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24 HOUR NOISE LEVEL SURVEY CARRIED OUT AT THE REAR OF MIRANDA HOUSE, 58 GRAFTON WAY, LONDON W1 AND A REPORT ON THE NOISE CONTROL MEASURES REQUIRED TO MINIMISE THE NOISE IMPACT OF THE PROPOSED NEW AIR CONDITIONING PLANT

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Authorised for Release by : I J Marchant

Client : Peter Deer and Associates
Project : Miranda House, 58 Grafton Way, London W1
Emtec Ref. : QF7112/PF3582/RP1
Date : 10th April 2012

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QF7112/PF4582/RP1

24 HOUR NOISE LEVEL SURVEY CARRIED OUT AT THE REAR OF MIRANDA HOUSE, 58 GRAFTON WAY, LONDON W1 AND A REPORT ON THE NOISE CONTROL MEASURES REQUIRED TO MINIMISE THE NOISE IMPACT OF THE PROPOSED NEW AIR CONDITIONING PLANT

1.0. INTRODUCTION

This report details the results of a 24 hour noise survey carried out on the first floor roof at the rear of the building at Miranda House, 58 Grafton Way, London W1.

The objectives of this survey were as follows:

- To establish the existing background noise level at the rear of the building.
- To assess the proposed new Air Conditioning Plant that is to be mounted on the first floor roof and to recommend areas that may require particular treatment to ensure that the operation of the new plant does not disturb the occupants of the neighbouring residential properties.

This report has been divided into the following sections for ease of analysis:

1.0. INTRODUCTION
2.0. TEST INSTRUMENTATION
3.0. TEST PROCEDURE
4.0. RESULTS
5.0. DISCUSSION OF RESULTS

2.0. TEST INSTRUMENTATION

All measurement equipment used during the survey complied with the requirements of BS4142:1997 "Method for Rating Industrial Noise Affecting Mixed Residential and Industrial Areas". Details of the equipment are as follows:

Integrating Sound Level Meters	: Bruel & Kjaer type 2231 fitted with a Bruel & Kjaer type 4155 ½ inch condenser microphone.
Statistical Analysis Modules	: Bruel & Kjaer type BZ 7115 capable of computing, percentile levels L1, L10, L50, L90 and L99 and also the Leq level.
Acoustic Calibrator	: Bruel & Kjaer type 4231 electronic calibrator.

Calibration was performed before and after the surveys and found to be, in all cases, +/- 0.1 dB from the reference source.

3.0. TEST PROCEDURE

The survey was conducted during a continuous 24 hour period from 10.18am on Tuesday the 3rd of April 2012 to 9.38am on Wednesday the 4th of April 2012.

Data was continuously acquired throughout the measurement period with the individual averaging time for statistical noise data set to 20 minutes. The following statistical measurements were recorded concurrently:

LA1 - The Sound Pressure Level exceeded for 1% of the measurement period.

LA10 - The Sound Pressure Level exceeded for 10% of the measurement period.

LA50 - The Sound Pressure Level exceeded for 50% of the measurement period.

LA90 - The Sound Pressure Level exceeded for 90% of the measurement period. LA90 is considered to represent the "background noise level" during the measurement period and is used for the assessment of noise to determine the likelihood of complaints (See BS 4142).

LA99 - The Sound Pressure Level exceeded for 99% of the measurement period.

LAeq - The continuous steady state Sound Pressure Level that has the same acoustic energy as the real fluctuating level.

All noise levels recorded were filtered using a standard 'A' Weighting filter.

3.1. Measurement Position

The noise levels were measured at a position on the first floor roof at the rear of the building. The microphone was placed on a tripod at the rear of the roof as shown on Photo A and Photo B attached.

The microphone was positioned so that it was pointing towards the rear of the building.

The microphone was approximately 1.2 metres above the first floor roof level. The rest of the measurement equipment was located within a weatherproof enclosure with a low impedance cable running from the microphone to the instrumentation.

3.2. Weather Conditions

The weather conditions prevailing during the measurement period were in line with those recommended in BS 4142:1997 with no precipitation and no wind. The weather was clear and bright throughout the measurement period.

The microphone was protected throughout the tests by an acoustically transparent wind balloon.

4.0. RESULTS

The raw test data, gathered during the 24 hour noise survey, is given in Appendix 'A 'of this report.

