…sustainable building services solutions

project house

environmental noise survey report

ace

consultancy engineering business environment

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1.0 INTRODUCTION & SURVEY DETAILS

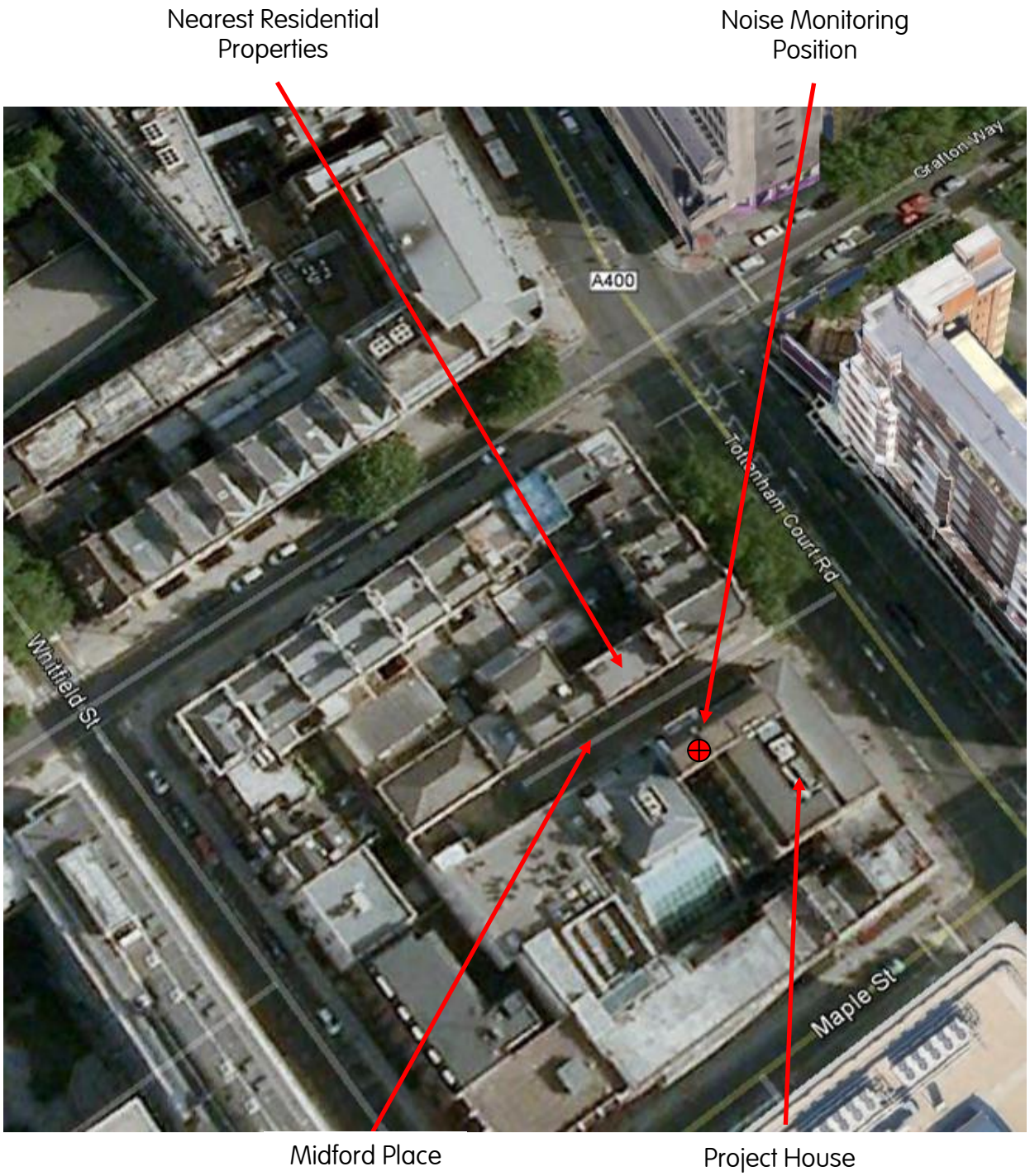
The existing development at Project House comprises a five storey building with retail accommodation on the lower ground and ground floors, and offices on the first floor and above. As part of the redevelopment works new items of air conditioning plant are to be installed externally at roof level, within a partially enclosed plant area.

The site is situated on the west side of Tottenham Court Road, between the junction with Midford Place and Maple Street, and amidst an area comprising mixed retail, residential and commercial premises. From the observations made on site, the nearest noise affected properties appear to be the residential house/apartments immediately to the north of the site in Midford Place.

mTT have been commissioned to undertake an environmental noise survey at the site. The purpose of the survey is to obtain statistical noise data and to determine the pre-existing background noise levels at the site. Based on the noise survey data, noise criteria are to be established for limiting noise emission from the mechanical plant installations serving the premises. The noise criteria are to be set in accordance with the requirements of the local planning authority (London Borough of Camden).

