Noise Assessment for Proposed

Redevelopment at 6 Erskine Road, London

On Behalf of Jackson Coles LLP






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Prepared by:	Susan Hirst BSc MIOA	Acoustic Consultant		02/07/2013
Reviewed & checked by:	Stephen Scott MEng MIOA	Senior Acoustic Consultant		02/07/2013
Authorised by:	Phil Evans BSc (Hons) MSc, MIOA, FGS	Senior Director		02/07/2013
Date of issue:	2 July 2013			
Revision:	1			
Project number	JAE7371			
Document file path:	O:\Jobs_7001-8000\7371e\Report\7371e_Report_Rev1_20130702.docx			

RPS
6-7 Lovers Walk
Brighton
BN1 6AH
T: +44 (0) 1273 546800
F: +44 (0) 1273 546801
E: rpsbn@rpsgroup.com
W: www.rpsgroup.com

Quality Management

Revision History				
Rev	**Date**	**Status**	**Reason for revision**	**Additional comments**
0	06/03/13	Issue	-	-
1	02/07/13	Re-issue	Amendment to proposal	-

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1 Introduction

1.1 The Acoustics Team at the Brighton office of RPS Planning and Development has been commissioned by Jackson Coles LLP to assess the suitability of a site for redevelopment with respect to noise, amongst other matters. The proposed development site is located north-east of Erskine Road, east of the B525 and west of the A502. The railway line from Camden Road station to South Hampstead station runs to the north of the site.

1.2 These proposals include the partial refurbishment of the existing buildings and the re-construction of Leeder House, to provide both office and residential use. The site is located within the administrative area of Camden Borough Council (CBC).

1.3 The report considers the noise impact of the railway and road traffic and considers any possible constraints that may be placed upon the residential or commercial office development with respect to noise. Reference to national, regional and local planning guidance has been included and a baseline noise survey has been undertaken.

2 Noise Units, Standards and Guidance

Noise

2.1 Noise is defined as 'sound which is undesired by the recipient'. The range of audible sound is from 0 dB to 140 dB. The frequency response of the ear is usually taken to be about 18 Hz (number of oscillations per second) to 18000 Hz. The ear does not respond equally to different frequencies at the same level. It is more sensitive in the mid-frequency range than the lower and higher frequencies and because of this, the low and high frequency components of a sound are reduced in importance by applying a weighting (filtering) circuit to the noise measuring instrument. The weighting which is most widely used and which correlates best with subjective response to noise is the dB(A) weighting. This is an internationally accepted standard for noise measurements.

2.2 For variable noise sources such as traffic, a difference of 3 dB(A) is just distinguishable. In addition, a doubling of a noise source would increase the overall noise by 3 dB(A). For example, if one item of machinery results in noise levels of 30 dB(A) at 10 m, then two identical items of machinery adjacent to one another would result in noise levels of 33 dB(A) at 10 m. The 'loudness' of a noise is a purely subjective parameter but it is generally accepted that an increase/decrease of 10 dB(A) corresponds to a doubling/halving in perceived loudness.

2.3 External noise levels are rarely steady but rise and fall according to activities within an area. In an attempt to produce a figure that relates this variable noise level to subjective response, a number of noise indices have been developed. These include:

- **L_{Amax} noise level:** This is the maximum noise level recorded over the measurement period.
- **L_{Aeq} noise level:** This is the 'equivalent continuous A-weighted sound pressure level, in decibels' and is defined in British Standard 7445 (BS 7445) [1] as the 'value of the A-weighted sound pressure level of a continuous, steady sound that, within a specified time interval, T, has the same mean square sound pressure as a sound under consideration whose level varies with time'. It is a unit commonly used to describe construction noise and noise from industrial premises and is the most suitable unit for the description of other forms of environmental noise. In more straightforward terms, it is a measure of energy within the varying noise. It is also the unit best suited to assessing community response.
- **L_{A10} noise level:** This is the noise level that is exceeded for 10% of the measurement period and gives an indication of the noisier levels. It is a unit that has been used over many years for the measurement and assessment of road traffic noise.
- **L_{A90} noise level:** This is the noise level that is exceeded for 90% of the measurement period and gives an indication of the noise level during quieter periods. It is often referred to as the background noise level and is used in the assessment of disturbance from industrial noise.

National Planning Policy Framework

2.4 The National Planning Policy Framework (NPPF) [2], published in March 2012, sets out the Governments planning policies for England. The document revokes and replaces Planning Policy Guidance Note 24 'Planning and Noise (PPG 24) [3].

2.5 The document does not contain any specific noise policy, or noise limits except in relation to noise from mineral workings, but it provides a framework for local people and local authorities to produce their own local and neighbourhood plans, which reflect the needs and priorities of their communities.

