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24-HOUR NOISE LEVEL SURVEY CARRIED OUT AT THE REAR OF 12/13 KINGS MEW'S, LONDON WC1 AND A REPORT ON THE NOISE CONTROL MEASURES REQUIRED TO MINIMISE THE NOISE IMPACT OF THE PROPOSED NEW EXTERNAL PLANT

Test Engineer : J R Tait

Report Author : J R Tait

Authorised for Release by : I J Marchant

Client	:	Good Stuff Property Ltd
Project	:	12/13 Kings Mew's, London
Emtec Ref.	:	QF6942/PF4459/RP1
Issue Date	:	14th October 2011

24-HOUR NOISE LEVEL SURVEY CARRIED OUT AT THE REAR OF 12/13 KINGS MEW'S, LONDON WC1 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 12/13 Kings Mew's, London WC1.

The objectives of this survey were as follows:

- To establish the existing background noise level in the vicinity of the nearby residential premises.
- To assess the proposed new external plant that is to be located on the flat roof of the development and to recommend a noise limit and measures 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:

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 the 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 08.02am on Tuesday the 11th of October 2011 to 08.22am on Wednesday the 12th of October 2011.

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 Positions

The noise levels were measured in the rear garden of the property at the rear of the development approximately 15 metres from the nearest residential accommodation that might be affected by the proposed plant.

The microphone was positioned so that it was pointing out over the garden, directly towards the nearest affected residential windows.

The microphone was approximately 3 metres above the ground 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.

3.2. Weather Conditions

The weather conditions prevailing during the measurement period were generally in line with those recommended in BS 4142:1997. The weather was clear and bright throughout the daytime periods and clear to overcast during the nightime period. Wind was light to still throughout the test 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 periods (denoted by LAeq, (20 mins) are displayed as a bar graph on the attached Sketch No QF/6942/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/6942/T2 at the back of this report.

4.1. Summary of Results

The table QF/6942/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/6942/D1 – Summary of Maximum and Minimum Noise Levels

	LA1	LA10	LA50	LA90	LA99	LAeq
Min.	44.0dBA	41.0dBA	37.5dBA	35.0dBA	33.5dBA	38.5dBA
Max.	75.5dBA	63.0dBA	51.5dBA	48.0dBA	47.0dBA	64.0dBA

5.0. DISCUSSION OF RESULTS

Residential design criteria

To comply with Camden's current Unitary Development Plan, noise from the external plant must be at least 5dB less than the lowest measured LA90 when measured at 1 metre external to the nearest sensitive façade. (Assuming inverter controlled condensers emitting noise that does not contain a distinguishable discrete continuous note / whine / hiss /screech / hum).

The lowest recorded LA_{90} level measured during the 24-hour period was 35dBA, which occurred four times. Once during the time period ending at 02.02am, twice during consecutive time periods ending at 2.42am and 3.02am and once again during the time period ending at 3.42am.

All proposed external plant that is to operate on a 24-hour basis should therefore be designed to achieve a noise level 5dB below the lowest LA_{90} level, ie: 30 dBA, at 1 metre from the nearest residential property's window.

Design noise limits

Based upon the above we summarise the actual design rating levels to be adopted for this project in table QF/6142/D2 below: -

Table QF/6142/D2 – recommended design rating levels $L_{Ar,T}$

Type of premises	$L_{Ar,T}$ (24-hour)
Residential	30dBA

Measures to mitigate noise

The proposed external plant comprises 2 No. air cooled condensers that are to be located on the roof of the development. The location of the condensers relative to the nearest affected residential properties is shown on the attached plans at the rear of this report.

The nearest affected residential window belong to a flat 6 on the adjoining building, 14 Kings Mew's, which has a window approximately 6 metres away from the condenser. The next nearest affected residential property is 9 John Street, which has a first floor rear window approximately 15 metres away.

The other closest buildings were seen to be commercial properties.

The proposed external plant comprises a Daikin type MXS68G condenser that has a published sound pressure level of 49dBA at 1 metre in free field conditions and a Daikin type MXS50G condenser that has a published sound pressure level of 50dBA at 1 metre in free field conditions. The combined sound pressure level of two units will therefore be 52.5dBA.

