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24 HOUR NOISE LEVEL SURVEY CARRIED OUT ON THE ROOF AND FRONT FAÇADE OF No. 14 ROGER STREET, LONDON WC1N AND A REPORT ON THE NOISE CONTROL MEASURES REQUIRED TO MINIMISE THE NOISE IMPACT OF THE PROPOSED NEW VENTILATION PLANT AND THE SUITABILITY OF THE BUILDING FOR RESIDENTIAL DEVELOPMENT AGAINST THE GUIDELINE OF PLANNING POLICY GUIDANCE DOCUMENT PPG24

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Client	:	Marek Wojciechowski Architects
Project	:	14 Roger Street, London WC1N
Emtec Ref.	:	QF7463/PF4849/RP1
Issue Date	:	22nd April 2013

24 HOUR NOISE LEVEL SURVEY CARRIED OUT ON THE ROOF AND FRONT FAÇADE OF No. 14 ROGER STREET, LONDON WC1N AND A REPORT ON THE NOISE CONTROL MEASURES REQUIRED TO MINIMISE THE NOISE IMPACT OF THE PROPOSED NEW VENTILATION PLANT AND THE SUITABILITY OF THE BUILDING FOR RESIDENTIAL DEVELOPMENT AGAINST THE GUIDELINE OF PLANNING POLICY GUIDANCE DOCUMENT PPG24

1.0. INTRODUCTION

This report details the results of a 24-hour noise survey carried out on the roof and front facade of No.14 Roger Street, London WC1N.

The objectives of this survey were as follows:

- To establish the existing background noise level outside the nearest affected properties.
- To assess the proposed new ventilation plant that is to be installed 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.
- To assess the building against the guidelines of PPG24 and make recommendations with regard to the external fabric of the building to bring it up to an acceptable standard.

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

2.0. SITE DESCRIPTION

No.14 Roger Street is a four storey property in the Camden area of London. The adjacent properties consist of a mix of commercial and residential dwellings.

3.0. 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 Meter:	Rion type NL-52 class 1 Sound Level Meter fitted with a Rion type UC-59 ½ inch condenser microphone. Serial No.01121378 and 01121380
Statistical Analysis Modules:	Built in module capable of computing the percentile levels L1, L10, L50, L90 and L99 and also the Leq level.
Acoustic Calibrator:	Bruel & Kjaer type 4231 electronic calibrator. Serial No. 1934160

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

3.1. Existing Noise Climate

Road traffic travelling on nearby Greys Inn Road could be heard during the manned periods at the start and the end of the survey, so the noise levels measured will include contributions from road vehicles.

Commercial jet aircraft were observed at medium and high altitude during the manned periods at the start and the end of the survey, so it is possible that the noise levels measured could include contributions from medium altitude jet aircraft.

There are no overland railways nearby, so the noise levels measured will not include contributions from rail noise.

There were no other noticeable noise sources heard during the 24-hour noise survey period i.e. construction work.

We judged that road traffic noise to be the dominant source of noise affecting ambient noise levels.

4.0. TEST PROCEDURE

The survey was conducted during a continuous 24-hour period from 09:30am on Tuesday the 2nd of April 2013 to 09:30am on Wednesday the 3rd of April 2013

Data was continuously acquired throughout the measurement period with the individual averaging time for statistical noise data set to 15 minutes. The following 'A' weighted 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 4142:1997).

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.

4.1. Measurement Positions

Noise levels were measured on the roof and outside a fourth floor window at the front of the property as shown on Photos A and B.

The microphone on the roof was pointing vertically and was approximately 1.2 metres above ground level. The microphone on the front façade was pointing horizontally away from the façade. The rest of the measurement equipment was located in a weatherproof enclosure with low impedance cables running from the microphone to the instrumentation.

4.2. Weather Conditions

The weather conditions prevailing during the measurement period were generally in line with those recommended in BS 4142:1997: -

Weather daytime: -	Dry	Weather night time: -	Dry
Wind daytime: -	Calm	Wind night time: -	Calm

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

5.0. RESULTS AND EVALUATION OF NOISE CRITERIA

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

The 'A' Weighted Leq levels measured, on the roof, over each 15 minute interval throughout the 24-hour periods (denoted by LAeq, (15 mins) are displayed as a bar graph on the attached Sketch No QF/7463/T1 at the back of this report.

The 'A' Weighted percentile levels measured, on the roof, over each 15 minute interval denoted by LA10 (15 mins), LA50 (15 mins) and LA90 (15 mins) are displayed as a line graph on the attached Sketch No QF/7463/T2 at the back of this report.

The 'A' Weighted Leq levels measured, at the front facade, over each 15 minute interval throughout the 24-hour periods (denoted by LAeq, (15 mins) are displayed as a bar graph on the attached Sketch No QF/7463/T3 at the back of this report.

The 'A' Weighted percentile levels measured, at the front facade, over each 15 minute interval denoted by LA10 (15 mins), LA50 (15 mins) and LA90 (15 mins) are displayed as a line graph on the attached Sketch No QF/7463/T4 at the back of this report.

The 'A' Weighted percentile levels LA1 (15 mins) and maximum level LAmax measured, at the front façade, over each 15 minute interval are displayed as a line graph on the attached Sketch No. QF/7463/T5 at the back of this report.

5.1. Summary of Results

The table QF/7463/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/7463/D1 – Summary of Maximum and Minimum Noise Levels

Position 1 - Roof

	LAMAX	LA1	LA10	LA50	LA90	LA99	LAeq
Minimum	63.5 dBA	60.6 dBA	57 dBA	46.1 dBA	43.2 dBA	42.5 dBA	52.6 dBA
Maximum	87.1 dBA	79.9 dBA	64.1 dBA	59.8 dBA	55.6 dBA	53.1 dBA	64.8 dBA

Position 2 – Front Facade

	LAMAX	LA1	LA10	LA50	LA90	LA99	LAeq
Minimum	69.4 dBA	66.6 dBA	60.7 dBA	46.9 dBA	43.3 dBA	42.6 dBA	56.4 dBA
Maximum	93.9 dBA	83.8 dBA	81.4 dBA	66.6 dBA	60.1 dBA	56.7 dBA	76.7 dBA

5.2. Summary of the Local Authority's planning requirements regarding noise for noise sensitive properties

Table E of Camden's current replacement Unitary Development Plan states that noise from external plant and machinery must be at least 5dB less than the lowest measured LA90 when measured at 1 metre external to the nearest sensitive façade.

Where the noise has a distinguishable discrete continuous note (whine, hiss, screech, hum) the Development Plan states that noise from external plant and machinery must be at least 10dB less than the lowest measured LA90 when measured at 1 metre external to the nearest sensitive façade.

Where the noise has distinct impulses (bangs, clicks, clatters, thumps) the Development Plan states that noise from external plant and machinery must be at least 10dB less than the lowest measured LA90 when measured at 1 metre external to the nearest sensitive façade.

Where the lowest background noise level exceeds 60dBA, then noise from external plant and machinery must be at least 55dBA when measured at 1 metre external to the nearest sensitive façade.

Section 16.34 of Camden's Noise Strategy 2002 states: -

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 metreexternalto sensitive facades are at least 5dB(A) less than the existing background measurement (LA90) 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 from plant and equipment at any sensitive facade to at least 10dB(A) below the LA90 level.