2.6 In Section 11, 'Conserving and enhancing the natural environment', paragraph 123 relates to noise and states:

'123. Planning policies and decisions should aim to:

avoid noise from giving rise to significant adverse impacts[27] on health and quality of life as a result of new development;

mitigate and reduce to a minimum other adverse impacts[27] on health and quality of life arising from noise from new development, including through the use of conditions;

recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established;[28] and

identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.'

[27] See Explanatory Note to the Noise Policy Statement for England (Department for the Environment, Food and Rural Affairs).

[28] Subject to the provisions of the Environmental Protection Act 1990 and other relevant law.'

2.7 The first bullet point refers to 'significant adverse impacts' which relates back to SOAEL in the NPSE although the term 'effect' is used instead of the term 'impact' although these have been deemed to be interchangeable in this context. Therefore, given the comments above on the NPSE with regard to assessment methods and criteria, the current content of the NPPF does not require any change in previously adopted approaches. This is further endorsed by the noise limits provided for mineral workings which are the same as those contained in the revoked Minerals Policy Statement 2 on 'Controlling and Mitigating the Environmental Effects of Minerals Extraction in England, 2005.

British Standard 8233 ‘Sound insulation and noise reduction for buildings – Code of Practice’, 1999

2.8 British Standard 8233 ‘Sound insulation and noise reduction for buildings – Code of practice’ (BS 8233) [4] draws on the results of research and experience to provide information on the

design of buildings to provide internal acoustic environments appropriate to their functions. It deals with control of noise from outside the building, noise from plant and services within it, and room acoustics in non-critical situations.

2.9 BS 8233 defines a range of indoor ambient noise levels for spaces when they are unoccupied, below which 'good' or 'reasonable' conditions are achieved. If reasonable conditions are not met within residential rooms then sleep disturbance or disruption to rest may occur. If reasonable conditions are not met within offices then effects could be detrimental to people's ability to work causing task impairment and problems with speech intelligibility in the rooms. A summary of the levels recommended in BS 8233 Table 5 for rooms for office and residential use is provided in Table 2.1 below.

2.10 The noise levels defined within BS 8233 are based on guidance published by the World Health Organisation (WHO).

Table 2.1: BS 8233 Indoor Ambient Noise Levels in Unoccupied Spaces

Criterion	Typical Situation	Design Range $L_{Aeq,t}$ dB	
		Good	Reasonable
Reasonable resting/sleeping conditions	Living Rooms	30	40
	Bedrooms[1]	30	35
Reasonable conditions for study and work requiring concentration	Cellular office	40	50
	Staff room	35	45
	Meeting room, executive office	35	40
Reasonable listening conditions	Classroom	35	40
Reasonable acoustic privacy in shared places	Open plan office	45 – 50	N/A

[1] For a reasonable standard in bedrooms at night, individual noise events (measured with F time-weighting) should not normally exceed 45 dB L_{Amax}.

2.11 In addition, the second paragraph of 7.6.1.2 states that:

'As well as protection for the building, barriers or bunds should be considered to protect the gardens. In gardens and balconies etc. it is desirable that the steady noise level does not exceed 50 $L_{Aeq,T}$ dB and 55 $L_{Aeq,T}$ dB should be regarded as the upper limit.'

British Council for Offices Guide 2009: Best practise in the specification for offices

2.12 The British Council for Offices Guide to Specification 2009 [5] provides specifications on a wide variety of subjects covering the construction and use of offices. Noise is just one of the topics specified. A summary of the levels recommended in the guide for a variety of rooms and uses is provided in Table 2.2 below.

Table 2.2: External Noise Intrusion Levels

Room Type	Maximum Level
Cellular Offices	NR35 (L_{eq})
Speculative Offices	NR38 (L_{eq})
Open Plan Offices	NR40 (L_{eq})

2.13 In a note to 8.2.1 the guidance states:

'In addition $L_{Amax(fast)}$ noise intrusion levels should not normally exceed 55 dBA in openplan/ speculative offices or 50 dB in cellular offices. In the case of naturally ventilated buildings, it may be appropriate or necessary to accept higher external noise intrusion levels than those shown above (e.g. + 5 dBA relaxation in maximum ventilation mode provided occupants have the choice).'

2.14 Additionally, the guide also states that:

'Sound level difference between individual office floors should be at least $D_{nT,w}$ 45 dB at shell and core stage, or at least $D_{nT,w}$ 48 dB if fitted to Cat A standards when tested in accordance with BS EN ISO 140-4: 1998 [6] *and rated in accordance with BS EN ISO 717-1: 1997* [7].*'*

British Standard 4142 'Method for Rating industrial noise affecting mixed residential and industrial areas', 1997

2.15 British Standard 4142 'Method for Rating industrial noise affecting mixed residential and industrial areas' (BS 4142) [8] is used to assess noise from industrial and commercial developments. The Standard provides a method for rating industrial noise affecting mixed residential and industrial areas and has been extensively used by local authorities and consultants to rate noise from fixed installations, such as plant noise.

