NOISE ASSESSMENT REPORT
100 Park Village East

Cyril Silver and Partners LLP

15 August 2005

WSP

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Noise Assessment Report

1.0 Introduction

1.1 WSP Acoustics has been commissioned by Cyril Silver and Partners LLP, to undertake a survey of prevailing noise levels affecting land at 100 Park Village East, London, and to assess the suitability of the site for the development of a proposed residential building.

1.2 The assessment is based upon a survey of environmental noise levels carried out at the façade of an existing building, which currently occupies the site, overlooking the dominant local noise sources.

1.3 The results of this assessment have been used to ascertain the need for, and degree of, mitigation measures required to offer a commensurate level of protection against noise for the future occupants of the proposed residences.

1.4 Further to liaison with the Environmental Health Department at London Borough of Camden (LBC), the assessment has been undertaken in accordance with the guidance contained within their policy DS6, as set out in Section 16: 'Development Standards' of the Camden Unitary Development Plan (UDP).

1.5 A glossary of acoustic terminology used in this report is contained within Appendix A.

2.0 Site Description

2.1 The site of the proposed residential development is bounded as follows:

- North east – Park Village East (road)
- South – Playground area and existing residential block
- West – Existing residential block

2.2 The site is currently occupied by an existing 5-storey office/college building, which is to be demolished under development proposals.

2.3 A plan identifying the site boundary and its location is provided in Appendix B.

2.4 The dominant source of noise affecting the site is road traffic on Park Village East and the surrounding road network and rail traffic entering and exiting London Euston station.

2.5 Current outline development proposals are for the construction of a single 11-storey residential building occupying the whole effective area of the site.

3.0 Noise Assessment Criteria

3.1 DS6 of the Camden UDP sets out the Council's standards with regard to the impact of environmental noise on proposed residential developments. These have been set with regard to the Planning Policy Guidance Note 24: *Planning and Noise* (PPG24).

3.2 DS6 sets out trigger noise levels to be measured and/or predicted at 1m from the façade of a proposed noise sensitive building. Trigger levels are set over the three discreet time periods: Day (0700-1900), Evening (1900-2300) and Night (2300-0700).

3.3 The trigger noise levels set out in DS6 are summarised in Table 1.

Table 1 – Summary of Trigger Noise Levels set out in DS6 of the Camden UDP

Time Period	Noise Level Parameter	Noise mitigation measures required to control internal noise		Planning permission should normally be refused on the grounds of noise	
		Rail Noise	Road Noise	Rail Noise	Road Noise
Day (0700-1900)	$L_{Aeq,12hr}$	65 dB	62 dB	74 dB	72 dB
Evening (1900-2300)	$L_{Aeq,4hr}$	60 dB	57 dB	74 dB	72 dB
Night (2300-0700)	$L_{Aeq,8hr}$	55 dB	52 dB	66 dB	66 dB

3.4 The proposed development site is affected by road and rail noise and therefore it is reasonable to take the more onerous trigger levels in each instance, i.e. those given for road traffic noise sources.

3.5 Where it may be shown that noise mitigation measures are required to control internal noise, it is necessary to assess means of achieving suitable internal noise levels within habitable rooms overlooking the dominant noise sources. DS6 does not include internal noise targets within habitable rooms; however, on the basis of BS 8233: 1999: *Sound Insulation and Noise Reduction for Buildings - Code of Practice* and the World Health Organisation (WHO) document *Guidelines for Community Noise* (1999) suitable levels are recommended as set out in Table 2.

Table 2 – Recommended Maximum Internal Noise Levels with Habitable Rooms

Time Period	Noise Level Parameter	Recommended Internal Noise Level
Day (0700-1900)	$L_{Aeq,12hr}$	40 dB
Evening (1900-2300)	$L_{Aeq,4hr}$	35 dB
Night (2300-0700)	$L_{Aeq,8hr}$	30 dB

4.0 Noise Surveys

4.1 An environmental traffic noise survey was undertaken at the site over a continuous 24-hour period commencing 1700hrs on 4 August 2005. Weather conditions during the survey were conducive to the measurement of noise, it being dry, with wind speeds generally below 2m/s.