LOCATION

The environmental noise analyser microphone was located externally on the 5th floor roof, to west side of the building, and as far away as possible from existing mechanical plant. This position was chosen as it was considered to be representative of the background noise environment which exists at the nearest noise affected properties immediately to the north of the site, as described above. Please refer to the attached site plan in figure 2 of this report for details.


Nearest Residential Properties
Noise Monitoring Position
A400
Grafton Way
Tottenham Court Rd
Whitfield St
Maple St
Midford Place
Project House

PERIOD

Monitoring was carried out continuously from approximately 13:00 hrs on the 14th February 2014 through to 05:00 hrs on the 19th February 2014. The instrument was set up to monitor noise levels continuously and store data in fifteen minute intervals.

WEATHER

The prevailing weather condition throughout the majority of the survey period was satisfactory for noise monitoring, being cold with little precipitation and with a moderate breeze. Windspeed, although not recorded, was considered to be less than 5 m/s throughout the survey period.

SITE NOISE CHARACTERISTICS

Although the survey was un-manned, it is assumed that the ambient noise level was characterised by road traffic noise and to a lesser extent from mechanical plant serving adjacent neighbouring properties. It is thought that no unusual events occurred during the survey period and the data are considered to be a true representation of ambient noise levels.

2.0 INSTRUMENTATION

A precision grade Norsonic 140 'Type 1' Integrating Sound Level Meter was used for the survey. This was equipped with an environmental microphone and extension cable. The instrument was powered by an external battery and stored in a weatherproof case.

The instrument was calibrated prior and subsequent to use with no calibration drift recorded.

3.0 SITE OBJECTIVES

To establish, by means of detailed environmental noise monitoring over a period of at least 24 hours, the existing A-weighted (dBA) $L_{90,}$ and L_{eq} environmental noise levels at the site, thought to be representative of the pre-existing ambient noise levels at the nearest adjacent residential properties.

4.0 SURVEY RESULTS

The results of the environmental survey are presented in a graphical format in the attached appendices, showing the recorded values of L_{Aeq} and L_{A90}.

See Appendix A for a glossary of terms.

With reference to the measured data, the minimum L_{A90} background noise levels measured during the survey period are summarised as follows:

Daytime (07:00 to 23:00hrs) - 50.1 L_{A90}
Night time (23:00 to 07:00hrs) - 48.3 L_{A90}

5.0 ENVIRONMENTAL NOISE LEVEL CRITERIA

Criteria for mechanical services noise emission are normally based upon the prevailing level of background noise in the period of concern and may be set against this to a level as normally defined by the local planning authority.

The London Borough of Camden current noise emission criteria in relation to this site states that;

"Noise levels at a point 1 metre external to sensitive facades shall be at least 5dB(A) less than the existing background measurement (LA90), expressed in dB(A) when all plant/equipment are in operation. Where it is anticipated that any plant/equipment will have 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 facade to at least 10dB(A) below the LA90, expressed in dB(A)"

To conform to the above criteria and in accordance with the minimum background noise levels measured during the survey (detailed in 4.0 above); noise from the proposed plant installations should not exceed the following value.

Daytime plant operation (07:00 to 23:00hrs) - 45.1 L_{Aeq}
24hour plant operation - 43.3 L_{Aeq}

Note: These levels must be achieved cumulatively with all plant operating, and as measured at 1 metre from the window of the nearest affected property.

If the noise from the plant is tonal or runs intermittently the maximum 'A' weighted sound pressure level from the plant and machinery shall be reduced by a further 5dB.

The criteria above may be increased by 5dB(A) for emergency plant such as standby generators.

6.0 CONCLUSION

A background noise level survey has been carried out at Project House, Tottenham Court Road, London.

Based upon the survey results and discussions with the local planning authority, criteria applicable to noise from the mechanical services plant have been established.