The 'A' Weighted Leq levels measured over each 20 minute interval throughout the 24 hour period (denoted by LAeq, (20 mins) are displayed as a bar graph on the attached Sketch No QF/7112/T1 at the back of this report.

The 'A' Weighted percentile levels measured over each 20 minute interval denoted by LA10 (20 mins), LA50 (20 mins) and LA90 (20 mins) are displayed as a line graph on the attached Sketch No QF/7112/T2 at the back of this report.

4.1. Summary of Results

The table QF/7112/D1 below summarises the noise levels taken over the 24 hour period in terms of the maximum and minimum Sound Pressure Levels recorded.

Table QF/7112/D1 – Summary of Maximum and Minimum Noise Levels

	LA1	LA10	LA50	LA90	LA99	LAeq
Min.	54.0dBA	53.5dBA	52.5dBA	51.5dBA	50.5dBA	52.5dBA
Max.	72.0dBA	62.0dBA	60.5dBA	60.0dBA	59.5dBA	62.2dBA

5.0. DISCUSSION OF RESULTS

The lowest recorded LA_{90} background noise level was 51.5dBA which occurred during eight time periods ending at 2.18am; 2.38am; 3.18am; 3.58am and 4.38am to 5.38am. The LA_{90} background noise level was between 51.5dBA and 53.5dBA during the period between midnight and 9am.

During the period of 9am and midnight the lowest LA_{90} noise level was 52dBA which is only 0.5dBA higher than the lowest recorded level of 51.5dBA. We have therefore based our recommended maximum allowable noise level on 24 hour operation of the plant.

In order to ensure that the existing lowest LA_{90} background noise level is not increased the maximum allowable LAeq level from the new plant should be 10dB below the lowest LA_{90} noise level recorded during our survey. The table below confirms the limiting LAeq noise level allowable with all the new plant in operation:-

Table QF/7112/D2 – Limiting LAeq Noise Level for New Plant

Hours of Operation	Lowest LA_{90} Background Noise Level	Limiting LAeq Noise Level For New Plant
24 hours	51.5dBA	41.5dBA*

* Note: This limiting noise level will apply at 1 metre from the nearest residential property's window.

Appendix 3
NOISE LEVEL AND CONTROL REPORT

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It is proposed to install a single Mitsubishi PURY-EP600YSJM-A Air Cooled Condenser/Compressor unit on the first floor roof of the existing Venezuala Consulate building. The rear of the building at Miranda House will be extended out to form a new lift and services riser and glazed in walkway as shown on the attached sketch No QF/7112/GA1. The new condenser will therefore enjoy a degree of barrier attenuation due to the new lift/riser structure. The distance from the new plant to the nearest window of the next door residential property is approximately 15 metres and allowing for a reverberation correction of +5dB and a distance correction of 20 log 14 (-23dB) together with a barrier effect of -10dB will reduce the free field noise level of the Condenser from 63dBA at 1 metre to 35dBA at 1 metre from the nearest residential property's window.

So long as the new Condenser/Compressor is installed in a position that shields it from direct line of sight to the adjacent residential property's windows then the unit will not require any additional attenuation in order to satisfy the requirements of the local authority's planning department.