4.2 The noise measurements were undertaken using a 01dB-Stell Solo Master datalogging integrating sound level meter (serial number 10330), fitted with a Microtech Gefell GmbH MCE212 condenser microphone (serial number 37991), which itself was fitted with a windshield.

4.3 The measurement microphone was extended a lateral distance of 1m from a forth floor window of the existing building on the site, directly overlooking Park Village East and the railway line leading into London Euston. This measurement position is indicated on the site plan in Appendix B.

4.4 The measurement position is considered to be representative of the worst case across the Park Village East façade. It is generally the case that road traffic noise levels are no greater than 1-2dB(A) higher at ground floor level than at forth floor level. However, at the lower levels on this façade there is a restricted view of the railway lines due to the carriage depot located between the site and the tracks. Accordingly, rail noise levels at lower floor levels are significantly lower than those at forth floor level. As such, the overall noise levels (road and rail combined) at forth floor levels are considered to represent the worst case scenario.

4.5 The measurement system was calibrated at the beginning and end of the survey using a Bruel & Kjaer type 4231 portable acoustic calibrator (serial number 11332), which had itself been calibrated within the preceding twelve months by a UKAS accredited calibration laboratory. No drift in calibration levels occurred during the survey.

4.6 The recorded results were processed subsequent to the survey, to determine the aggregated $L_{Aeq,12hr}$ daytime (0700-1900), $L_{Aeq,4hr}$ evening (1900-2300) and $L_{Aeq,8hr}$ night-time (2300-0700) noise levels. As the noise level were measured at a façade position, it is appropriate to compare the measured noise levels directly with the trigger noise levels given in DS6 of the Camden UDP and summarised in Table 1 of this report. This is presented in Section 5 of this report.

4.7 These daytime and night-time noise levels are summarised in Table 3, with the full-tabulated noise measurement results shown in Appendix C.

Table 3 – Daytime, Evening and Night-time Noise Levels Measured at 1m from Existing Building Façade

Time Period	Noise Level Parameter	Measured Noise Level
Day (0700-1900)	$L_{Aeq,12hr}$	63 dB
Evening (1900-2300)	$L_{Aeq,4hr}$	60 dB
Night (2300-0700)	$L_{Aeq,8hr}$	56 dB

5.0 Assessment of Measured Noise Levels

5.1 Comparison of the measured noise levels summarised in Table 3 with the trigger noise levels set out in Table 1 shows that noise mitigation measures will be required to control internal noise within habitable rooms overlooking Park Village East and the railway line leading into London Euston.

5.2 Comparison of the measured noise levels with the recommended internal noise levels set out in Table 2 shows that an overall noise reduction (outside to inside) of up to 25dB(A) will be required of the façade construction of rooms overlooking these noise sources.

5.3 It is recommended that this level of noise reduction may typically be achieved using standard thermal double glazing (e.g. two standard 4mm thick panes on a 12mm wide air-filled cavity). However, in order to maintain the acoustic integrity of the glazing solution and to provide the appropriate level of background ventilation to habitable rooms, it will be necessary to incorporate acoustically attenuation tickle ventilators rather than standard units.

5.4 Habitable rooms that do not face toward the dominant local noise sources will be screened by the front façade of the building such that no specific noise mitigation measures will be required.

6.0 Conclusions

6.1 WSP Acoustics has undertaken a survey of the prevailing noise climate affecting a site at 100 Park Village East, London, and has assessed the suitability of the site for residential development.

6.2 Further to liaison with the Environmental Health Department at London Borough of Camden (LBC), the assessment has been undertaken in accordance with the guidance contained within their policy DS6, as set out in Section 16 Development Standards of the Camden Unitary Development Plan (UDP).

6.3 The assessment has been based upon a survey of environmental noise levels carried out at the façade of an existing building, which currently occupies the site, overlooking the dominant local noise sources.