5.3 Summary of Local Authority's Planning requirements regarding suitability of incoming residential developments

Whilst PPG24 was replaced with the new National Planning Policy Framework, Camden Council still adopt PPG24 for the suitability of incoming residential developments.

The Planning Policy Guidance Notes PPG24 give guidelines to local planning authorities with regard to the suitability of incoming residential developments onto sites that are exposed to high levels of existing road traffic, rail or aircraft noise.

The guidance notes establish a noise exposure category (NEC) for the site in question and these categories fall into one of four types (A; B; C or D). NEC-A is a quiet environment where noise need not be considered a determining factor for granting planning permission. NEC-B considers that noise should be taken into account and conditions imposed to ensure that adequate protection against noise is included in the design of the project. NEC-C

considers that planning permission should not normally be granted but if permission is given because no alternative site is available then conditions must be imposed to ensure so that protection is provided against the high noise level. NEC-D considers that planning permission should normally be refused.

5.4 Calculation of noise sensitive property design criteria

The new plant will not be intermittent or contain tones. Based on the local authority's planning requirements outlined above, the new plant should be designed to be 10dBA below the minimum existing LA90 background noise level during the relevant operational period.

It is proposed to operate the plant on a 24-hour basis.

The lowest recorded LA_{90} level measured during the 24-hour period was 43.2dBA. This occurred during the time periods ending at 02:28 and 02:43.

The new plant should therefore be designed to achieve (43.2 – 10)dBA at 1 metre from the nearest noise sensitive properties' windows if the externally located equipment is to be operated on a 24-hour basis.

5.5 Summary of external noise criteria

Based upon the results of the survey and the above design criteria we summarise the actual design rating levels to be adopted for this project in table QF/7463/D2: -

Table QF/7463/D2 – recommended design rating levels $L_{Ar,T}$

Type of premises	**$L_{Ar,T}$ (24-hour)**
Noise sensitive	33.2dBA

6.0. DISCUSSION OF RESULTS

6.1 Suitability of Building for Residential Use

The average and minimum LAeq noise levels when measured on the front facade during the 24 hour noise level survey equate to the following figures:

	Average	Minimum Level	Maximum Level
LAeq (7 a.m. – 23 p.m.)	66.3dBA	60.4dBA	76.7dBA
LAeq (23 p.m. – 7 a.m.)	60.3 dBA	56.4dBA	66.1dBA
Category limiting levels for road traffic (7 a.m. – 23 p.m.)	Category C	Category B	Category D
	63-72dBA	55-63dBA	>72dBA
(23 p.m. – 7 a.m.)	Category B	Category B	Category B
	55-63dBA	55-63dBA	63-72dBA

The above table shows that the average LAeq level falls into Category C for the daytime and Category B for the nightime periods in the measurement position with regard to any new residential development of the site.

The minimum LAeq levels fall into Category B for the daytime and for the nightime periods. The absolute maximum levels fall into Category D during the daytime periods and Category C for the nightime period.

The measurements taken would therefore indicate that the proposed residential development fall into Category C and Category B with regard to the provisions of PPG24 and that any planning application must take account of the local noise environment and impose conditions to ensure an adequate level of protection against high noise levels.

The maximum noise levels, during the nightime period, were measured at approximately 94dBA and the structure around any bedrooms of the residential units should therefore be designed to attenuate this level to no more than NR 30 within the sleeping areas to ensure that the sleep of the occupants of the residential property is not interrupted. NR 30 is equivalent to 39 dBA and therefore the outer shell of the building should have a minimum noise reduction capability of 55dB if bedrooms are to be located on the front façade. The maximum LA1 level was 83.8dBA and this would give a noise reduction requirement of 45dB.

The existing facades of the building are built from heavy brick construction and should be adequate to meet the Rw:55dB requirement. However the weak link will be the windows facing onto Roger Street as the existing sash windows will be totally inadequate to achieve an acceptable noise environment internally to allow these rooms to be used as bedrooms.

Ideally the windows should be designed to achieve a minimum noise reduction capability of Rw:45dB and to achieve this level of performance we would recommend that the existing sash windows be replaced by well sealed double glazed windows, fitted with efficient edge seals and that a 100mm airgap be created between the external windows and an inner glazed window made up of 10mm thick laminated glass contained in a well sealed framework. This form of double window arrangement should achieve the necessary noise reduction. If possible the reveal between the inner and outer glazing should be lined with mineral wool slab retained by a perforated plastic or metal liner so that the airgap between the two window systems contains some acoustic absorption.

If the above glazing is introduced it may be necessary to ventilate the bedrooms and any such ventilation system should be fitted with an atmospheric attenuator having a dynamic insertion loss equal to the glazing performance.

If the above recommendations are implemented on the redevelopment we feel that a satisfactory resultant noise level in the bedrooms will be maintained.

With regard to the proposal of a roof terrace, it is difficult to predict the level of noise emanating from this area as this would depend on its use.

Any noise generated on the terrace would be reduced to the nearest noise sensitive receiver due to distance. This reduction would be 14dB for a distance of 5 metres. During normal conversation the noise levels would be reduced to an acceptable level at the nearest sensitive receiver.

A worst case scenario might be a party with amplified music which may not be acceptable to the nearest sensitive receiver.

6.1. Description of Ventilation Equipment and Predicted Noise Levels

As any ventilation plant is likely to operate on a 24 hour basis the noise level of all the equipment, when operating together, must be designed to achieve 33.2 dBA at 1 metre from the nearest residential property's window.

The nearest residential property to the building at No. 14 Roger Street is the adjoining property to the rear. The distance from the edge of No. 14 to the nearest window is approximately 3 metres.

The new plant should therefore be selected to achieve a noise level of no more than 39 dBA at the edge of the roof of No. 14 when all the plant is in operation.

If you could forward details of the ventilation equipment that is to be installed at No. 14 Roger Street we can make detailed recommendations with regard to any acoustic treatment that may be necessary to achieve this noise level of 39 dBA at the edge of the building.

