Technical Report

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Project

Arkwright Road
Acoustic Survey and Assessment

Prepared for

Adair Associates
Cadogan House
4/6 High Street
Epsom,
Surrey
KT19 8AD

By

Alexandra Ison-Jacques BSc (hons)

Sound Research Laboratories

Southern Office & Laboratory:
Holbrook House, Little Waldingfield, Sudbury, Suffolk CO10 0TH
Tel: +44(0)1787 247595 Fax: +44(0)1787 248420
e-mail:srl@srltsl.com

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Summary

Sound Research Laboratories has been commissioned by Adair Associated to assess the impact of noise on the proposed residential development at 9 Arkwright Road, London.

The building has previously been used as offices, and it is proposed to change its use to residential.

Noise measurements were taken around the site to determine the current noise levels at the facades. The most significant source of noise affecting the site is road traffic noise from Arkwright Road. The site is classed as Noise Exposure Category B, which indicates planning permission should normally be granted providing," where appropriate, conditions are imposed to provide an adequate level of protection against noise".

With "trickle" ventilation the 'reasonable' internal noise criteria (BS 8233 "Sound Insulation and Noise Reduction for Buildings) will be achieved given the existing facade and windows.

I therefore do not expect noise break-in to be an issue at this development.

Alexandra Ison-Jacques
For and on behalf of
SRL Technical Services Limited
Tel: 01787 247595
Email: ajacques@srltsl.com

Dave Clarke

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1.0 Noise Criteria

1.1 PPG 24

Planning Policy Guidance 24: Planning and Noise (PPG 24) gives guidance to Local Authorities on the use of their planning powers with respect to noise. Specifically, it outlines considerations to be taken into account in determining applications for noise sensitive development.

PPG24 "Planning and Noise" proposes four Noise Exposure Categories (NECs) denoted A to D for assessing sites where new housing is proposed.

The NECs are defined in terms of $L_{Aeq,16h}$ for day time (07:00–23:00) and $L_{Aeq,8h}$ for night time (23:00–07:00), both free field levels. $L_{Aeq,T}$ is the equivalent continuous sound pressure level over the sample period T.

The dominant noise source is road traffic noise from Arkwright Road. Therefore the NECs for road traffic noise, as defined in PPG24, have been used to assess this site, see Table 1 below.

Table 1 - Average Day and Night time free field noise level and NEC category for road traffic noise sources

Time Period	Noise Exposure Category			
	A	**B**	**C**	**D**
07:00 – 23:00	< 55	55 - 63	63 - 72	> 72
23:00 – 07:00	< 45	45 - 57	57 - 66	> 66

1.2 Noise Break-In to Dwellings

We have adopted the advice and criteria contained in BS 8233:1999 “Sound Insulation and Noise Reduction for Buildings”. We have based our advice on achieving the “reasonable” resting / sleeping conditions standard as defined by BS 8233:1999:

- 35dB $L_{Aeq,\ 8hr}$ in bedrooms during the night-time (23:00–07:00)
- 40dB $L_{Aeq,\ 16hr}$ in living areas during the daytime (07:00–23:00)

For ‘reasonable’ conditions BS 8233 also requires that 45 dB L_{AFmax} should not ‘normally’ be exceeded in bedrooms during the night time (23:00–07:00).

2.0 Noise Impact Assessment

2.1 Noise Survey

Manned noise measurements were made outside the front of the building (facing Arkwright Road) and at the back of the building. Unmanned measurements were also taken continuously, using equipment placed at the back of the property.

The only significant noise source affecting the facades of the building is road traffic noise from Arkwright Road. There is distant railway noise to the South West of the site.

Details of the noise survey, and measured noise data are shown in Appendix A and B.

2.2 Noise Assessment

We have calculated the free-field L_{Aeq} noise levels at the facades during the day and night time. The levels are shown in Table 2 below together with the relevant Noise Exposure Category (NEC).

Table 2 – Average Day time and Night time Noise Levels (L_{Aeq}, dB), and NEC

Facade	Daytime $L_{Aeq,16hr}$ (dB)	Night-time $L_{Aeq,8hr}$ (dB)	NEC
Front Facade (Facing Arkwright Road)	62	53	B
Rear Facade	45	44	A/B

In relation to NEC B, PPG24 states: "Noise should be taken into account when determining factor planning applications and, where appropriate, conditions imposed to ensure an adequate level of protection against noise.