6.4 Recommendations have been made as to the degree of acoustic attenuation that would be required to offer a commensurate level of protection against noise for the future occupants of the proposed residential dwellings.

6.5 It has been shown that a façade comprising standard thermal double glazing will suffice in order to suitably control internal noise levels. Acoustically attenuated trickle ventilators will be required to provide background ventilation and to retain the acoustic integrity of the external building fabric. This is applicable only to habitable rooms overlooking Park Village East and the railway line leading into London Euston. No specific noise mitigation measures are required on other façade of the proposed building.

WSP Acoustics

APPENDIX A

Glossary of Acoustic Terminology

Appendix A

Acoustic Terminology

Term	Definition
Sound Pressure	Sound, or sound pressure, is a fluctuation in air pressure over the static ambient pressure.
Sound Pressure Level (Sound Level)	The sound level is the sound pressure relative to a standard reference pressure of 20µPa ($20x10^{-6}$ Pascals) on a decibel scale.
Decibel (dB)	A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds s_1 and s_2 is given by 20 $\log_{10}$ (s_1 / s_2). The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is 20µPa.
A-weighting, dB(A)	The unit of sound level, weighted according to the A-scale, which takes into account the increased sensitivity of the human ear at some frequencies.
Noise Level Indices	Noise levels usually fluctuate over time, so it is often necessary to consider an average or statistical noise level. This can be done in several ways, so a number of different noise indices have been defined, according to how the averaging or statistics are carried out.
$L_{eq,T}$	A noise level index called the equivalent continuous noise level over the time period T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded.
$L_{max,T}$	A noise level index defined as the maximum noise level during the period T. L_{max} is sometimes used for the assessment of occasional loud noises, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
$L_{90,T}$	A noise level index. The noise level exceeded for 90% of the time over the period T. L_{90} can be considered to be the "average minimum" noise level and is often used to describe the background noise.
$L_{10,T}$	A noise level index. The noise level exceeded for 10% of the time over the period T. L_{10} can be considered to be the "average maximum" noise level. Generally used to describe road traffic noise.
Free-Field	Far from the presence of sound reflecting objects (except the ground), usually taken to mean at least 3.5m
Fast Time Weighting	An averaging time used in sound level meters. Defined in BS5969 (superseded).
Ambient Noise Level	The totally encompassing sound in a given situation at a given time, usually composed of a sound from many sources both distant and near ($L_{Aeq,T}$).

In order to assist the understanding of acoustic terminology and the relative change in noise, the following background information is provided.

The human ear can detect a very wide range of pressure fluctuations, which are perceived as sound. In order to express these fluctuations in a manageable way, a logarithmic scale called the decibel, or dB scale is used. The decibel scale typically ranges from 0 dB (the threshold of hearing) to over 120 dB. An indication of the range of sound levels commonly found in the environment is given in the following table.

Sound Level	Location
0dB(A)	Threshold of hearing
20 to 30dB(A)	Quiet bedroom at night
30 to 40dB(A)	Living room during the day
40 to 50dB(A)	Typical office
50 to 60dB(A)	Inside a car
60 to 70dB(A)	Typical high street
70 to 90dB(A)	Inside factory
100 to 110dB(A)	Burglar alarm at 1m away
110 to 130dB(A)	Jet aircraft on take off
140dB(A)	Threshold of Pain

The ear is less sensitive to some frequencies than to others. The A-weighting scale is used to approximate the frequency response of the ear. Levels weighted using this scale are commonly identified by the notation dB(A).

In accordance with logarithmic addition, combining two sources with equal noise levels would result in an increase of 3 dB(A) in the noise level from a single source.

A change of 3 dB(A) is regarded as the smallest change in broadband continuous noise which the human ear can detect. A 2 dB(A) increase would not be perceptible. A 10 dB(A) increase in noise represents a subjective doubling of loudness.

