AET Acoustic & Environmental Technology

An Acoustic Report

(Background Noise Assessment to BS4142:1997)

On

Woburn House

20 Tavistock Square

London W1H 9QH

For

The Kut Partnership

Rosebery House, Tottenham Lane

London, N8 9BY

PSX010 4325

Background Noise Assessment

in accordance with
British Standard 4142 : 1997

('Method for Rating Industrial Noise Affecting Mixed Residential and Industrial Areas')

at

Woburn House
20 Tavistock Square
London
W1H 9HQ

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Signed: _____

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1. Introduction:

Acoustic & Environmental Technology has been instructed by The Kut Partenership to carry out a background noise survey at Woburn House, 20 Tavistock Square, London. The survey is to be undertaken during a normal working weekday between 06:00 hours and 21:00 hours, with 15 minute L_{Aeq}, $L_{Amax.,}$ L_{Amin}, & L_{A90} levels being recorded.

This survey was carried out to assess the existing background level at roof level and to calculate the acoustic impact of the proposed installation of six roof mounted condenser units generally in accordance with British Standard 4142 : 1997 'Method for Rating Industrial Noise Affecting Mixed Residential and Industrial Areas'.

It is proposed to install these units as indicated on RHWL Architects drawing number 4720 SK1 and as shown on the attached measurement position plan.

Woburn House is situated at the north side of Tavistock Square and the attached measurement position plan indicates the nearest residential properties to the proposed condenser site.

This report includes a predicted assessment of typical noise levels at the nearest residential properties between 06:00 hours and 21:00 hours based on the measurement results over that period.

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2. Procedure:

Sound pressure levels were recorded approximately at the centre of the roof and at 1.5m from roof level on Monday 19th March 2001 between 06:00 hours and 21:00 hours. Continuous equivalent noise levels were recorded over fifteen minute periods which included maximum, minimum and a 90% percentile.

All the results were down loaded from the noise meter and are tabulated onto table 1 of this report.These results reproduced as graph figure 1 of this report.

In addition, weather conditions and general audible and visual observations were also carried out during the measurement period. It should be noted that a survey co-ordinator was present during the 24 hour test period in order to indentify any specific noise events that may have occurred.

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3. Apparatus:

DESCRIPTION	MAKE	TYPE	SERIAL NO.
Integrated Sound Level Meter	Norsonics	110	13094
12.5mm Microphone Cartridge	Norsonics	1220	15112
Microphone Pre - Amplifier	Norsonics	1201	12861
Calibrator	Bruel & Kjoer	4230	657234

The above equipment was calibrated using a sound pressure level of 94.0 dB at an octave band centre frequency of 1000Hz with reference to 2 x 10 -5 Nm-2 before and after the tests and the equipment set to have no inaccuracy.

All the above equipment was fully tested and calibrated at Gracy and Associates, Chelveston, Northants and found to comply with:

- British Standard EN 60651 type 0
- British Standard EN 60804 type 0
- IEC 61260 type 0
- Norsonics Production Standards

4. Weather Conditions:

Temperature	4-12 ^{0}C
Relative Humidity	85-95 %
Wind Speed	< 2m/s
Wind Direction	NE to SE
Cloud Cover	Light / partial
Precipitation	None

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5. General Observations:

During the above test period the following general observation were made which could be considered an influence to the existing background levels.

- Traffic noise remained audibly constant over the measurement period.
- Emergency services sirens were audible during the majority of the 15 minute time periods.
- Helicopter noise predominant during 08:00, 11:15, 14:45 and 17:30 time periods.
- No audible change in background noise levels when existing roof plant operated.

6. Results:

All results have been down loaded from the noise meter and are reproduced onto table 1.The table also shows the arithmetic average of each measurement over the 15 hour measurement period.

A summary of the results is shown below.

All the results have been reproduced and are shown on the attached graph figure 1.

Arithmetic Averages

$L_{Aeq\ 15\ hour}$	54.6 dB
$L_{A\ max.\ 15\ hour}$	66.9 dB
$L_{A\ min.\ 15\ hour}$	50.3 dB
$L_{A\ 90\ 15\ hour}$	52.3 dB

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7. Calculations & Predictions:

Calculation sheet, table 2, shows the predicted noise levels associated with the roof mounted condenser units.

Table 1A - summates the combined sound pressure levels of the six units to be installed. The individual levels of the two types of units are published free field levels from the manufacturers. This calculates out to 68dB(A).

Table 1B - indicates the maximum predicted level at 1m outside the nearest residential property (i.e. approximately 22m from the source). Calculations indicate a level of 38dB(A) which could be considered 15 dB below the measured background.

Table 1C - predicts a maximum distance from the source to give no increase in the background level. This suggests a distance of 12m from source in order to give a level of 10dB below the measured background.

All the calculations and predicted noise levels relate to the weekday time period of 06:00 - 21:00 hours only.

