LEE CUNNINGHAM PARTNERSHIP

Acoustic Consultancy Report

Environmental Noise Survey

Report Prepared For

Marldon

21b Brownlow Mews

Date

22th September 2006

Report Reference

52596 E2

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1.0 Introduction

The proposed development of the site located at 21b Brownlow Mews, London, is to include the provision of new mechanical ventilation plant.

The Lee Cunningham Partnership has been commissioned to conduct an environmental survey in order to obtain statistical noise data and establish the local background noise levels at the site. This information will be used in accordance with relevant British Standards and codes of good design practice to set noise rating levels at the nearest affected premises.

Details of the proposed plant installation shall be reviewed and recommendations for necessary noise mitigation provided where necessary. The guidance contained within this report is given on the basis that the operational period of the mechanical plant may potentially be continuous over the 24 hour period.

2.0 Site description

The site layout together with measurement positions are shown in the drawing contained in Appendix A.

3.0 Local Noise Climate

The predominant noise sources during the survey was from traffic to the north of the site.

4.0 Measurements

The noise monitoring took place on 19th September 2006. The measurement period was considered sufficient to establish the lowest background noise levels corresponding to the operational period of the plant.

The site plan contained in Appendix A identifies the approximate measurement position.

The weather conditions during the survey were dry and calm.

5.0 Results

The measured statistical spectral and broad-band sound pressure levels are shown within Appendix B. The lowest representative background noise level(s) obtained being as follows:

Table 1: Lowest measured background noise levels

Measurement Position	Night $L_{A90(23:00-07:00)}$
MP1	37dB

6.0 Evaluation of Design Criteria

6.1 Residential Design Criteria

BS4142:1997 "Method for rating industrial noise affecting mixed residential and industrial areas" describes a method of determining the level of the noise of an industrial nature, together with procedures for assessing whether the noise in question is likely to give rise to complaints from persons living in the vicinity. In general, the likelihood of complaint in response to a noise depends upon factors including the margin by which it exceeds the background noise level. The standard states that "*a difference of around 5dB is of marginal significance*".

It is also necessary however, to consider any policy requirements of the Local Authority, in this instance Camden council, their policy being that the rating level should be 5 dB below the background level.

The rating level shall therefore be: -

Rating Level = $L_{A90,T}$ - 5 dB

6.2 Design Rating Levels

The design rating levels to be adopted for this project are set out in the table below.

Table 2: Noise Rating Level

Receiver premises	Approximate distance from plant	Rating Level (Night) $L_{Ar,T\ (23:00 - 07:00)}$
No 16 Brownlow Mews	17m	32dB

7.0 Review of Proposed Plant Installation

The new plant is to be installed as indicated on the drawing ref: 1346 / 18

Calculations of the predicted noise levels have been carried out with the appropriate corrections for geometric attenuation, barrier effect, reflective surfaces and multiple source addition.

8.0 Plant Noise

The proposed plant at 21b Brownlow Mews are shown in table 3.

Table 3: Plant Details

Type	Model	No Off
Condenser Unit	REYQ8M	4

Table 4 shows the results of the plant noise calculations. The calculations used to predict the plant noise level are shown in Appendix C.

Table 4: Predicted Sound Pressure Level (Un-attenuated)

Receiver	Predicted Noise Level L_{Aeq}	Rating Noise Level $L_{Ar,T}$	Excess over Rating Noise Level
No. 16 Brownlow Mews	48 dB	32 dB	16 dB

9.0 Noise Mitigation Scheme

It is necessary to introduce a suitable noise mitigation scheme by means of acoustic enclosure, with a minimum performance as shown in the table below.

Table 5: Acoustic Enclosure Requirements

	Minimum sound reduction indices SRI								
Minimum Performance	63	125	250	500	1000	2000	4000	8000	Hz
	11	12	14	18	20	23	25	26	dB

The supplier of any acoustic enclosure shall warrant that it provides the required sound reduction performance.

In our opinion, the solution of this problem will now need the services of a noise control company specialising in bespoke solutions to non-standard situations.

Such a company would visit the site, and attempt to arrive at an economic solution, taking into account all the parameters of this particular situation.

The problems of air flow pressure drop etc, applicable to this equipment will all need to be taken into account.

