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A REPORT ON A 24 HOUR NOISE LEVEL SURVEY CARRIED OUT AT THE REAR OF THE PREMISES AT 134A & 136 GLOUCESTER AVENUE, LONDON NW1 AND AN ASSESSMENT OF THE RESULTS AGAINST POLICY GUIDANCE NOTES PPG24

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Authorised for Release by : I J Marchant

Client	:	Starprop LLP/Rolfe Judd Planning Ltd
Project	:	134A & 136 Gloucester Avenue, London NW1
Emtec Ref.	:	QF6831/PF4439/RP1
Date	:	22nd September 2011

A REPORT ON A 24 HOUR NOISE LEVEL SURVEY

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1.0. INTRODUCTION

This report details the results of a 24 hour noise survey carried out at first floor level at the rear of the existing building on the back of the site known as 134A & 136 Gloucester Avenue, London NW1.

The objectives of this survey were as follows:

- To establish the existing background noise level that will impinge on the facades of the proposed new development on the site.

- To assess the background noise level against the guidelines of the planning policy guidance notes PPG24 and assess whether or not the building needs special considerations with regard to the design of the building envelope.

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

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

2.0. TEST INSTRUMENTATION

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

Integrating Sound Level Meter	:	Bruel & Kjaer type 2231 fitted with a Bruel & Kjaer type 4155 ½ inch condenser microphone.
Statistical Analysis Module	:	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 survey 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 approximately 10.15am on Monday the 19th of September 2011 to 9.35am on Tuesday the 20th of September 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 total acoustic energy as the real fluctuating level.

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

3.1. Measurement Position

The noise levels were measured outside a first floor window at the rear of the back building on the site all as shown on our attached Photos A, B, C and D.

The microphone was positioned so that it was pointing towards the railway lines at the rear of the site and the microphone was approximately 4 metres above ground level and 1.2 metres from the façade of the building. The rest of the measurement equipment was located inside the building with a low impedance cable running from the instrumentation to the microphone.

3.2. Weather Conditions

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

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

4.0. RESULTS

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

The 'A' Weighted Leq levels measured over each 20 minute interval throughout the 24 hour period (denoted by LAeq, (20 mins) are displayed as a bar graph on the attached Sketch No QF/6831/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/6831/T2 at the back of this report.

The 'A' weighted percentile level LA1 (20 mins) and maximum level LAmax measured over each 20 minute interval are displayed as a line graph on the attached Sketch No QF/6831/T3 at the back of this report.

4.1. Summary of Results

The table QF/6831/D1 below summarises the noise levels taken at the measuring location over the 24 hour period in terms of the maximum and minimum Sound Pressure Levels recorded.

Table QF/6831/D1 – Summary of Maximum and Minimum Noise Levels at First Floor Location

	LAMAX	**LA1**	**LA10**	**LA50**	**LA90**	**LA99**	**LAeq**
Min.	73.3dBA	50.5dBA	42.0dBA	40.0dBA	36.5dBA	35.0dBA	41.7dBA
Max.	105.4dBA	92.0dBA	58.5dBA	58.5dBA	55.0dBA	54.0dBA	77.6dBA

5.0. DISCUSSION OF RESULTS

The Planning Policy Guidance Notes PPG24 give guidelines to local planning authorities with regard to the suitability of incoming 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.

The average and minimum LAeq noise levels taken during the 24 hour noise level survey equate to the following figures:

	Average	Minimum Level	Maximum Level
LAeq (7 a.m. – 23 p.m.)	71.4dBA	65.8dBA	67 dBA
LAeq (23 p.m. – 7 a.m.)	60.4 dBA	41.7dBA	66.6 dBA
Category limiting levels for rail traffic (7 a.m. – 23 p.m.)	Category C	Category B	Category C
	66-74dBA	55-66dBA	66-74 dBA
(23 p.m. – 7 a.m.)	Category C	Category A	Category D
	59-66dBA	<45dBA	>66dBA

The above table shows that the average LAeq over the daytime and nightime periods in the measurement location both fell into the category C classification.