BS 8233 daytime and night-time noise levels can be met with non-acoustic trickle vents (or windows “cracked open”) up to 10,000mm^2 per room for bedrooms facing Arkwright Road and up to 20,000mm^2 for all other habitable rooms.

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Appendix A - Survey Details

A1. Location of Survey

9 Arkwright Road, London

A2. Date of Survey

31st March 2011

A3. Personnel Present During Survey

A Ison-Jacques

A4. Instrumentation

Bruel and Kjaer

Type 2250 Sound Level Meter	(SRL No.750)
Type 4231 Sound Level Calibrator	(SRL No.753)

Norsonics

Type 140 Sound Level Meter	(Serial No.1404078)

A5. Calibration Procedure

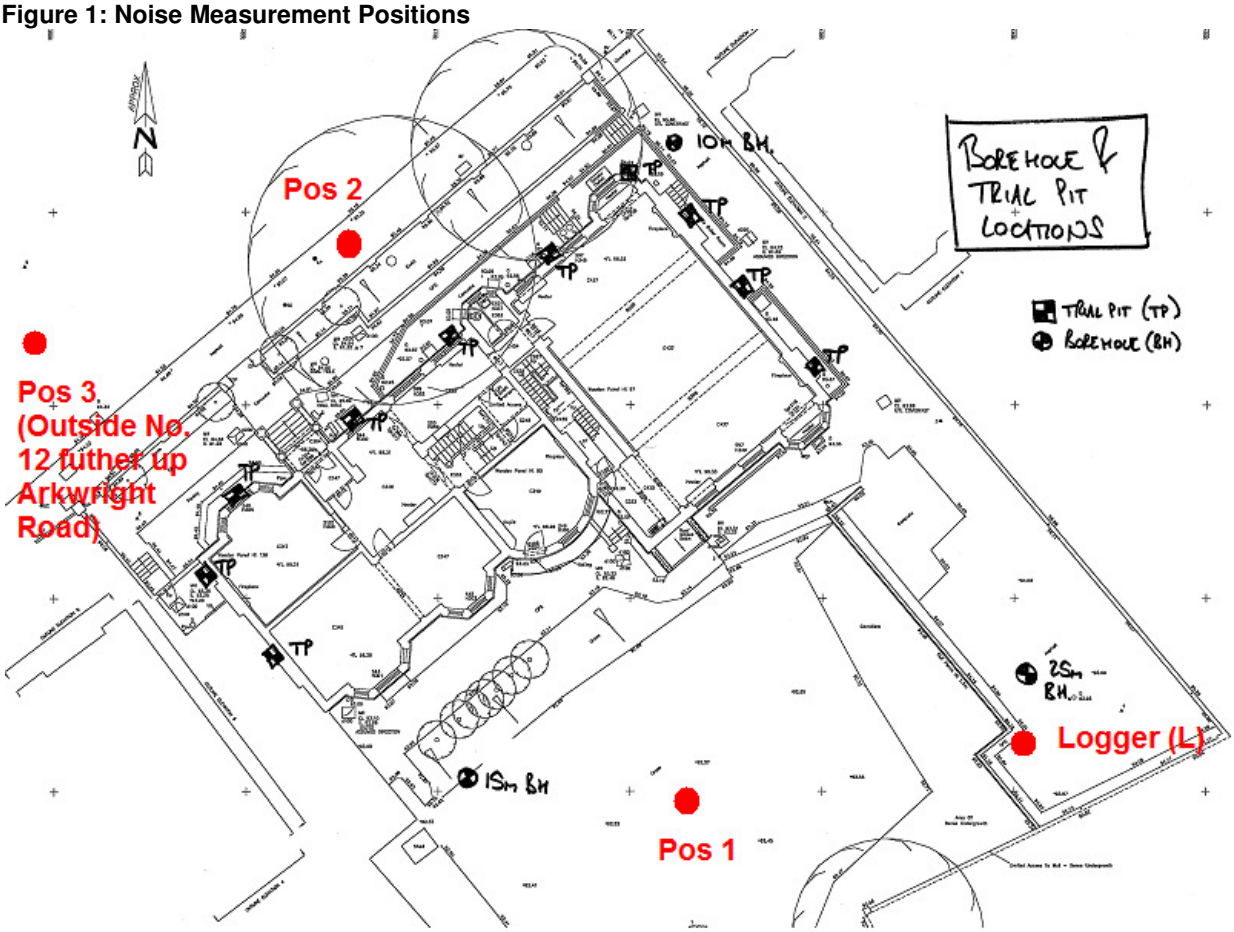
Bruel and Kjaer and *Norsonics*

Before and after the survey the measurement apparatus was check calibrated to an accuracy of ± 0.3dB using the Type 4231 Sound Level Calibrator. The calibrator produces a sound pressure level of 94.0 dB re. 2×10^{-5} Pa at a frequency of 1 kHz.

A6. Survey Procedure