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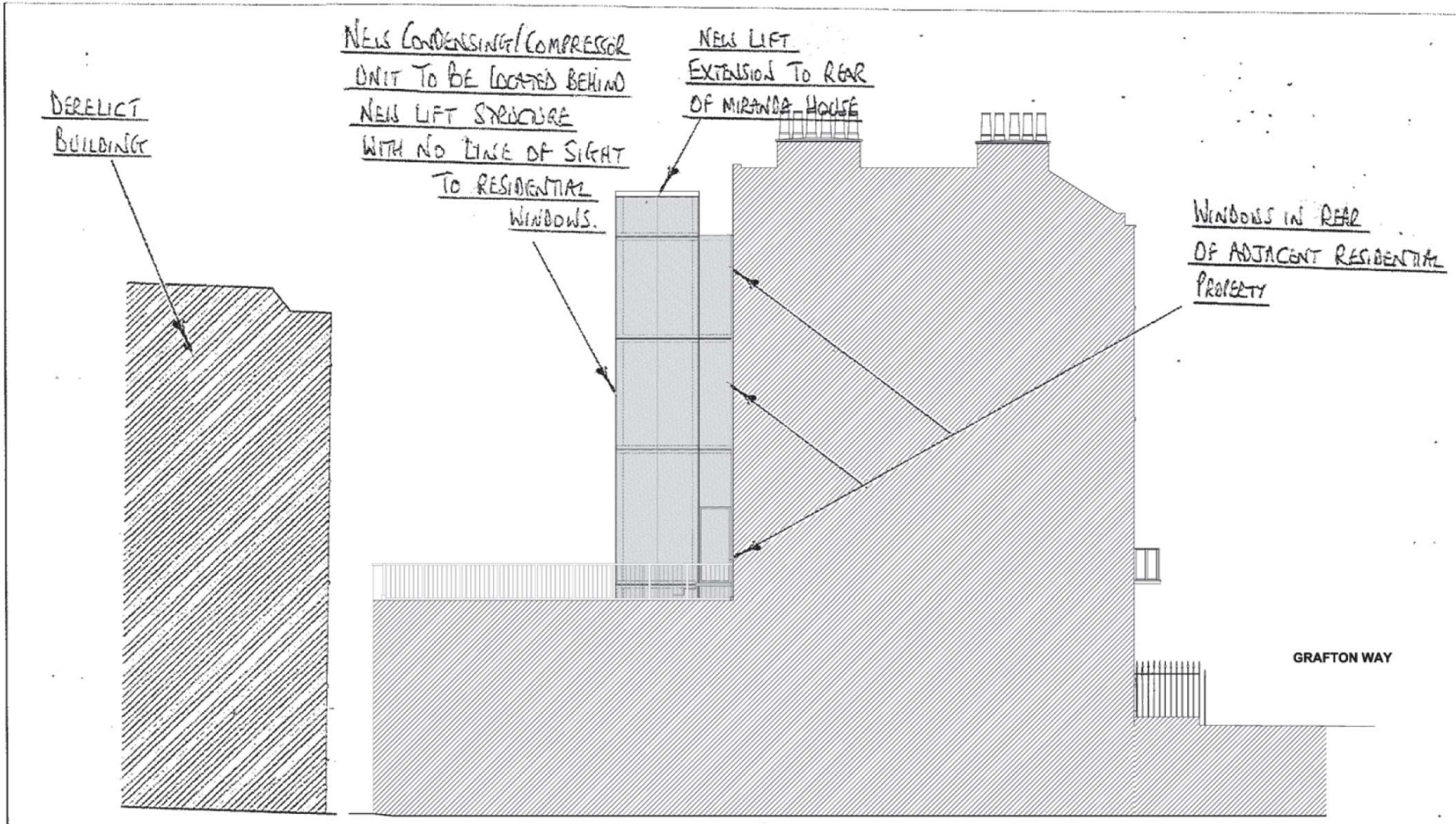
10th April 2012



SECTION THROUGH BUILDING.

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CLIENT: PETER DEER & ASSOCIATES	PF No: 4582				APPROVED BY: MGR	REVISION							
PROJECT: MIRANDA HOUSE, 58 GRAFTON WAY	Q	A	M	I	DESIGN AUTH: MGR	SKETCH No. QF/7112/GA1							

