60 CHARLOTTE STREET

CLADDING REPORT

6.00 CONCLUSION

In conclusion we believe that the current planning proposals for 60 Charlotte Street provide significant advantages over the consented scheme which can be summed up in the following way:

It provides a totally integrated building package in sustainability terms. This is something which is achieved all too infrequently in refurbishment. This is currently a failing building which, in our opinion, will respond magnificently to the level of refurbishment we are proposing.

We also believe strongly that not only will the buildings performance benefit from this level of attention, but that the perception of the building within it's street environment will be significantly improved as well. The cladding proposed is of high quality and has been designed to provide an updated architectural response which still sits comfortably within the hierarchy of the existing building and complements its surroundings.

The proposals will therefore serve to enhance the building and the contribution it makes to the character and appearance of this part of the Charlotte Street Conservation Area. It is generally acknowledged that the existing building does not positively contribute to the area and this scheme now provides an opportunity to realise substantial benefits in terms of both sustainable development and physical design.

56-62 Charlotte Street
London

COMBINED ENVIRONMENTAL NOISE SURVEY
AND PLANT NOISE ASSESSMENT
REPORT 12394/CENS3

For :

Cundall
Saffron House
6-10 Kirby Street
London
EC1N 8TS

13 September 2006

HANN TUCKER ASSOCIATES
Consultants in Acoustics
Noise and Vibration

Head Office
Duke House
1-2 Duke Street
WOKING
Surrey GU21 5BA

Tel : 01483 770595
Fax : 01483 729565

Northern Office
82 King Street
MANCHESTER
M2 4WQ

Tel : 0161 935 8337
Fax : 0161 832 8075

E-mail : Enquiries@HannTucker.co.uk
www.hanntucker.co.uk

REPORT 12394/CENS3

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1.0 INTRODUCTION

A refurbishment is proposed at 56-62 Charlotte Street, London, including the installation of 11No. new items of plant at roof level. Hann Tucker Associates have therefore been commissioned to undertake a detailed environmental noise survey of the site, and to carry out a noise assessment of the proposed items of plant.

This report presents the results of the survey. Based on these results and in conjunction with the Local Authority, suitable plant noise emission criteria have been recommended.

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 level position at the proposed development site.

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

To carry out an assessment for the proposed new plant items to determine their acceptability in respect of the proposed criteria.

3.0 SITE DESCRIPTION

56-62 Charlotte Street is bounded by Charlotte Street to the South West, Tottenham Street to the North West, Scala Street to the South East, and by adjoining mixed commercial and residential properties to the North East.

There is an adjoining residential tower block of 9 storeys to the North East.

The development site comprises 7 storeys. There is a first floor roof area and there is a narrow central tower above.

4.0 ACOUSTIC TERMINOLOGY

The acoustic terms used in our 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 11:15 hours on Wednesday 22 June 2005 to 11:15 hours on Thursday 23 June 2005.

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 sunny and dry.

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 3No. positions at the development site. The positions were selected in order to assess the lowest background noise levels at the development site for subsequent use in setting plant noise emission criteria. The measurement positions are described below, and their approximate locations are indicated on the enclosed Site Plan 12394/SP1.

Position No	Description
1	The sound level meter was positioned towards the South of the site overlooking the residential properties on the opposite sides of Scala Street and Charlotte Street.
2	The sound level meter was positioned towards the East of the site overlooking Scala Street and overlooked by the residential tower block.
3	The sound level meter was positioned towards the West of the site overlooking Tottenham Street and Charlotte Street.

All measurement positions were approximately 1.5m above first floor 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	820	0413	LD calibration on 02/09/2004
Type 1 ½" Condenser Microphone	Larson Davis	MK250	4925	LD calibration on 02/09/2004
Type 1 Calibrator	Larson Davis	CAL200	3082	LD calibration on 23/09/2004

Each 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.

Each 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 0.1 dB).

6.0 RESULTS

The results have been plotted on Time History Graphs 12394/TH1 to 12394/TH2 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 sources at all positions were noted to be traffic on surrounding roads and intermittent road work machinery.

8.0 PLANT NOISE EMISSION CRITERIA

In order that the currently prevailing background noise levels are not significantly elevated, we normally advise that the total noise level due to all items of building services plant should be designed to a level at least 5dBA below the currently prevailing lowest L_{A90} noise level (during the period that plant would be operational).

London Borough of Camden's requirements are in line with the above criterion, as follows:

> *"The Council considers that for new developments involving noisy plant/ equipment or other uses, design measures should be taken to ensure that noise levels predicted at a point 1 metre external to sensitive facades are at least 5dB(A) less than the existing background measurement (L_{A90}) when the equipment is in operation. Where it is anticipated that equipment will have a noise that has a distinguishable, discrete continuous note (whine, hiss, screech, hum) and/or if there are distinct impulses in the noise (bangs, clicks, clatters, thumps), special attention should be given to reducing the noise levels at any sensitive facade by at least 10dB(A) below the L_{A90} level ".*

Based on the above criteria and the results of the environmental noise survey, we therefore propose the following future plant noise emission criteria to be achieved (with all relevant plant operating simultaneously) at 1 metre from the nearest noise sensitive facades based on the minimum measured L_{A90} noise level.

Position	Noise Emission Limit (dBA)			
	Office Hours (07:00 – 18:00 hrs)	Evening (18:00 – 22:00 hrs)	Night-time (22:00 – 07:00 hrs)	24 Hours
1	49	49	44	44
2	49	49	44	44
3	50	49	43	43

The above criteria are only relevant for the stated time periods. Hann Tucker Associates can advise for other operational periods if requested.