6.2. Summary

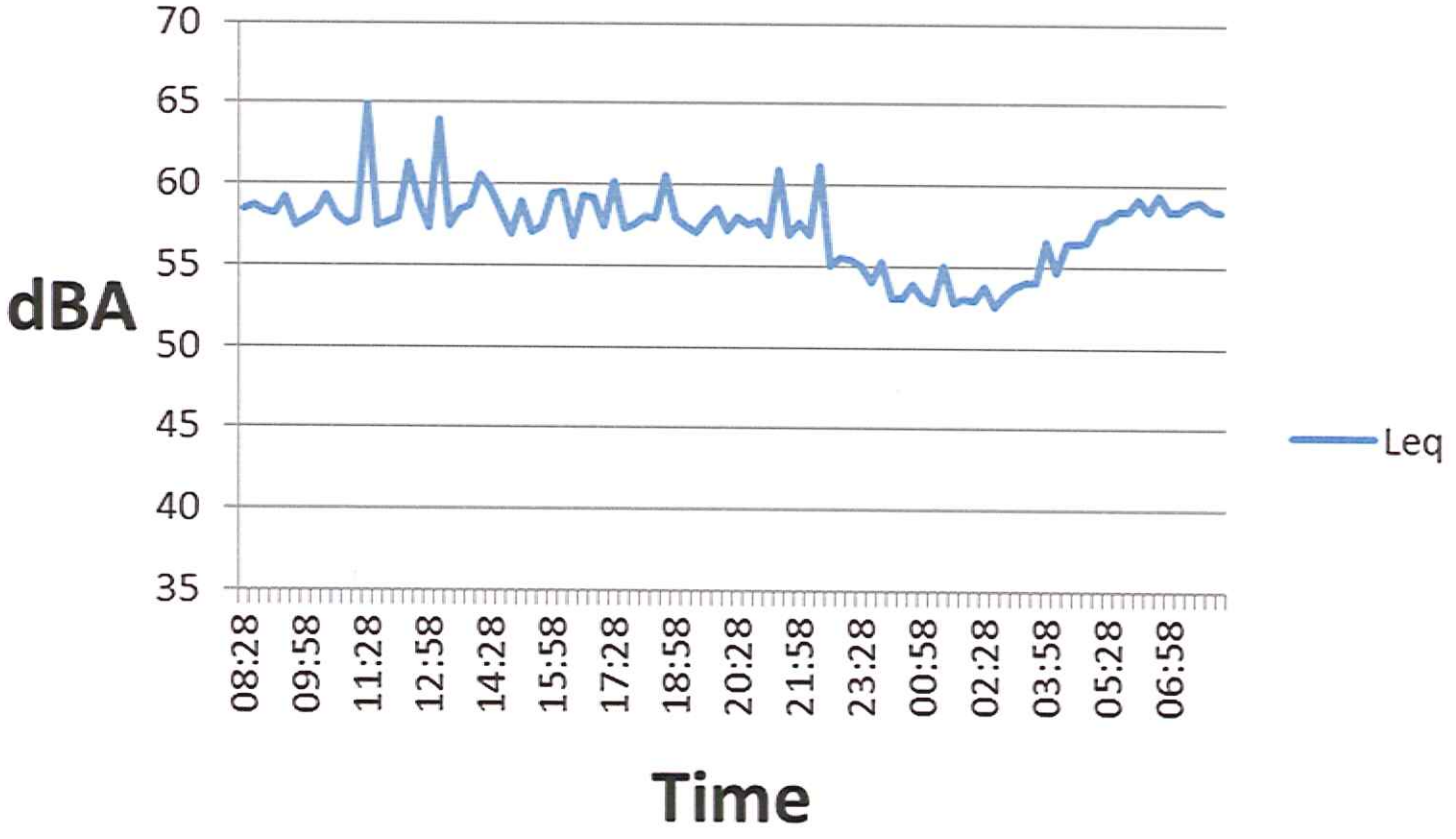
24-hour noise surveys have been undertaken on the roof and front façade of No. 14 Roger Street, London WC1N with respect to the suitability of the development for residential use.

With respect to any ventilation plant that might serve the new development, design noise limits have been recommended, based on the results of the survey and the local authority's planning guidelines.

If the recommended design noise limits are implemented for any new plant and the design rating levels are achieved, it is predicted that operation of the new plant should attract no justifiable complaints under the guidelines set out in the Camden Council's planning policies and as such reservations are not expected from the planning authority on the grounds of noise.

When details of all the plant and sound power levels are provided, Emtec will be pleased to undertake a review of the project and assess in the design of any necessary acoustic treatment that might be required.

EMTEC PRODUCTS LTD
22nd April 2013



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CLIENT: Marek Wojciechowski Architects	PF No: 4849				APPROVED BY: JRT	REVISION							
PROJECT: 4 Roger Street, London WC1	Q	A	M	I	DESIGN AUTH: CH	SKETCH No. QF/7463/T1							

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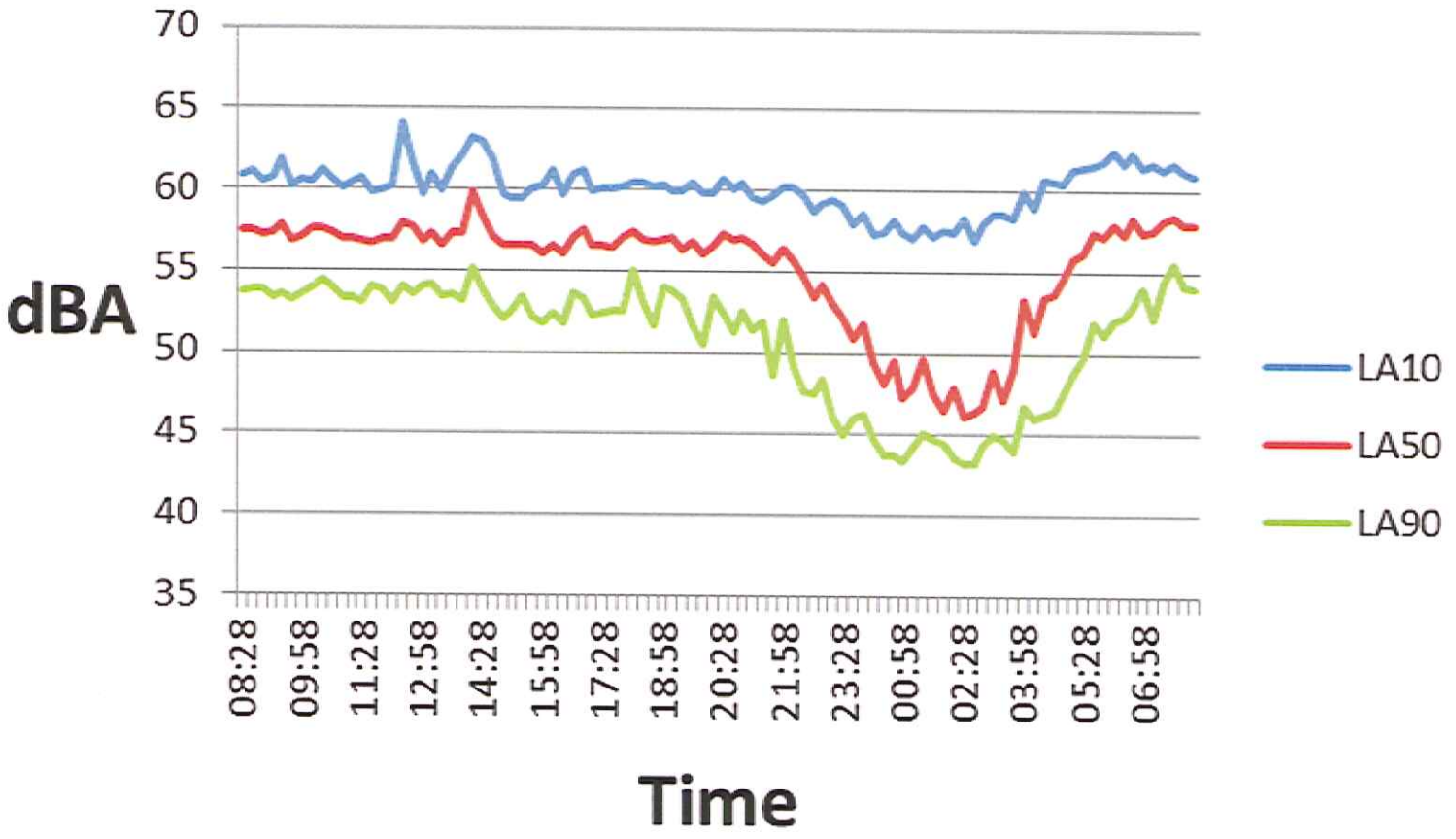

