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RESULTS OF A 24-HOUR NOISE LEVEL SURVEY

CARRIED OUT AT THE REAR OF THE RETAIL PREMISES

LOCATED AT 196-198 HAVERSTOCK HILL, LONDON NW3

AND A REPORT ON THE NOISE CONTROL MEASURES

REQUIRED TO MINIMISE THE NOISE IMPACT

OF THE PROPOSED NEW EXTERNAL PLANT

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Authorised for Release by [redacted]

I J Marchant

Client:	CL14 Ltd/Watts Group Limited
Project:	196-198 Haverstock Hill, London NW3
Emtec Ref:	QF9140/PF6025/RP1
Issue Date:	7th August 2017

QF9140/PF6025/RP1

EMTEC PRODUCTS LTD.

RESULTS OF A 24-HOUR NOISE LEVEL SURVEY CARRIED OUT AT THE REAR OF THE RETAIL PREMISES LOCATED AT 196-198 HAVERSTOCK HILL, LONDON NW3 AND A REPORT ON THE NOISE CONTROL MEASURES REQUIRED TO MINIMISE THE NOISE IMPACT OF THE PROPOSED NEW EXTERNAL PLANT

1.0. INTRODUCTION

This report details the results of a 24-hour noise survey carried out at the rear of the retail premises located on the ground floor of 196-198 Haverstock Hill, London NW3.

The objectives of this survey were as follows:

- To assess the proposal to install new external plant on the first floor rear roof area of the building.
- To establish the existing background noise level outside the nearest affected properties.
- To recommend noise limits and any necessary measures to ensure that the operation of the new plant does not disturb the occupants of the nearest affected properties.

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

2.0. SITE DESCRIPTION

The property at 196-198 Haverstock Hill is part of a five storey parade of ground floor shops and residential flats on the four upper floors. A number of the shop units have been turned into restaurants and coffee bars and 196-198 used to be a restaurant and is being refurbished for use as arestaurant in the future. The shop unit to the north of the site is also being used as a restaurant.

The condensing units and kitchen fan unit associated with the former restaurant are located on the flat roof area behind the ground floor retail unit. The area behind the site can be seen on the attached photo A to E.

The four floors above the ground floor retail units seem to be residential..

3.0. TEST INSTRUMENTATION

All measurement equipment used during the survey complied with the requirements of BS4142:2014 "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
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 Haverstock Hill 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 was construction work being carried out on the new residential development at the end of the rear service road (see photo D) so daytime noise levels will be affected by the noise from these operations.

Existing air conditioning condensers and ventilation plant, associated with the next door restaurant, are mounted onto the rear first floor roof (see photo B) and these units were operating at the start and finish of the survey.

We judged that during the day the prime noise source will be the ventilation fan of the adjacent restaurant together with possible construction noise from the site at the end of the service road.

We assume that the next door restaurant will not operate throughout the nightime period and that the construction noise will not be a factor overnight.

4.0. TEST PROCEDURE

The surveys were conducted during a continuous 24-hour period from 10:50am on Wednesday 2nd of August to 10.50am on Thursday the 3rd of August 2017.

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: -

LA_1 - The Sound Pressure Level exceeded for 1% of the measurement period.

LA_{10} - The Sound Pressure Level exceeded for 10% of the measurement period.

LA_{50} - The Sound Pressure Level exceeded for 50% of the measurement period.

LA_{90} - 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 4142:2014).

LA_{99} - The Sound Pressure Level exceeded for 99% of the measurement period.

LA_{eq} - 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 at a position on the first floor roof of the rear part of the building that is adjacent to the rear service road. The photographs A and C show the microphone attached to the railings at the back of the first floor roof and in front of the windows of the residential flats.

The microphone was fitted onto a boom that was attached to the metal railings and was approximately 2 metres above the roof surface. The rest of the measurement equipment was located in weatherproof enclosures with low impedance cables running from the microphones to the instrumentation.

