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RESULTS OF A 24 HOUR NOISE LEVEL SURVEY
CARRIED OUT ON THE THIRD FLOOR ROOF OF
No. 174-178 KENTISH TOWN ROAD, LONDON NW5
AND A REPORT ON THE NOISE CONTROL MEASURES REQUIRED
TO MINIMISE THE NOISE IMPACT OF THE PROPOSED NEW EXTERNAL PLANT
AND THE SUITABILITY OF THE BUILDING FOR RESIDENTIAL DEVELOPMENT AGAINST
THE GUIDELINES OF THE LOCAL COUNCIL'S DEVELOPMENT MANAGEMENT POLICIES

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Client : Marek Wojciechowski Architects
Project : 174-178 Kentish Town Road, London NW5
Emtec Ref. : QF8092/PF5318/RP1
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1.0. INTRODUCTION

This report details the results of a 24-hour noise level survey carried out on the third floor roof of No. 174-178 Kentish Town Road, London NW5.

The proposed development is the erection of an extension at third floor roof level in order to create two residential flats.

The objectives of this survey were as follows:

- To assess the proposal that is to develop the existing site into a mixed use building which includes a third floor roof extension and the introduction of external plant.
- To identify the nearest properties that might be affected by external plant noise.
- To establish the existing background noise level outside the nearest affected properties.
- To recommend noise limits for new external plant and any mitigating measures to ensure that the operation of new plant does not disturb the occupants of the neighbouring properties.
- To assess the building against the guidelines of the local councils 'Development Management Policies' and rate of the site as to its suitability for residential development.

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

- 1.0. INTRODUCTION
- 2.0. SITE DESCRIPTION
- 3.0. TEST INSTRUMENTATION
- 4.0. TEST PROCEDURE
- 5.0. RESULTS AND EVALUATION OF NOISE CRITERIA
- 6.0. DISCUSSION OF RESULTS

2.0. SITE DESCRIPTION

No. 174 – 178 Kentish Town Road is a three storey commercial property located in the Kentish Town area of North London. The property is on the corner of Kentish Town Road, which is a main road connecting Camden to the A1, and Patshull Road. Buildings to the north, south and west of the property are of mixed use with commercial on the ground floor and residential above. To the east is a typical suburban street with a row of detached houses on the either side.

See photo 'A' in appendix B of this report for site existing site layout.

3.0. TEST INSTRUMENTATION

All measurement equipment used during the survey complied with the requirements of BS4142:2014 "Methods for Rating and Assessing Industrial and Commercial Sound". 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.: 01232570 and 01232569.

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, using a reference noise level of 94dBA, and found to be in all cases, +/- 0.1 dB from the reference source.

3.1. Existing Noise Climate

Road traffic travelling on Kentish Town Road and Patshull 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 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 10:09am on Monday the 15th of December 2014 to 10:09am on Tuesday the 16th of December 2014.

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.
- 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 on the third floor flat roof, in positions considered equivalent to the closest receptor properties in order to enable noise predictions from the proposed plant to be compared and assessed against.

The microphones were pointing vertically and were approximately 1.2 metres above roof level. The rest of the measurement equipment was located in a weatherproof enclosure with a low impedance cable running from the microphone to the instrumentation.

Photo 'A' in appendix 'B' of this report shows the microphone locations.

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: -	Light	Wind night time: -	Light

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

4.3. Uncertainty

Existing external plant on the roof of the building consists of condenser units serving the offices below, outside the hours of 8.30am and 6.00pm which are the normal working hours for the office, this plant is normally switched off.

It has been assumed that the noise levels measured during the 24-hour survey period represent the noise levels experienced by the neighbourhood during a typical normal day.

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 line graph on the attached Sketch No QF8092/T1/A & QF8092/T1/B 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 QF8092/T2/A & QF8092/T2/B at the back of this report.

5.1. Summary of Results

The tables QF/8092/D1 and QF/8092/D2 summarises the noise levels taken over the 24-hour period in terms of the maximum and minimum Sound Pressure Levels recorded on the third floor roof at the North East and South West corners of the property.

Table QF/8092/D1 – Summary of Maximum and Minimum Noise Levels (South West Corner)

	LA_{eq}	LA_1	LA_{10}	LA_{50}	LA_{90}	LA_{99}
Minimum	62dBA	65dBA	64dBA	51dBA	42dBA	41dBA
Maximum	78dBA	81dBA	74dBA	67dBA	64dBA	63dBA

Table QF/8092/D2 – Summary of Maximum and Minimum Noise Levels (North East Corner)

	LA_{eq}	LA_1	LA_{10}	LA_{50}	LA_{90}	LA_{99}
Minimum	54dBA	64dBA	57dBA	47dBA	43dBA	43dBA
Maximum	70dBA	82dBA	68dBA	64dBA	60dBA	59dBA

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

The local planning authority is The London Borough of Camden.

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

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

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

5.3. Determination of noise sensitive property design criteria

The new external plant will comprise of air cooled inverter controlled condenser units, so 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 LA₉₀ background noise level during the relevant operational period.