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CLIENT: Marek Wojciechowski Architects	PF No: 4849				APPROVED BY: JRT	REVISION							
PROJECT: 4 Roger Street, London WC1	Q	A	M	I	DESIGN AUTH: CH	SKETCH No. QF/7463/T2							

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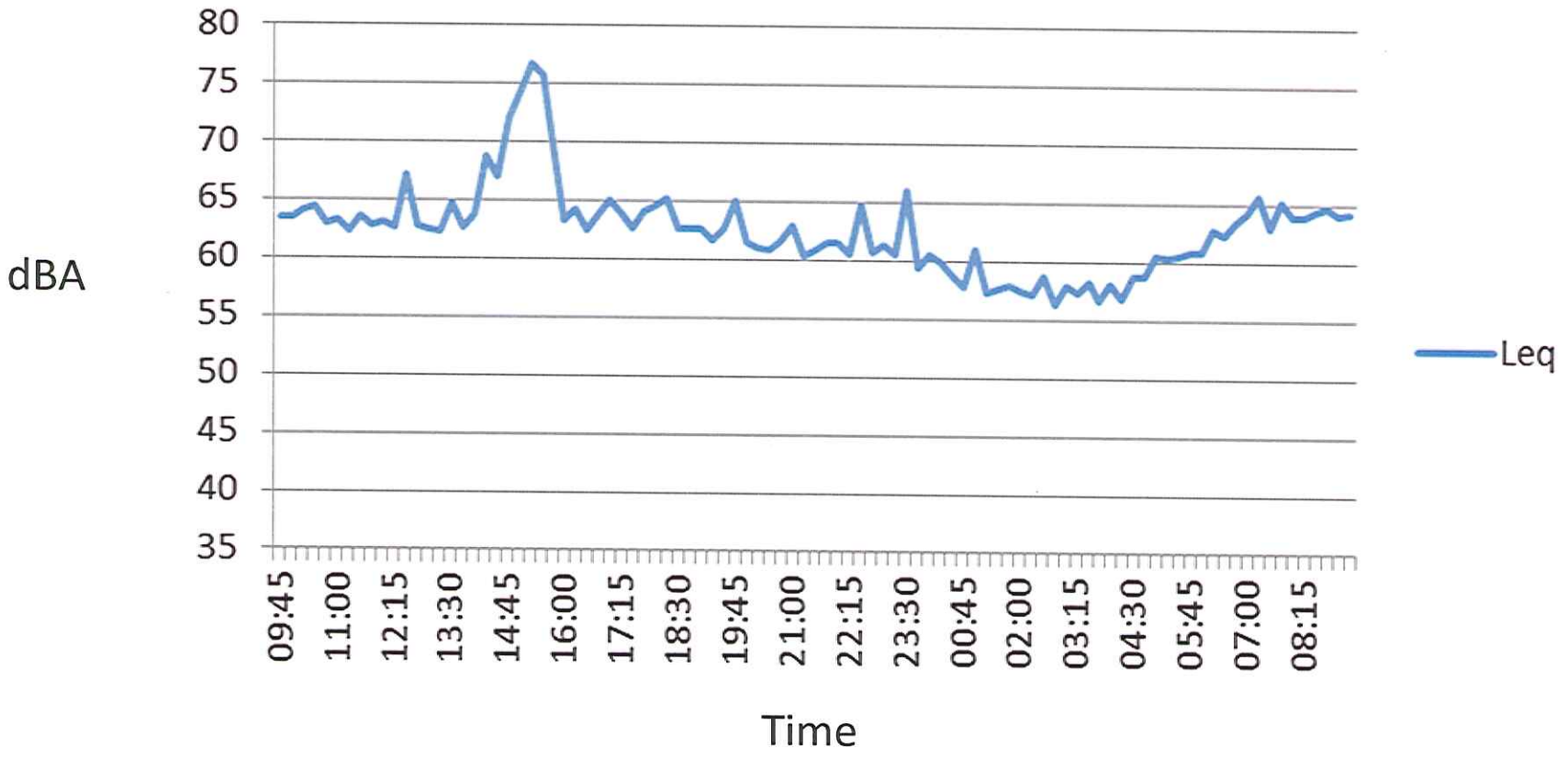

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CLIENT: Marke Wojciechowski Architects	PF No: 4849				APPROVED BY: JRT	REVISION							
PROJECT: 4 Roger Street, London WC1	Q	A	M	I	DESIGN AUTH: CH	SKETCH No. QF/7463/T3							

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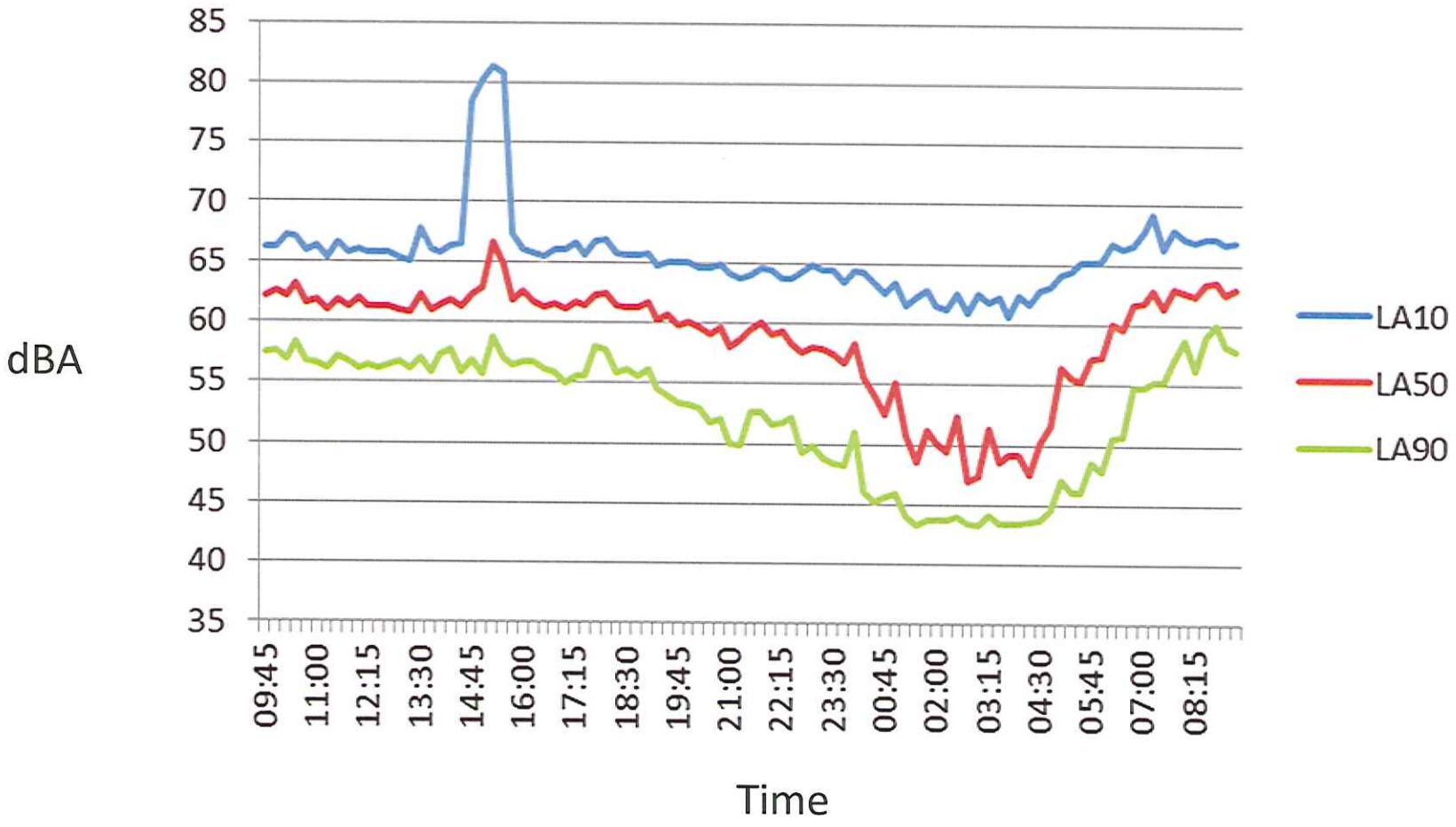