Such a company is the PAR Noise Control

A Division of:
Caice Acoustic Air Movement Ltd
258 Shinfield Road
Reading
RG2 8EY

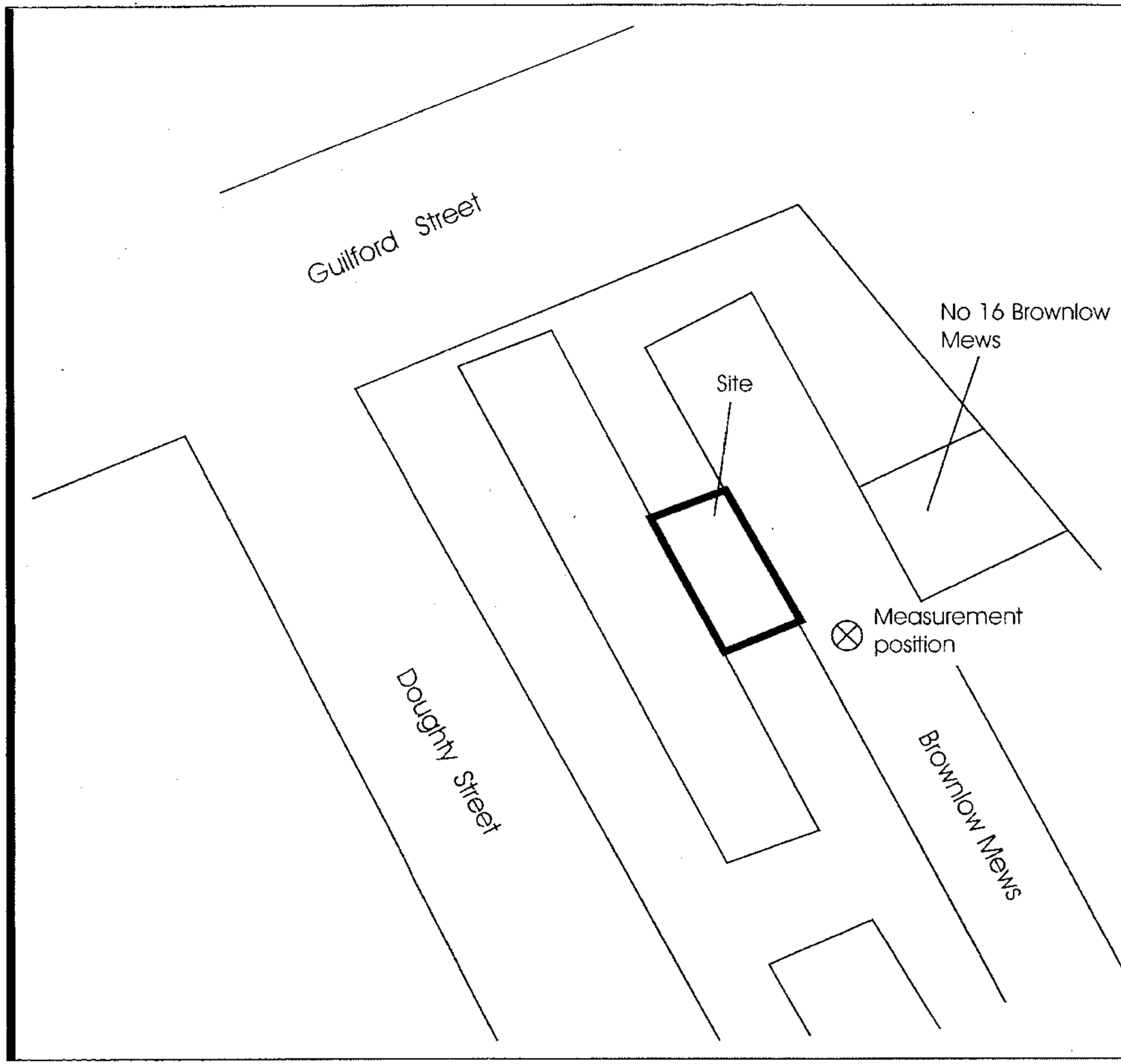
Tel: 01189 879300
Fax: 01189 879320

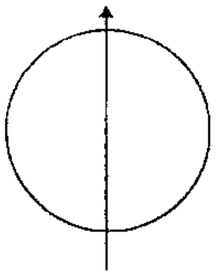
10.0 Conclusion

An environmental noise survey has been undertaken in order to establish the existing background noise levels local to the site generally in accordance with the method contained within BS4142: 1997.

The implementation of the noise mitigation scheme outlined within this report and the attached appendices will be sufficient to ensure the risk of justifiable complaints of noise nuisance from the nearest affected residents is minimised, and will achieve consensus with Local Authority policy with respect to environmental noise emissions.