7. Assessment:

The following assessment has been made generally in accordance with British Standard 4142 : 1997 'Rating Industrial Noise Affecting Mixed Residential and Industrial Areas' with relation to the nearest residential property.

Specific Level	38	dB
Acoustic Feature	0	dB
Rating Level	38	dB
Background	55	dB
Excess Over Background	**-17**	**dB**

Assessment Indicates-"Positive indication that complaints are unlikely"

9. Conclusions:

The above assessment has suggested that the proposed installation of the condenser units on the roof of the building, will not be audible at the nearest residential property window.

This has been based on recorded noise levels at the centre of the roof area where the plant is to be sited over a 15 hour daytime weekday period.

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Woburn House,
20 Tavistock Square, London

Sound pressure levels recorded on 19/3/01

Time	LA eq	LA max	LA min	LA 90
06:00	53.8	60	49.6	51.5
06:15	54.2	60.8	50	52.1
6:30	54.5	61.5	50.1	52.6
6:45	54.6	65.4	50.8	53
7:00	54.9	65.4	51.4	53
7:15	54.4	59	50.9	53
7:30	54.4	61.9	50.6	52.8
7:45	54.7	61.9	51.4	53
8:00	56.2	76.3	50.9	53
8:15	55.2	69.2	52	53.4
8:30	56	71.3	51.7	53.4
8:45	55.4	61.4	51.6	53.8
9:00	54.8	61.8	51	53.4
9:15	54.9	71.1	51.3	53.4
9:30	53.9	61.4	51.2	52.6
9:45	56.2	71	51.1	52.8
10:00	55.5	66.9	50.6	53.2
10:15	54.5	69.6	50.8	52.8
10:30	54.4	61.8	51.3	53.2
10:45	54.8	71.7	50.8	52.4
11:00	55.4	69.6	51	53.2
11:15	59.7	75.2	51.3	53.2
11:30	54.9	64.8	50.8	53
11:45	54.1	66.4	50.3	52.4
12:00	54.1	60	49.8	52.6
12:15	54	61	50.3	52.4
12:30	56.5	72.8	50.3	52.4
12:45	54.5	71.8	50.5	52.4
13:00	54.4	67	49.2	51.6
13:15	55.2	66.1	50	52
13:30	53.3	61.7	49.9	51.8
13:45	54.2	63.9	50	52
14:00	54.1	69.1	50.1	52
14:15	54.2	64.3	50.4	52
14:30	54.2	67.7	49.3	51.8
14:45	57.5	75.3	50.2	52.2
15:00	53.6	65.9	50.4	52.2
15:15	56.4	74.7	50.2	52.4
15:30	54.4	67.2	49.7	52
15:45	55.8	69.4	50.9	52.8
16:00	55.8	83.8	49.9	52.4
16:15	54.1	78.3	49.2	51.6
16:30	54.1	78.2	50	51.8
16:45	55	67.1	50.3	52.4
17:00	54.2	65.4	50.2	51.8
17:15	53.4	61.3	50	51.8
17:30	56.9	74.6	50.4	52
17:45	54	65.2	50.1	52.4
18:00	53.9	62.3	50	51.8
18:15	53.9	62.8	49.6	52
18:30	55.1	74.2	49.8	51.8

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TABLE 1

Woburn House,
20 Tavistock Square, London

Sound pressure levels recorded on 19/3/01

18:45	53.3	63.7	49.7	51.4
19:00	55.9	71.8	50	51.8
19:15	53.2	63.2	49.2	51.4
19:30	53.7	68.9	49.3	51.4
19:45	52.5	58	48.4	50.8
20:00	52.2	57.5	49.2	50.8
20:15	52.6	62.8	48.6	51
20:30	52	58.2	48.9	50.6
20:45	53.5	71.8	48.6	50.4
total	*3277.1*	*4012.4*	*3015.1*	*3136.2*
average	**54.6**	**66.9**	**50.3**	**52.3**

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TABLE 1

Woburn House

TABLE 1A

Source Levels @ 1m

	63	125	250	500	1k	2K	4K	8K
L1 (P600)	71	71	59	59	55	53	48	41
L2	71	71	59	59	55	53	48	41
L3	71	71	59	59	55	53	48	41
L4 (P200)	65	61	56	55	50	47	45	39
L5	65	61	56	55	50	47	45	39
L6	65	61	56	55	50	47	45	39
Total-Arth	81.60	79.20	69.00	68.40	63.00	60.00	55.80	48.00
Total-LOG	***76.74***	***76.19***	***65.54***	***65.23***	***60.96***	***58.74***	***54.54***	***47.90***
	-26.00	-16	-9	-3	0	1	1	-1
	50.74	60.19	56.5356	62.2266	60.9645	59.7444	55.53556	46.89564
dB(A)	***68***							

TABLE 1B

Level @ Nearest Residential

	77	46	66	65	61	59	55	48
hemispherical divergence	3	3	3	3	3	3	3	3
total @ 1m	80	49	69	68	64	62	58	51
distance correction (20m)	27	27	27	27	27	27	27	27
screening	5	5	5	5	5	5	5	5
	48	17	37	36	32	30	26	19
	-26	-16	-9	-3	0	1	1	-1
	22.0	1.0	28.0	33.0	32.0	31.0	27.0	18.0

dB(A)	***38***
Background	53
Level below background	15

TABLE 1C

Maximum distance from source to give no increase in background level

	77	46	66	65	61	59	55	48
hemispherical divergence	3	3	3	3	3	3	3	3
total @ 1m	80	49	69	68	64	62	58	51
distance correction (12m)	22	22	22	22	22	22	22	22
screening	5	5	5	5	5	5	5	5
	53	22	42	41	37	35	31	24
	-26	-16	-9	-3	0	1	1	-1
	27.0	6.0	33.0	38.0	37.0	36.0	32.0	23.0

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Background	53
Level below background	10

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Woburn House, 20 Tavistock Square, London.

Background Noise levels (roof top) - 19th March 2001

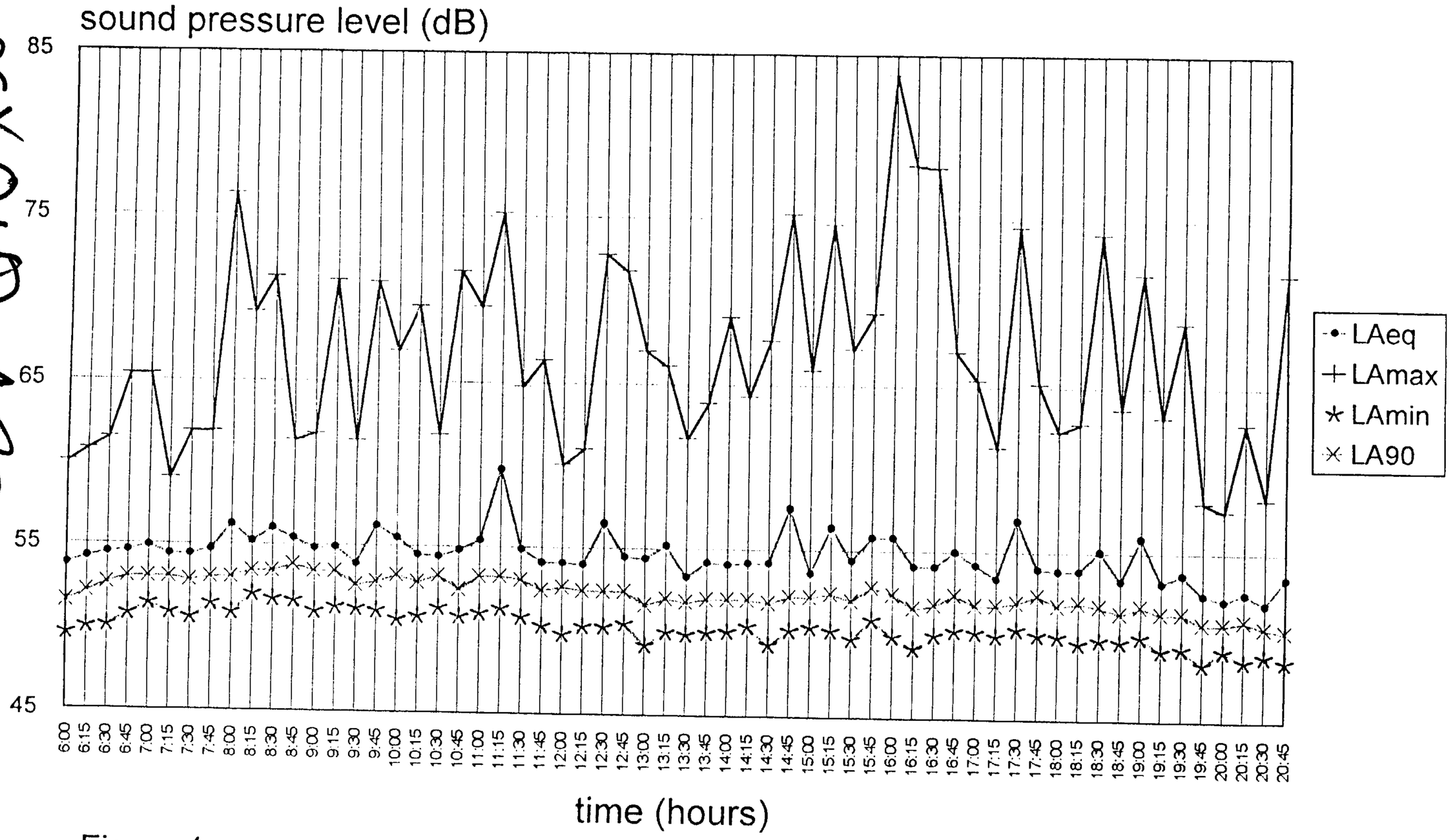

Figure 1