PSX0105017

NOISE ASSESSMENT OF ROOF MOUNTED PLANT AT 12-18 THEOBALDS ROAD, LONDON WC1

Project No: 013809

Report prepared by:

K.J.Gayler. BSc (Hons). AMIOA
Acoustic Consultant.

Sharps Redmore Partnership

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1.0 Introduction

1.1 The Sharps Redmore Partnership has been instructed by Status Design Associates to carry out an assessment of noise from proposed air conditioning units to be mounted on a roof at 12-18 Theobalds Road, London WC1. (See Figure 1 for a location plan and Figure 2 for a roof plan).

1.2 The Plant is to serve the existing building, which is currently being refurbished, and the Local Authority (London Borough of Camden), has asked for a noise assessment to be undertaken.

1.3 The object is to assess the noise from the proposed units, as it may affect nearby proposed residential properties.

1.4 The proposed plant is to consist of 4 Daikin single fan VRV heat recovery units. Three of these units have a manufacturers quoted noise level of 58 dBA at 1 metre. The remaining unit has a manufacturers quoted noise level of 57 dBA at 1 metre.

1.5 Appendix A contains details of the acoustic terminology used in this report.

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2.0 Noise survey

2.1 A noise survey was carried out on 2nd to 3rd August 2001. Background L_{A90} and ambient L_{Aeq} noise levels were taken, firstly at roof level, and then at pavement level outside 2 Kings Mews.

2.2 The weather remained dry and calm for the majority of the survey.

2.3 The survey was carried out using Bruel and Kjaer 2236 precision sound level meter. Generally, 15-minute measurements were taken. The meter was calibrated before and after the surveys and no significant drift was recorded.

2.4 The units are expected to operate from 0730 hours to 1930 hours (i.e. daytime only). However, the background noise measurements were taken over a daytime and night time period time period, in order to ensure that the units will not cause disturbance if they are required to operate during the night (for example to cool computer servers).

2.5 For background noise levels, the L_{A90} index was used. This is the A-weighted noise level exceeded for 90% of the measurement period, indicating an underlying background noise level by filtering out any short-lived peaks of noise. A-weighting is a scale used to reflect the response of the human ear to different frequencies.

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3.0 Criteria

3.1 Planning conditions can be imposed to ensure that the noise from the proposed plant does not adversely affect the amenity of nearby residents.

3.2 I understand that the London Borough of Camden generally require that the noise level from the plant that is 5 dBA below the minimum background L_{A90} noise level, during the proposed hours of operation.

3.3 This will be sufficient to protect nearby residents and would lead to an increase in the background noise level of no more than 1 dBA, during the quietest background period. During noisier background periods the increase in background noise level as a result of the proposed plant would be negligible.

3.4 The nearest residential properties have been identified as the apartment buildings to the rear of 12-18 Theobalds Road, the nearest being 2 Kings Mews. The nearest sensitive window is likely to be a skylight in the roof of this building, above first floor level. This is approximately 10 metres from the proposed plant, being on a flat roof above 1st floor level to the rear of 12 Theobalds Road.

3.5 The residential property and survey positions are shown in the location plan, Figure 1 and roof plan, Figure 2.

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4.0 Noise Survey Results

4.1 The noise survey gave the following results:

Roof/Street	Time	L_{Aeq} dB	L_{A90} dB	L_{AMAX} dB
Roof	1200-1300	55	54	72
Roof	1300-1400	56	54	74
Roof	1400-1500	56	54	74
Street	1900-2000	54	53	69
Street	2000-2100	54	52	67
Street	2100-2200	53	52	66
Street	2200-2300	52	50	68
Street	2300-0000	52	49	69
Street	0000-0100	51	47	66
Street	0100-0200	52	46	62
Street	0200-0300	51	45	64

4.2 The minimum L_{A90} background noise level measured in Kings Mews was 45 dB. The minimum L_{A90} background noise level measured in Kings Mews during the expected period of operation of the plant (up to 2000 hours) was 53 dB.

4.3 This would give a maximum allowable noise level at the nearby residences from the units, of 40 dBA, if the units were to run at night. During the day (up to 2000 hours), a maximum allowable noise level from the units at the nearby residences, of 48 dBA should be applied.

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5.0 Calculations

5.1 The units will be screened from the residences, to a certain extent, by a short mansard on the flat roof.

5.2 Calculations were carried out to assess the noise levels from the inverter units in their proposed positions, at the nearby residences, as follows:

Position	Calculation	Level
Inverter unit at 1 metre (3 of)		58 dBA
Inverter unit at 1 metre (1 of)		57 dBA
Total for all units at 1m	58+58+58+57	64 dBA
Distance attenuation	20 log ($^{1}/_{10}$)	-20 dBA
Screening attenuation	Minimum 5 dBA	-5 dBA
Total all units at residential	64-24-5	**39 dBA**

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6.0 Conclusions and Recommendations

6.1 The total predicted noise level at the nearest residential accommodation, from the proposed plant, of 39 dBA is within the limits of 48 dBA during the day and 40 dBA during the night.

6.2 No further noise attenuation works should be required in order to comply with likely planning conditions imposed by the London Borough of Camden.

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