Appendix A Site Plan





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Client: Marldon

Project: 21b Brownlow Mews
London WC1

Title: Site Plan

Drawn: MJC	Date: 21/09/06
Scale: NTS	Drawing No: 52596-1

Appendix B Measurement Data

Sound pressure level measurements were obtained using the following instrumentation complying with the Type 1 specification of IEC 651(1979) Amend.1 and IEC 804(1985) Amend 2:

- Brule & Kjear 2260 Sound Level Meter

Calibration checks were made prior to and after completion of measurements using a Brüel & Kjær Type 4231 calibrator complying with Class 1 of IEC 942 (1988), calibration level 94.0 dB, ± 0.3 dB, @ 1.0 kHz. All acoustic instrumentation carried current manufacturer's certificates of conformance.

LEE CUNNINGHAM PARTNERSHIP

Client: Maridon Design and Build
Project: 21B Brownlow Mews, London WC1

File: 52596
Date: 19-Sep-2006

Environmental Noise Level Measurements

Survey date: 19-Sep-2006 from 00:17 to 02:10

Run 001-01	63	125	250	500	1k	2k	4k	8k	A	Position:	1
L_{eq}	61	53	47	44	41	37	30	22	**47**	Start Time:	00:17:33
L_{10}	64	55	48	46	43	39	32	25	**48**	End Time:	00:22:33
L_{90}	53	49	45	42	38	33	25	16	**44**	Comments:	
L_{max}	76	67	57	52	49	50	51	41	**56**		

Run 002-01	63	125	250	500	1k	2k	4k	8k	A	Position:	1
L_{eq}	62	52	45	41	40	36	28	20	**45**	Start Time:	00:31:13
L_{10}	63	54	47	43	43	39	31	22	**47**	End Time:	00:36:13
L_{90}	55	48	43	39	37	32	24	15	**42**	Comments:	
L_{max}	81	68	55	51	52	50	43	37	**57**		

Run 003-01	63	125	250	500	1k	2k	4k	8k	A	Position:	1
L_{eq}	59	51	45	41	39	35	28	21	**45**	Start Time:	01:00:53
L_{10}	62	53	48	43	42	38	31	24	**47**	End Time:	01:05:53
L_{90}	54	47	43	38	36	32	24	17	**42**	Comments:	
L_{max}	73	66	56	50	50	44	43	37	**53**		

Run 004-01	63	125	250	500	1k	2k	4k	8k	A	Position:	1
L_{eq}	56	49	46	41	39	34	27	20	**44**	Start Time:	01:29:11
L_{10}	58	52	48	43	41	37	29	22	**46**	End Time:	01:34:11
L_{90}	52	45	41	38	35	30	22	14	**41**	Comments:	
L_{max}	71	65	64	50	48	45	44	41	**56**		

Run 005-01	63	125	250	500	1k	2k	4k	8k	A	Position:	1
L_{eq}	57	51	44	41	39	35	27	20	**44**	Start Time:	01:58:11
L_{10}	57	52	45	44	41	36	29	22	**46**	End Time:	02:03:11
L_{90}	49	45	38	35	32	28	20	13	**38**	Comments:	
L_{max}	75	67	58	52	54	51	45	38	**58**		

Run 006-01	63	125	250	500	1k	2k	4k	8k	A	Position:	1
L_{eq}	52	48	41	38	36	31	24	20	**41**	Start Time:	02:05:58
L_{10}	54	51	44	42	39	34	28	23	**44**	End Time:	02:10:58
L_{90}	48	44	38	35	32	27	18	13	**37**	Comments:	
L_{max}	62	60	54	46	44	46	40	36	**50**		