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

The measurements taken would therefore indicate that the proposed development generally falls into category C 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 95-105dBA and the structure should therefore be designed to attenuate this level to no more than NR 30 within the adjacent sleeping areas of the development to ensure that the sleep of the occupants is not interrupted. NR 30 is equivalent to 39 dBA and therefore the outer shell of the building that faces onto the railway tracks should have a minimum noise reduction capability of 56dB and preferably closer to 66dB.

In order to achieve this level of noise reduction we would recommend that the outer skin of the building be a traditional brick and heavy block cavity wall construction with render and plaster on the inner face to ensure that the structure is well sealed. The inner blockwork should be of solid concrete blockwork and have a minimum weight of 340kg/m^2 (150mm thick blocks).

There should be no bedrooms with windows overlooking the railway line. All bedrooms should therefore face into the development with windows only on the inside face of the building.

The windows on all the facades facing the railway should be double windows of 10mm thickness externally and 6mm internally with a 200mm airgap between the inner and outer windows. The reveal between the windows should be fitted with an absorptive lining of mineral wool placed behind perforated sheet. These windows should be as small as possible and not more than 8% of the total surface area of any room.

Due to the high noise reduction requirement the flats should be provided with mechanical ventilation systems, fitted with suitable attenuators, to provide fresh air into living spaces so that it is not necessary to open the windows of the flat during the nightime period.

The weakest element of the structure is likely to be the roof. The roof structure should give a minimum noise reduction of 56dB and preferably should be a solid flat reinforced concrete slab of at least 200mm thickness.

We would be pleased to comment on the final details of the building construction and provide costs for any attenuated mechanical ventilation units required.

EMTEC PRODUCTS LTD.
22nd September 2011

PHOTO A: View out of first floor window with train on Main Line and train parked in siding.

PHOTO B: View of rear of No 136 with first and ground floor windows.

PHOTO C: Location of microphone on boom suspended from first floor window.