Ambient noise levels were measured at Positions L,1,2,3 and 4 as shown in Figure 1. The measurements taken are listed in Appendix B, and explanations of the parameters used are given in Appendix C.

Figure 1: Noise Measurement Positions



Appendix B – Measured Noise Levels

Table B1 - Measured Ambient Noise Levels (See Figure 1 for Measurement Positions)

Position	Start Time	L_{Aeq} (dB)	L_{A10} (dB)	L_{A90} (dB)	L_{AFmax} (dB)
L	11.50	53	55	49	65
L	1208	54	57	51	62
1	1219	52	55	47	63
2	1231	71	76	60	80
3	1243	69	73	58	87
L	1258	57	59	52	75
2	1315	66	71	57	83
3	1328	69	73	55	84
L	1340	55	57	52	70
2	1355	66	71	56	82
3	1406	66	70	56	84
2	1418	67	71	56	86
L	1430	57	59	53	74
2	2252	63	67	48	81
2	2303	62	67	48	76
3	2314	62	66	48	82
2	0608	60	60	49	77
3	0618	63	64	47	83

Table B2 - Measured octave band spectrums.

Position	Param	Start Time	Octave bands, Frequency (Hz)							
			63	125	250	500	1k	2k	4k	8k
2	L_{eq}	1231	74	68	65	66	67	64	62	61
2	L_{eq}	2303	68	62	59	57	58	54	48	42
2	L_{max}	2303	84	81	75	72	73	69	65	62