The total cumulative noise emissions of any future plant should not exceed the above criteria at 1m from the nearest noise sensitive façade.

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

9.0 PROJECT DATA

9.1 Proposed Items of Plant

Table 9.1 below list the proposed items of plant to be installed. We understand the proposed condenser units have a night mode which will limit the night time noise levels to 45dB per unit. However, in order to comply with the night time criterion set by London Borough of Camden, the condenser units must operate at night mode from 22:00 hours each night.

Table 9.1

Location	No. and Reference of Plant Units	Sound Pressure Level @1m from unit	
		Daytime (07:00 – 22:00hrs)	Night Time (22:00 – 07:00hrs)
General Roof Area	1 No. REYQ44M DAIKIN Condenser	65dBA	45 dBA
	2 No. REYQ34M DAIKIN Condenser	67dBA	45 dBA
	1 No. REYQ32M DAIKIN Condenser	63dBA	45 dBA
	5 No. REYQ18M DAIKIN Condenser	68dBA	45 dBA
	1 No. Nuaire Toilet Extract Fan	67dBA	67 dBA
	1 No. ESBHS4-E Nuaire Toilet Supply Fan	49dBA	49 dBA
Total combined Sound Pressure Level @ 1m		**73dBA**	**67dBA**

9.2 Drawings

All acoustic analyses reported herein have been based upon the following Rolfe Judd drawing:

Drawing No.	Title	Date
4322/Z(SK) P	Proposed Site Plan	June 2006
L4176/M/5107	Primary Roof Layout	August 2006

9.3 Operational Hours

We understand the proposed items of plant will be operational 24 hours per day.

10.0 PLANT NOISE IMPACT ASSESSMENT

For the purposes of this assessment, the nearest noise sensitive receptor is considered to be a residential tower overlooking the roof area of the site, at approximately 16m to the North East of the site.

Based on our assessment in Section 8.0 we therefore propose:

- a future daytime (07:00 – 22:00 hours) plant noise emission criteria of 49dBA and,
- a future night time (22:00 – 07:00 hours) plant noise emission criteria of 43dBA

to be achieved, with all relevant plant operating simultaneously, at 1 metre from the nearest noise sensitive façade.

Our calculations indicate the following noise levels incident at the above receptor.

Plant Item	Calculated Incident Noise Level at 1m from the nearest residential property (dBA)	
	Daytime (07:00 – 22:00 hours)	Night Time (22:00 – 07:00 hours)
1 No. REYQ44M DAIKIN Condenser	41dBA	21dBA
2 No. REYQ34M DAIKIN Condenser	43dAB	21dBA
1 No. REYQ32M DAIKIN Condenser	39dBA	21dBA
5 No. REYQ18M DAIKIN Condenser	44dBA	21dBA
1 No. Toilet Extract Fan	43dBA	43dBA
1 No. ESBHS4-E Nuaire Toilet Supply Fan	25dBA	25dBA
Calculated Cumulative Incident Noise Level	**49dBA**	**43dBA**

In addition to the distance attenuation a louvered screen surrounding the plant area is proposed which should offer additional screening loss.

11.0 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 proposed development site.

A detailed critical period daytime fully manned environmental noise survey has been undertaken in order to establish the currently prevailing roof level environmental noise climate around the proposed development site.

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

Based on our assessment in Section 10.0 above, the proposed new items of plant are therefore likely to comply with the requirements of the London Borough of Camden.

Prepared by
Karen Ehlers
Assistant Consultant
HANN TUCKER ASSOCIATES

Checked by
John Gibbs
Director
HANN TUCKER ASSOCIATES

HT: 12394

13 September 2006

56-62 CHARLOTTE STREET, LONDON

ACOUSTIC SPECIFICATION FOR ACOUSTIC LOUVRE SCREENING

The acoustic louvred screen shall extend continuously around the roof plant area. The acoustic louvred roof shall extend over the East half of the roof plant area. See attached Drawing 12394/D1.

Performance

The acoustic louvres shall be at least 300mm deep and provide, in their as-installed condition, the following minimum combined sound reduction indices (SRI's)/Transmission Losses when tested in accordance with BS EN ISO 140-3: 1995:

Minimum Sound Reduction Index (dB) at Octave Band Centre Frequency (Hz)							
63	125	250	500	1k	2k	4k	8k
5	7	10	12	13	14	12	9

The pressure loss under maximum operating conditions should be confirmed with the mechanical engineers.

Construction

The louvre frame shall be constructed from a suitable gauge of galvanised mild steel, or aluminium, supporting louvre blades of like material. The acoustic material in the blades shall be packed to a density of not less than 45kg/m^3 and be inert, rot and vermin proof, non-hygroscopic incombustible mineral fibre. This shall be faced with glass fibre cloth, or other approved infill protection membrane, and retained on the lower blade face by perforated galvanised mild steel or aluminium (not "expamet" or similar derivative) having a minimum thickness of 0.5mm fixed at 200mm (max) centres.

All junctions between the acoustic screen and adjacent structures shall be made good and sealed with a heavy grout and/or non-hardening dense mastic.

The supplier shall ensure that the assembled enclosure is designed and constructed to withstand site operating conditions such as wind and snow loads, etc., as appropriate, and is suitably weatherproofed.

The acoustic media shall not comprise materials which are generally composed of mineral fibres, either man made or naturally occurring, which have a diameter of 3 microns or less and a length of 200 microns or less or which contain any fibres not sealed or otherwise stabilised to ensure that fibre migration is prevented.

Any deviations from the above specification must be agreed by, and confirmed in writing to, Hann Tucker Associates.