Allowing for a +5dB reverberation factor, a 20 log d correction for distance (where d = 6 metres) and a -5dB reduction for the screening provided by the building structure we arrive at a predicted noise level of LAeq: 37dB at 1 metre from the nearest affected residential windows. This is some 7dB higher than the maximum allowable noise level.

We would therefore suggest that acoustically absorptive cladding is fitted to the walls behind and to the one side of the condensers and a simple low level acoustic louvre screen be located to the front and other side of the condenser units. The acoustic louvre screen should be designed to prevent line of sight between the condensers and the nearest affected windows.

If the acoustic cladding and acoustic louvres are fitted around the condensers and provide 7dB of attenuation no justifiable complaints should be received from neighbouring properties under the guidelines of the local authority's planning guidelines as set out in their current Unitary Development Plan.

Summary

A 24-hour noise survey has been undertaken in the rear of 12/13 Kings Mew's, London WC1and the results are published in this report.

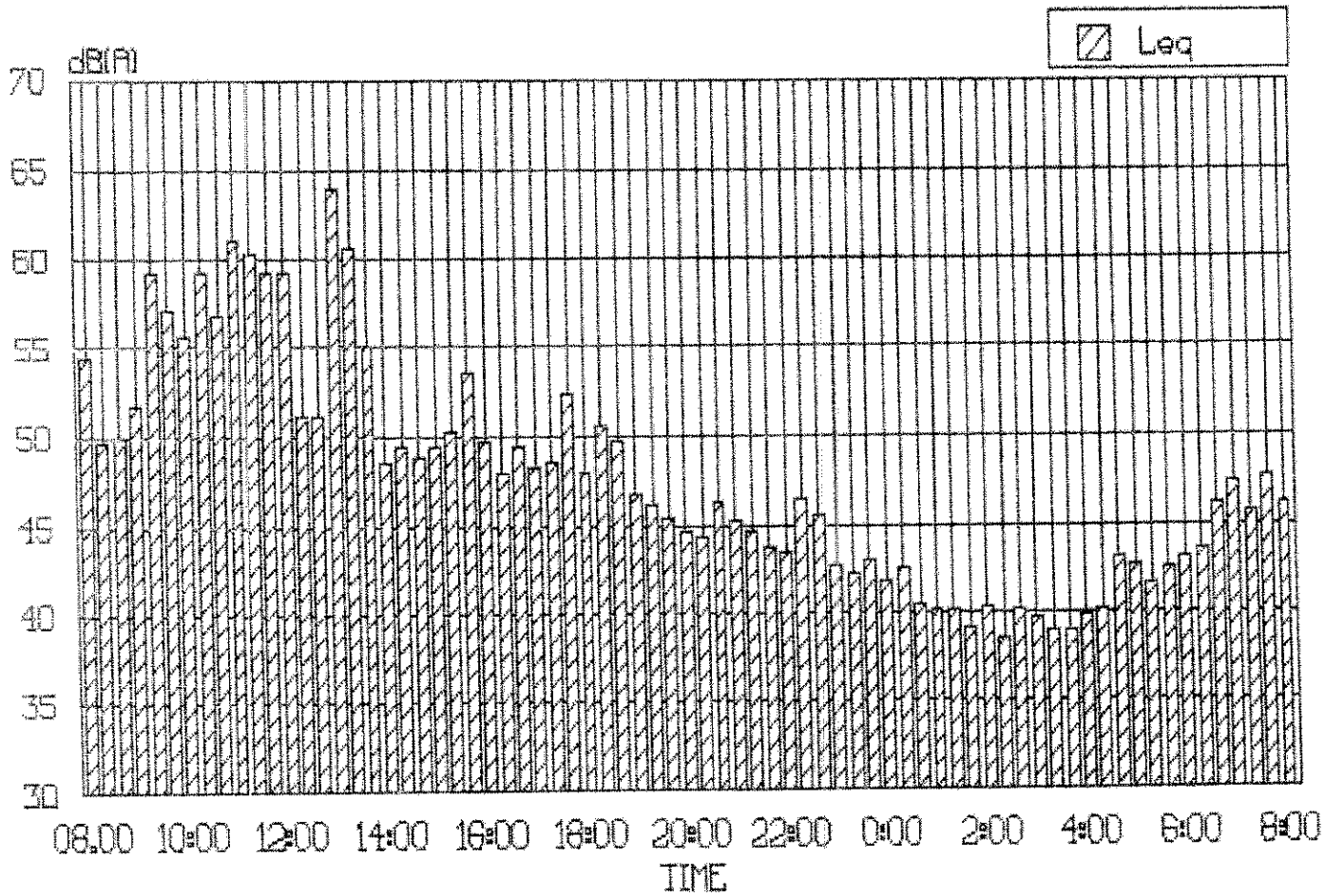
Design noise limits have been recommended based on the results of the survey and the local authority's planning criteria.