2.16 The Standard advocates the use of L_{Aeq}, a level that is directly measurable. The L_{Aeq} is either measured or calculated at a receptor location and this is termed the 'specific noise level'. The specific noise level may then be corrected for the character of the noise, if appropriate, and it is then termed the 'rating level', whether or not a correction is applied. A correction of +5 dB is made if the noise contains distinguishable, discrete and continuous tones (e.g. hums, whistles or whines); distinct impulses (e.g. bangs, clicks, clatters or thumps) or if the noise is irregular enough in character to attract attention.

2.17 When used to rate the likelihood of complaints, the rating level is determined and the L_{A90} background noise level is subtracted from it. Where positive differences occur, the greater the difference between the two levels, the greater the likelihood of complaints. Where negative differences occur, the greater the difference between the two levels, the lesser the likelihood of complaints. A difference of around +10 dB or higher indicates that complaints are likely; a difference of around +5 dB is of marginal significance; and a difference of -10 dB is a positive indication that complaints are unlikely. These descriptions are summarised in Table 2.3.

Table 2.3: BS 4142 Significance Criteria

BS 4142 Assessment Level dB(A) (Rating level relative to background level)	BS 4142 Semantic (as described in BS 4142)
< -10	*'If the rating level is more than 10 dB below the measured background level then this is a positive indication that complaints are unlikely'*
-10 to +5	No BS 4142 description but the more negative the difference, the less the likelihood of complaints.
+5	*'A difference of around*[i] *+5 dB is of marginal significance'*
+5 to +10	No BS 4142 description but the more positive the difference, the greater the likelihood of complaints.
> +10	*'A difference of around*[ii] *+10 dB or more indicates that complaints are likely'*

[i] 'around +5 dB' is taken as between 3 dB and 7 dB
[ii] 'around +10 dB' is taken as 8 dB or greater

2.18 BS 4142 states that measurement positions should be outside buildings in free-field conditions, where the microphone is at least 3.5 m from any reflecting surfaces other than the ground and at a preferred height of between 1.2 m and 1.5 m above ground level. However, where it is necessary to make measurements above ground floor level, the measurement position, height and distance from reflecting surfaces should be reported, ideally measurements should be made at a position 1 m from the façade of the relevant floor.

2.19 BS 4142 states that the night period should cover the times when the general adult population are preparing for sleep or are actually sleeping. When assessing the noise from night-time operations, the period of 23:00 to 07:00 hours, is commonly adopted. Whilst BS 4142 may be used to assess the likelihood of night-time noise complaints, it is generally accepted that other appropriate criteria should be adopted for assessing sleep disturbance during night-time periods, such as British Standard 8233 (BS 8233)[9] or the World Health Organisation (WHO)[10].

2.20 BS 4142 requires a 'representative background noise level' to be adopted for the assessment. There is no Government or BS guidance that states what is considered to constitute 'representative' and the night-time period is particularly difficult as it can be subject to a wide variation in noise level between the shoulder night periods.

2.21 One approach that is commonly adopted, and has been adopted for this project, is to use the average $L_{A90,15\ min}$ for the daytime period between 07:00 and 23:00 hours and the night-time period between 23:00 and 07:00 hours, i.e. the arithmetic mean of the data from the long-term surveys within the appropriate time period.

Local Planning Requirements

2.22 Development Policy 28 (DP28) of CBC's Local Development Framework (LDF) [11] states the following:

'The Council will seek to ensure that noise and vibration is controlled and managed and will not grant planning permission for:

a) development likely to generate noise pollution; or

b) development sensitive to noise in locations with noise pollution, unless appropriate attenuation measures are provided.

Development that exceeds Camden's Noise and Vibration Thresholds will not be permitted.

The Council will only grant permission for plant or machinery if it can be operated without cause harm to amenity and does not exceed our noise thresholds.

The Council will seek to minimise the impact on local amenity from the demolition and construction phases of development. Where these phases are likely to cause harm, conditions and planning obligations may be used to minimise the impact.'

2.23 Thresholds for exposure from noise and vibration for various developments are referred to within the policy. The noise levels on residential sites at and above which planning permission will not be granted are provided in Table 2.4. The noise levels on residential sites at and above which attenuation measures will be required are provided in Table 2.5.

Table 2.4: Noise Levels on Residential Sites Adjoining Railways and Roads at and above which Planning Permission Will Not Be Granted

Noise description and location of measurement	Period	Time	Sites adjoining railways	Sites adjoining roads
Noise at 1 metre external to a sensitive façade	Day	07:00 – 19:00	74 dB $L_{Aeq,12h}$	72 dB $L_{Aeq,12h}$
Noise at 1 metre external to a sensitive façade	Evening	19:00 – 23:00	74 dB $L_{Aeq,4h}$	72 dB $L_{Aeq,4h}$
Noise at 1 metre external to a sensitive façade	Night	23:00 – 07:00	66 dB $L_{Aeq,8h}$	66 dB $L_{Aeq,8h}$

