SYNTEGRA CONSULTING

Preliminary Planning Compliance Review

Report 12077.PPCR.01

137 Euston Road, London NW1 2AA

January 2015

Ref: 14-942

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1.0 INTRODUCTION

Syntegra Consulting, Syntegra House, 63 Milford Road, Reading, RG1 8LG has been commissioned by Maciej Weyberg (M.R Partnership Limited) to undertake an environmental noise survey at 137 Euston Road, London, NW1 2AA.

The background noise levels measured will be used to determine daytime and night-time noise emission criteria for a proposed installation of plant units, in agreement with the planning requirements of the Council of the London borough of Camden.

This report presents the overall methodology and results from the environmental survey followed by calculations to demonstrate the feasibility of the plant installation to satisfy the emissions criterion at the closest noise-sensitive receiver and outline mitigation measures as appropriate.

2.0 ENVIRONMENTAL NOISE SURVEY AND EQUIPMENT

2.1 Procedure

Automated noise monitoring was undertaken at the position shown in Site Plan 12077.SP1. The choice of this position was based both on accessibility and on collecting representative noise data in relation to the nearest noise sensitive receiver relative to the proposed plant installation. Continuous automated monitoring was undertaken for the duration of the survey between 10:45 on 14 January 2015 and 14:30 on 16 January 2014.

Initial inspection of the site revealed that the background noise profile at the monitoring location was wholly dominated by traffic noise from adjacent roads. The weather during the course of the survey was generally dry with wind speeds within acceptable tolerances, and therefore suitable for the measurement of environmental noise. Due to the rainy weather during the night between 14-15 January 2015, noise levels during this period have not been considered for the purpose of the assessment. Noise levels measured during the night between 15-16 January 2015 have been analysed instead. The measurement procedure complied with BS7445:1991 "*Description and measurement of environmental noise, Part 2- Acquisition of data pertinent to land use*".

2.2 Equipment

The equipment calibration was verified before and after use and no abnormalities were observed.

The equipment used was as follows.

- 1 no. Svantek Tupe 958 Class 1 Sound Level Meter
- B&K Type 4231 Class 1 Calibrator

3.0 RESULTS

The results from the continuous noise monitoring are shown as a time history of L_{Aeq}, L_{Amax}, LA10 and LA90 averaged over 5 minute sample periods in Figure 12077.TH2. Minimum background noise levels are shown in Table 3.1.

	Minimum background noise level $L_{A90,\ 5min}$ dB(A)
Daytime (7:00-23:00)	51
Night time (23:00-7:00	48

Table 3.1: Minimum measured background noise level

The criterion of the Council of the Borough of Camden for noise emissions of new plant in this instance is as follows: *"The proposed plant and machinery shall be operated so as to ensure that any noise generated is "not audible" outside the nearest residential premises. To demonstrate inaudibility, you will need to provide calculations that show that the plant noise level is 10dBA below the lowest background level (LA90 (15minutes)) 1m from the nearest residential window, over the proposed operating hours. Tonality must also be taken into consideration."*
As the proposed condenser units can operate at any time, we would therefore propose to set the noise criterion as shown in Table 3.2 in order to comply with the above requirement.

	Any time (00:00 – 24:00
Noise criterion at nearest residential receiver	38 dB(A)

Table 3.2: Proposed Noise Emissions Criteria

4.0 DISCUSSION

Based on the measured minimum background noise levels in the area, the maximum overall noise level as a result of the proposed plant units is 38dB(A) at 1m of the nearest noise sensitive receiver. It is usually possible to achieve these levels, however the addition of some mitigation measures, such as silencers or barriers, may be necessary.
Currently, the exact details of the proposed extraction system and condenser units are unknown.
Once all M&E proposals have been finalised, this report will be refined to include calculations which demonstrate compliance to the criterion set in Table 3.2.