The proposed externally located plant has been analysed, and if the suggested noise control measures are adopted then the operation of the new plant should attract no justifiable complaints under the guidelines of Camden's current Unitary Development Plan.

Emtec Products Ltd. is able to assist in the design of a suitable acoustic treatment to meet the local authority's planning requirements on request.

EMTEC PRODUCTS LTD
14th October 2011

12/13 Kung's Mews, London WC1.
11th to 12th October 2011



TITLE: LAeq Levels	*ISSUE DATE: 14/10/11*				*DRAWN BY: JRT*	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*
CLIENT: Good Stuff Property Ltd	*PF No: 4459*				*APPROVED BY: MGR*	*REVISION*							
PROJECT: 12/13 Kings Mew's, London WC1	*Q*	*A*	*M*	*I*	*DESIGN AUTH: JRT*	*SKETCH No. QF/6942/T1*							

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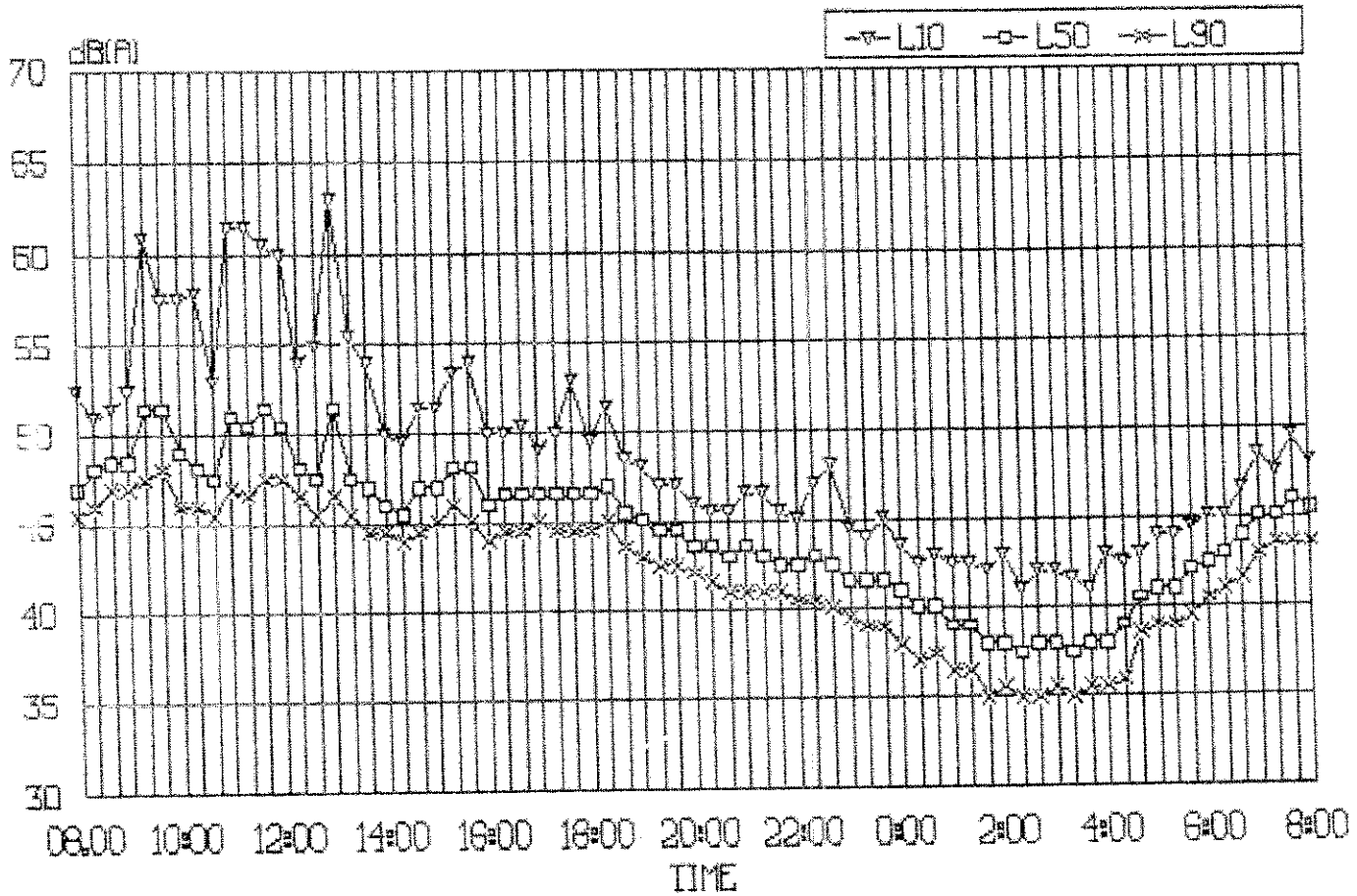
12/13 King's Mews, London WC1.
11th to 12th October 2011