Table 2.5: Noise Levels on Residential Sites Adjoining Railways and Roads at and above which Attenuation Measures Will Be Required

Noise description and location of measurement	Period	Time	Sites adjoining railways	Sites adjoining roads
Noise at 1 metre external to a sensitive façade	Day	07:00 – 19:00	65 dB $L_{Aeq,12h}$	62 dB $L_{Aeq,12h}$
Noise at 1 metre external to a sensitive façade	Evening	19:00 – 23:00	60 dB $L_{Aeq,4h}$	57 dB $L_{Aeq,4h}$
Noise at 1 metre external to a sensitive façade	Night	23:00 – 07:00	55 dB $L_{Aeq,8h}$	52 dB $L_{Aeq,8h}$
Individual noise events several times an hour	Night	23:00 – 07:00	>82 dB $L_{Amax,S}$	>82 dB $L_{Amax,S}$

2.24 In addition, in discussions with an EHO at CBC it was stated that, for noisy plant/equipment or other uses, design measures should be taken to ensure that:

'1a. Noise levels at a point 1 metre external to sensitive facades shall be at least 5dB(A) less than the existing background measurement (L_{A90}), expressed in dB(A) when all plant/equipment are in operation.

Where it is anticipated that any plant/equipment will have a noise that has a distinguishable, discrete continuous note (whine, hiss, screech, hum) and/or if there are distinct impulses (bangs, clicks, clatters, thumps) special attention should be given to reducing the noise levels from that piece of plant/equipment at any sensitive façade to at least 10dB(A) below the L_{A90}, expressed in dB(A).

And, 1b. For each of the octave band of centre frequencies 63Hz-8KHz inclusive, noise levels from all plant/equipment (measured in L_{Aeq}) when in operation shall at all times add not more than 1 decibel to the existing background noise level L_{A90}, expressed in dB(A), in the same octave band as measured 1 metre external to sensitive facades.'

3 Baseline Conditions

Site Layout

3.1 Erskine Road bounds the proposed site to the south-west; there are residential uses adjacent to the north-west boundary; and mixed residential and retail uses adjacent to the north-east and south-east boundaries of the site. Approximately 50 m north of the site is the railway line that runs from South Hampstead Rail Station to Camden Road Rail Station. To the south of the site is Regent's Park, the B525 to the west and the A502 to the east. Road traffic is the most influential noise source in the vicinity of the proposed development.

3.2 Given the distance between the site and the railway and the nature of vehicles using the line, it has been considered that the site will not be exposed to significant sources of vibration.

3.3 The proposals include the refurbishment of existing offices and the re-development of the site currently occupied by Leeder House as a four-storey residential block comprising 4 units.

3.4 The site location is shown in Figure 1.

Baseline Noise Survey

3.5 A baseline noise survey was carried out by RPS in November 2008 in order to support a prior application for the site.

3.6 An EHO was consulted[1] regarding the survey to determine the suitability of the historic survey to assess the current situation. It was agreed that provided there were no major changes to the use of the surrounding buildings, no major changes to the road layout on Erskine Road and no major changes to the use of the railway, the historic surveys would be considered valid. As none of these have changed considerably from the time of the previous survey, the measured noise levels are considered to be valid.

3.7 Two long-term surveys were undertaken from 15:45 on 12th November 2008 until 11:15 on 14th November 2008. Figure 1 shows the location of the surveys.

3.8 One three day measurement (LT1) was positioned on the south-west façade of Leeder House, with the microphone positioned at 1 m from a second floor window. The second monitoring location (LT2) was on the roof of Block 2.

3.9 The instrumentation used consisted of Rion NL-31 and NL-32 Sound Level Meters (SLMs) and a Rion NC-74 Calibrator. The SLMs were set-up to record the noise metrics described in Section 2 of this report in 15 minute periods.

[1] Helen Masterson, Principal Environmental Health Officer, London Borough of Camden 28th February 2013

3.10 All instrumentation was calibrated both prior to and immediately following the survey to ensure that no significant drift had occurred over the survey period. All instrumentation was within the manufacturer's periods of calibration, as specified in BS 7445-1:2003. Calibration certificates are available on request.

3.11 Meterological data were obtained from a nearby weather station for the survey period. Conditions were mostly sunny or partly cloudy and wind speeds were less than 5 m/s at 10 m. Conditions were therefore considered to be favourable for the purpose of noise monitoring.

3.12 During the site visit, it was confirmed that the main noise source was road traffic noise. An additional source contributing to the background noise environment was trains on the railway.

3.13 A summary of the measured noise levels for the periods specified in BS 8233 and DP28 of CBC's LDP are included in Table 3.1. Hourly survey data is provided in Appendix A.