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

The lowest recorded LA₉₀ background noise level measured during the 24-hour period was 42dBA. This occurred during the time periods starting at 3.59AM.

The new plant should therefore be designed to achieve 37dBA at 1 metre from the nearest noise sensitive properties' windows if the externally located equipment is to be operated on a 24-hour basis.

5.4. Summary of external noise criteria

Based upon the results of the survey and the above design criteria we summarise the actual design rating level to be adopted for this project in table QF/8092/D3 :-

Table QF/8092/D3 – recommended design rating levels L_{Ar,T}

Type of premises	L _{Ar,T} (24-hour)
1 metre from the nearest noise sensitive receiver.	37dBA

6.0. DISCUSSION OF RESULTS

The results show a fairly typical pattern for suburban noise levels in a mixed use area of London when compared to the results of other surveys conducted in nearby residences.

It is proposed as part of the third floor roof extension, to install a new air conditioning system for each of the residential flats, which includes an external air cooled condenser unit. These proposed external condenser units will be located in the North East and South West corners of the proposed extension.

The surrounding properties to the proposed location of the condenser unit in the North East corner were inspected and the nearest affected noise sensitive dwelling was identified as a residential property No 4 Patshull Road. This property has a window approximately 8m away from the proposed location of the condenser.

The surrounding properties to the proposed location of the condenser unit in the South West corner were inspected and the nearest affected noise sensitive dwelling was identified as a residential property above No. 170 – 172 Kentish Town Road. This property has a window approximately 2m away from the proposed location of the condenser.

See photos 'B' and 'C' in appendix 'B' of this report for the proposed condenser unit locations and nearest noise sensitive receivers.

6.1. Description of Equipment

We understand that the new external plant on the third floor roof will comprise of the following new equipment:

North East Corner

- 1 No. Daikin RXYSQ6P8Y1 external condenser unit having a sound pressure level of 53dBA at 1 metre in free field conditions.

South West Corner

- 1 No. Daikin RXYSQ6P8Y1 external condenser unit having a sound pressure level of 53dBA at 1 metre in free field conditions

The above sound pressure levels are taken from the manufactures published data.

6.2. Predicted Noise Levels

North East Corner

Allowing for a +3dB increase due to directivity, a -18dB reduction in noise due to a point source at a distance of 8 metres ($20 \log r$, where r = distance), a -3dB reduction due to the partial screening effect of the building edge, we predict that the noise level from the proposed external plant on the north-east corner will be in the order of 35dBA when measured at 1 metre outside the nearest affected residential window.

South West Corner

Allowing for a +3dB increase due to directivity, a -6dB reduction in noise due to a point source at a distance of 2 metres ($20 \log r$, where r = distance), a -3dB reduction due to the partial screening effect of the building edge, we predict that the noise level from the proposed external plant on the south-west corner will be in the order of 47dBA when measured at 1 metre outside the nearest affected residential window.

6.3. Assessment on the Requirement for Noise Treatment

The recommended design rating level for any new plant is 37dBA when measured at 1 metre outside the nearest affected residential window.

As the predicted noise level for the condenser unit in the North East corner is below the recommended design rating level, no further acoustic treatment will be required.

As the predicted noise level for the condenser unit in the South West corner is above the recommended design rating level, it will be necessary to acoustically treat the unit in order to reduce the noise level by at least 10dB.

6.4. Measures to Mitigate Noise

To meet the requirements for 24-hour operation, the proposed condenser located in the South West corner shall be acoustically screened. The screen must have a minimum insertion loss of R_w : 10dB. The width and location of the screen shall be such as to avoid any direct line of sight between the condenser unit and the nearest noise sensitive receiver. One edge of the screen must abut the proposed new extension, and the top of the screen shall be at least 300mm above the top of the condenser unit. The screen shall be constructed from 50 thick proprietary acoustic panels, such as Emtec type PAC 30 acoustic panels, having the following minimum sound reduction indices:

	Sound Reduction Index (dB) at Octave Band centre Frequencies (Hz)							
	63	125	250	500	1k	2k	4k	8k
Acoustic panels	18	20	28	32	40	41	44	38

To prevent the transmission of structure borne noise, all the proposed external plant should be effectively isolated from the structure using double deflection neoprene-in-shear anti-vibration mounts.

6.5. Suitability of Building for Residential Use

Whilst the Planning Policy Guidance PPG24 has been replaced by the National Planning Policy Framework, Camden Council still use the same NEC categories for assessing noise levels for new dwellings.

The Planning Policy Guidance PPG24 gives guidelines to local planning authorities with regard to the suitability of incoming developments onto sites that are exposed to high levels of existing environmental noise such as 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 & 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 are 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 high noise level. NEC-D considers that planning permission should normally be refused.