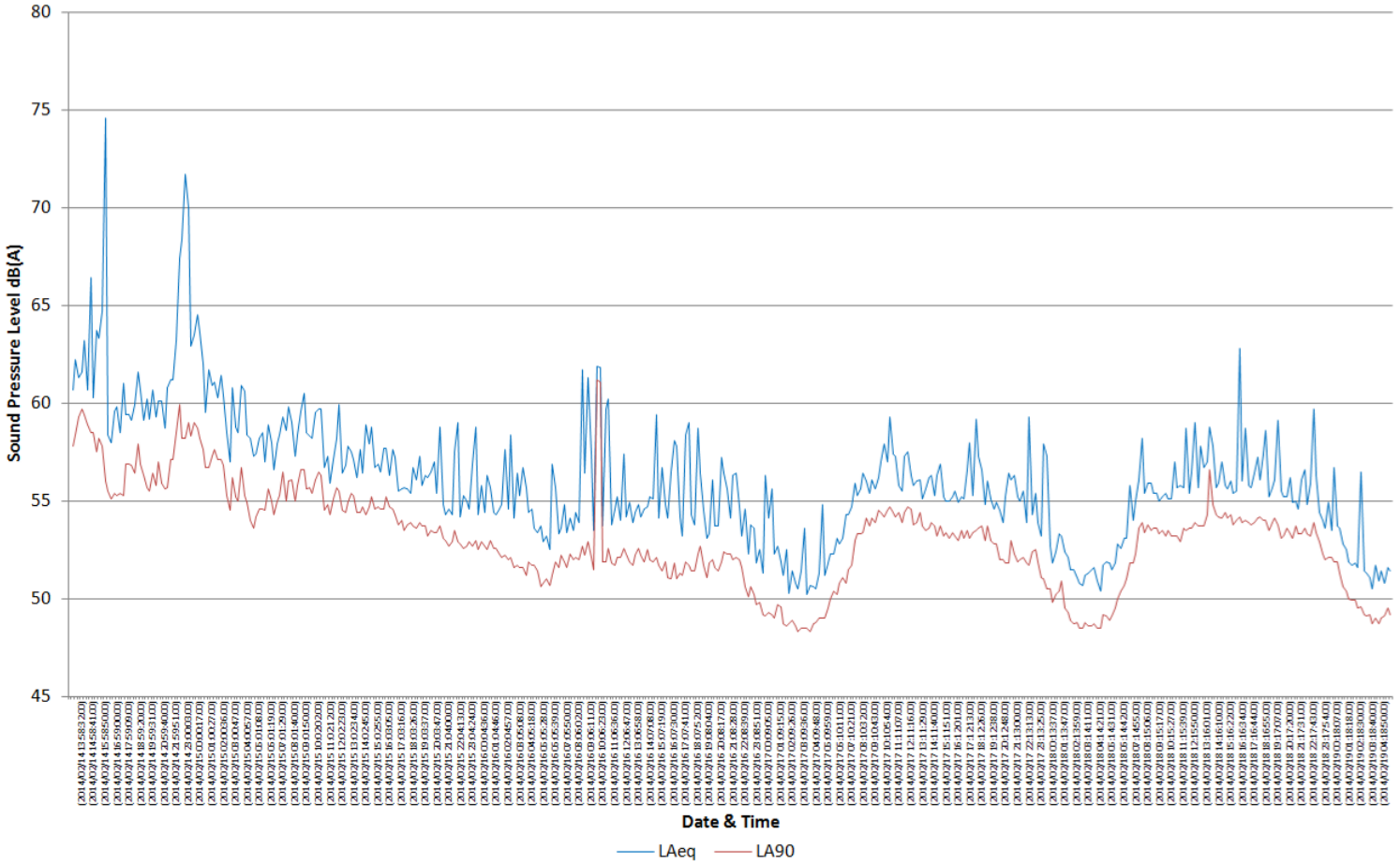
The information reported will enable mechanical plant items to be selected, and any necessary noise control measures to be designed.

APPENDIX A - GLOSSARY OF TERMS

Decibel, dB	A unit of level derived from the logarithm of the ratio between the value of a quantity and a reference value. For sound pressure level (Lp) the reference quantity is $2x10^{-5}$ N/m^2. The sound pressure level existing when microphone measured pressure is $2x10^{-5}$ N/m^2 is 0 dB, the threshold of hearing.
L	Instantaneous value of Sound Pressure Level (Lp).
Frequency	Is related to sound pitch; frequency equals the ratio between velocity of sound and wavelength.
A weighting	Arithmetic corrections applied to values of Lp according to frequency. When logarithmically summed for all frequencies, the resulting single "A weighted value" becomes comparable with other such values from which a comparative loudness judgement can be made, then, without knowledge of frequency content of the source.
$L_{eq,T}$	Equivalent continuous level of sound pressure which, if it actually existed for the integration time period T of the measurement, would possess the same energy as the constantly varying values of Lp actually measured.
$L_{Aeq,T}$	Equivalent continuous level of A weighted sound pressure which, if it actually existed for the integration time period, T, of the measurement would possess the same energy as the constantly varying values of Lp actually measured.
$L_{n,T}$	Lp which was exceeded for n% of time, T.
$L_{An,T}$	Level in dBA which was exceeded for n% of time, T.
$L_{max,T}$	The instantaneous maximum sound pressure level which occurred during time, T.
$L_{Amax,T}$	The instantaneous maximum A weighted sound pressure level which occurred during time, T.
Background Noise Level	The value of $L_{A90,T}$, ref. BS4142:1997.
Traffic Noise Level	The value of $L_{A10,T}$.
Specific Noise Level	The value of $L_{Aeq,T}$ at the assessment position produced by the specific noise source, ref. BS4142:1997.
Rating Level	The specific noise level, corrected to account for any characteristic features of the noise, by adding a 5 dBA penalty for any tonal, impulsive or irregular qualities, ref. BS4142:1997.

Specific Noise Source	The noise source under consideration when assessing the likelihood of complaint.
Assessment Position	Unless otherwise noted, is a point at 1 m from the façade of the nearest affected sensitive property.

APPENDIX B - GRAPHICAL REPRESENTATION OF SURVEY RESULTS



APPENDIX C - NOISE MONITORING POSITION