Table 3.1: Summary of Long-Term Measured Noise Levels in Periods Used for BS 8233

Location	Period	Noise Survey Metric (dB)			
		L_{Aeq}	L_{AFmax*}	L_{A10}	L_{A90}
LT1	Daytime 16 hr (07:00 – 23:00)	58	91	59	50
	Daytime 12 hr (07:00 – 19:00)	59	91	61	50
	Evening 4 hr (19:00 – 23:00)	55	80	57	49
	Night-time 8 hr (23:00 – 07:00)	49	82	48	40
LT2	Daytime 16 hr (07:00 – 23:00)	51	85	52	45
	Daytime 12 hr (07:00 – 19:00)	52	85	52	46
	Evening 4 hr (19:00 – 23:00)	50	80	50	43
	Night-time 8 hr (23:00 – 07:00)	44	75	44	39

*L_{AFmax} levels stated are absolute maximum noise levels for the period

4 Assessment of Site Suitability

Residential Suitability

4.1 The measurements carried out at LT1 are considered to be representative of the residential rooms within the development that are most exposed to noise, having direct line-of-sight to Erskine Road. The levels were measured at 1 m from the façade of the building in compliance with CBC's policy.

4.2 With reference to Tables 2.4, 2.5 and 3.1, the levels measured on site are within the levels for which CBC permit residential development without specific mitigation for noise. On this basis, the site should be considered suitable for residential development. For guidance, design recommendations are provided below.

Design Recommendations

4.3 As far as sound insulation is concerned, Approved Document E of the Building Regulations [12] is primarily concerned with the transmission of sound between dwellings, or from adjoining spaces where there is likely to be noisy activity, rather than from transmission through the building envelope from external noise sources. It is generally accepted that the windows of any dwelling are the weakest point of the building fabric with regards to sound transmission, especially when the resident opens windows to provide natural, rapid ventilation.

4.4 Table 10 of BS 8233 contains values for the difference between internal and external free-field dB(A) levels for a façade with single gazing and thermal double-glazed units. The attenuation of a double glazed window is 33 - 35 dB(A). This reduces to 10 – 15 dB(A) for an open window.

4.5 Table 4.1 summarises the predicted internal noise levels based on the free-field daytime and night-time noise levels, for rooms with façades opposite Erskine Road.

Table 4.1 : Calculated Internal Noise Levels with Windows Closed and Partially Open for Facades Opposite Erskine Road

	Façades opposite Erskine Road		
	Daytime Noise Levels (07:00 – 23:00 hours)	**Night time Noise Levels (23:00 – 07:00 hours)**	
	$L_{Aeq,T}$ dB	**$L_{Aeq,T}$ dB**	**L_{AFmax} dB**
Façade Level	58	49	82
Free-field Level	55	46	79
Insulation of façade with Thermal Double Glazing [1]	33 - 35	33 - 35	33 - 35
Calculated Internal Level with Thermal Double Glazing (Window Closed)	23 - 25	11 - 13	44 - 46

	Façades opposite Erskine Road		
	Daytime Noise Levels (07:00 – 23:00 hours)	**Night time Noise Levels (23:00 – 07:00 hours)**	
	$L_{Aeq,T}$ dB	**$L_{Aeq,T}$ dB**	**L_{AFmax} dB**
BS 8233:1999 Rating (Residential)	Good	Good	Reasonable
Insulation provided by window partially open	10 – 15	10 - 15	10 – 15
Calculated Internal Level with Partially Open Windows	40 - 45	31 - 36	64 - 71
BS 8233:1999 Rating (Residential)	Above Reasonable Design Rating	Reasonable	Above Reasonable Design Rating

*1 Obtained from BS 8233 Table 10

4.6 As good to reasonable environments can be achieved with standard thermal double glazing, it is recommended that, for habitable residential rooms, ventilation be provided that does not compromise the attenuation of the facade. Furthermore, this will be in compliance with the requirements of the Building Regulations.

4.7 The use of trickle ventilators should provide adequate sound insulation on residential facades that have sight of Erskine Road. The exact acoustic specification will be established once room volumes and window areas are finalised.

4.8 Ventilation units will need to comply with the Building Regulations 2010: Approved Document F [13]. It should be noted that the provision of a ventilation unit should not prohibit the windows from being opened at the residents' discretion.

Suitability for Office Use

4.9 The measurements carried out at LT2 are considered to be representative of the offices within the development. As CBC has no specific criteria for the assessment of noise within offices, the assessment has been carried out only with reference to BS 8233 and BCO guidance.

4.10 Table 4.2 summarises the predicted internal noise levels based on the free-field daytime and night-time noise levels, for offices.

Table 4.2 : Calculated Internal Noise Levels with Windows Closed and Partially Open for Office areas

	Daytime Noise Levels (07:00 – 19:00 hrs)
	$L_{Aeq,T}$ dB
Free-field Level	52
Insulation of façade with Single Glazing (4 mm) [*1]	22 - 30
Calculated Internal Level with Single Glazing (Window Closed)	22 - 30
Within BCO and BS 8233:1999 Guidance (Offices)	Yes (BS 8233 Good)
Insulation provided by window partially open	10 – 15
Calculated Internal Level with Window Partially Open	37 – 42
Within BCO and BS 8233:1999 Guidance (Offices)	Yes (BS 8233 Reasonable, Ref BCO note 8.2.1)

[*1] Obtained from BS 8233 Table 10

4.11 With standard single glazed windows (4 mm)[2], internal noise levels within offices will be within the 'Good' design range of BS 8233 and below the requirements for maximum internal noise levels from the BCO Guidance for all office uses.