4.2. Weather Conditions

The weather conditions prevailing during the measurement period were generally in line with those recommended in BS 4142:2014: -

Weather daytime: -	Dull and Overcast	Weather night time: -	Overcast
Wind daytime: -	Light	Wind night time: -	Light

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

5.0. RESULTS AND EVALUATION OF NOISE CRITERIA

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

The 'A' Weighted Leq levels measured over each 15 minute interval throughout the 24-hour period (denoted by LA_{eq}, (15 mins)) are displayed as a bar graph on the attached Sketch No QF/9140/T1 at the back of this report.

The 'A' Weighted percentile levels measured over each 15 minute interval denoted by LA_{10} (15 mins), LA_{50} (15 mins) and LA_{90} (15 mins) are displayed as line graphs on the attached Sketch No QF/9140/T2 at the back of this report.

5.1. Summary of Results

The table QF/9140/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/9140/D1 – Summary of Maximum and Minimum Noise Levels

	LA_{eq}	LA_1	LA_{10}	LA_{50}	LA_{90}	LA_{99}
Minimum	46.4 dBA	48.5 dBA	47.6 dBA	46.5 dBA	45.7 dBA	45.2 dBA
Maximum	75.3 dBA	88.7 dBA	79.4 dBA	63.6 dBA	59.9 dBA	58.4 dBA

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

The local authority is the London Borough of Camden and Section 16.34 of Camden's Noise Strategy 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 metre external to sensitive facades are at least 5dBA less than the existing background measurement (LA_{90}) 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 façade to at least 10dBA below the LA_{90} level."

5.3. Determination 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 5dBA below the minimum existing LA_{90} background noise level during the relevant operational period.

It is proposed to operate the majority of the plant only during the daytime and evening (8am to midnight) but some equipment may operate on a 24-hour basis.

The lowest recorded LA_{90} levels measured during the 8am to midnight period was 47.5dBA and during the 24-hour period the lowest LA_{90} was 45.7dBA.

The new plant should therefore be designed to achieve 42.5dBA for daytime and evening operation (8am to midnight) and 40.7dBA for 24 hour operation. These noise levels should be achieved at 1 metre from the nearest noise sensitive properties' windows with all the proposed new plant that normally operates either during the daytime/evening period or during the overnight period.

5.4. 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/9140/D2: -

Table QF/9140/D2 – recommended design rating levels $L_{Ar,T}$

Type of premises	**$L_{Ar,T}$ (24-hour)**	**$L_{Ar,T}$ (8am – midnight)**
Noise sensitive	45.7 dBA	47.5 dBA

6.0. DISCUSSION OF RESULTS

During the daytime and evening period of the survey the mechanical plant associated with the next door restaurant was operating.