The average LA_{eq} noise levels measured over the 24 hour noise level survey equate to the following figures:

Time Period	Average LA_{eq}
Daytime (7:00am to 23:00pm)	70dBA
Category for mixed sources of noise (7:00am to 23:00pm)	Category C
Nighttime (23:00pm to 7:00am)	66dBA
Category for mixed sources of noise (23:00pm to 7:00am)	Category C

The above table shows that the average LA_{eq} over the daytime and nighttime periods fall into Category C which therefore requires that planning permission should not normally be granted. Where it is considered that permission should be given, for example because there are no alternative quieter sites available, conditions should be imposed to ensure a commensurate level of protection against noise.

The building should be designed to achieve the following internal noise levels as recommended by the World Health Organisation:

35dB $LA_{eq}(16)$: daytime (7:00am to 23:00pm) to prevent interference of speech and moderate annoyance.

30dB $LA_{eq}(8)$: nighttime (23:00pm to 7:00am) to prevent sleep disturbance.

Using the lower noise level of LA_{eq} : 30dB as the design requirement within the bedrooms of the development it will be necessary to construct the envelope of the new building with a minimum mean noise reduction capability of at least 36dB (100Hz to 3150Hz). Particular attention should be made to the glazing which will necessitate being well sealed double glazing units with substantial glass weight and adequate intermediate air gaps as well as acoustically efficient peripheral seals.

6.6. Summary

A 24-hour noise level survey has been undertaken at No. 174-178 Kentish Town Road, London NW5.

Design noise limits have been recommended, based on the results of the survey and the local authority's planning guidelines.

Proposed plant noise levels have been predicted, and an assessment has been carried out to determine whether the proposed plant will meet the recommended design noise limits.

The proposed plant in the North East corner of the third floor roof will meet the recommended design noise limits for the prescribed period of operation (24-hours daily).

The proposed plant in the South West corner of the third floor roof will require acoustic treatment in order to meet the recommended design noise limits for the prescribed period of operation (24-hours daily).

Where required, suitable noise control measures have been described for the proposed new external plant.

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

A PPG24 assessment has been undertaken at No. 174-178 Kentish Town Road, London and an NEC Category C has been designated for both day and night time.

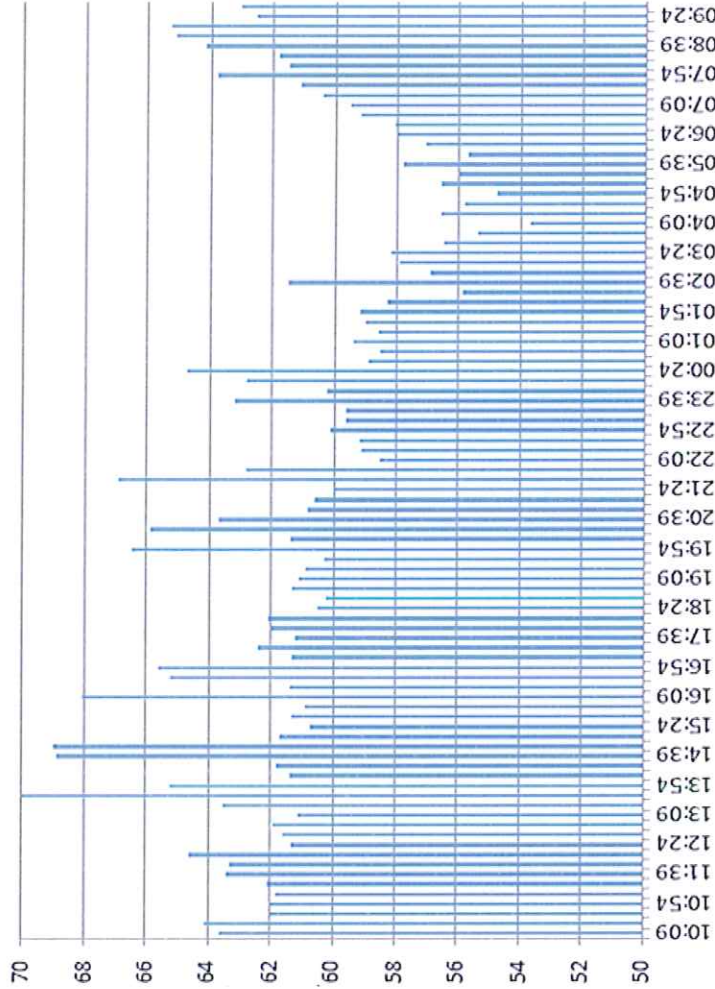
APPENDIX 'A'

Raw Data – Noise Survey

15th to 16th December 2014

APPENDIX 'B'