4.12 With open windows, the internal levels meet the BS 8233 'Reasonable' design range for offices. With reference to the note in Section 8.2.1 of the BCO Guidance described in paragraph 2.13 of this report, the internal levels meet the BCO design levels for all office uses with windows open.

4.13 On the basis of the above it is considered that there are no specific noise constraints for the site for use as offices.

Outdoor Amenity Areas

4.14 The proposal includes a residential garden area between the residential block and the office area to the north-west. It is expected that this area will be screened from the main sources of noise by

[2] This assumes a worst-case situation with respect to noise. (i.e. if a higher specification double glazed unit is used, this will also be sufficient).

the surrounding buildings on site and therefore will meet the recommended external noise limit of 50 dB $L_{Aeq,T}$ provided in BS 8233 for external living areas.

Noise Transfer between Uses

4.15 Noise from the offices should not cause an adverse noise impact upon the proposed residential dwellings. The design layouts indicate that the proposed residential block is within a separate building to the office blocks. Therefore it is unlikely that there will be any noise transfer between uses.

Assessment of Noise from Fixed Plant Installations

4.16 The site plans (reference AutoCAD drawing nos. 835-010-01, 835-010-02) indicate that there will be condenser plant located on first floor level on the south-east façade of office area B2.3 and at second floor level on the south-west façade of office area B2.8.

4.17 At present there is no information available as to the specification of any external plant to be provided with the development and, as such, the assessment provided in Table 4.3 below is based on the background noise levels measured at LT2, and the local planning requirements in respect of plant noise provided in Section 2 of this report. These have been used to provide design levels for all plant at the closest facades of noise sensitive properties, including those which form part of the development itself.

Table 4.3: BS 4142 Assessment

Period	Daytime (07:00 – 23:00)	Night-time (23:00 – 07:00)
Background noise level L_{A90} dB	45	39
Design Specific Noise level no tonal component $L_{Aeq,T}$ dB	40	34
Design Specific Noise level with tonal component $L_{Aeq,T}$ dB	35	29

5 Summary and Conclusions

5.1 The proposed development site is located on the north east side of Erskine Road, west of the A502, east to the B525 and south of the B509. The railway line from Camden Road station to South Hampstead station runs approximately 50 m to the north of the site. The development currently comprises five office buildings. The proposals include the refurbishment of existing offices and the re-development of the site currently occupied by Leeder House as a four-storey residential block comprising 4 units.

5.2 Baseline noise levels for the site have been determined from a noise survey undertaken by RPS in November 2008. An appraisal of the environment indicates that noise levels experienced on site are unlikely to have changed since the time of the baseline survey.

5.3 The suitability of the site for residential development has been assessed using BS 8233 and DP28 of CBC's LDF. The noise levels experienced on the site are below the levels at which mitigation for noise would be required according to DP28. Further recommendations have been provided to achieve reasonable internal environments within residential habitable rooms with respect to BS 8233. On this basis the site is considered suitable for residential development.

5.4 The suitability of the site for office development has been assessed using BS 8233 and BCO Guidance. It is concluded that there are no specific constraints on the suitability of the site for office use.

5.5 BS 4142 has been used to determine a specification for noise for any external plant associated with the offices. These have been determined for both the daytime and night-time periods.

5.6 In summary, it is concluded that recommended internal noise levels can be achieved within the proposed development and external plant can be designed so as to minimise the likelihood of complaints from nearby residents. On this basis, noise should not be a material factor in the granting of planning permission for the proposed development.

References

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11 London Borough of Camden. Camden's Local Development Framework. Development Policies. 2010.

12 The Building Regulations 2010. Approved Document E: Resistance to the Passage of Sound. Office of the Deputy Prime Minster. 2010.

