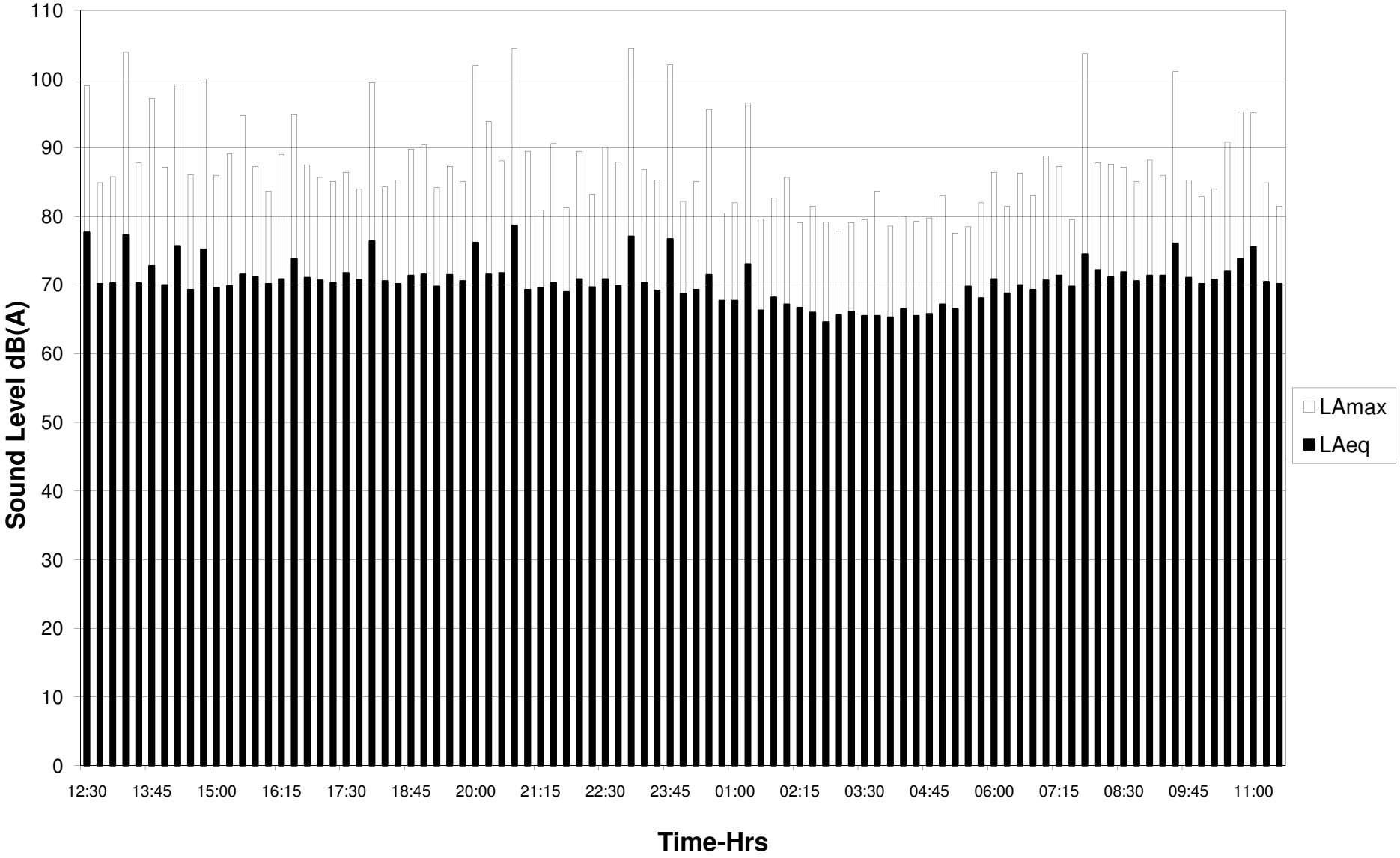


Time History Graph 17741/TH1

Halifax Bank Plc, 69 Camden High Street, London

L_{Amax} and L_{Aeq} Noise Levels

Tuesday 18/10/2011 - Wednesday 19/10/2011



Time History Graph 17741/TH2