Photos and sketches



TITLE: LAeq Levels – Third Floor North East Corner

CLIENT: Marek Wojciechowski Architects

PROJECT: 174-178 Kentish Town Road, London

ISSUE DATE:
17/12/14

PF No: 5318

Q A M I

DRAWN BY:
CH

APPROVED BY:
MGR

DESIGN AUTH:
CH

REVISION

SKETCH No. QF/8092/T1/B

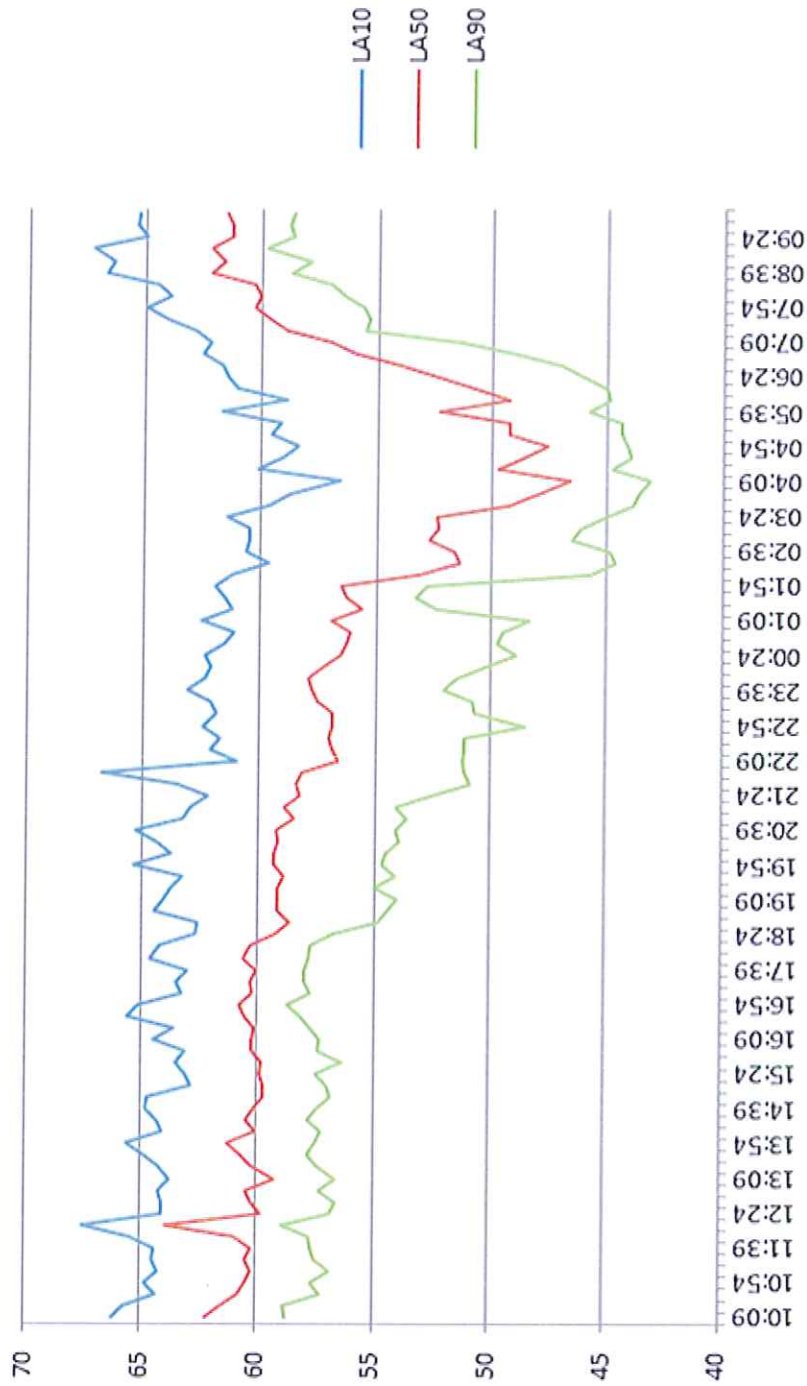


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TITLE: LA10; LA50 & LA90 Levels Third Floor South West Corner	ISSUE DATE: 17/12/14	DRAWN BY: CH		A B C D E F G H							
CLIENT: Marek Wojciechowski Architects	PF No: 5318	APPROVED BY: MGR		REVISION							
PROJECT: 174-178 Kentish Town Road, London	Q A M I	DESIGN AUTH: CH		SKETCH No. QF/8092/T2/A							



TITLE: LA10; LA50 & LA90 Levels
Third Floor North East Corner

CLIENT: Marek Wojciechowski Architects

PROJECT: 174-178 Kentish Town Road, London

ISSUE DATE:
17/12/14

PF No: 5318

Q A M I

DRAWN BY:
CH

APPROVED BY:
MGR

DESIGN AUTH:
CH

A	B	C	D	E	F	G	H
REVISION							
SKETCH No. QF/8092T2/B							



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South West Measurement
positions at roof level.

No. 174/178 Kentish Town Road

North East Measurement
positions at roof level.

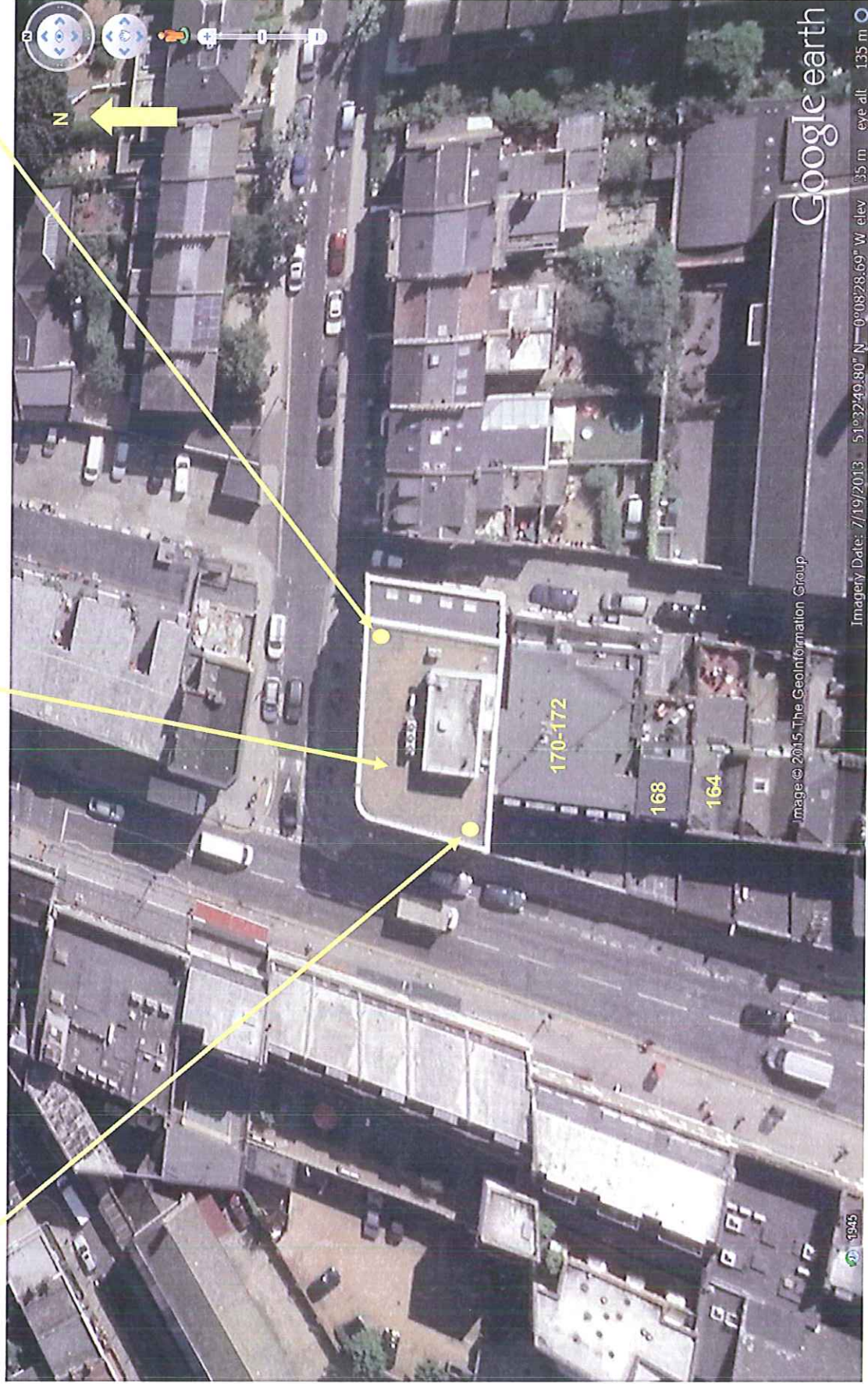
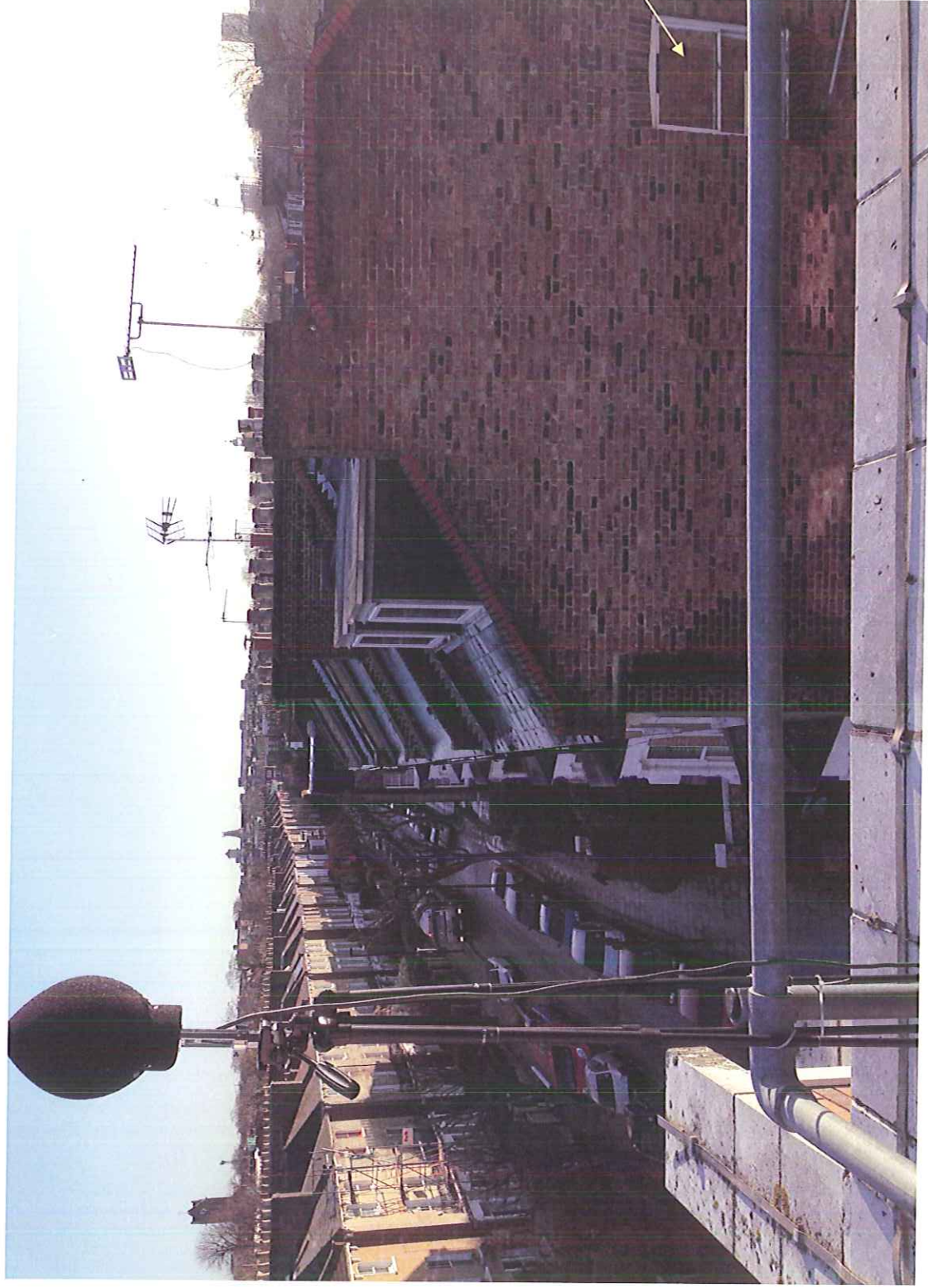


PHOTO A: Measurement locations on the roof of No. 174-178 Kentish Town Road, London

Nearest
noise
sensitive
window of
No. 170-
172 Kentish
Town Road



PHOTO B: Nearest noise sensitive window in relation to the South West corner of No. 174-178 Kentish Town Road



Nearest noise
sensitive window of
No. 4 Patshull Road

PHOTO C: Nearest noise sensitive window in relation to the North East corner of No. 174-178 Kentish Town Road

RAW NOISE DATA - 174-178 Kentish Town Road - (Third Floor North East Corner)

Ref: QF8092/PF5318/RP1
Client: Marek Wojciechowski Architects
Date: 15th to 16th December 2014

Address	Start Time	LAeq	LE	Lmax	Lmin	LA1	LA10	LA50	LA90	LA99
1	10:09	64	93	82	55	71	66	62	59	58
2	10:24	64	94	87	56	71	66	62	59	58
3	10:39	62	92	79	55	70	64	61	57	57
4	10:54	62	92	74	54	70	65	60	58	57
5	11:09	62	91	79	54	69	64	60	57	56
6	11:24	62	92	77	55	70	65	60	58	57
7	11:39	63	93	86	55	71	64	60	58	57
8	11:54	63	93	81	55	73	66	61	58	57
9	12:09	65	94	79	55	71	68	64	59	57
10	12:24	61	91	75	54	69	64	60	57	56
11	12:39	62	91	79	54	69	64	60	57	56
12	12:54	62	92	80	54	70	64	60	57	56
13	13:09	61	91	75	54	69	64	59	57	56
14	13:24	64	93	89	55	72	64	60	57	57
15	13:39	70	100	97	56	82	65	61	58	57
16	13:54	65	95	88	54	75	66	61	58	56
17	14:09	61	91	80	55	67	64	60	57	57
18	14:24	62	91	77	53	70	64	60	58	57
19	14:39	69	99	94	54	81	65	60	57	57
20	14:54	69	99	93	54	82	65	60	57	56
21	15:09	62	91	85	55	68	63	60	57	56
22	15:24	61	90	77	55	67	63	60	58	57
23	15:39	61	91	79	54	69	64	60	56	56
24	15:54	61	91	75	55	67	63	60	57	57
25	16:09	68	98	96	54	79	65	60	57	57
26	16:24	61	91	79	54	68	64	60	58	57
27	16:39	65	95	88	55	77	66	61	58	58
28	16:54	66	95	88	56	79	65	61	59	58
29	17:09	61	91	80	55	68	63	60	58	57
30	17:24	62	92	83	56	72	64	60	58	58
31	17:39	61	91	80	56	67	63	60	58	58
32	17:54	62	92	76	55	69	65	61	58	57
33	18:09	62	92	79	55	70	64	60	58	57
34	18:24	61	90	77	53	67	63	59	57	56
35	18:39	60	90	80	50	68	63	59	55	54
36	18:54	61	91	80	49	70	65	59	54	53
37	19:09	61	91	79	51	70	64	59	54	53
38	19:24	61	91	76	50	69	64	59	55	54
39	19:39	60	90	73	50	68	63	59	54	53
40	19:54	67	96	90	49	79	65	59	55	54
41	20:09	61	91	80	50	70	64	59	55	53
42	20:24	66	96	91	48	77	64	59	54	52
43	20:39	64	93	86	49	74	65	59	54	52
44	20:54	61	90	78	49	71	63	59	54	52
45	21:09	61	90	77	48	70	63	59	54	52
46	21:24	60	90	79	48	69	62	58	53	51
47	21:39	67	97	95	47	76	64	58	51	50
48	21:54	63	92	77	48	74	67	58	51	50
49	22:09	59	88	77	47	66	61	57	51	50