13 The Building Regulations 2010. Approved Document F: Ventilation. Office of the Deputy Prime Minster. 2010.

Figures

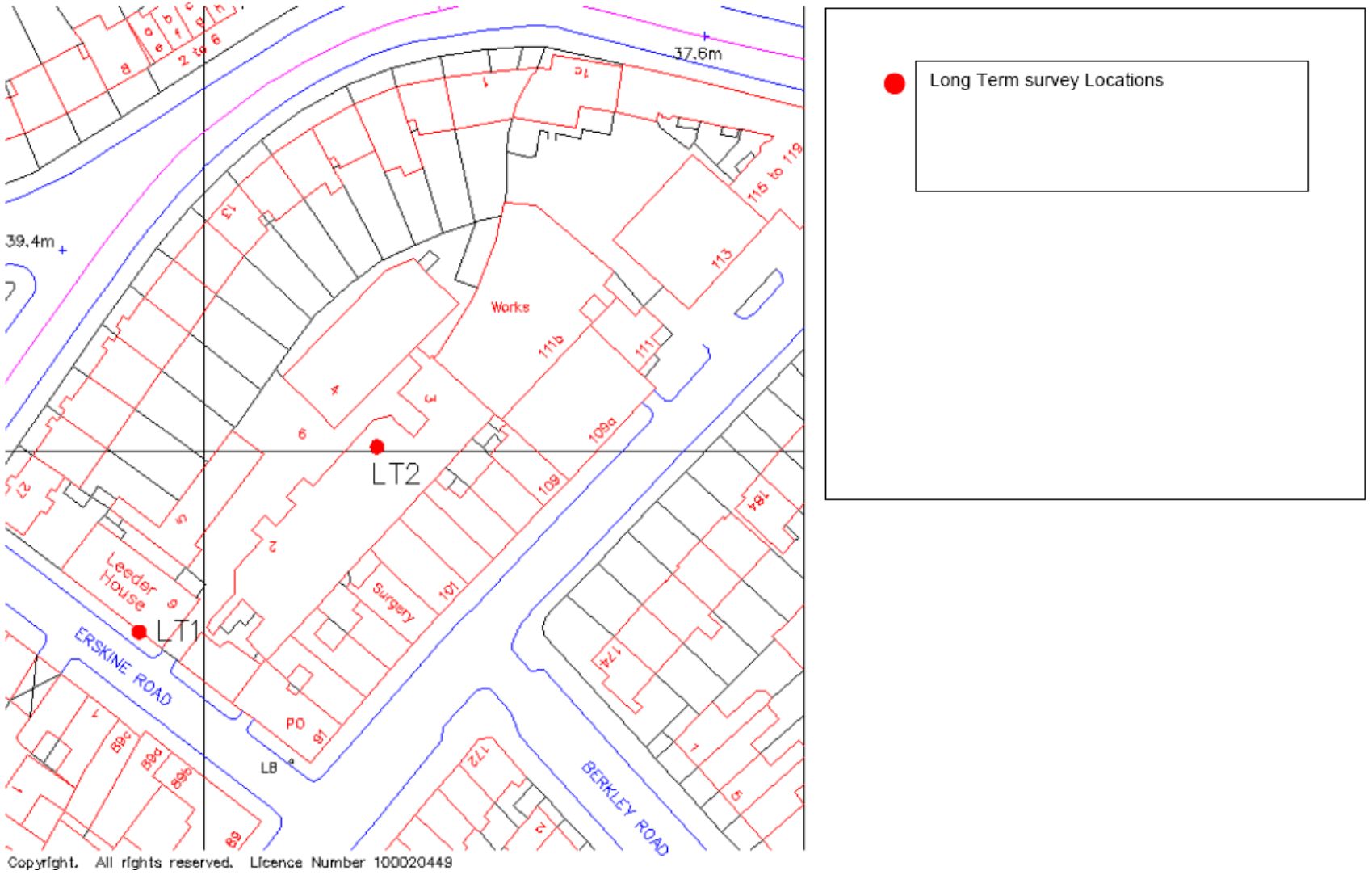

Figure 1: Site and Survey Locations

Appendices

Appendix A: Baseline Survey Data

Location 1 (LT1)