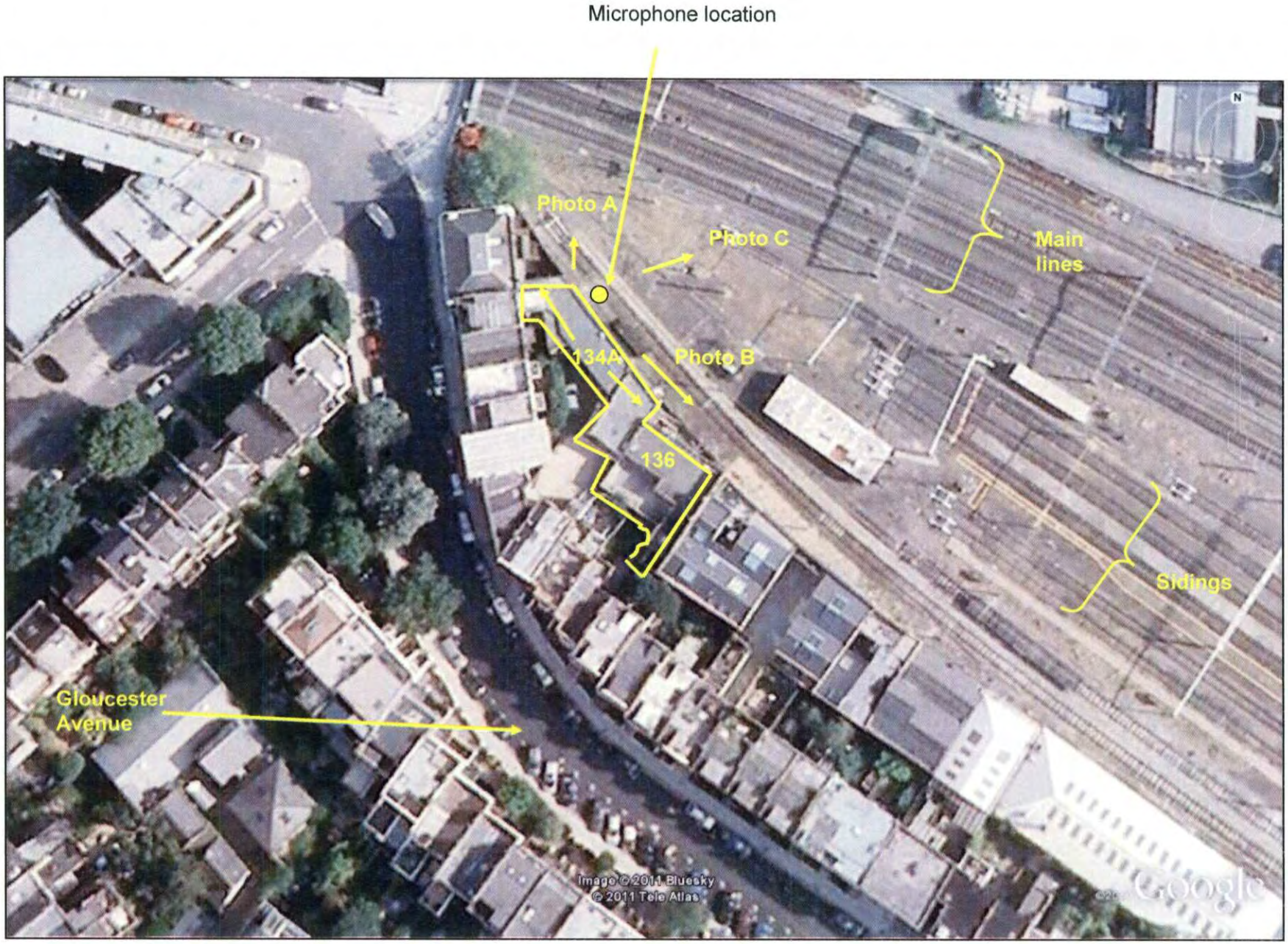
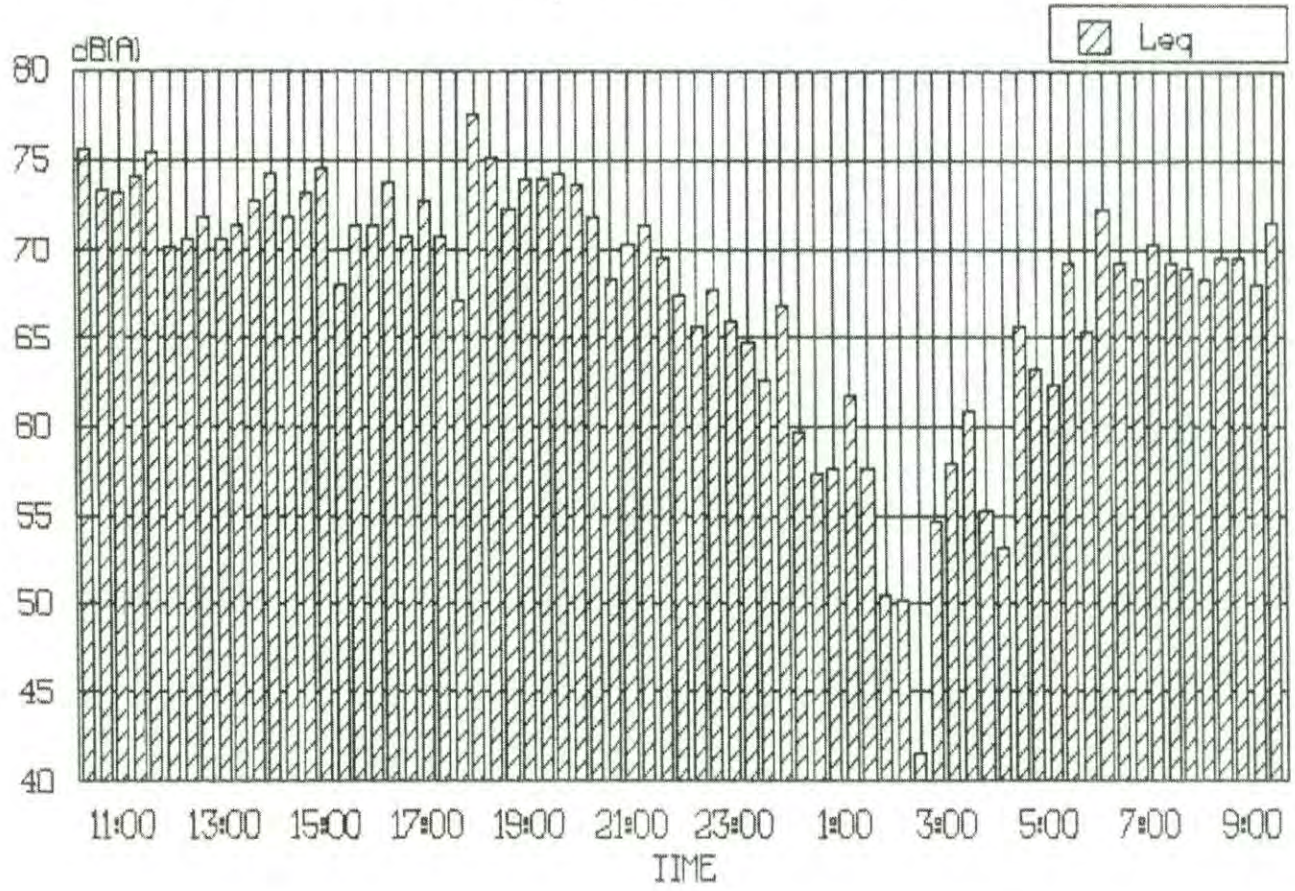