TITLE: LA10; LA50 & La90 Levels – Front Facade	ISSUE DATE: 3/4/13				DRAWN BY: CH	A	B	C	D	E	F	G	H
CLIENT: Marke Wojciechowski Architects	PF No: 4849				APPROVED BY: JRT	REVISION							
PROJECT: 4 Roger Street, London WC1	Q	A	M	I	DESIGN AUTH: CH	SKETCH No. QF/7463/T4							

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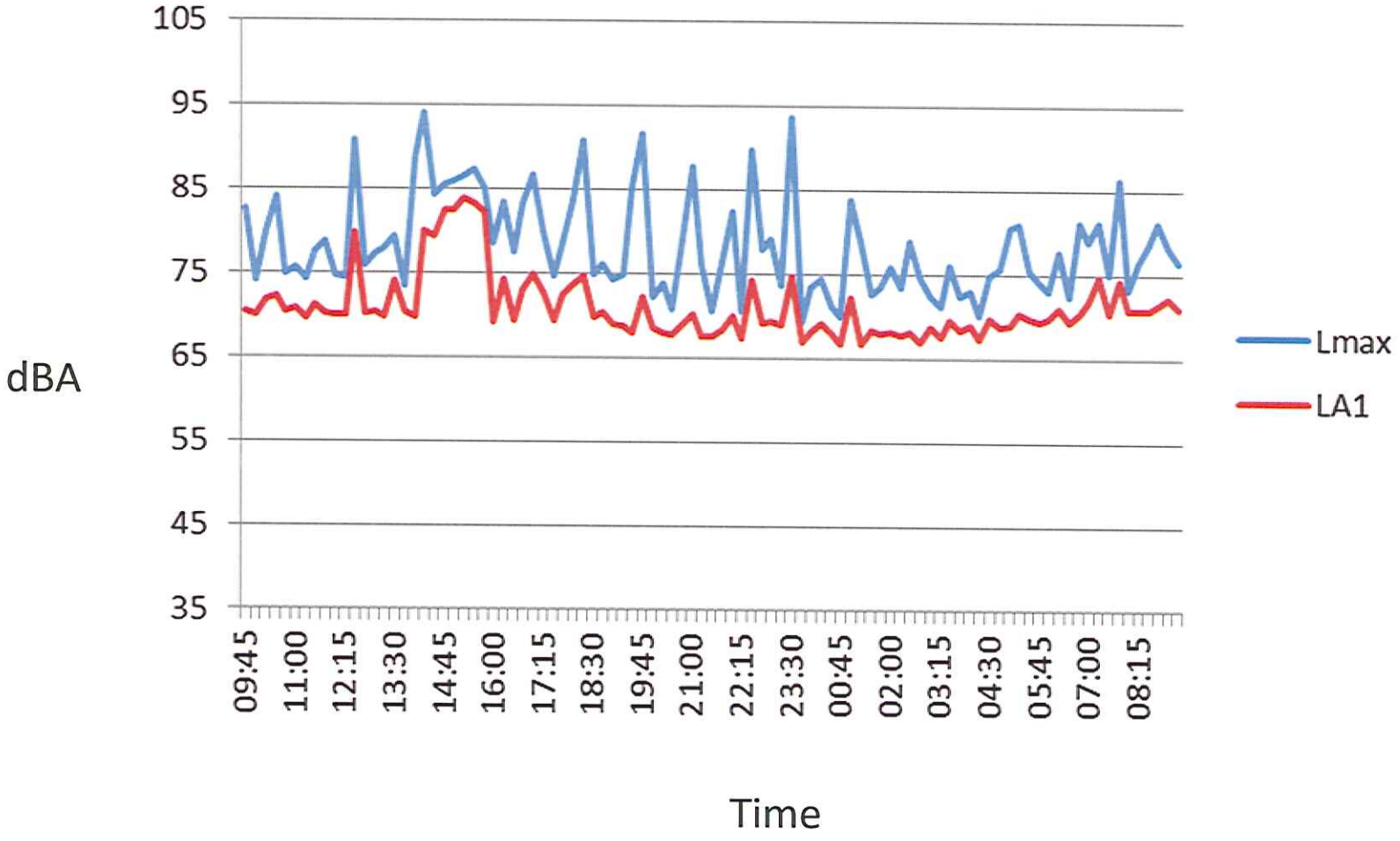

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CLIENT: Marke Wojciechowski Architects	PF No: 4849				APPROVED BY: JRT	REVISION							
PROJECT: 4 Roger Street, London WC1	Q	A	M	I	DESIGN AUTH: CH	SKETCH No. QF/7463/T5							

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APPENDIX 'A'