For information

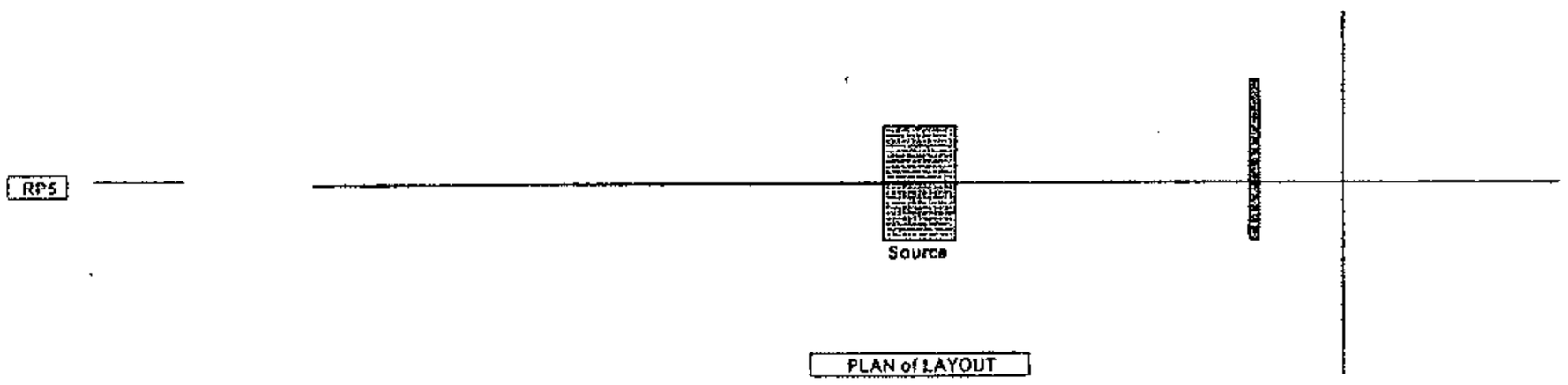
Sound level meter: Bruel & Kjaer type 2260 serial number 2217577 compliant with Type 1 specification of IEC 651 (1979) amendment 1 & IEC 804 (1985) amendment 2.
Microphone: Bruel & Kjaer 4189 serial number 21744779.
Calibrator: Bruel & Kjaer 4231 compliant with Class 1 of IEC 942 (1988).
Calibration Level: Level of 93.8 dB +/-0.3dB at 1kHz Sensitivity: -27.0 dB
Calibration Time: 19-Sep-2006 at 00:15

Notes:

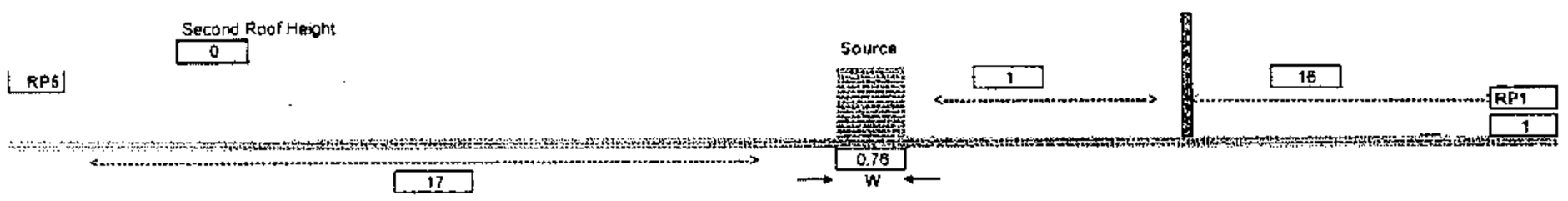
a) The manufacturers calibration and validation certificates are current and are available on request.
b) 63 to 8k are octave band centre frequencies in Hz.
c) All measurements are sound pressure levels in dB (reference 2×10^{-5} Pa).

Appendix C Calculations

Client:	Maridon	File No:	52596
Project:	21b Brownlow Mews London	Task:	Screen requirements
Plant Considered	Condensers		



PLAN of LAYOUT



ELEVATION of LAYOUT

Client: Maridon File No: 52596

Project: 21b Brownlow Mews London Task: Screen requirements

Plant Considered Condensers

SELECT RECEIVER LOCATIONS

	RP1 or RP1A		RP2	RP3 or RP3A		RP4 or RP4A		RP5 or RP5A	
Selected Yes Y or No N	y		n	n		n		y	
Central or Angled C/A	c			c		c		c	
	RP1		RP2	RP3		RP4		RP5	

PLANT DIMENSIONS

	W		H		L		
Source Dimensions	0.76	x	1.6	x	0.93	No of Sources	4

NF1 0.2419 m
NF2 0.286 m
OK

BARRIER DETAILS

Minimum Barrier Width 3.73
Actual Barrier Hieght 3

Check location of other units

INPUT SOUND DATA

FALSE

W/P	w	Lp P or Lw W
W/P	w	Sound Power Level

63	125	250	500	1k	2k	4k	8k	dB(A)	Notes
0	83	79	77	71	67	62	57	76	REYQ8M

Lowest Appplied Noise Red'n due to Noise Control Measures

CALCULATION RESULTS

Resultant Plant Level at 17.0 m	RP1	-41	41	35	29	21	14	7	1	31
Any additional Lp at RP1										
Overall Lp at	RP1	0	41	35	29	21	14	8	4	31
Criteria	NR 50	75	66	59	54	50	47	45	44	58
Resultant Plant Level at 17.0 m	RP5	-30	53	49	47	41	37	32	27	48
Any additional Lp at RP1										
Overall Lp at	RP5	0	53	49	47	41	37	32	27	48
Criteria	NR 50	75	66	59	54	50	47	45	44	58

Prepared by: Date: