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Canbrook Basements

Statement of Generic Noise Policy
for Basement Construction

Prepared for :-

Canbrook Basements
26-28 Hammersmith Grove,
Hammersmith,
London
W6 7BA

Prepared by :-

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Checked by:-

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1.0 INTRODUCTION

ADC was asked to carry out an independent assessment of the above site with regards to its suitability for residential development from a noise perspective.

This report begins by summarising assessment standards and, where appropriate, discusses alternative interpretations.

After a brief statement of survey details we discuss basic results and the resulting assessment, along with any mitigation which might be implied. We sum-up and conclude at the end, along with brief recommendations.

2.0 PUBLICATION PLANNING POLICY

The Royal Borough of Kensington and Chelsea document entitled "Basements, Publication Planning Policy, Partial Review of the Core Strategy, February 2014, Regulation 19, Town and Country Planning (Local Planning) (England) Regulations 2012, makes the following references to noise:

34.3.48 Basement development in recent years has been the subject of concern from residents. Basements have given rise to issues about noise and disturbance during construction, the management of traffic, plant and equipment, and concerns about the structural stability of nearby buildings. These concerns have been heightened by the growth in the number of planning applications for basements in the Royal Borough with 46 planning applications in 2001, increasing to 182 in 2010, 294 in 2012 and 450 in 2013. The vast majority of these are extensions under existing dwellings and gardens within established residential areas.

34.3.49 In the Royal Borough, the construction of new basements has an impact on the quality of life, traffic management and the living conditions of nearby residents and is a material planning consideration. This is because the Borough is very densely developed and populated. It has the second highest population density and the highest household density per square km in England and Wales1. Tight knit streets of terraced and semi-detached houses can have several basement developments under way at any one time. The excavation process can create noise and disturbance and the removal of spoil can involve a large number of vehicle movements.

34.3.53 Restricting the size of basements will help protect residential living conditions in the Borough by limiting the extent and duration of construction and by reducing the volume of soil to be excavated. Large basement construction in residential neighbourhoods can affect the health and well-being of residents with issues such as noise, vibration and heavy vehicles experienced for a prolonged period. A limit on the size of basements will reduce this impact.

34.3.69 Basement construction can cause nuisance and disturbance for neighbours and others in the vicinity, through construction traffic, parking suspensions and the noise, dust and vibration of construction itself. The applicant must demonstrate that these impacts are kept to acceptable levels under the relevant acts and guidance[21], taking the cumulative impacts of other development proposals into account. Every effort must be made to locate

[21] *There are a number of relevant acts and regulations including Control of Pollution Act (COPA) 1974, Environmental Protection Act 1990 and Noise Emission in the Environment by Equipment for use Outdoors Regulations 2001. The guidance includes British Standard 5228 – 1 2: 2009: Code of practice for noise and vibration control on construction and open sites.*

the building compound and the skip on site or in exceptional circumstances in the highway immediately outside the application site.

Policy CL7, Basements

m. ensure that construction impacts such as noise, vibration and dust are kept to acceptable levels for the duration of the works;

We would point out also that the revised version of BS8233 has just come out but that it essentially refers to BS5228 (see footnote[21] below) in the section on construction noise.

It is likely that Planners will impose conditions regarding construction noise, usually in the form a requirement to submit details of equipment, methods/times of work. No common standards specify absolute noise limits for construction applicable to all situations of construction noise (noise standards tend to be for permanent noise sources or very long term noise sources). The requirement is usually to submit details and to show that noise is being minimised as far as is reasonably practicable.

3.0 PROPOSED EQUIPMENT

The equipment list and noise data is as follows:-

Equipment	Make/ Model	Description	Noise Level		
			dB(A)	Index	Dist (m)
Compressor	Chicago Pnuematic Typical CPS Model	For air tools	70	SPL	7
Air Spade	Air Spade 2000	Loosens soil for removal	120	SWL	-
Electric Conveyor	Easykit 300	Loaded with hand shovel	Figures unavilable but clearly unlikely to be a problem		
Diamond Cutter	Atlas Copco LCS 38 S150-D	Hand held circular saw	97	SWL	-
Electric truck	Smith Newton	Material delivered to and removed from site	Figures unavilable but clearly well below normal traffic levels		
Cement Mixer	Belle TBE-130 & 165		90	SWL	-

We are advised that it is Canbrook Basements policy to continually seek the quietest equipment, and that this is the quietest they can find to date.

4.0 IMPACT ASSESSMENTS

Impact assessments will be site-specific. Planning conditions will often require statements about methods to control noise and operating hours for the noisiest items. The following will provide a rough guide.

Most equipment will be located indoors for most of the time and protected by site hoarding, and it will be used for different parts of the projects at different times. But, assuming for mow that all equipment runs in a single day and all out in the open air, 20m from a residential property with direct line of sight, the following illustrative assessment applies:

Equipment	Daily Duration (Hrs)	Overall daily level		
		Level	Index	Dist (m)
Compressor	1.00	49	L_{Aeq}	20
Air Spade	0.17	66	L_{Aeq}	20
Electric Conveyor	10.00	Figures unavilable but clearly unlikely to be a problem		
Diamond Cutter	0.50	48	L_{Aeq}	20
Electric truck	3 trips per day	Figures unavilable but clearly well below normal traffic levels		
Cement Mixer	2.00	47	L_{Aeq}	20
Overall	16.00	66	L_{Aeq}	20

For equipment used indoors with open doors and windows, the noise is likely to be around 20 dB lower, again assuming a direct line of sight from openings to residential properties.

The Air Spade is clearly the only item of any significance. It is used for only around 10 minutes a day and for only a relatively short part of the project.

5.0 MONITORING

For some projects, particularly night time working and/or long duration projects, monitoring is required as a planning condition. Here, however, it would seem unlikely to be necessary but can of course be arranged if required.

6.0 CONCLUSIONS

Canbrook Basements has gone to some trouble to source quiet equipment. All items are likely to be perfectly acceptable, particularly if largely used indoors

In addition, it is typical for Canbrook Basements to completely enclose their sites. mainly for the control of dirt and dust, but with the obvious side effect of reduced noise.

The only item of any significance is the Air Spade and this is usually used for about 10 minutes a day over a short part of the project.

However, in the unlikely event of problems, there are of course numerous tools by which noise control can be enforced such as the Control of Pollution Act and it would be unusual to impose heavy restrictions on a construction project where no significant harm is anticipated. A relatively simple statement of good practice (of which this report can form a part) and operating hours should suffice in this case.

A R Raymond

P J Durell

Appendix 1

Definition of Acoustic Terms

The Decibel

The decibel is the basic unit of noise measurement and is denoted dB. Technically, it is a means of expressing the difference in noise level between the measured noise and a standard level of noise. Most often the threshold of human hearing is used as the standard reference but is really should be stated. The threshold of human hearing is a sound pressure of 20μPa or a sound power of 1pW.

A sound pressure level or SPL should be expressed in dB(re. 20μPa). A sound power level or SWL should be expressed in dB(re. 1pW). If the reference levels are omitted, it will often (but not always) be safe to assume that they are referenced to the threshold of human hearing.

A-Weighting and dB(A)

The human hearing system responds differently to different frequencies. The A-weighting system takes account of this by emphasising mid and high frequencies more than low frequencies to given an overall level. An A-Weighted noise level, therefore, reflects the way normal, healthy hearing would perceive the overall level of the noise. The basic unit is dB(A), although other systems of expressing an A-weighted level are discussed below.

Other weighting systems, such as C-Weighting, denoted dB(C), reflect the human hearing system's response at higher noise levels.

Sound Pressure Level (SPL)

The is the noise level as detected by the ear. it depends primarily on the sound power of the source (see below), and the distance from the source of the receiver. So the SPL of a source must always be expressed with a location – for equipment noise specifications this is often (but by no means always) 1m. It also depend on many other factors to do this the immediate environment such as indoor acoustics, obstacles, reflection, etc.

Sound Power Level (SWL)

This is the noise generated by the source and so its value is not related to the distance of the receiver, or on environmental conditions. Numerically it is usually a significantly larger number than the equivalent sound pressure level at 1m.

Equivalent Continuous Sound Level, L_{eq}

This is a kind of mean noise level.

The unit is dB L_{eq}. For A-weighted levels the unit is dB(A) L_{eq} or, in more modern units, dB L_{Aeq}. The Noise at Work Regulations use $L_{eq(s)}$ which refers to a sample level.

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Andrew Raymond - Summary CV

Date of Birth: 9th May 1966

Academic Qualifications:-

1986: BBC Engineering Training
1990: Degree in Electro-Acoustics
1996: Chartered Engineer
1999: MBA

Professional Memberships:-

Corporate Member of Institute of Acoustics (MIOA)

Work Experience:-

1984 – 1987	:	The BBC – formal academic and on-the-job training in all aspects of broadcast engineering, plus post qualification work as a broadcast engineer.
1987 – 1990	:	University – see above. Self employed audio installation work during vacations
1990 – 2004	:	Philip Dunbavin Acoustics – started as a graduate consultant and progressed through various grades to Director and Principal Consultant in 1997.
2004 to date	:	Co founder and Director of Acoustic Design and Control trading as ADC Acoustics. Promoting particularly experience in occupational and environmental noise assessment and control, noise control at source, noise nuisance and planning applications and appeals, audio analysis, as well as all aspects of architectural acoustics.

Other General Information:-

Wide experience of expert witnessing in noise nuisance, deafness, planning applications and appeals, audio analysis. Prepared reports for claimants/plaintiffs/appellants, defendants as well as Single Joint Expert for magistrates, crown and county courts, public inquiries, council hearings, etc.

Presented seminars and written articles on acoustics and noise control for clients, media, interest groups, schools, etc.

ADC ACOUSTICS

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Philip Durell - Summary CV

Date of Birth: 20th May 1968

Academic Qualifications:-

2003 ANC Approved Tester for Building Regulations Approved Document E
2000: MSc in Environmental and Architectural Acoustics
1997: PGC Environmental Quality Management
1992: IOA Acoustics Diploma
1990: HNC Mechanical Engineering

Professional Memberships:-

Corporate Member of Institute of Acoustics (MIOA)

Work Experience:-

1989 – 1991	:	Marconi Radar – post apprenticeship Mechanical engineer involved in servicing and designing modifications for military radar systems for RAF and HM Navy.
1991 – 1992	:	Waterloo Ozonair – on site and research laboratory acoustic testing.
1992 – 1999	:	Cherwell DC, North Oxfordshire Environmental Health Department – Acoustics and Noise Expert for the council for statutory noise nuisance prosecutions ref EPA and Planning.
1999 – 2004	:	PDA Acoustics – started as a consultant and promoted to Senior Consultant in 2000. Became an ANC Approved Tester in 2003 and was involved in the start-up and initial testing of what was formally to become Robust Details.
2004 – to date	:	Co founder and Director of Acoustic Design and Control trading as ADC Acoustics. Promoting particular experience in architectural acoustics (especially residential and schools) as well as planning and environmental noise issues

Other General Information:-

Have presented various acoustic seminars and provided expert evidence for Planning enquiries, magistrate and Crown Courts. Have had articles published on acoustics and noise control for clients, media, interest groups, schools, etc.