Figure B1 - $L_{Aeq,5\ min}$ Noise Levels Measured at Position L

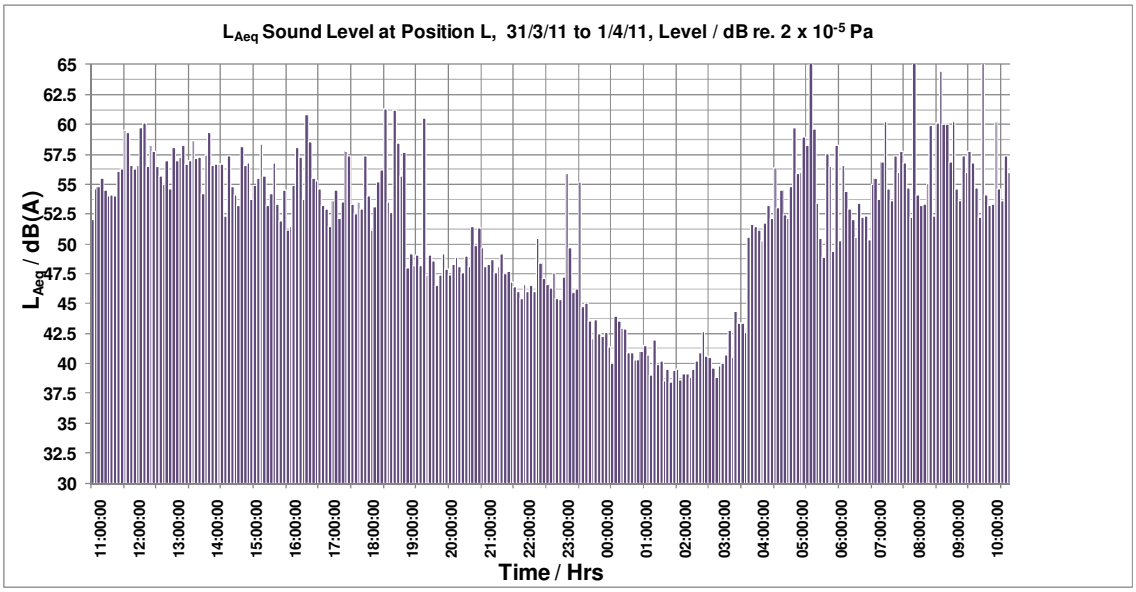
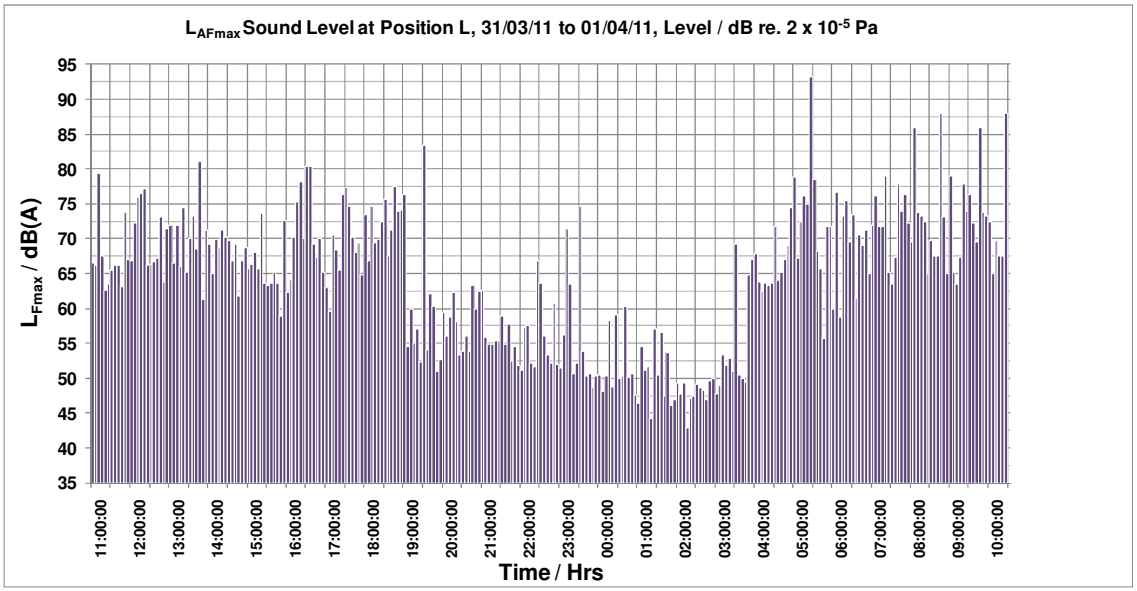


Figure B2 - L_{AFmax} Noise Levels Measured at Position L



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Appendix C

Noise Measurement Parameter Definitions

L_{A90} - The "A" weighted sound pressure level that is exceeded for 90% of the measurement period. It is commonly used as the "Background Noise Level".

L_{A10} - The "A" weighted sound pressure level that is exceeded for 10% of the measurement period. This is often used for assessing traffic noise.

L_{Aeq} - The "A" weighted equivalent continuous sound pressure level. A representation of a continuous sound level containing the same amount of sound energy as the measured varying noise, over the measurement period. It can be considered as the "average" noise level.

L_{Amax} - The "A" weighted maximum sound pressure level in a given measurement period.

Southern Office & Laboratory
Holbrook House
Little Waldingfield
Sudbury
Suffolk
CO10 0TH
Tel: +44(0)1787 247595

Northern Office
Lynnfield House
Church Street
Altrincham
Cheshire
WA14 4DZ
Tel: +44(0)161 929 5585

London Office
70 Cowcross Street
London
EC1M 6EJ
Tel: +44 (0)207 251 3585

Dubai Office
South Africa Office

Website: www.soundresearch.co.uk
e-mail: srl@soundresearch.co.uk

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Registered Name and Address:
SRL Technical Services Limited
Holbrook House
Little Waldingfield
Sudbury
Suffolk
CO10 0TH
Registered Number: 907694 England

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