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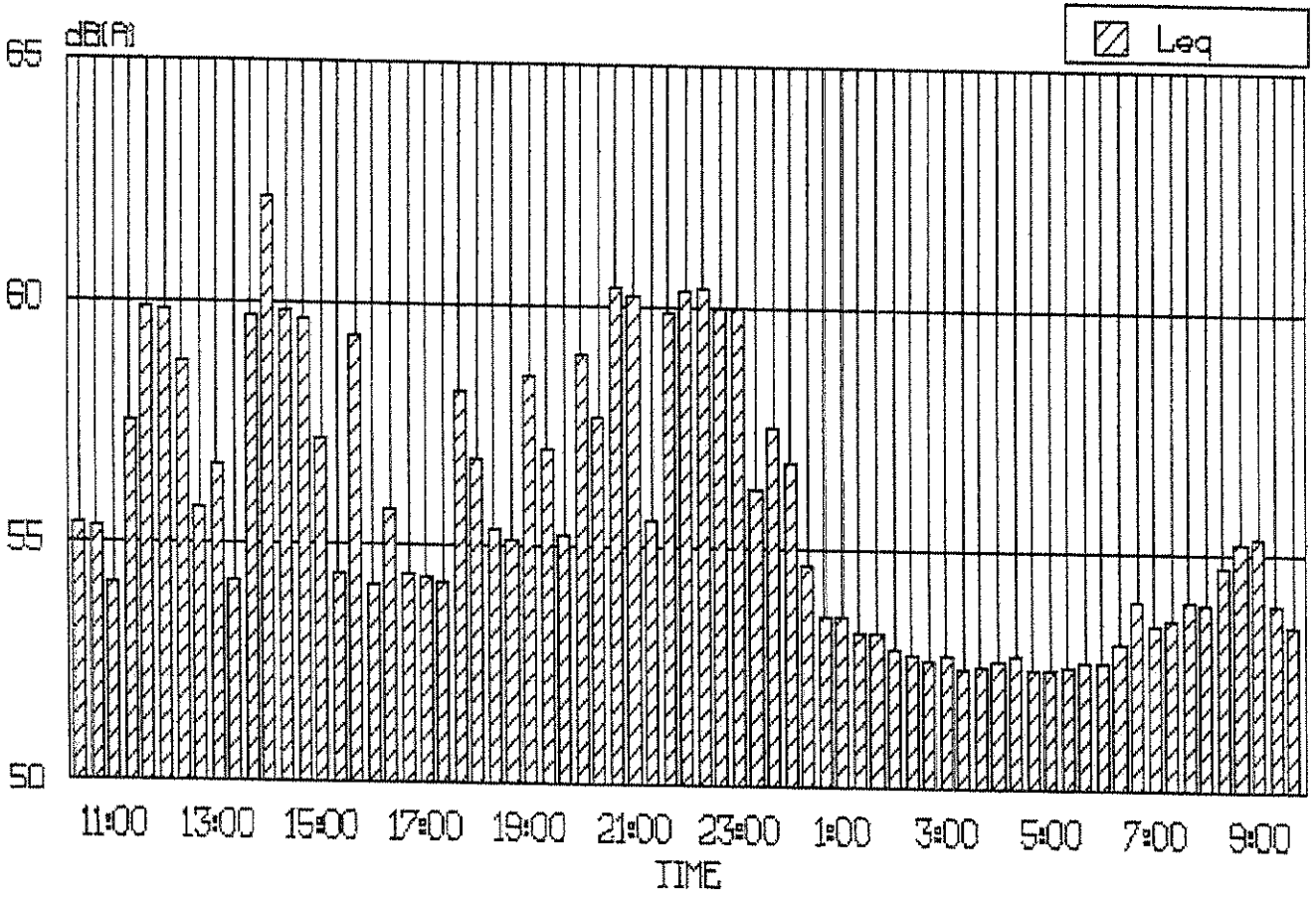
Miranda House, 58 Grafton Way, W1.
3rd to 4th April 2012



TITLE: LAeq Levels	*ISSUE DATE: 10/4/12*				*DRAWN BY: MGR*	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*
CLIENT: Peter Deer & Associates	*PF No: 4582*				*APPROVED BY: MGR*	*REVISION*							
PROJECT: Miranda House, 58 Grafton Way, W1	*Q*	*A*	*M*	*I*	*DESIGN AUTH: MGR*	*SKETCH No. QF/7112/T1*							

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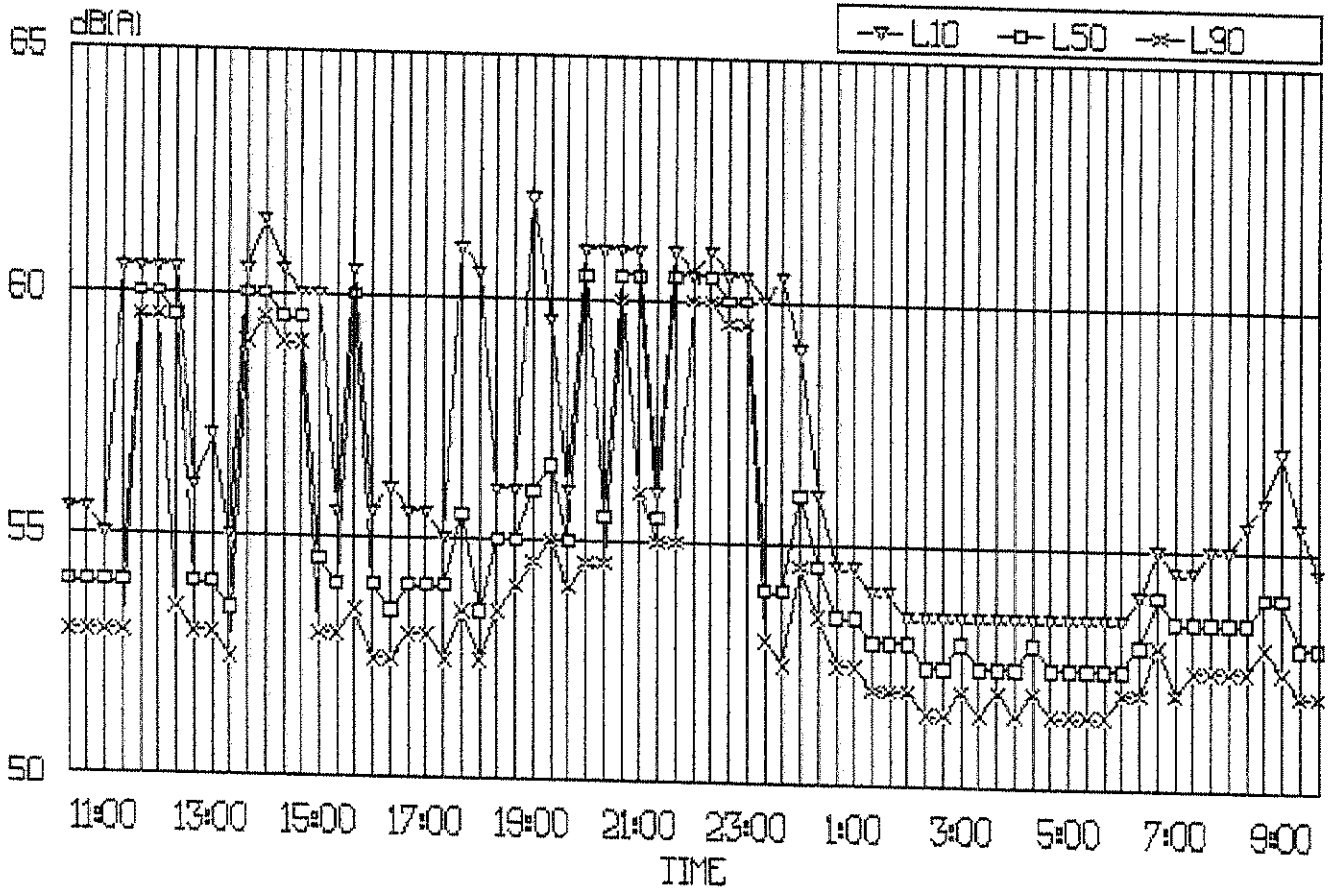

TITLE: LA10;LA50 and LA90 Levels	*ISSUE DATE: 10/4/12*				*DRAWN BY: MGR*	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*
CLIENT: Peter Deer & Associates	*PF No: 4582*				*APPROVED BY: MGR*	*REVISION*							
PROJECT: Miranda House, 58 Grafton Way, W1	*Q*	*A*	*M*	*I*	*DESIGN AUTH: MGR*	*SKETCH No. QF/7112/T2*							

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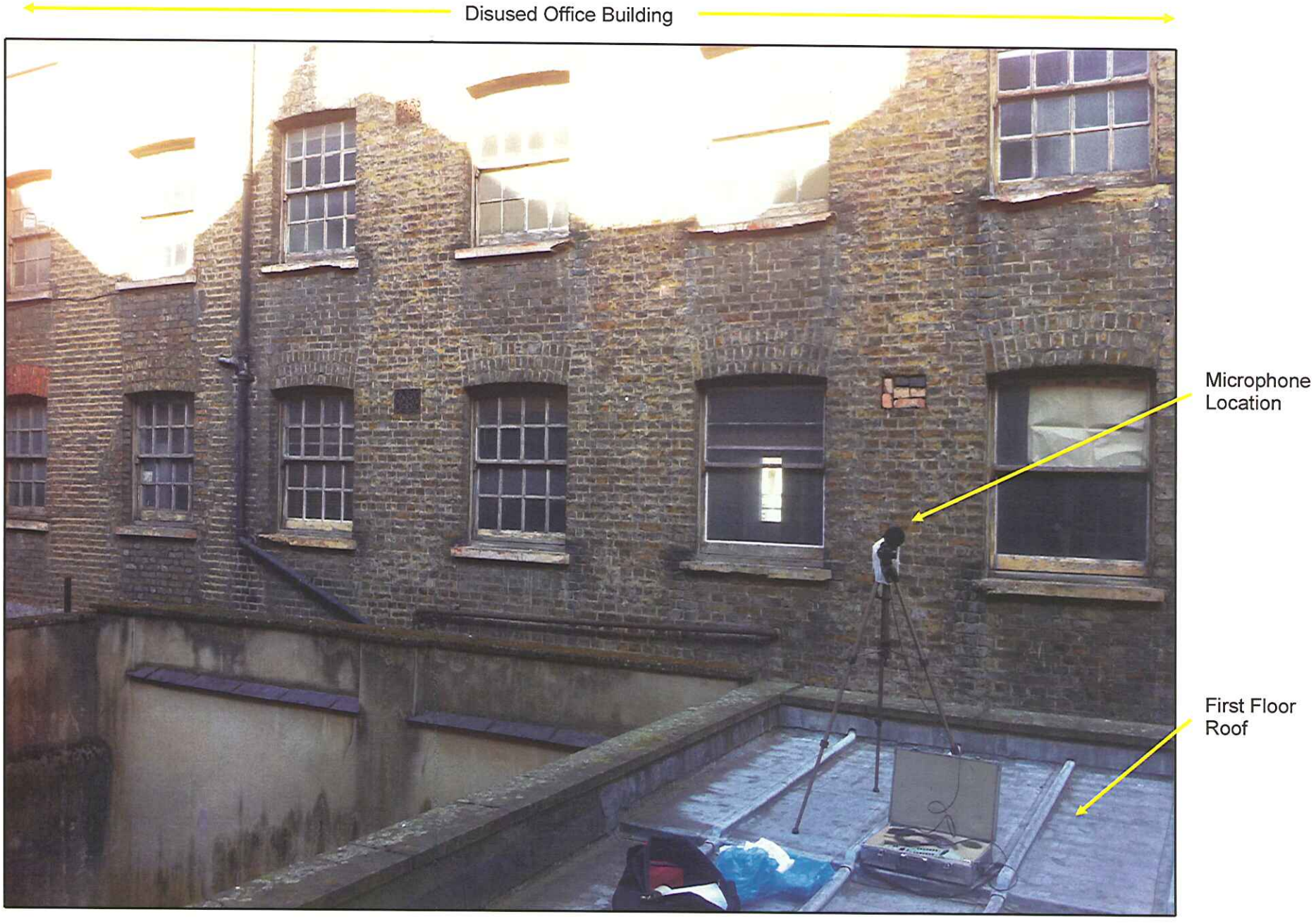

PHOTO A: First floor roof to rear of building with disused building to rear of site.

PHOTOB: Microphone on first floor roof with rear face of adjacent residential building.

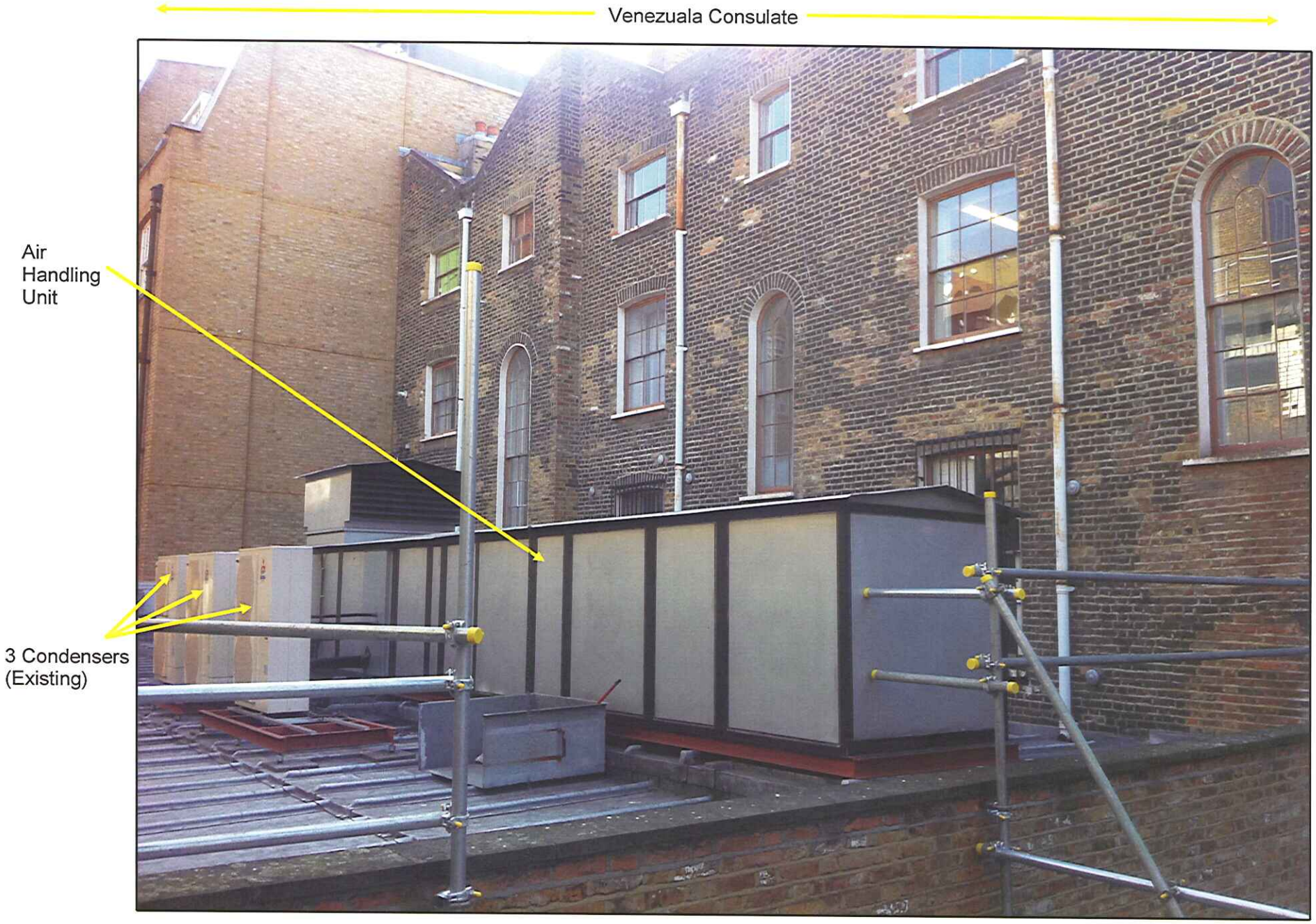

PHOTO C: Rear façade of Venezuala Consulate building with Air Handling unit and Condenser on first floor roof.

APPENDIX A

Raw Data – Noise Survey

3rd to 4th of April 2012

NOISE SURVEY DATA FROM BACKGROUND NOISE LEVEL SURVEY CARRIED OUT AT THE REAR OF MIRANDA HOUSE AT 58 GRAFTON WAY, LONDON W1.

Project : Miranda House, 58 Grafton Way, London W1.
Client : Peter Deer and Associates.
Ref : QF7112
Date : 4th March 2012