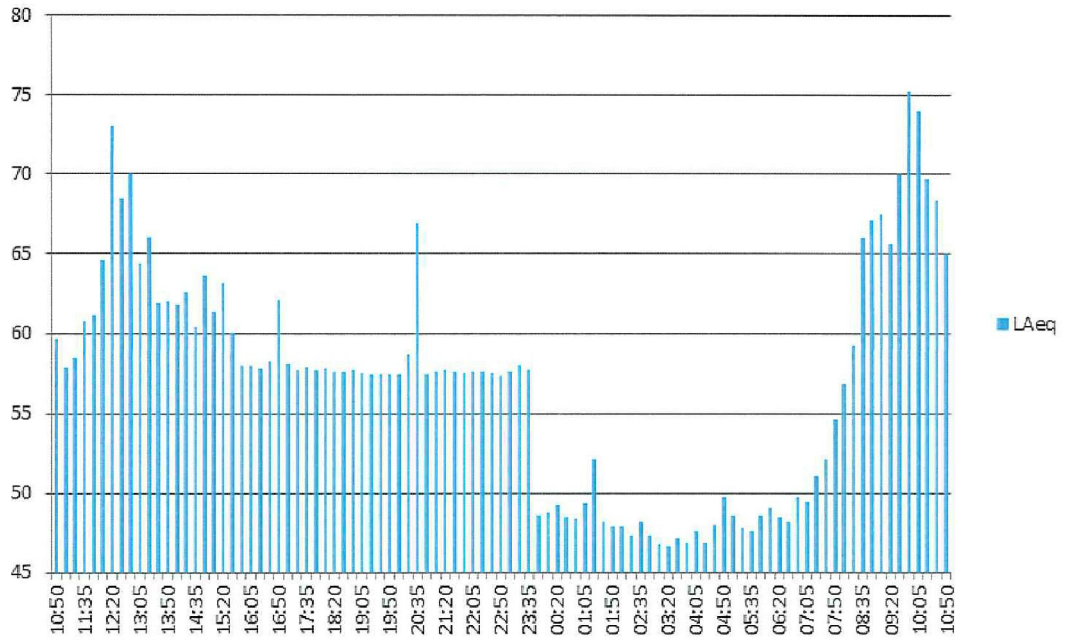
As can be seen from the LAeq noise levels (see sketch No.QF/9140/T1) the plant operated from approximately 8am to 23.35pm and the steady noise of the ventilation fan was equivalent to a noise level of just over 57dBA.

The LA90 background noise levels were also equivalent to approximately 57dBA during the same time period.

If the new proposed restaurant is to operate between 8am and 23.30pm then it may be possible to relax the noise level criteria to approximately 52dBA (ie 5dB below the 57dBA background noise level with the neighbour's fan running). However we believe that the local council will wish to see an improvement on the current noise environment and so we would recommend that the new systems be designed to the LAeq limiting noise levels listed in table QF/9140/D2 of this report.

On receipt of details of the proposed plant we will be able to give details of any noise control measures that may be required to meet the limiting noise levels and thereby satisfy the requirements of Camden Council's planning directives.

EMTEC PRODUCTS LTD
7th August 2017



TITLE: *LAeq Levels*	*ISSUE DATE:* 03/08/2017				*DRAWN BY:* *MGR*	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*
CLIENT: CL14 Ltd	*PF No: 6025*				*APPROVED BY:* *MGR*	*REVISION*							
PROJECT: 196-198 Haverstock Hill, London NW3	*Q*	*A*	*M*	*I*	*DESIGN AUTH:* *MGR*	*SKETCH No. QF/9140/T1*							

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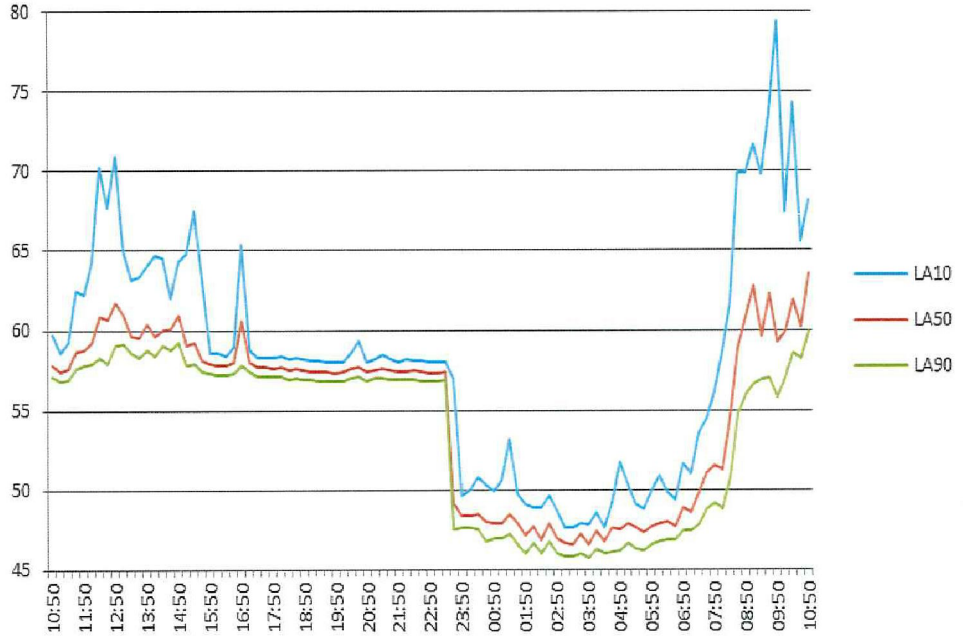

TITLE: LA10; LA50 & LA90 Levels	ISSUE DATE: 03/08/2017				DRAWN BY: MGR	A	B	C	D	E	F	G	H
CLIENT: CL14 Ltd	PF No: 6025				APPROVED BY: MGR	REVISION							
PROJECT: 196-198 Haverstock Hill, London NW3	Q	A	M	I	DESIGN AUTH: MGR	SKETCH No. QF/9140/T2							

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APPENDIX 'A'

Raw Data – Noise Survey

2nd to 3rd August 2017

RAW NOISE DATA - 196-198 Haverstock Hill, London NW3

Ref: QF9140/PF6025/RP1
Client: CL14 Ltd
Date: 2nd to 3rd of August 2017

Address	Start Time	LAeq	LE	Lmax	Lmin	LA1	LA10	LA50	LA90	LA99
1	10:50	59.6	89.2	82.9	55.8	66.7	59.7	57.8	57.1	56.6
2	11:05	57.9	87.5	72.1	55.7	63.4	58.6	57.4	56.8	56.3
3	11:20	58.5	88.1	81.8	55.8	64.4	59.2	57.6	56.9	56.4
4	11:35	60.8	90.4	85.3	56.1	68	62.5	58.7	57.6	57.1
5	11:50	61.2	90.8	78.5	56.3	71.1	62.2	58.8	57.8	57.3
6	12:05	64.6	94.2	89.3	56.4	76.1	64.2	59.2	57.9	57.2
7	12:20	73.1	102.7	100.6	56.6	85.4	70.3	60.9	58.3	57.5
8	12:35	68.5	98.1	91.6	56.4	81	67.7	60.7	57.9	57.2
9	12:50	70	99.6	91.4	56.7	82.7	71	61.7	59	57.9
10	13:05	64.4	94	85.4	57.1	75.8	65	61	59.1	57.9
11	13:20	66.1	95.7	88.6	57.1	79.4	63.2	59.6	58.6	57.9
12	13:35	61.9	91.5	81.2	57.1	71.4	63.4	59.5	58.3	57.8
13	13:50	62	91.6	80.4	57.4	68.3	64	60.4	58.8	58.2
14	14:05	61.8	91.4	76.6	57.1	69.1	64.7	59.6	58.4	57.8
15	14:20	62.6	92.2	84.9	57.7	70	64.5	60	59	58.4
16	14:35	60.4	90	72.2	57.4	63.3	62	60.1	58.8	58.1
17	14:50	63.7	93.3	94.2	57.3	66.5	64.3	61	59.2	58.2
18	15:05	61.3	90.9	71.9	56.8	66.6	64.8	59	57.8	57.4
19	15:20	63.2	92.8	74.1	56.6	71.4	67.5	59.2	57.9	57.3
20	15:35	60	89.6	71.2	56.4	66.4	63.2	58.1	57.4	57
21	15:50	58	87.6	66.2	55.9	59.9	58.6	57.9	57.3	56.9