50	22:24	59	89	77	47	68	62	57	51	50
51	22:39	59	89	85	47	67	62	57	51	50
52	22:54	60	90	77	46	72	62	57	49	48
53	23:09	60	89	77	46	70	62	57	51	49
54	23:24	60	89	77	47	70	62	58	51	49
55	23:39	63	93	87	48	74	63	58	52	50
56	23:54	60	90	78	48	70	62	58	52	50
57	00:09	63	92	89	47	73	62	57	50	49
58	00:24	65	94	94	46	71	62	57	49	48
59	00:39	59	89	80	47	68	62	56	50	49
60	00:54	59	88	77	46	67	61	56	50	49
61	01:09	59	89	76	43	69	63	57	48	46
62	01:24	59	88	76	46	68	61	56	52	49
63	01:39	59	89	79	52	68	62	56	53	53
64	01:54	59	89	77	45	68	62	57	53	52
65	02:09	58	88	84	42	68	61	53	46	44
66	02:24	56	86	74	42	65	60	51	45	44
67	02:39	62	91	88	43	72	61	52	45	44
68	02:54	57	87	77	43	65	60	53	47	46
69	03:09	58	88	79	43	70	60	52	46	44
70	03:24	58	88	78	43	68	61	52	45	44
71	03:39	57	86	80	42	67	60	49	44	43
72	03:54	55	85	77	41	65	59	48	44	43
73	04:09	54	83	75	42	65	57	47	43	43
74	04:24	57	86	76	43	67	60	50	45	44
75	04:39	56	85	79	42	65	59	49	44	43
76	04:54	55	84	78	42	64	58	48	44	44
77	05:09	57	86	80	43	66	60	49	44	44
78	05:24	56	86	79	42	66	59	49	44	44
79	05:39	58	87	78	43	68	62	52	46	45
80	05:54	56	85	78	43	66	59	49	45	45
81	06:09	57	87	77	43	67	61	51	45	44
82	06:24	58	88	78	43	68	61	52	46	45
83	06:39	58	88	77	44	67	62	54	47	46
84	06:54	59	89	76	45	68	63	56	49	48
85	07:09	60	89	80	46	69	62	57	51	49
86	07:24	60	90	77	53	68	63	59	56	55
87	07:39	61	91	76	53	69	64	60	55	55
88	07:54	64	93	88	53	73	65	60	56	55
89	08:09	62	91	78	52	70	64	60	56	55
90	08:24	62	91	73	54	70	65	60	57	57
91	08:39	64	94	84	54	72	67	62	59	58
92	08:54	65	95	88	54	74	66	62	58	57
93	09:09	65	95	86	58	73	67	62	60	59
94	09:24	63	92	75	56	69	65	61	59	58
95	09:39	63	93	79	57	71	65	61	59	58
96	09:54	63	92	79	56	69	65	62	59	58

RAW NOISE DATA - 174-178 Kentish Town Road - (Third Floor South West corner)

Ref: QF8092/PF5318/RP1
Client: Marek Wojciechowski Architects
Date: 15th to 16th December 2014