A noise impact on a community is deemed to occur when a new noise is introduced that is out of character with the area, or when a significant increase above the pre-existing ambient noise level occurs.

For levels of noise that vary with time, it is necessary to employ a statistical index that allows for this variation. These statistical indices are expressed as the sound level that is exceeded for a percentage of the time period of interest. In the UK, traffic noise is measured as the L_{A10}, the noise level exceeded for 10% of the measurement period. The L_{A90} is the level exceeded for 90% of the time and has been adopted to represent the background noise level in the absence of discrete events. An alternative way of assessing the time varying noise levels is to use the equivalent continuous sound level, L_{Aeq}. This is a notional steady level that would, over a given period of time, deliver the same sound energy as the actual fluctuating sound.

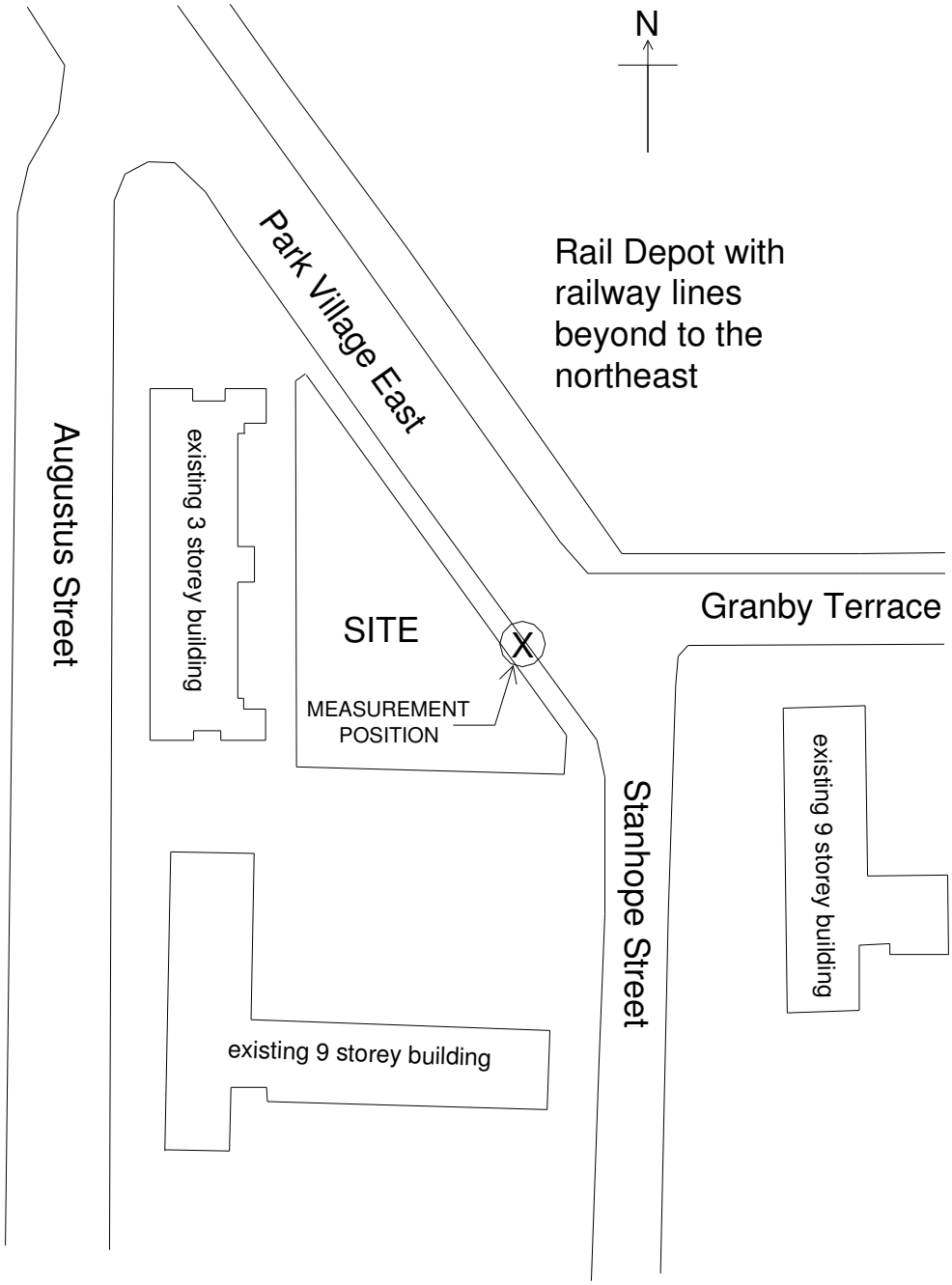
To put these quantities into context, where a receiver is predominantly affected by continuous flows of road traffic, a doubling or halving of the flows would result in a just perceptible change of 3 dB, while an increase of more than 25%, or a decrease of more than 20%, in traffic flow represents a change of 1 dB in traffic noise levels (assuming no alteration in the mix of traffic or flow speeds).