PHOTO D: Aerial view of site with location of microphone and railway lines and sidings.

134A to 136 Gloucester Avenue, NW1.
19th to 20th September 2011



TITLE: LAeq Levels	*ISSUE DATE: 22/9/11*				*DRAWN BY: MGR*	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*
CLIENT: Starprop LLP/Rolfe Judd Planning Ltd	*PF No: 4439*				*APPROVED BY: MGR*	*REVISION*							
PROJECT: 134A to 136 Gloucester Avenue	*Q*	*A*	*M*	*I*	*DESIGN AUTH: MGR*	*SKETCH No. QF/6831/T1*							

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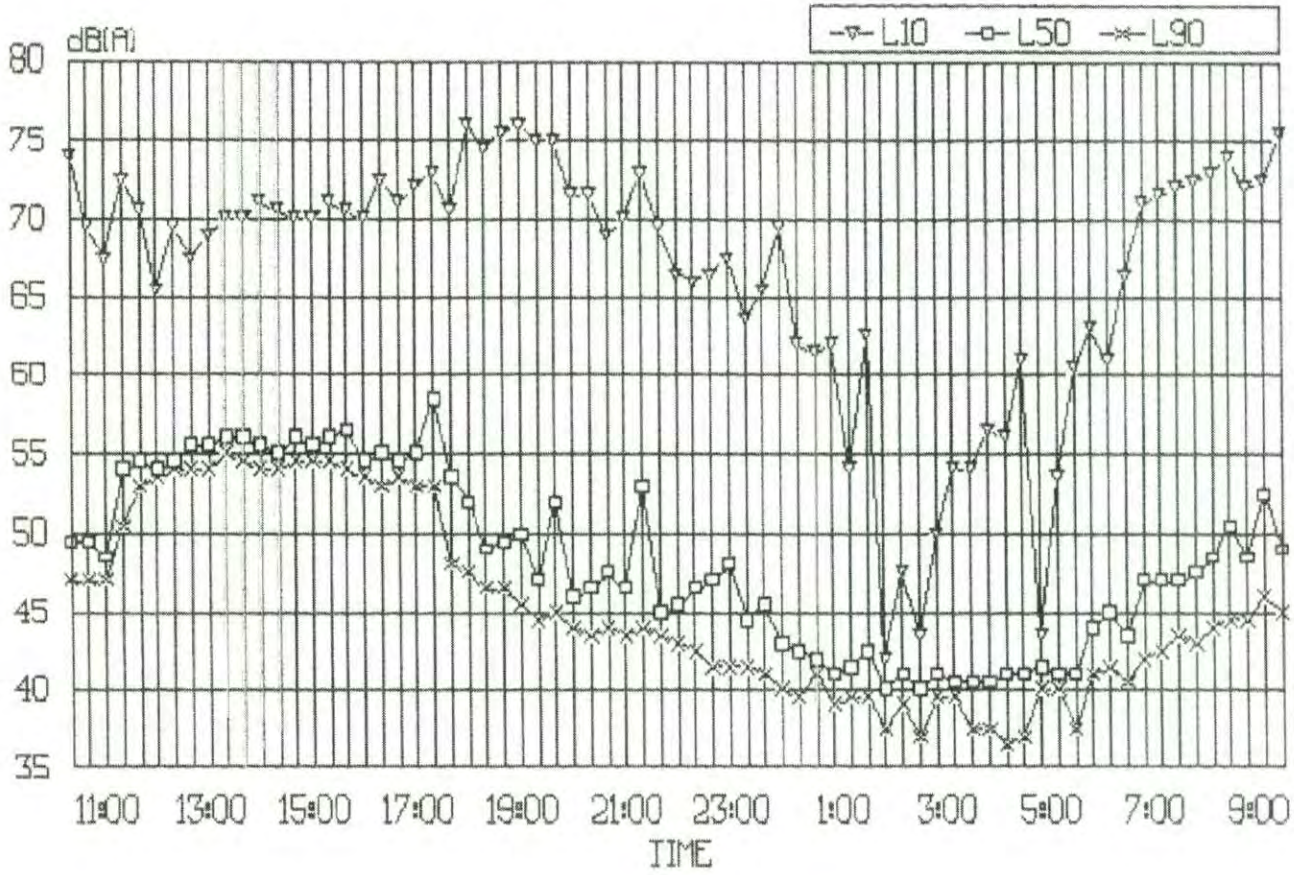

TITLE: LA10; LA50 and LA90 Levels	*ISSUE DATE: 22/9/11*				*DRAWN BY: MGR*	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*
CLIENT: Starprop LLP?Rolfe Judd Planning Ltd	*PF No: 4439*				*APPROVED BY: MGR*	*REVISION*							
PROJECT: 134A to 136 Gloucester Avenue	*Q*	*A*	*M*	*I*	*DESIGN AUTH: MGR*	*SKETCH No. QF/6831/T2*							