Address	Start Time	LAeq	LE	Lmax	Lmin	LA1	LA10	LA50	LA90	LA99
1	10:14	69	99	88	58	73	71	67	62	61
2	10:29	68	98	87	60	72	70	66	62	61
3	10:44	69	99	88	58	73	71	67	62	61
4	10:59	69	98	85	58	74	71	65	61	60
5	11:14	68	98	86	56	73	71	65	60	59
6	11:29	68	98	86	55	73	71	66	61	60
7	11:44	71	100	95	56	72	69	65	61	60
8	11:59	68	98	87	58	72	71	66	61	60
9	12:14	68	98	87	57	72	71	66	61	60
10	12:29	69	99	91	56	74	71	65	60	59
11	12:44	67	96	84	57	70	69	65	61	60
12	12:59	69	98	86	57	73	71	65	60	59
13	13:14	68	98	88	56	71	69	65	60	60
14	13:29	69	99	92	56	72	69	65	61	60
15	13:44	78	107	102	59	76	71	67	63	62
16	13:59	72	102	95	57	74	70	65	60	59
17	14:14	66	96	78	56	70	69	65	61	60
18	14:29	68	98	88	55	72	70	65	61	59
19	14:44	77	107	100	57	81	74	66	62	61
20	14:59	72	102	94	57	74	70	65	61	60
21	15:14	66	95	79	55	70	68	64	60	59
22	15:29	68	97	86	58	71	69	65	61	60
23	15:44	66	96	85	57	70	69	64	61	60
24	15:59	68	98	89	58	71	69	66	62	61
25	16:14	74	104	98	57	73	70	65	61	60
26	16:29	66	96	83	56	70	69	65	62	60
27	16:44	73	103	95	58	75	71	66	63	62
28	16:59	74	104	96	58	74	71	65	62	61
29	17:14	66	95	82	56	69	68	64	61	60
30	17:29	69	99	93	58	71	69	65	61	60
31	17:44	66	96	83	58	70	69	65	61	61
32	17:59	69	99	86	59	73	71	66	63	62
33	18:14	68	98	90	58	71	69	65	62	62
34	18:29	67	96	86	57	71	70	65	61	60
35	18:44	66	96	83	55	70	69	64	59	58
36	18:59	69	99	87	57	73	70	66	61	60
37	19:14	69	98	89	55	73	71	64	59	58
38	19:29	68	98	89	55	72	69	65	60	59
39	19:44	72	102	97	57	75	72	65	60	58
40	19:59	68	98	89	53	71	69	65	60	58
41	20:14	69	98	88	52	73	71	65	59	58
42	20:29	73	103	94	53	76	72	65	59	58
43	20:44	70	99	91	54	74	71	65	58	57
44	20:59	68	98	88	51	71	69	64	59	57
45	21:14	68	98	88	53	71	69	64	59	56
46	21:29	68	98	89	52	71	69	64	57	56
47	21:44	73	103	98	50	76	73	65	57	56
48	21:59	66	96	87	50	69	67	62	56	54
49	22:14	66	96	89	51	69	67	62	58	57

50	22:29	65	95	87	48	70	68	63	56	54
51	22:44	67	97	95	48	69	68	63	55	54
52	22:59	68	97	88	47	71	68	63	55	53
53	23:14	68	98	87	49	71	68	63	57	55
54	23:29	68	97	89	51	71	68	63	56	55
55	23:44	70	100	93	50	74	69	64	57	55
56	23:59	68	98	89	49	70	68	63	56	55
57	00:14	72	102	96	49	72	69	62	54	52
58	00:29	67	97	91	49	70	68	62	55	54
59	00:44	66	96	90	49	68	67	61	54	53
60	00:59	67	97	88	46	70	68	63	55	53
61	01:14	66	95	87	45	69	67	60	52	50
62	01:29	66	95	90	44	69	67	60	51	49
63	01:44	65	95	88	46	69	67	61	54	52
64	01:59	66	96	88	47	69	68	61	53	51
65	02:14	66	95	94	42	68	66	58	49	46
66	02:29	67	96	90	43	68	66	58	48	46
67	02:44	65	94	91	43	68	66	58	49	48
68	02:59	64	94	89	44	67	66	57	49	47
69	03:14	66	96	90	41	69	67	56	47	45
70	03:29	65	95	89	39	68	66	57	47	44
71	03:44	67	96	91	41	68	66	56	47	45
72	03:59	62	91	88	39	65	64	51	42	41
73	04:14	63	92	87	39	66	64	52	43	42
74	04:29	64	94	89	41	68	66	55	47	45
75	04:44	64	94	90	40	67	65	55	45	43
76	04:59	62	92	86	40	66	64	54	44	43
77	05:14	64	94	90	41	67	65	55	44	43
78	05:29	64	94	90	41	68	66	57	46	45
79	05:44	64	93	89	42	68	66	57	46	45
80	05:59	65	94	88	42	68	66	56	48	46
81	06:14	64	94	89	42	68	66	58	48	46
82	06:29	66	96	88	44	69	67	60	50	47
83	06:44	65	94	87	44	69	67	60	51	50
84	06:59	66	96	88	48	70	68	62	53	50
85	07:14	66	96	90	50	70	68	62	57	55
86	07:29	67	97	87	53	71	69	64	58	56
87	07:44	70	99	91	53	73	70	65	59	56
88	07:59	69	98	89	54	74	71	66	60	58
89	08:14	67	97	85	55	72	70	65	60	59
90	08:29	68	97	87	58	73	71	66	61	61
91	08:44	69	98	88	57	73	72	66	62	61
92	08:59	72	101	91	58	77	74	67	62	61
93	09:14	71	101	91	60	75	73	67	64	63
94	09:29	68	98	86	58	72	71	66	61	61
95	09:44	68	98	90	59	73	71	66	62	61
96	09:59	69	98	85	59	73	72	66	62	61