Raw Data – Noise Survey

2nd to 3rd April 2013

RAW NOISE DATA - 14 Roger Street, London WC1N 2JR - Roof

Ref: QF7463/PF4849
Client: Marek Wojciechowski Architects
Date: 2nd April 2013

Address	Start Time	Leq	LE	Lmax	Lmin	LA1	LA10	LA50	LA90	LA99
1	08:28	58.4	88	77.9	49.7	64.9	60.8	57.4	53.7	51.4
2	08:43	58.7	88.3	82.6	47.5	63.9	61.1	57.5	53.8	50.9
3	08:58	58.3	87.9	74.2	50	65.9	60.5	57.2	53.8	51.5
4	09:13	58.2	87.8	70.2	49	64.6	60.7	57.3	53.3	50.2
5	09:28	59.2	88.8	72.5	49.4	66.3	61.9	57.8	53.5	51.4
6	09:43	57.5	87.1	67.2	48.9	62.8	60.2	56.8	53.2	50.3
7	09:58	57.8	87.4	66.2	48.7	63	60.6	57.1	53.5	49.7
8	10:13	58.2	87.8	72.5	48.5	63.7	60.5	57.6	53.9	49.9
9	10:28	59.3	88.9	75.6	50	68.7	61.2	57.6	54.4	51.6
10	10:43	58.1	87.7	73.8	47.9	63.6	60.6	57.3	53.9	49.9
11	10:58	57.6	87.2	65.5	50	62.6	60.1	57	53.3	51.5
12	11:13	57.8	87.4	68.8	49.7	63.4	60.4	56.9	53.3	51
13	11:28	64.8	94.4	87	48	79.9	60.7	56.8	53.1	50.2
14	11:43	57.4	87	67.8	51.1	62.6	59.8	56.7	54	52.2
15	11:58	57.7	87.3	73.1	51	63.6	59.9	56.9	53.8	52.2
16	12:13	57.9	87.5	70.9	50.1	63.9	60.2	57	53.1	51.4
17	12:28	61.3	90.9	77.6	50.4	71.7	64.1	57.9	54.1	51.8
18	12:43	58.9	88.5	71.8	49	66.6	61.6	57.7	53.5	50.3
19	12:58	57.3	86.9	68.2	50.1	62.1	59.7	56.8	54.1	51.8
20	13:13	64	93.6	87.1	51	77.8	60.9	57.3	54.2	52.1
21	13:28	57.4	87	70.6	48.6	63.5	60	56.6	53.4	50.1
22	13:43	58.4	88	69.8	49.3	64.2	61.4	57.3	53.5	51.2
23	13:58	58.7	88.3	67.5	49	63.8	62.1	57.3	53.2	50.5
24	14:13	60.6	90.2	74.6	50.2	66.5	63.2	59.8	55.2	51.6
25	14:28	59.7	89.3	67	48.7	64.6	63	58.3	53.8	50
26	14:43	58.3	87.9	66.1	48.2	64.2	61.9	57.1	52.8	50.2
27	14:58	57	86.6	69.8	47.9	61.6	59.7	56.5	52	49.2
28	15:13	58.9	88.5	81.9	48.1	68.3	59.4	56.5	52.6	49.7
29	15:28	57.1	86.7	65.3	48.9	61.5	59.5	56.5	53.4	50.7
30	15:43	57.5	87.1	70.2	48.5	63.9	60.1	56.6	52.1	49.5
31	15:58	59.4	89	81.6	47.6	70.4	60.2	56.1	51.8	48.6
32	16:13	59.6	89.2	77.7	47.7	70.1	61.2	56.6	52.4	49.6
33	16:28	56.8	86.4	65	49.1	62.1	59.7	56	51.8	50.2
34	16:43	59.3	88.9	75.2	50.1	69.9	60.9	57.1	53.7	51.3
35	16:58	59.2	88.8	73.3	47.4	68.6	61.2	57.6	53.3	49.4
36	17:13	57.4	87	73.2	48	64.4	59.9	56.6	52.3	49.4
37	17:28	60.2	89.8	83.1	48.5	69.7	60.1	56.6	52.4	49.6
38	17:43	57.3	86.9	69	46.3	63.5	60.1	56.4	52.5	47.7
39	17:58	57.6	87.2	66.6	47.8	62.4	60.2	57.1	52.5	49.1
40	18:13	58.1	87.7	66.8	50.4	62.7	60.5	57.5	55.1	52.2
41	18:28	57.9	87.5	73.6	47	63	60.4	56.9	53	49.4
42	18:43	60.6	90.2	82.9	46.4	70.4	60.2	56.8	51.7	47.9
43	18:58	57.9	87.5	69.9	47.5	64.7	60.3	57	54.1	49.3
44	19:13	57.5	87.1	63.7	48.6	62.1	59.9	57.1	53.8	49.7
45	19:28	57.1	86.7	64	47.4	62.1	59.9	56.3	53.3	49.2
46	19:43	57.9	87.5	72.4	47.5	64.3	60.4	56.8	51.7	49
47	19:58	58.6	88.2	78.4	46.4	65	59.8	56.1	50.5	47.5
48	20:13	57.2	86.8	66.7	47.1	63	59.8	56.6	53.4	48.9
49	20:28	58.1	87.7	69.3	45.7	64.9	60.7	57.3	52.4	48.5
50	20:43	57.6	87.2	70.5	45.8	63.6	60.1	56.9	51.3	47.2
51	20:58	57.8	87.4	72.9	47.6	62.8	60.4	57.1	52.5	48.8

52	21:13	57	86.6	63.5	46.8	61.3	59.6	56.7	51.4	47.8
53	21:28	61	90.6	83.7	46.3	73	59.3	56.1	51.9	48.1
54	21:43	56.9	86.5	72.2	45.1	63.1	59.7	55.6	48.7	46
55	21:58	57.7	87.3	75.6	46.2	64	60.2	56.4	52	47.5
56	22:13	57	86.6	66.7	45.2	63.7	60.2	55.7	49.2	46.5
57	22:28	61.2	90.8	85.2	44.3	73.2	59.7	54.7	47.6	45.6
58	22:43	55.1	84.7	64.2	44.3	61.6	58.7	53.4	47.5	45.6
59	22:58	55.6	85.2	64.5	45.5	62	59.2	54.2	48.4	46.7
60	23:13	55.4	85	66.1	44.1	62.7	59.4	53.1	46.1	45.1
61	23:28	55	84.6	69.1	42.7	63.2	59.1	52.1	45	43.8
62	23:43	54	83.6	64.1	44	61.6	58	50.9	46	45
63	23:58	55.3	84.9	74.4	44.4	62.7	58.6	51.8	46.2	45.2
64	00:13	53.1	82.7	68.2	43.1	60.6	57.3	49.4	44.8	43.9
65	00:28	53	82.6	66.3	42	61.9	57.4	48.1	43.7	42.6
66	00:43	53.9	83.5	65.9	41.7	62.5	58.2	49.5	43.7	42.8
67	00:58	53	82.6	68.3	42	62.5	57.4	47.3	43.4	42.5
68	01:13	52.8	82.4	65.2	41.7	62.2	57.1	47.9	44.2	42.6
69	01:28	55	84.6	77.2	43.4	65.5	57.8	49.7	45.1	44.2
70	01:43	52.8	82.4	65.6	43.5	61.7	57.2	47.5	44.7	44.1
71	01:58	53	82.6	67.3	43.3	62.9	57.6	46.5	44.5	43.9
72	02:13	52.9	82.5	66	41.9	61.4	57.5	47.9	43.6	42.7
73	02:28	53.8	83.4	68.8	41.8	64.7	58.3	46.1	43.2	42.5
74	02:43	52.6	82.2	68.7	41.9	62.3	57	46.4	43.2	42.6
75	02:58	53.3	82.9	67.6	41.9	63.1	58	46.8	44.4	42.8
76	03:13	53.8	83.4	63.8	43.5	61.6	58.6	48.9	45	44.3
77	03:28	54.1	83.7	72	43.6	64.1	58.6	47.1	44.7	44.1
78	03:43	54	83.6	67.8	42.7	62.9	58.3	49	44	43.3
79	03:58	56.5	86.1	72.4	44.8	65.7	59.9	53.3	46.7	45.5
80	04:13	54.7	84.3	66.9	44.3	62.5	59	51.3	46	45
81	04:28	56.4	86	66.1	43.7	63.7	60.7	53.4	46.2	44.7
82	04:43	56.4	86	68.1	43.9	64.2	60.6	53.7	46.5	45
83	04:58	56.5	86.1	68.3	44.6	64.3	60.4	54.5	47.5	45.7
84	05:13	57.8	87.4	73.6	45.5	64.8	61.4	55.8	48.8	46.4
85	05:28	57.9	87.5	68.9	46.7	64.4	61.5	56.2	49.8	47.7
86	05:43	58.5	88.1	70.4	48.1	64.6	61.6	57.4	51.9	49.6
87	05:58	58.4	88	67.3	46.4	64.3	61.9	57.2	51.2	48
88	06:13	59.2	88.8	69.3	47.3	66.3	62.5	57.9	52	48.2
89	06:28	58.4	88	67.8	48.7	64.2	61.7	57.3	52.3	50.3
90	06:43	59.4	89	72.9	47.5	65.6	62.3	58.3	52.9	49.5
91	06:58	58.5	88.1	69.1	49.8	64.2	61.5	57.4	54	51.3
92	07:13	58.5	88.1	68.1	49.1	64.1	61.7	57.6	52.1	50
93	07:28	58.9	88.5	70.1	49.5	64.8	61.4	58.2	54.4	50.4
94	07:43	59.1	88.7	68.9	51.7	64.4	61.7	58.4	55.6	53.1
95	07:58	58.6	88.2	68.3	49.1	64.2	61.2	57.9	54.2	50.4
96	08:13	58.5	88.1	72	50.6	63.7	60.9	58	54.1	52