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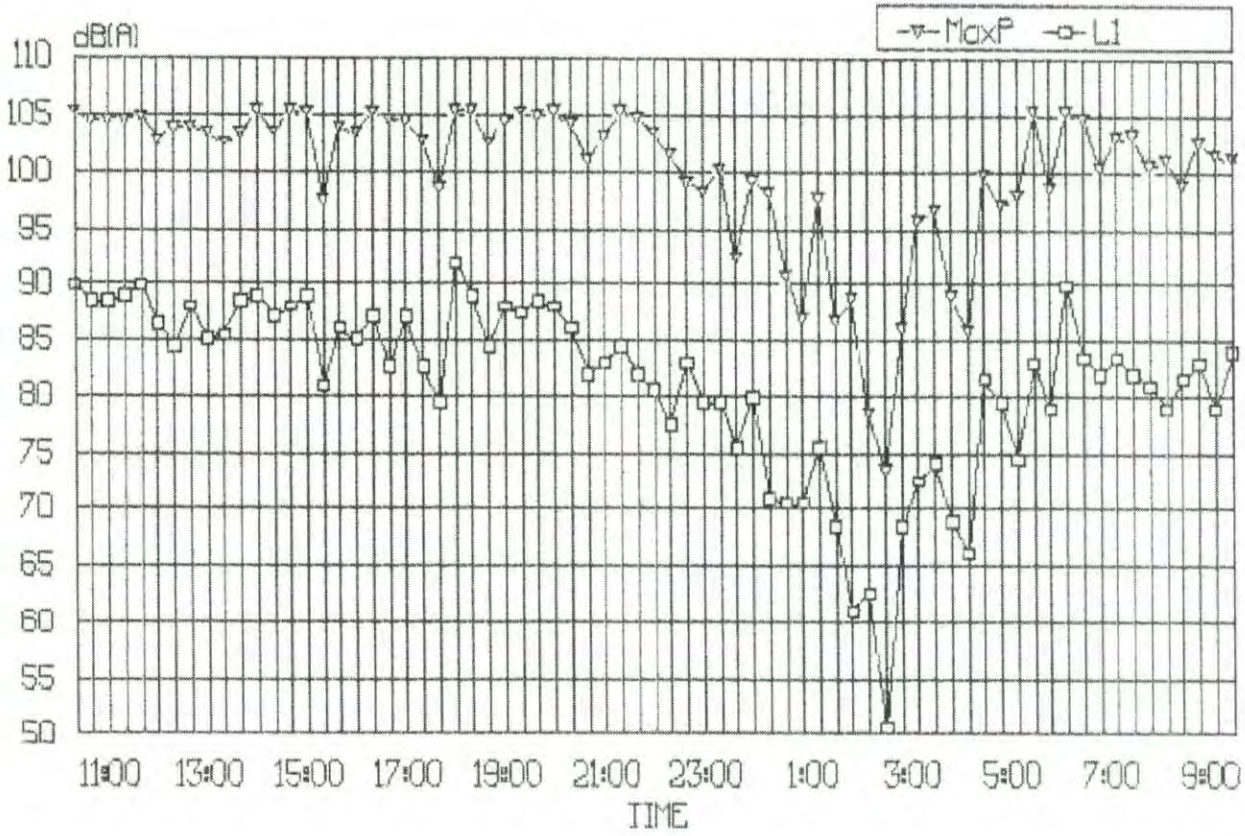

TITLE: Max P & LA1 Levels	*ISSUE DATE: 22/9/11*				*DRAWN BY: MGR*	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*
CLIENT: Starprop LLP/Rolfe Judd Planning Ltd	*PF No: 4439*				*APPROVED BY: MGR*	*REVISION*							
PROJECT: 134A to 136 Gloucester Avenue	*Q*	*A*	*M*	*I*	*DESIGN AUTH: MGR*	*SKETCH No. QF/6931/T3*							

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APPENDIX A

Raw Test Data

19th to 20th of September 2011

DATA FROM BACKGROUND NOISE LEVEL SURVEY CARRIED OUT AT THE REAR OF 134A TO 136 GLOUCESTER AVENUE, LONDON NW1.

Project : 134a to 136 Gloucester Avenue, London NW1.
Client : Starprop LLP/Rolfe Judd Planning Ltd.
Ref : QF6819.
Date : 20th September 2011