5.0 CONCLUSION

An environmental noise impact survey and noise breakout assessment has been undertaken 137 Euston Road, London, by Syntegra Consulting Ltd between 14 & 16 January 2015. The results of the survey have enabled criteria to be set for noise emissions from proposed plant units.
A maximum noise emissions criterion for the proposed extraction unit installation has been set based on the requirements of the Council of the Borough of Camden for new plant unit installations. Further calculations would need to be undertaken once all M&E proposals are finalised in order to demonstrate compliance.

APPENDIX A

Glossary of Acoustic Terminology

GENERAL ACOUSTIC TERMINOLOGY

Decibel scale - dB

In practice, when sound intensity or sound pressure is measured, a logarithmic scale is used in which the unit is the 'decibel', dB. This is derived from the human auditory system, where the dynamic range of human hearing is so large, in the order of 1013 units, that only a logarithmic scale is the sensible solution for displaying such a range.

Decibel scale, 'A' weighted - dB(A)

The human ear is less sensitive at frequency extremes, below 125Hz and above 16Khz. A sound level meter models the ears variable sensitivity to sound at different frequencies. This is achieved by building a filter into the Sound Level Meter with a similar frequency response to that of the ear, an A-weighted filter where the unit is dB(A).

L_{eq}

The sound from noise sources often fluctuates widely during a given period of time. An average value can be measured, the equivalent sound pressure level Leq. The Leq is the equivalent sound level which would deliver the same sound energy as the actual fluctuating sound measured in the same time period.

L_{10}

This is the level exceeded for no more than 10% of the time. This parameter is often used as a "not to exceed" criterion for noise.

L_{90}

This is the level exceeded for no more than 90% of the time. This parameter is often used as a descriptor of "background noise" for environmental impact studies.

L_{max}

This is the maximum sound pressure level that has been measured over a period.

Octave Bands

In order to completely determine the composition of a sound it is necessary to determine the sound level at each frequency individually. Usually, values are stated in octave bands. The audible frequency region is divided into 11 such octave bands whose centre frequencies are defined in accordance with international standards. These centre frequencies are: 16, 31.5, 63, 125, 250, 500, 1000, 2000, 4000, 8000 and 16000 Hertz. Environmental noise terms are defined in BS7445, *Description and Measurement of Environmental Noise*.

APPENDIX A

APPLIED ACOUSTIC TERMINOLOGY

Addition of noise from several sources

Noise from different sound sources combines to produce a sound level higher than that from any individual source. Two equally intense sound sources operating together produce a sound level which is 3dB higher than a single source and 4 sources produce a 6dB higher sound level.

Attenuation by distance

Sound which propagates from a point source in free air attenuates by 6dB for each doubling of distance from the noise source. Sound energy from line sources (e.g. stream of cars) drops off by 3dB for each doubling of distance.

Subjective impression of noise

Hearing perception is highly individualised. Sensitivity to noise also depends on frequency content, time of occurrence, duration of sound and psychological factors such as emotion and expectations.
The following table is a guide to explain increases or decreases in sound levels for many scenarios.

Change in sound level (dB)	Change in perceived loudness
1	Imperceptible
3	Just barely perceptible
6	Clearly noticeable
10	About twice as loud

Transmission path(s)

The transmission path is the path the sound takes from the source to the receiver. Where multiple paths exist in parallel, the reduction in each path should be calculated and summed at the receiving point. Outdoor barriers can block transmission paths, for example traffic noise. The effectiveness of barriers is dependent on factors such as its distance from the noise source and the receiver, its height and construction.

Ground-borne vibration

In addition to airborne noise levels caused by transportation, construction, and industrial sources there is also the generation of ground-borne vibration to consider. This can lead to structure-borne noise, perceptible vibration, or in rare cases, building damage.

Sound insulation - Absorption within porous materials

Upon encountering a porous material, sound energy is absorbed. Porous materials which are intended to absorb sound are known as absorbents, and usually absorb 50 to 90% of the energy and are frequency dependent. Some are designed to absorb low frequencies, some for high frequencies and more exotic designs being able to absorb very wide ranges of frequencies. The energy is converted into both mechanical movement and heat within the material; both the stiffness and mass of panels affect the sound insulation performance.