APPENDIX B

Site Plan and Noise Measurement Location

Appendix B

Site Plan and Noise Measurement Location



APPENDIX C

Full Noise Measurement Results

Appendix C

Full Noise Measurement Results at Measurement Position 1

Period start, hhmm	Noise Level, dB			
	$L_{Aeq,1hr}$	$L_{Amax,1hr}$	$L_{A90,1hr}$	$L_{A10,1hr}$
DAYTIME NOISE LEVELS (façade)				
07:00	62	84	55	65
08:00	63	78	57	66
09:00	63	78	56	66
10:00	63	86	56	65
11:00	62	78	55	65
12:00	63	85	56	65
13:00	63	86	55	65
14:00	63	90	55	65
15:00	62	87	54	64
16:00	62	84	54	66
17:00	63	87	55	65
18:00	62	82	55	65
EVENING NOISE LEVELS (façade)				
23:00	61	83	53	64
00:00	60	76	52	63
01:00	59	74	50	62
02:00	59	82	51	62
NIGHT-TIME NOISE LEVELS (façade)				
23:00	58	72	50	62
00:00	55	73	47	59
01:00	56	79	45	59
02:00	52	67	44	55
03:00	53	74	44	56
04:00	54	69	45	58
05:00	57	76	47	60
06:00	60	73	51	64

APPENDIX D

Notes on Limitations

Appendix D

Notes on Limitations

This report has been prepared for the titled project or named part thereof and should not be used in whole or part and relied upon for any other project without the written authorisation of WSP Environmental Limited. WSP Environmental Limited accept no responsibility or liability for the consequences of this document if it is used for a purpose other than that for which it was commissioned. Persons wishing to use or rely upon this report for other purposes must seek written authority to do so from the owner of this report and/ or WSP Environmental Limited and agree to indemnify WSP Environmental Limited for any and all loss or damage resulting therefrom. WSP Environmental Limited accepts no responsibility or liability for this document to any other party other than the person by whom it was commissioned.

The findings and opinions expressed are relevant to the dates of the site works and should not be relied upon to represent conditions at substantially later dates. Opinions included therein are based on information gathered during the study and from our experience. If additional information becomes available which may affect our comments, conclusions or recommendations WSP Environmental Limited reserve the right to review the information, reassess any new potential concerns and modify our opinion.

Our ref: 12101497.dm003

08 February 2007

Notting Hill Developments Limited
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Dear Sirs

100 Park Village East - Noise Report

Further to our recent discussions with Cyril Silver and Partners, may I confirm the following with respect to our Noise Assessment Report dated 15th August 2005.

Whilst undertaken over one year ago, it is considered unlikely that the prevailing noise level environment has changed significantly in the area. It is therefore considered that our report and its findings and recommendations are still valid in relation to the current Notting Hill Housing Trust proposals at the development land.

I do not foresee a need to repeat our study for the latest planning application in relation to the site.

I trust the above is clear and satisfactory, however please call if you have any queries.

Yours sincerely

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Technical Director

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