TITLE: LA10; LA50 and LA90 Levels	*ISSUE DATE: 14/10/11*				*DRAWN BY: JRT*	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*
CLIENT: Good Stuff Property Ltd	*PF No: 4459*				*APPROVED BY: MGR*	*REVISION*							
PROJECT: 12/13 Kings Mew's, London WC1	*Q*	*A*	*M*	*I*	*DESIGN AUTH: JRT*	*SKETCH No. QF/6942/T2*							

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APPENDIX A

Raw Data – Noise Survey

11th to the 12th of October 2011

NOISE SURVEY DATA FROM BACKGROUND NOISE LEVEL SURVEY CARRIED OUT AT THE REAR OF 12/13 KINGS MEWS, LONDON WC1

Project :	12/13 King's Mews, London WC1
Client :	Good Stuff Property Ltd.
Ref :	QF6942
Issue date :	14th October 2011

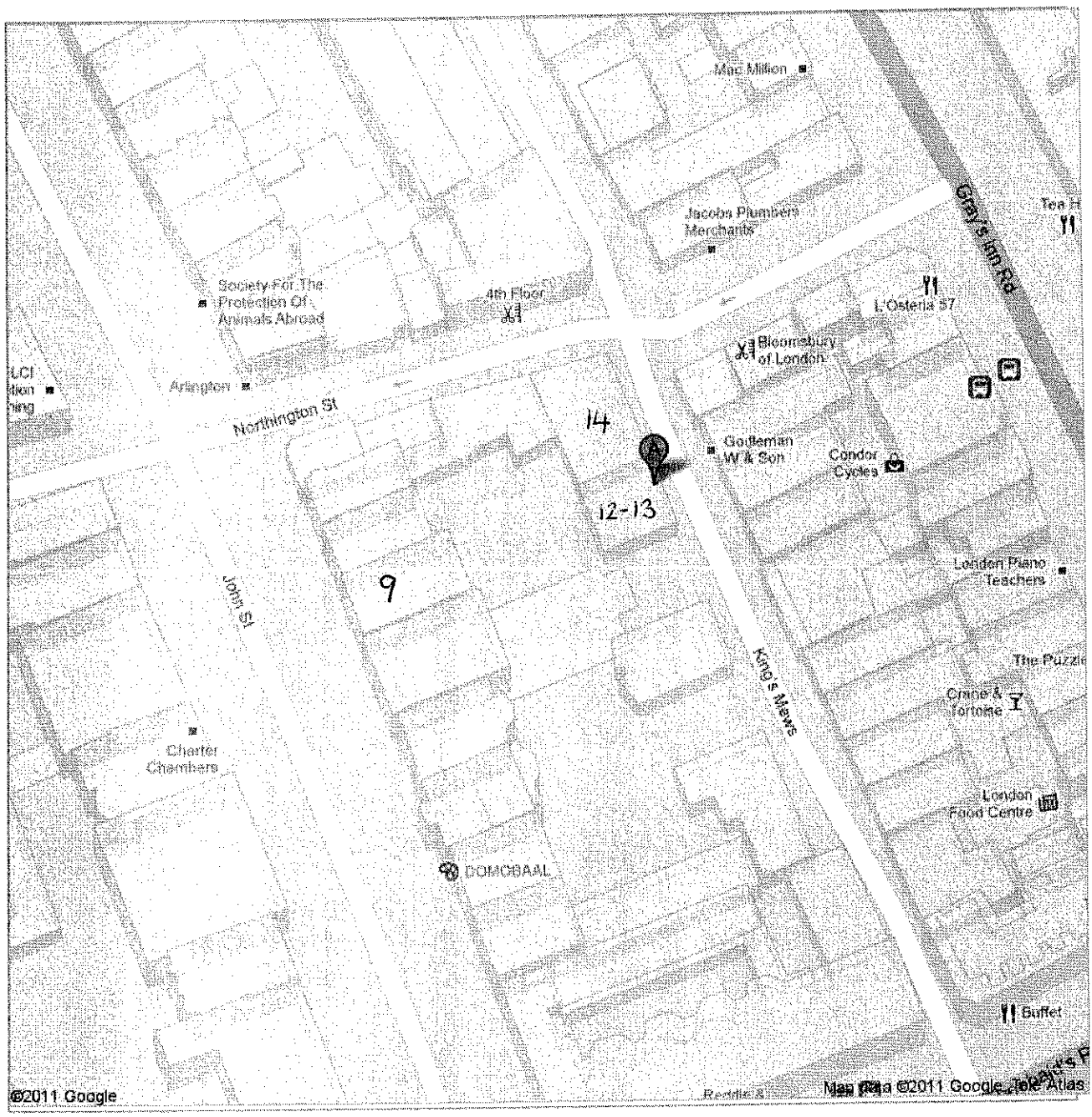
Measure No.	End Time	MaxP (dBA)	L1 (dBA)	L10 (dBA)	L50 (dBA)	L90 (dBA)	L99 (dBA)	Leq (dBA)
1	08:22	94.4	64	52.5	47	45.5	44.5	54.5
2	08:42	88.7	56.5	51	48	46	45	49.6
3	09:02	82.9	56.5	51.5	48.5	47	46	50
4	09:22	91.8	62	52.5	48.5	47	46	51.8
5	09:42	94.9	71	61	51.5	47.5	46	59.2
6	10:02	93.7	69.5	57.5	51.5	48	47	57.2
7	10:22	95.3	67.5	57.5	49	46	45	55.8
8	10:42	95.3	72	58	48	48	44.5	59.2
9	11:02	95.4	68.5	53	47.5	45.5	44.5	56.8
10	11:22	95.3	73	61.5	51	47	45.5	61.1
11	11:42	95.4	72.5	61.5	50.5	46.5	45.5	60.4