Measure No.	End Time	MaxP (dBA)	L1 (dBA)	L10 (dBA)	L50 (dBA)	L90 (dBA)	L99 (dBA)	Leq (dBA)
1	10:18	97.1	63	55.5	54	53	52.5	55.4
2	10:38	96.4	60.5	55.5	54	53	52.5	55.3
3	10:58	75.5	57	55	54	53	52	54.1
4	11:18	93.5	61.5	60.5	54	53	52	57.5
5	11:38	78.2	62.5	60.5	60	59.5	59	59.9
6	11:58	78.6	62	60.5	60	59.5	59	59.8
7	12:18	85.4	63.5	60.5	59.5	53.5	52.5	58.7
8	12:38	79.6	65.5	56	54	53	52.5	55.7
9	12:58	80.4	67	57	54	53	52	56.6
10	13:18	83.2	60	55	53.5	52.5	52	54.2
11	13:38	77.4	61.5	60.5	60	59	53	59.7
12	13:58	93.7	72	61.5	60	59.5	59	62.2
13	14:18	79.2	63	60.5	59.5	59	59	59.8
14	14:38	79.4	60.5	60	59.5	59	59	59.6
15	14:58	77.8	60.5	60	54.5	53	52	57.2
16	15:18	93.9	59	55.5	54	53	52	54.4
17	15:38	83.8	62.5	60.5	60	53.5	52.5	59.3
18	15:58	77	57.5	55.5	54	52.5	52	54.1
19	16:18	91.6	66.5	56	53.5	52.5	52	55.7
20	16:38	83.9	59.5	55.5	54	53	52	54.4
21	16:58	77.8	58.5	55.5	54	53	52	54.3
22	17:18	87.7	58.5	55	54	52.5	52	54.2
23	17:38	89.2	64.5	61	55.5	53.5	52.5	58.2
24	17:58	77.7	61.5	60.5	53.5	52.5	52	56.8
25	18:18	77.5	60.5	56	55	53.5	52.5	55.3
26	18:38	83.8	59	56	55	54	53.5	55.1
27	18:58	96.2	63.5	62	56	54.5	54	58.5
28	19:18	88.3	60.5	59.5	56.5	55	54.5	57
29	19:38	87.2	57.5	56	55	54	53.5	55.2
30	19:58	77	61.5	61	60.5	54.5	53.5	59
31	20:18	79.2	62	61	55.5	54.5	54.5	57.7
32	20:38	78.1	61.5	61	60.5	60	59.5	60.4
33	20:58	87.2	61.5	61	60.5	56	54.5	60.2
34	21:18	76.2	57.5	56	55.5	55	54.5	55.5
35	21:38	77.6	62	61	60.5	55	54.5	59.9
36	21:58	78.3	61	60.5	60.5	60	59.5	60.3
37	22:18	82.6	61.5	61	60.5	60	59.5	60.4
38	22:38	85.3	61	60.5	60	59.5	59	60
39	22:58	75	61	60.5	60	59.5	59	60
40	23:18	79	60.5	60	54	53	52	56.2
41	23:38	79.6	61	60.5	54	52.5	52	57.5
42	23:58	89	61.5	59	56	54.5	53	56.8
43	00:18	79.1	58	56	54.5	53.5	52.5	54.6
44	00:38	74.7	55.5	54.5	53.5	52.5	52	53.6
45	00:58	74.2	56.5	54.5	53.5	52.5	51.5	53.6
46	01:18	71.4	55	54	53	52	51.5	53.2
47	01:38	69.9	55.5	54	53	52	51.5	53.2
48	01:58	68.6	54.5	53.5	53	52	51	52.9
49	02:18	78.3	55.5	53.5	52.5	51.5	51	52.8
50	02:38	72.3	54.5	53.5	52.5	51.5	51	52.7
51	02:58	70.2	54.5	53.5	53	52	51	52.8
52	03:18	79.6	54	53.5	52.5	51.5	51	52.5
53	03:38	78.4	54	53.5	52.5	52	51	52.6
54	03:58	71	54.5	53.5	52.5	51.5	50.5	52.7
55	04:18	68.8	54.5	53.5	53	52	51.5	52.8
56	04:38	69.1	54.5	53.5	52.5	51.5	51	52.5
57	04:58	67.7	54	53.5	52.5	51.5	51	52.5
58	05:18	68.3	55	53.5	52.5	51.5	50.5	52.6
59	05:38	68.4	54.5	53.5	52.5	51.5	51	52.7
60	05:58	68.8	54.5	53.5	52.5	52	51	52.7
61	06:18	80.6	55	54	53	52	51.5	53.1
62	06:38	75.4	58	55	54	53	52	54
63	06:58	81	56.5	54.5	53.5	52	51.5	53.5
64	07:18	82	56	54.5	53.5	52.5	52	53.6
65	07:38	73.4	58	55	53.5	52.5	52	54
66	07:58	72.1	56.5	55	53.5	52.5	52	53.9
67	08:18	79.7	63.5	55.5	53.5	52.5	51.5	54.7
68	08:38	79.1	64.5	56	54	53	52	55.2
69	08:58	78.4	63	57	54	52.5	52	55.3
70	09:18	79.2	60.5	55.5	53	52	51	53.9
71	09:38	82.5	59	54.5	53	52	51.5	53.5