RAW NOISE DATA - 14 Roger Street, London WC1N 2JR - Front Façade

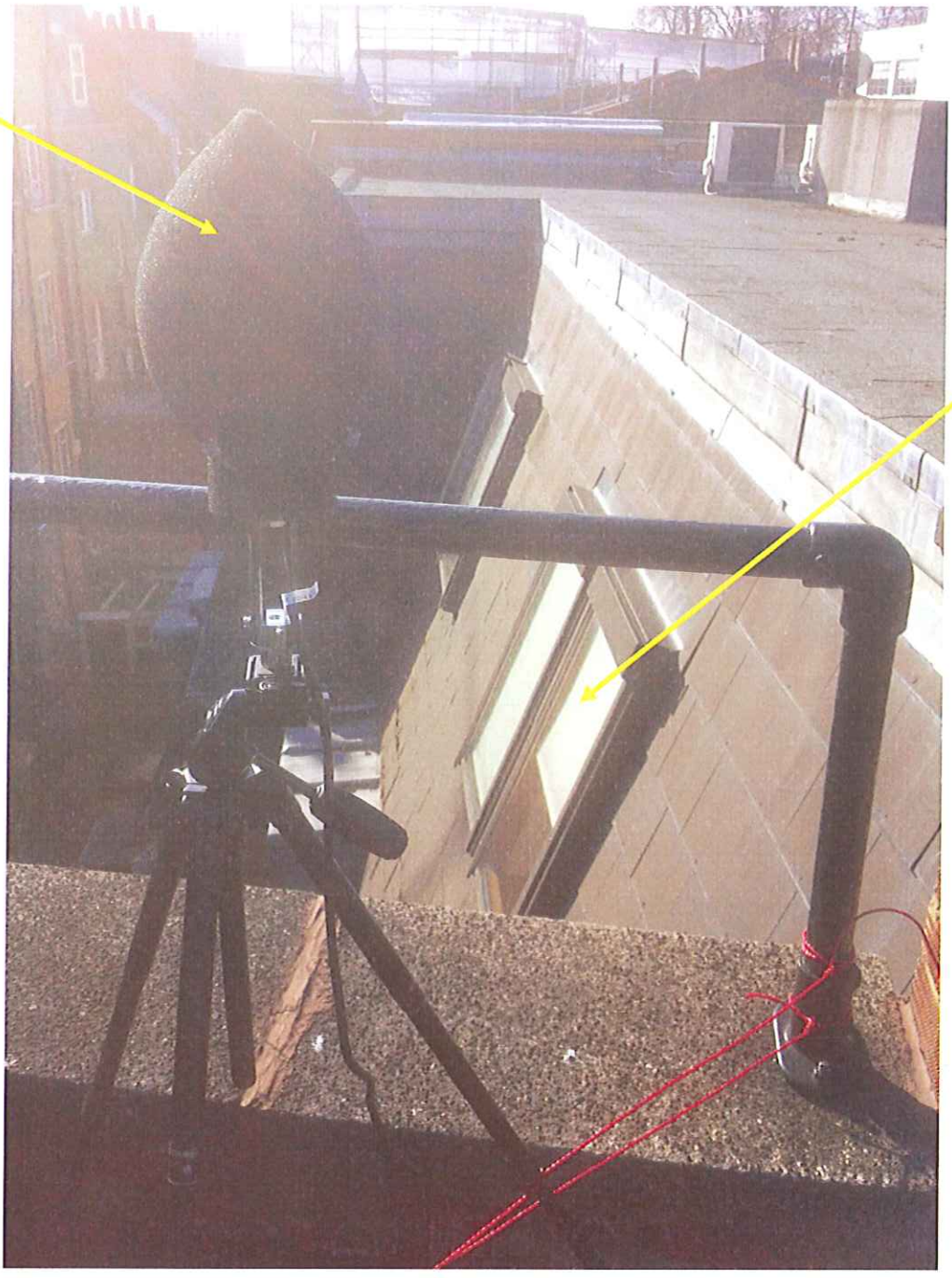
Ref: QF7463/PF4849
Client: Marek Wojciechowski Architects
Date: 2nd April 2013