12	12:02	95.4	71	60.5	51.5	47.5	46	59.4
13	12:22	95.3	71.5	60	50.5	47.5	46	59.4
14	12:42	87.5	61	54	48	46.5	45	51.3
15	13:02	89.9	59.5	55	47.5	45.5	44.5	51.3
16	13:22	95.4	75.5	63	51.5	46.5	45	64
17	13:42	95.4	69	55.5	47.5	45.5	44	60.7
18	14:02	92.6	69.5	54	47	44.5	43	55.2
19	14:22	82.8	58	50	46	44.5	43	48.5
20	14:42	85.1	62	49.5	45.5	44	43	49.5
21	15:02	81.3	57	51.5	47	44.5	43.5	48.9
22	15:22	88.3	58	51.5	47	45	43.5	49.4
23	15:42	87.1	58.5	53.5	48	46	44.5	50.3
24	16:02	95.4	61	54	48	45	43.5	53.7
25	16:22	93.2	60	50	48	44	43	49.7
26	16:42	74.4	55	50	48.5	44.5	43	47.8
27	17:02	86.7	59	50.5	46.5	44.5	43.5	49.5
28	17:22	79.8	56	49	46.5	45	43.5	48.1
29	17:42	85.8	57	50	46.5	44.5	43	48.5
30	18:02	95.4	63.5	53	48.5	44.5	43.5	52.4
31	18:22	81.4	54	49.5	46.5	44.5	43	48
32	18:42	88.4	61	51.5	47	45	43.5	50.5
33	19:02	86.9	62.5	48.5	45.5	43.5	42.5	49.8
34	19:22	74.1	56.5	48	45	43	42.5	46.7
35	19:42	76.3	55.5	47	44.5	42.5	41.5	46.1
36	20:02	71.1	51	47	44.5	42.5	41.5	45.4
37	20:22	75.7	52	46	43.5	42	40	44.8
38	20:42	79.8	50.5	45.5	43.5	41.5	40.5	44.4
39	21:02	85.2	57.5	45.5	43	41	40	46.3
40	21:22	86.5	52	46.5	43.5	41	40	45.2
41	21:42	75.1	53	46.5	43	41	39.5	44.8
