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NOISE CONSTRAINTS ASSESSMENT
12 PLATTS LANE, LONDON

REC REFERENCE: AC102181R2

REPORT PREPARED FOR: ORLY WEINBERGER

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EXECUTIVE SUMMARY

Resource and Environmental Consultants Ltd has been commissioned by Hoze Investment to undertake a baseline noise survey prior to the commencement of building works at 12 Platts Lane, London NW3 7NR.

Noise Survey

An ambient noise survey has been completed at the rear of the property, considered representative of the ambient noise environment to which other nearby residential receptors are exposed. Noise levels are presented.

Such noise levels are suitable for use as a baseline in a subsequent noise impact assessment such as using the ABC method of BS 5228-1:2009+A1:2014 and provide a threshold level above which a potentially significant effect is indicated.

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1. INTRODUCTION

Resource and Environmental Consultants (REC) Limited was commissioned by Orly Weinberger to undertake a Pre-Construction Ambient Noise Survey prior to undertaking building works at 12 Platts Lane, London NW3 7NR, to be referred to hereafter as 'the Site'.

This assessment has been undertaken to meet the requirements of Camden Council.

All acronyms used within this report are defined in the Glossary presented in Appendix II.

1.1 Site Location & Proposed Development

The Site currently comprises a house which has been converted into flats, with a rear garden. The Site lies on a residential street. There are currently substantial building works with associated noise-generating plant approximately 100 metres to the SSW, also on Platts Lane.

The key source of noise impacting upon the Site is plant associated with the above-mentioned building site.

The site location is shown in Figure 1 of Appendix III.

1.2 Limitations

The limitations of this report are presented in Appendix I.

1.3 Confidentiality

REC has prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from REC; a charge may be levied against such approval.

2. ASSESSMENT CRITERIA

2.1 Local National Planning Practice Guidance

Noise needs to be considered when new developments may create additional noise and when new developments would be sensitive to the prevailing acoustic environment. When preparing local or neighbourhood plans, or taking decisions about new development, there may also be opportunities to consider improvements to the acoustic environment.

Local planning authorities' plan-making and decision taking should take account of the acoustic environment and in doing so consider:

- Whether or not a significant adverse effect is occurring or likely to occur;
- Whether or not an adverse effect is occurring or likely to occur; and
- Whether or not a good standard of amenity can be achieved.

In line with the Explanatory Note of the Noise Policy Statement for England, this would include identifying whether the overall effect of the noise exposure (including the impact during the construction phase wherever applicable) is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation.

The Observed Effect Levels are as follows:

- Significant observed adverse effect level: This is the level of noise exposure above which significant adverse effects on health and quality of life occur;
- Lowest observed adverse effect level: this is the level of noise exposure above which adverse effects on health and quality of life can be detected; and
- No observed effect level: this is the level of noise exposure below which no effect at all on health or quality of life can be detected.

Table 2.1 summarises the noise exposure hierarchy, based on the likely average response.

Table 2.1 Noise Exposure Hierarchy

Perception	Examples of Outcomes	Increasing effect level	Action
Not Noticeable	No effect.	No Observed Effect	No specific measures required
Noticeable and not intrusive	Noise can be heard but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			

Perception	Examples of Outcomes	Increasing effect level	Action
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Effect	Avoid
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

The subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any particular situation.

These factors include:

- The source and absolute level of the noise together with the time of day it occurs. Some types and level of noise will cause a greater adverse effect at night than if they occurred during the day – this is because people tend to be more sensitive to noise at night as they are trying to sleep. The adverse effect can also be greater simply because there is less background noise at night;
- For non-continuous sources of noise, the number of noise events, and the frequency and pattern of occurrence of the noise; and
- The spectral content of the noise and the general character of the noise. The local topology and topography should also be taken into account along with the existing and, where appropriate, the planned character of the area.

More specific factors to consider when relevant:

- Where applicable, the cumulative impacts of more than one source should be taken into account along with the extent to which the source of noise is intermittent and of limited duration;

- Consideration should also be given to whether adverse internal effects can be completely removed by closing windows and, in the case of new residential development, if the proposed mitigation relies on windows being kept closed most of the time. In both cases a suitable alternative means of ventilation is likely to be necessary. Further information on ventilation can be found in the Building Regulations; and

- If external amenity spaces are an intrinsic part of the overall design, the acoustic environment of those spaces should be considered so that they can be enjoyed as intended.