Address	Start Time	Leq	LE	Lmax	Lmin	LA1	LA10	LA50	LA90	LA99
2	09:45	63.4	93	82.6	49.9	70.3	66.2	62.1	57.5	53.4
3	10:00	63.4	93	74	51.6	69.9	66.2	62.5	57.6	53.7
4	10:15	64.1	93.7	79.9	50.8	71.7	67.2	62.1	56.9	53
5	10:30	64.5	94.1	84	51.6	72.2	67.1	63.2	58.3	54.6
6	10:45	62.9	92.5	74.9	51.5	70.3	65.9	61.5	56.8	53.8
7	11:00	63.3	92.9	75.6	49.7	70.8	66.3	61.8	56.6	52.1
8	11:15	62.4	92	74.3	49	69.5	65.4	61	56.1	51.1
9	11:30	63.6	93.2	77.5	50.1	71.1	66.6	61.9	57.1	52.9
10	11:45	62.8	92.4	78.6	50.8	70.1	65.7	61.3	56.8	52.5
11	12:00	63.1	92.7	74.7	51.7	69.9	66.1	62	56.1	53.4
12	12:15	62.7	92.3	74.5	50.8	70	65.8	61.3	56.5	53
13	12:30	67.1	96.7	90.7	51.7	79.8	65.8	61.2	56.2	53.7
14	12:45	62.8	92.4	75.9	51.4	70.2	65.7	61.3	56.5	53
15	13:00	62.5	92.1	77.3	53.1	70.4	65.4	61	56.7	54.5
16	13:15	62.3	91.9	77.9	51.5	69.8	65.1	60.8	56.2	53.1
17	13:30	64.7	94.3	79.3	51.6	74	67.8	62.3	57	53.4
18	13:45	62.6	92.2	73.4	49.9	70.3	66	61	55.9	51.9
19	14:00	63.8	93.4	88.7	53.6	69.7	65.8	61.4	57.3	55
20	14:15	68.8	98.4	93.9	51.9	80	66.4	61.9	57.8	54.6
21	14:30	67	96.6	84.3	51.5	79.3	66.5	61.2	55.8	52.8
22	14:45	72.1	101.7	85.5	51	82.3	78.4	62.3	56.9	53.2
23	15:00	74.3	103.9	85.9	48.2	82.4	80.2	62.8	55.7	50.8
24	15:15	76.7	106.3	86.4	50.2	83.8	81.4	66.6	58.8	53.3
25	15:30	75.8	105.4	87.3	49.7	83.2	80.8	64.7	57	52.5
26	15:45	70	99.6	85.1	48.8	82.1	67.4	61.8	56.5	51.6
27	16:00	63.3	92.9	78.4	48.5	69.1	66.1	62.5	56.7	50.5
28	16:15	64.2	93.8	83.4	50.4	74.2	65.8	61.7	56.7	52.2
29	16:30	62.5	92.1	77.5	50.6	69.3	65.5	61.3	56.1	51.9
30	16:45	63.7	93.3	83.2	49.2	72.9	66	61.5	55.8	51
31	17:00	65.1	94.7	86.7	48.3	74.8	66	61.1	55	49.9
32	17:15	63.9	93.5	79.7	51	72.5	66.6	61.7	55.6	52.1
33	17:30	62.6	92.2	74.7	50	69.3	65.6	61.4	55.5	51.8
34	17:45	64.1	93.7	78.4	49.5	72.3	66.8	62.3	58	53.8
35	18:00	64.6	94.2	83.6	48.7	73.5	67	62.4	57.7	52
36	18:15	65.2	94.8	90.8	50.9	74.7	65.8	61.4	55.8	52
37	18:30	62.6	92.2	74.8	49.5	69.7	65.6	61.3	56.2	51.3
38	18:45	62.6	92.2	76.1	47.9	70.3	65.6	61.2	55.6	50
39	19:00	62.7	92.3	74.1	50.7	68.9	65.7	61.7	56.1	52.6
40	19:15	61.6	91.2	74.9	48.2	68.6	64.8	60.2	54.6	51.2
41	19:30	62.7	92.3	85.3	48.1	67.8	65	60.6	54	50.3
42	19:45	65.1	94.7	91.5	48	72.1	65.1	59.8	53.4	50.3
43	20:00	61.5	91.1	72.1	48.1	68.4	65	60.1	53.2	49.4
44	20:15	61.1	90.7	73.8	47.4	67.8	64.6	59.7	52.9	49.6
45	20:30	60.9	90.5	70.7	47.4	67.7	64.6	59	51.7	48.6
46	20:45	61.7	91.3	78.9	46.1	68.9	64.9	59.6	52.1	48.4
47	21:00	62.9	92.5	87.7	44.4	70.2	64.1	58.1	50	45.9
48	21:15	60.4	90	76	46.7	67.5	63.8	58.6	49.9	47.8
49	21:30	60.8	90.4	70.5	46.4	67.4	64	59.5	52.6	48.2
50	21:45	61.5	91.1	76.5	44.6	68.3	64.6	60.1	52.6	45.7
51	22:00	61.5	91.1	82.3	45.5	69.9	64.4	59.1	51.6	48

52	22:15	60.5	90.1	70.5	45	67.2	63.8	59.3	51.7	45.9
53	22:30	64.8	94.4	89.8	46.3	74.1	63.7	58.4	52.2	48.1
54	22:45	60.7	90.3	77.9	44.2	69	64.3	57.6	49.3	45.7
55	23:00	61.3	90.9	79	45.6	69.4	64.9	58.1	49.9	46.8
56	23:15	60.5	90.1	73.5	44	68.9	64.4	57.9	48.9	45.4
57	23:30	66.1	95.7	93.5	44.9	74.7	64.5	57.5	48.4	45.8
58	23:45	59.4	89	69.4	43.9	66.9	63.4	56.8	48.3	45.1
59	00:00	60.6	90.2	73.4	44.3	68.1	64.5	58.3	51.1	46.3
60	00:15	59.9	89.5	74.5	43.1	69	64.3	55.6	46.1	44.1
61	00:30	58.8	88.4	71.2	42.8	67.9	63.4	54.1	45.2	43.8
62	00:45	57.8	87.4	69.9	43.8	66.6	62.5	52.5	45.7	44.4
63	01:00	61	90.6	83.8	42.9	72.2	63.4	55.1	46	44.6
64	01:15	57.3	86.9	78.6	41.8	66.6	61.6	50.8	44	42.9
65	01:30	57.7	87.3	72.5	41.8	68.3	62.2	48.6	43.3	42.6
66	01:45	58	87.6	73.3	42.2	67.8	62.9	51.2	43.7	42.9
67	02:00	57.5	87.1	75.8	41.6	68	61.6	50.1	43.7	42.7
68	02:15	57.1	86.7	73.3	42.2	67.6	61.3	49.5	43.7	42.8
69	02:30	58.7	88.3	78.8	42	68.1	62.6	52.3	44.1	42.9
70	02:45	56.4	86	74.6	42.2	66.9	60.9	46.9	43.4	42.8
71	03:00	57.9	87.5	72.4	41.9	68.6	62.6	47.4	43.3	42.7
72	03:15	57.3	86.9	71.2	41.8	67.4	61.8	51.3	44.2	42.9
73	03:30	58.2	87.8	76.1	42.1	69.5	62.3	48.5	43.5	42.8
74	03:45	56.7	86.3	72.4	41.8	68.2	60.7	49.2	43.5	42.6
75	04:00	58.1	87.7	73	42.1	68.9	62.4	49.1	43.4	42.8
76	04:15	56.9	86.5	70.2	42.4	67.3	61.7	47.6	43.6	43.1
77	04:30	58.7	88.3	74.8	42.5	69.7	62.8	50.1	43.8	43.2
78	04:45	58.8	88.4	75.6	42.7	68.7	63.1	51.6	44.6	43.5
79	05:00	60.6	90.2	80.6	43.6	68.9	64.2	56.4	47.1	44.8
80	05:15	60.4	90	80.9	43.1	70.3	64.5	55.6	46.1	44
81	05:30	60.6	90.2	75.4	43.7	69.8	65.2	55.2	46.1	44.7
82	05:45	60.9	90.5	73.9	44.7	69.4	65.2	57.2	48.5	45.8
83	06:00	60.9	90.5	72.9	44.7	69.7	65.3	57.3	47.9	46
84	06:15	62.8	92.4	77.7	46.5	70.9	66.8	60.1	50.6	47.8
85	06:30	62.3	91.9	72.3	46.8	69.4	66.3	59.7	50.8	47.7
86	06:45	63.4	93	81.1	48.4	70.3	66.7	61.7	54.8	50.7
87	07:00	64.2	93.8	78.8	46.9	71.8	67.8	61.9	54.8	49.2
88	07:15	65.7	95.3	81.2	47.3	74.6	69.3	62.8	55.3	49.2
89	07:30	63	92.6	75.1	49.7	70.4	66.3	61.4	55.2	51.6
90	07:45	65.2	94.8	86.3	50.1	74.1	67.9	63	57.2	52.3
91	08:00	64	93.6	73.1	53	70.7	67.2	62.7	58.7	55
92	08:15	63.9	93.5	76.5	50.4	70.8	67	62.4	56.3	51.7
93	08:30	64.5	94.1	78.7	52.3	70.8	67.2	63.5	59	54.8
94	08:45	64.8	94.4	81.1	54.5	71.3	67.3	63.6	60.1	56.7
95	09:00	64.1	93.7	78.2	51.5	72.1	66.8	62.5	58.4	54.5
96	09:15	64.2	93.8	76.4	53.4	71	67	63	57.9	55

APPENDIX 'B'

Photos


Microphone
Nearest noise sensitive receiver


No. 14 Roger Street
Microphone