42	22:02	81.6	49.5	45.5	42.5	41	40	43.7
43	22:22	76.5	48.5	45	42.5	40.5	39.5	43.4
44	22:42	81.6	59	47	43	40.5	39.5	46.5
45	23:02	78	55.5	48	42.5	40	38.5	45.5
46	23:22	71.3	49.5	44.5	41.5	39.5	38	42.7
47	23:42	73.9	47.5	44	41.5	39	37.5	42.2
48	00:02	81.9	50	45	41.5	39	37.5	43
49	00:22	78	47.5	43.5	41	38	37	41.8
50	00:42	81.1	48	42.5	40	37	36	42.5
51	01:02	63.1	45	43	40	37.5	36	40.5
52	01:22	73.7	46.5	42.5	39	36.5	35	40.2
53	01:42	74.6	47.5	42.5	39	36.5	35.5	40.1
54	02:02	62.2	46	42	38	35	34.5	39.1
55	02:22	67	49	43	38	35.5	34	40.3
56	02:42	70.2	44	41	37.5	35	34	38.5
57	03:02	74.7	49	42	38	35	33.5	40.2
58	03:22	72.8	46	42	38	35.5	34.5	39.7
59	03:42	72.2	45.5	41.5	37.5	35	33.5	39
60	04:02	67	45.5	41	38	35.5	34.5	38.9
61	04:22	70.3	48.5	43	38	35.5	34	39.8
62	04:42	67.3	47	42.5	39	38	35	40.1
63	05:02	81.5	48.5	43	40.5	38.5	37.5	43.2
64	05:22	78.1	49.5	44	41	39	37.5	42.7
65	05:42	68	48.5	44	41	39	38	41.7
66	06:02	68	48	44.5	42	39.5	38.5	42.5
67	06:22	66	48	45	42.5	40.5	39	43.2
68	06:42	75.6	48.5	45	43	41	40	43.8
69	07:02	78.7	56.5	46.5	44	41.5	40.5	46.1
70	07:22	87.8	53.5	48.5	45	43	41.5	47.2
71	07:42	74.1	51	47.5	45	43.5	42	45.7
72	08:02	79.7	57	49.5	46	43.5	42	47.7
73	08:22	75.6	51.5	48	45.5	43.5	42	46.2