22	16:05	58	87.6	74	56.1	60	58.6	57.8	57.2	56.8
23	16:20	57.8	87.4	67.5	56.1	59.4	58.4	57.8	57.2	56.8
24	16:35	58.3	87.9	78.5	56.2	60.6	58.9	58	57.3	56.9
25	16:50	62.1	91.7	68	56.2	66.7	65.4	60.6	57.8	57.1
26	17:05	58.1	87.7	63.3	56.1	59.7	58.8	58	57.4	57
27	17:20	57.7	87.3	65.3	56.1	59.7	58.3	57.7	57.1	56.7
28	17:35	57.9	87.5	78.6	56.1	60.1	58.3	57.7	57.1	56.7
29	17:50	57.7	87.3	63.6	55.7	59.8	58.3	57.6	57.1	56.7
30	18:05	57.8	87.4	74	55.9	59.4	58.4	57.7	57.1	56.7
31	18:20	57.6	87.2	62.9	55.9	59.6	58.2	57.5	56.9	56.5
32	18:35	57.6	87.2	63.5	55.6	59.6	58.3	57.6	57	56.6
33	18:50	57.7	87.3	69.2	55.8	60.8	58.2	57.5	56.9	56.5
34	19:05	57.5	87.1	65.5	55.6	59.1	58.1	57.4	56.9	56.4
35	19:20	57.4	87	66.5	55.6	59.2	58.1	57.4	56.8	56.3
36	19:35	57.4	87	61.8	55.6	58.7	58	57.4	56.8	56.4
37	19:50	57.4	87	64.3	55.7	59.1	58	57.3	56.8	56.4
38	20:05	57.4	87	67	55.8	59	58	57.4	56.8	56.4
39	20:20	58.7	88.3	80.2	55.9	61.9	58.6	57.6	57	56.5
40	20:35	66.9	96.5	93.9	55.9	72.2	59.3	57.7	57.1	56.6
41	20:50	57.4	87	61.9	55.5	58.9	58	57.4	56.8	56.4
42	21:05	57.6	87.2	67.2	55.9	59.3	58.2	57.5	57	56.5
43	21:20	57.7	87.3	64.7	55.6	60.3	58.5	57.6	57	56.5
44	21:35	57.6	87.2	67.2	55.9	60.8	58.2	57.5	56.9	56.5
45	21:50	57.5	87.1	75.3	55.9	59.1	58	57.4	56.9	56.5
46	22:05	57.6	87.2	66.1	55.9	60.5	58.2	57.4	56.9	56.4
47	22:20	57.6	87.2	70.8	55.8	59.7	58.1	57.5	56.9	56.5
48	22:35	57.5	87.1	74.7	55.9	59.4	58.1	57.4	56.8	56.4
49	22:50	57.3	86.9	63.9	55.5	59.1	58	57.3	56.8	56.3
50	23:05	57.6	87.2	78.3	55.8	59.9	58	57.3	56.8	56.4
51	23:20	58	87.6	79.5	55.9	60.5	58	57.4	56.9	56.5
52	23:35	57.7	87.3	89.3	46.1	61.1	57	49.1	47.5	46.9