2.2 Local Authority Guidance and Criteria – Camden Council

REC understands that noise monitoring is required in order to address point no. 29 given within the received Construction Management Plan. It is considered that the most appropriate way of meeting the requirements of this document and the associated 'Camden's Minimum Requirements for Building/Construction/Demolition Sites' is to follow the ABC method contained in Appendix E.3.2 of BS5228-1:2009+A1:2014.

An enquiry ref 20679211 was sent to Camden Council to establish whether this methodology was appropriate. As of report date no reply had been forthcoming.

2.3 British Standard 5228: Noise and Vibration Control on Construction and Open Sites – Part 1:Noise: 2009 (BS 5228-1)

This British Standard sets out techniques required to predict and assess the likely noise effects from construction works, based on detailed information on the type and number of plant being used, their location, and the length of time they are in operation.

The noise prediction method is used to establish likely noise levels in terms of the $L_{Aeq,T}$ over the core working day.

This British Standard also documents a database of information, comprising previously measured sound power levels for a variety of different construction plant undertaking various common activities.

Example criteria are presented for the assessment of the significance of noise effects. Such criteria maybe concerned with fixed noise limits and/or ambient noise level changes. With respect to fixed noise limits, BS 5228-1 presents the following noise limits which are taken as an average over a 10-hour working day:

- 70.0dB(A) in rural, suburban and urban areas away from main road traffic and industrial noise; and,
- 75.0dB(A) in urban areas near main roads and heavy industrial areas.

The ABC methodology, detailed on p.119 of the standard, gives a methodology for calculating the potential significance effect of construction noise based upon the measured change in level and a baseline ambient level. Based upon the ambient noise level, a threshold value for construction noise is derived. If the construction noise level exceeds the appropriate 'category value', a potentially significant effect is indicated. The assessor then needs to consider other project-specific factors, such as the number of receptors affected and the duration and character of the impact, to determine if there is a significant effect.

3. NOISE SURVEY

3.1 Noise Survey – Ambient pre-construction level

REC has conducted a Noise Survey in order to measure the level of noise present and to which nearby residential receptors are currently exposed, prior to the commencement of building works at the site. The survey was carried out over the following time period:

- Wednesday 27th July 2016 from 12:30 until 13:30.

The following location was chosen for the survey:

- Noise Monitoring Position 1 (NMP1): Located at the back of the rear garden of no. 12 Platts Lane. The microphone was located at a height of 1.5m in free-field conditions. Noise sources audible at this location were noted to be dominated by distant road traffic noise and construction activities on the large site approximately 100 metres to the SSW. Weather Conditions during the Noise Surveys were conducive towards the measurement of environmental noise being overcast and dry with wind speeds below 5.0m/s.

The chosen period constitutes a worst-case assessment as at this time road traffic was not subject to peak or rush-hour flows, and construction on nearby sites was likely to be reduced due to lunch breaks.

A summary of the measured sound pressure levels is presented in Table 3.1.

Table 3.1 Summary of Measured Noise Levels

Measurement Position	Measurement Period	Measured Sound Pressure Level, free-field (dB)		
		$L_{Aeq,T}$	$L_{AMax,f}$	$L_{A90,T}$
NMP1	Weekday daytime	51.8	76.7	45.8

The Noise Survey was completed using the following noise measurement equipment. Dates are those at the time of the survey:

Table 3.2 Noise Measurement Equipment

Noise Survey	Equipment Description	Manufacturer & Type No.	Serial No.	Calibration Due Date
NMP1	Sound Level Meter	01dB-Metravib Black Solo	65947	10 September 2016
	Pre-amplifier	01dB-Metravib PRE 21 S	16831	
	Microphone	01dB Metravib MCE212	181856	
	Calibrator	01dB-Metravib CAL-21	34744600	05 November 2016

The Noise Measurement Position is shown on Figure 1.

Based upon the ABC methodology of BS5228-1:2009+A1:2014, the noise levels tabulated below are derived.

Table 3.3 BS5228-1:2009+A1:2014 ABC method noise levels

Item	Sound Pressure Level, dB(A)
(1) Measured noise level	51.8
(2) Item (1) rounded to 5 dB	50
(3) Daytime threshold value	65
(4) Construction site noise level at which potentially significant is indicated	65

The above level is applicable during daytime periods (07:00 to 19:00) and Saturdays (07:00 to 13:00). This level is applicable at nearby residential dwellings.

4. CONCLUSION

Resource and Environmental Consultants Ltd was commissioned by Orly Weinberger to undertake a Noise Survey prior to construction works at a site in Platts Lane, London NW3 7NR.

A Noise Survey has been completed in order to provide a baseline for calculating the potential impact of future construction site noise upon the proposed residential development.