APPENDIX B

- Plan of the local area
- Drawing number 1248/M/003 – Proposed second floor plan of roof terrace showing location of condenser units.
- Drawing number KN P13 – Proposed roof plan showing nearest affected windows belonging to 14 Kings Mews.

Google

Address **13 King's Mews**
Camden, London WC1N 2HZ, UK



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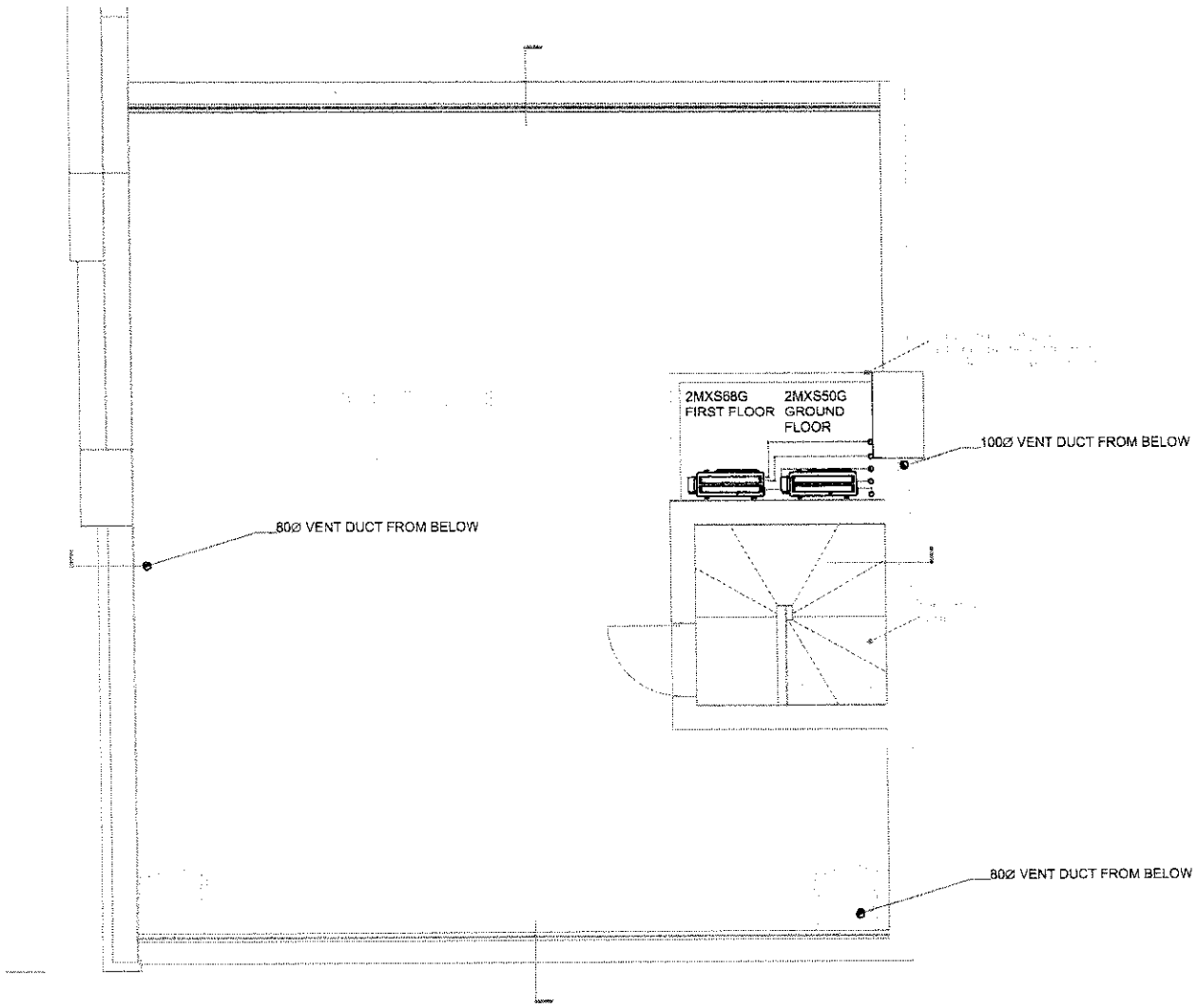