53	23:50	48.6	78.2	59.5	46.4	51.4	49.6	48.4	47.6	47.1
54	00:05	48.8	78.4	56.6	46.4	52.9	50	48.4	47.6	47.2
55	00:20	49.2	78.8	58.6	46.4	55	50.8	48.5	47.5	47
56	00:35	48.5	78.1	55.2	45.1	53.2	50.3	48	46.7	45.9
57	00:50	48.4	78	54.9	45.4	53.3	49.9	47.9	46.9	46.2
58	01:05	49.3	78.9	67.6	45.5	58	50.6	47.9	46.9	46.2
59	01:20	52.1	81.7	73.6	45.8	62.9	53.2	48.5	47.2	46.5
60	01:35	48.2	77.8	54.7	44.9	52.3	49.7	47.9	46.5	45.8
61	01:50	47.9	77.5	60.4	44.6	53.6	49	47.1	46	45.4
62	02:05	47.9	77.5	55.4	44.8	51.7	48.9	47.7	46.6	45.8
63	02:20	47.3	76.9	55.2	44.6	50.9	48.9	46.8	46	45.4
64	02:35	48.2	77.8	55.4	44.9	52.4	49.6	47.9	46.7	45.8
65	02:50	47.3	76.9	53.8	44.6	51.8	48.7	46.9	46	45.5
66	03:05	46.7	76.3	51.8	44.6	48.5	47.6	46.6	45.8	45.3
67	03:20	46.6	76.2	50.9	44.5	49.3	47.6	46.5	45.8	45.3
68	03:35	47.1	76.7	50.4	44.4	48.7	47.9	47.2	46	45.2
69	03:50	46.8	76.4	54.6	44.2	50.6	47.8	46.5	45.7	45.2
70	04:05	47.6	77.2	54.5	44.9	51.6	48.6	47.4	46.3	45.6
71	04:20	46.8	76.4	53.7	44.4	49.5	47.6	46.7	46	45.5
72	04:35	48	77.6	60.7	44.4	53.4	49.1	47.6	46.1	45.4
73	04:50	49.7	79.3	70.7	44.8	58.1	51.7	47.5	46.2	45.6
74	05:05	48.6	78.2	62.7	45	53.4	50.3	47.9	46.6	45.9
75	05:20	47.8	77.4	54.8	44.9	52	49	47.6	46.3	45.6
76	05:35	47.6	77.2	57.4	44.8	51.6	48.8	47.3	46.2	45.6
77	05:50	48.6	78.2	64.9	44.8	55.6	49.9	47.7	46.5	45.7
78	06:05	49	78.6	61.4	45.4	55.8	50.9	47.9	46.7	46
79	06:20	48.5	78.1	61.4	45.4	53.6	49.8	48	46.8	46.1
80	06:35	48.2	77.8	58.9	45.4	53.1	49.3	47.7	46.8	46.2
81	06:50	49.7	79.3	63	45.6	55.4	51.6	48.9	47.4	46.4
82	07:05	49.4	79	63.2	45.5	54.8	51	48.6	47.4	46.6
83	07:20	51.1	80.7	67.3	45.9	57.6	53.6	49.8	47.8	46.8
84	07:35	52.1	81.7	65.5	47.2	57.9	54.4	51.1	48.8	48
85	07:50	54.6	84.2	77.7	47	64.1	56.2	51.5	49.1	48.1
86	08:05	56.8	86.4	81.7	46.9	67.9	58.7	51.3	48.8	47.7
87	08:20	59.2	88.8	83.4	47.4	70	61.7	54.6	50.8	48.6
88	08:35	66.1	95.7	89.7	51	76.8	69.9	58.9	54.8	52.2
89	08:50	67.1	96.7	92.3	51.5	76.2	69.9	60.9	56	53
90	09:05	67.5	97.1	85.5	52	75.8	71.7	62.8	56.6	53.3
91	09:20	65.7	95.3	82.8	52.8	76.2	69.8	59.6	56.9	55
92	09:35	70	99.6	89	51.5	80.9	73.7	62.3	57	52.8
93	09:50	75.3	104.9	91	52	87.7	79.4	59.2	55.8	52.9
94	10:05	74	103.6	93.8	52	88.7	67.4	59.9	57	53.1
95	10:20	69.7	99.3	93.9	56.9	78.2	74.3	61.9	58.6	57.7
96	10:35	68.4	98	90.6	56.6	81.9	65.6	60.2	58.2	57.4

APPENDIX 'B'

Photos and drawing

Photo A – Location of Microphone Next to Railings in Front of the Residential Flats Over the Rear of the Ground Floor Retail Units at 196 Haverstock Hill, NW3

Photo B – Rear of Ground Floor Retail Units Showing Plant on First Floor Roofs & Residential Flats Behind

Photo C – View from 196 Haverstock Hill Roof Looking North West Along Rear of Ground Floor Retail Units

Photo D – View from 196 Haverstock Hill Roof Looking South East Towards New Residential Block of Flats

Photo E – View from 196 Haverstock Hill Looking East Towards Residential Properties off Aspen Grove