Measure No.	Start Time	MaxP (dBA)	L1 (dBA)	L10 (dBA)	L50 (dBA)	L90 (dBA)	L99 (dBA)	Leq (dBA)
1	10:15	105.3	90	74	49.5	47	45.5	75.6
2	10:35	104.5	88.5	69.5	49.5	47	46.5	73.3
3	10:55	104.6	88.5	67.5	48.5	47	46.5	73.2
4	11:15	104.6	89	72.5	54	50.5	47.5	74.1
5	11:35	104.8	90	70.5	54.5	53	52	75.5
6	11:55	102.8	86.5	65.5	54	53.5	52	70.2
7	12:15	103.8	84.5	69.5	54.5	54	53.5	70.7
8	12:35	103.9	88	67.5	55.5	54	53.5	71.8
9	12:55	103.3	85	69	55.5	54	53.5	70.6
10	13:15	102.8	85.5	70	56	55	54	71.4
11	13:35	103.3	88.5	70	56	54.5	53.5	72.7
12	13:55	105.2	89	71	55.5	54	53.5	74.3
13	14:15	103.5	87	70.5	55	54	53.5	71.9
14	14:35	105.2	88	70	56	54.5	54	73.2
15	14:55	105.3	89	70	55.5	54.5	54	74.5
16	15:15	97.5	81	71	56	54.5	54	68.1
17	15:35	103.9	86	70.5	56.5	54	53.5	71.4
18	15:55	103.3	85	70	54.5	53.5	53	71.4
19	16:15	105.3	87	72.5	55	53	52.5	73.8
20	16:35	104.6	82.5	71	54.5	53.5	52.5	70.6
21	16:55	104.3	87	72	55	53	52.5	72.8
22	17:15	102.8	82.5	73	56.5	53	52.5	70.6
23	17:35	98.6	79.5	70.5	53.5	48	47.5	67.1
24	17:55	105.4	92	76	52	47.5	46.5	77.6
25	18:15	105.4	89	74.5	49	46.5	46	75.1
26	18:35	102.6	84.5	75.5	49.5	46.5	46	72.3
27	18:55	104.5	88	76	50	45.5	44	73.9
28	19:15	105.3	87.5	75	47	44.5	44	74
29	19:35	104.9	88.5	75	52	45	44	74.3
30	19:55	105.2	88	71.5	46	44	43	73.6
31	20:15	104.2	86	71.5	46.5	43.5	43	71.8
32	20:35	101.1	82	69	47.5	44	43	68.3
33	20:55	103.1	83	70	46.5	43.5	42.5	70.3
34	21:15	105.2	84.5	73	53	44	43.5	71.4
35	21:35	104.8	82	69.5	45	43.5	43	69.7
36	21:55	103.5	80.5	66.5	45.5	43	42	67.6
37	22:15	101.5	77.5	66	46.5	42.5	41.5	65.8
38	22:35	99.2	83	66.5	47	41.5	40	67.9
39	22:55	98.3	79.5	67.5	48	41.5	40.5	66
40	23:15	100.3	79.5	63.5	44.5	41.5	40.5	64.8
41	23:35	92.3	75.5	65.5	45.5	41	40.5	62.8
42	23:55	99.3	80	69.5	43	40	39	66.9
43	00:15	98.2	71	62	42.5	39.5	38	59.6
44	00:35	90.8	70.5	61.5	42	41	40	57.4
45	00:55	86.8	70.5	62	41	39	37.5	57.7
46	01:15	97.7	75.5	54	41.5	39.5	37	61.9
47	01:35	86.7	68.5	62.5	42.5	39.5	37.5	57.7
48	01:55	88.6	61	42	40	37.5	36	50.4
49	02:15	78.5	62.5	47.5	41	39	37	50.1
50	02:35	73.3	50.5	43.5	40	37	36	41.7
51	02:55	85.9	68.5	50	41	39.5	37.5	54.6
52	03:15	95.7	72.5	54	40.5	39.5	38	57.8
53	03:35	96.7	74	54	40.5	37.5	36	60.8
54	03:55	88.8	69	56.5	40.5	37.5	35.5	55.3
55	04:15	85.8	66	56	41	36.5	35	53.2
56	04:35	99.9	81.5	61	41	37	35.5	65.8
57	04:55	97.2	79.5	43.5	41.5	40	37.5	63.3
58	05:15	97.9	74.5	53.5	41	40	38	62.3
59	05:35	105.4	83	60.5	41	37.5	36.5	69.3
60	05:55	98.6	79	63	44	41	40	65.3
61	06:15	105.4	90	61	45	41.5	40	72.3
62	06:35	104.8	83.5	66.5	43.5	40.5	39.5	69.4
63	06:55	100.4	82	71	47	42	41	68.4
64	07:15	103.1	83.5	71.5	47	42.5	41	70.4
65	07:35	103.2	82	72	47	43.5	42.5	69.2
66	07:55	100.5	81	72.5	47.5	43	42	68.9
67	08:15	101.2	79	73	48.5	44	42.5	68.4
68	08:35	98.9	81.5	74	50.5	44.5	43	69.5
69	08:55	102.8	83	72	48.5	44.5	43.5	69.6
70	09:15	101.5	79	72.5	52.5	46	45	68.1
71	09:35	101.3	84	75.5	49	45	44	71.6