Using the ABC methodology of BS5228-1:2009+A1:2014, a construction site noise level at which a potentially significant effect is indicated has been derived. This is applicable at nearby residential dwellings.

APPENDIX I LIMITATIONS

1. This report and its findings should be considered in relation to the terms of reference and objectives agreed between REC Limited and the Client as indicated in Section 1.2.

2. The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.

3. REC cannot be held responsible for any use of the report or its contents for any purpose other than that for which it was prepared. The copyright in this report and other plans and documents prepared by REC is owned by them and no such plans or documents may be reproduced, published or adapted without written consent. Complete copies of this may, however, be made and distributed by the client as is expected in dealing with matters related to its commission. Should the client pass copies of the report to other parties for information, the whole report should be copied, but no professional liability or warranties shall be extended to other parties by REC in this connection without their explicit written agreement there to by REC.

4. Where a noise survey is required to inform the assessment, REC will endeavour to ensure that all noise measurements taken are robust, representative and reliable in order to inform an accurate noise impact assessment. Where limitations or constraints exist which prevent a suitable noise survey being completed, REC will take all reasonable steps to make the client fully aware of any such limitations or constraints with a view to achieving the best possible outcome for the client. Where additional sound surveys are required, over and above those specified in our scope of works, then REC reserves the right to charge additional fees.

5. Where mitigation measures are specified in our report, it should be noted that these measures are relative to a specific sound source, both in terms of the measured sound pressure level and the character of the source. Where either the sound pressure level or the character of the sound varies following completion of the sound survey, REC cannot be held responsible for any subsequent variations in the proposed mitigation performance.

APPENDIX II GLOSSARY OF ACOUSTICAL TERMINOLOGY

Noise

Noise is defined as unwanted sound. Human ears are able to respond to sound in the frequency range 20 Hz (deep bass) to 20,000 Hz (high treble) and over the audible range of 0 dB (the threshold of perception) to 140 dB (the threshold of pain). The ear does not respond equally to different frequencies of the same magnitude, but is more responsive to mid-frequencies than to lower or higher frequencies. To quantify noise in a manner that approximates the response of the human ear, a weighting mechanism is used. This reduces the importance of lower and higher frequencies, in a similar manner to the human ear.

Furthermore, the perception of noise may be determined by a number of other factors, which may not necessarily be acoustic. In general, the impact of noise depends upon its level, the margin by which it exceeds the background level, its character and its variation over a given period of time. In some cases, the time of day and other acoustic features such as tonality or impulsiveness may be important, as may the disposition of the affected individual. Any assessment of noise should give due consideration to all of these factors when assessing the significance of a noise source.

The most widely used weighting mechanism that best corresponds to the response of the human ear is the 'A'-weighting scale. This is widely used for environmental noise measurement, and the levels are denoted as dB(A) or L_{Aeq}, L_{A90} etc., according to the parameter being measured.

The decibel scale is logarithmic rather than linear, and hence a 3 dB increase in sound level represents a doubling of the sound energy present. Judgement of sound is subjective, but as a general guide a 10 dB(A) increase can be taken to represent a doubling of loudness, whilst an increase in the order of 3 dB(A) is generally regarded as the minimum difference needed to perceive a change under normal listening conditions.

An indication of the range of sound levels commonly found in the environment is given in the following table.

Table A1 Typical Sound Pressure Levels

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

Table A2 Terminology

Descriptor	Explanation
dB (decibel)	The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (2x10-5Pa).
dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. 'A' weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
$L_{Aeq, T}$	L_{Aeq} is defined as the notional steady sound level which, over a stated period of time (T), would contain the same amount of acoustical energy as the A - weighted fluctuating sound measured over that period.
L_{Amax}	L_{Amax} is the maximum A - weighted sound pressure level recorded over the period stated. L_{Amax} is sometimes used in assessing environmental noise where occasional loud noises occur, 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_{10} & L_{90}	If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The Ln indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L_{10} is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, L_{90} is the 'average minimum level' and is often used to describe the background noise. It is common practice to use the L_{10} index to describe traffic noise.
Free-field Level	A sound field determined at a point away from reflective surfaces other than the ground with no significant contributions due to sound from other reflective surfaces. Generally as measured outside and away from buildings.
Fast	A time weighting used in the root mean square section of a sound level meter with a 125millisecond time constant.
Slow	A time weighting used in the root mean square section of a sound level meter with a 1000millisecond time constant.

APPENDIX III FIGURES

FIGURE 1 – SITE LOCATION AND NOISE MEASUREMENT POSITION