Date / Time	Noise Survey Metric (dB)			
	L_{Aeq}	L_{Amax}	L_{A10}	L_{A90}
12/11/2008 16:00	58.0	83.9	60.2	50.5
12/11/2008 17:00	56.9	78.4	59.9	50.1
12/11/2008 18:00	56.7	81.4	59.1	49.4
12/11/2008 19:00	55.3	71.7	58.3	49.5
12/11/2008 20:00	57.1	80.0	58.3	48.8
12/11/2008 21:00	54.5	77.4	56.7	48.1
12/11/2008 22:00	53.2	72.1	55.4	46.0
12/11/2008 23:00	51.9	79.9	53.5	42.2
13/11/2008 00:00	47.2	72.9	47.2	39.0
13/11/2008 01:00	44.3	67.6	44.1	36.8
13/11/2008 02:00	45.6	74.0	44.1	38.3
13/11/2008 03:00	42.4	66.7	42.8	38.0
13/11/2008 04:00	43.9	68.5	43.7	37.6
13/11/2008 05:00	45.4	67.9	46.7	40.8
13/11/2008 06:00	51.0	73.4	53.7	43.8
13/11/2008 07:00	56.4	78.3	57.8	45.9
13/11/2008 08:00	59.4	83.5	61.0	49.3
13/11/2008 09:00	64.8	89.6	64.8	50.5
13/11/2008 10:00	58.2	77.4	61.2	50.6
13/11/2008 11:00	59.1	86.1	60.3	51.2
13/11/2008 12:00	57.6	76.5	60.4	52.0
13/11/2008 13:00	61.0	85.6	63.0	51.3
13/11/2008 14:00	58.6	84.9	61.3	52.3
13/11/2008 15:00	58.6	78.9	61.2	51.5
13/11/2008 16:00	59.7	80.4	61.3	51.6
13/11/2008 17:00	58.3	90.6	58.9	50.6
13/11/2008 18:00	57.4	78.5	59.5	51.0
13/11/2008 19:00	56.3	74.7	58.9	50.5
13/11/2008 20:00	54.7	77.6	57.0	49.9
13/11/2008 21:00	53.7	74.4	55.5	49.4
13/11/2008 22:00	53.2	73.1	55.4	48.8
13/11/2008 23:00	53.5	75.4	54.8	45.3
14/11/2008 00:00	50.9	75.1	50.6	41.5
14/11/2008 01:00	46.1	73.3	47.7	37.5
14/11/2008 02:00	44.1	69.3	44.1	37.7
14/11/2008 03:00	45.9	72.4	45.3	38.3
14/11/2008 04:00	49.7	81.8	45.0	38.3
14/11/2008 05:00	49.7	74.8	48.6	40.8
14/11/2008 06:00	52.9	75.1	55.2	42.9
14/11/2008 07:00	57.9	87.2	57.0	45.7
14/11/2008 08:00	62.2	90.8	63.1	48.6
14/11/2008 09:00	58.8	82.3	61.0	49.3
14/11/2008 10:00	57.7	77.3	60.4	50.8

Location 2 (LT2)

Date	Noise Survey Metric (dB)			
	L_{Aeq}	L_{Amax}	L_{A10}	L_{A90}
12/11/2008 15:00	49.7	71.1	52.4	43.5
12/11/2008 16:00	49.9	70.4	52.3	43.8
12/11/2008 17:00	54.6	84.5	56.1	43.7
12/11/2008 18:00	50.3	75.0	52.8	44.0
12/11/2008 19:00	48.4	75.7	50.5	43.4
12/11/2008 20:00	55.5	79.7	53.7	42.2
12/11/2008 21:00	50.1	73.2	50.9	42.1
12/11/2008 22:00	48.6	71.0	47.8	42.0
12/11/2008 23:00	46.2	71.5	46.8	40.5
13/11/2008 00:00	41.2	55.1	43.6	38.0
13/11/2008 01:00	39.1	48.5	41.8	36.5
13/11/2008 02:00	40.5	65.9	41.9	36.5
13/11/2008 03:00	37.8	49.4	39.3	35.9
13/11/2008 04:00	40.3	58.3	41.5	36.6
13/11/2008 05:00	43.2	59.9	45.1	39.8
13/11/2008 06:00	48.9	69.1	50.5	43.4
13/11/2008 07:00	52.8	77.5	51.3	44.9
13/11/2008 08:00	53.4	74.7	52.6	46.8
13/11/2008 09:00	52.6	73.4	54.0	46.9
13/11/2008 10:00	51.8	77.2	52.6	46.5
13/11/2008 11:00	51.1	71.9	53.1	46.7
13/11/2008 12:00	49.9	71.2	51.8	46.6
13/11/2008 13:00	51.0	73.8	52.2	46.8
13/11/2008 14:00	49.7	65.8	51.4	47.5
13/11/2008 15:00	49.3	68.1	50.9	46.7
13/11/2008 16:00	50.5	72.0	50.4	46.0
13/11/2008 17:00	48.7	68.5	50.4	45.3
13/11/2008 18:00	49.8	73.2	51.3	46.4
13/11/2008 19:00	49.4	69.1	51.6	45.8
13/11/2008 20:00	49.2	74.6	50.7	45.6
13/11/2008 21:00	47.2	73.0	48.8	43.4
13/11/2008 22:00	45.0	69.5	46.1	42.8
13/11/2008 23:00	45.0	65.4	46.5	41.7
14/11/2008 00:00	42.5	55.8	44.4	39.9
14/11/2008 01:00	40.5	55.4	42.4	37.8
14/11/2008 02:00	38.9	56.5	40.4	36.3
14/11/2008 03:00	39.4	53.5	42.3	35.9
14/11/2008 04:00	39.8	55.6	42.1	37.4
14/11/2008 05:00	45.3	75.3	46.5	41.7
14/11/2008 06:00	48.3	68.0	50.2	44.3
14/11/2008 07:00	51.0	79.1	51.7	46.3
14/11/2008 08:00	50.7	75.9	52.0	47.0
14/11/2008 09:00	53.8	78.9	52.0	46.2
14/11/2008 10:00	53.3	76.9	52.2	45.7

RPS

Contact

Susan Hirst
RPS Planning & Development
6-7 Lovers Walk
Brighton
East Sussex
BN1 6AH

T: +44 (0) 1273 546 800
E: susan.hirst@rpsgroup.com

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