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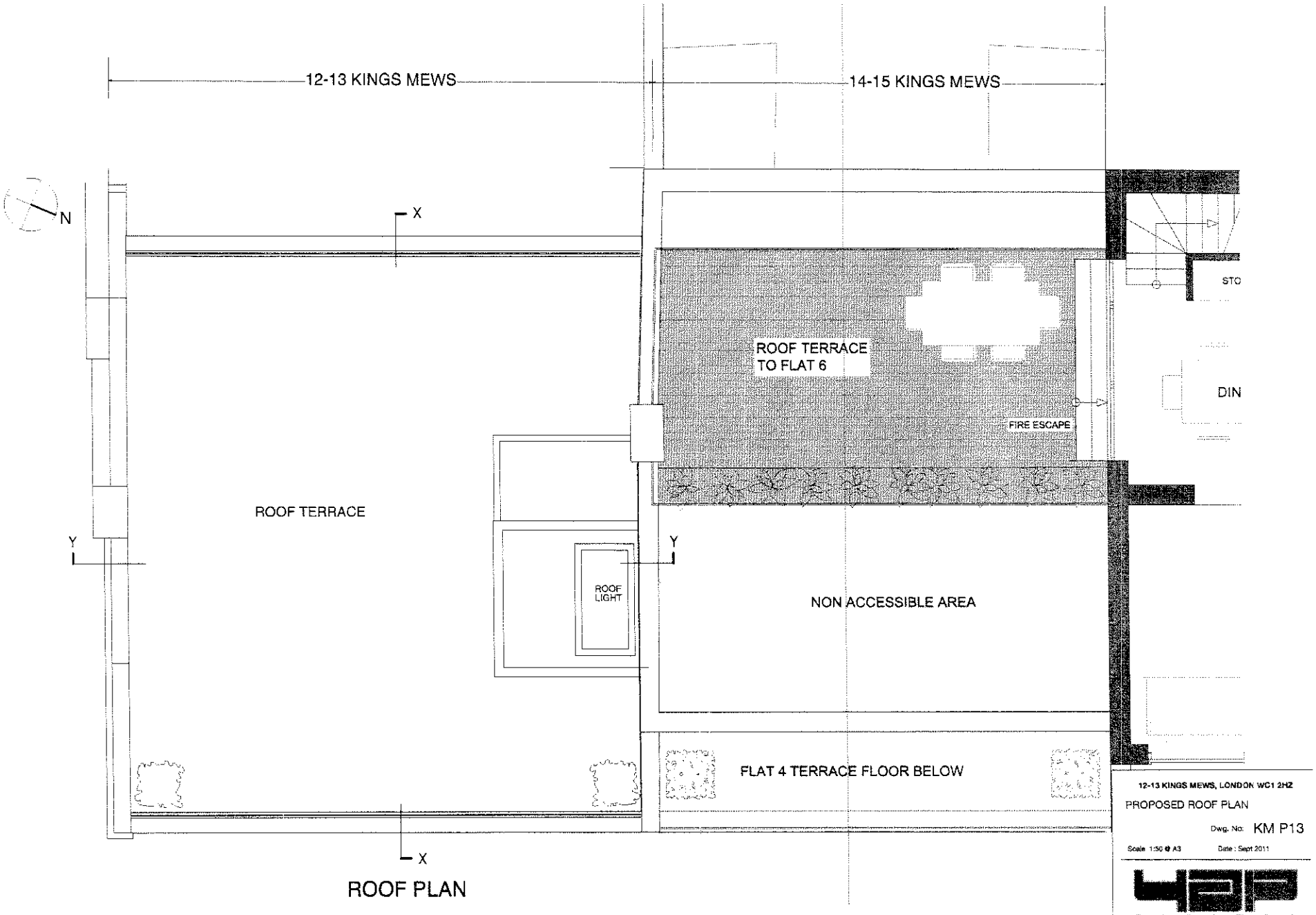
PROJECT
12-13 KINGS MEWS

TITLE
ROOF AC AND
VENTILATION

SCALE	DATE	DESIGN/DRAWN	CHECKED	APPROVED	SHT
1:50	6/10/11	JL			A3

DRAWING No.
1248/M/003

REV



ROOF PLAN

12-13 KINGS MEWS, LONDON WC1 2HZ

PROPOSED ROOF PLAN

Dwg. No: KM P13

Scale 1:50 @ A3 Date : Sept 2011

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