

70 Elsworthy Road London NW3

ENVIRONMENTAL NOISE SURVEY AND NOISE IMPACT ASSESSMENT REPORT 21163/NIA1

For :

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6 August 2015

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Revision No.	Date	Description
-	03.08.2015	First Issue
1	06.08.2015	First Revision

This report has been prepared by Hann Tucker Associates Limited (HTA) with all reasonable skill, care and diligence in accordance with generally accepted acoustic consultancy principles and the purposes and terms agreed between HTA and our Client. Any information provided by third parties and referred to herein may not have been checked or verified by HTA unless expressly stated otherwise. This document contains confidential and commercially sensitive information and shall not be disclosed to third parties. Any third party relies upon this document at their own risk.

1.0 INTRODUCTION

It is proposed to redevelop the existing site at 70 Elsworthy Road. This redevelopment will involve the demolition of the existing house, creation of a new house and refurbishment of the existing mews building.

Hann Tucker Associates have therefore been commissioned to undertake a detailed, fully automated noise survey of the site and to prepare a report to address concerns regarding the impact of noise generated from the surrounding area. This data will also be used to set plant noise emission criteria which the proposed plant should not exceed based on the requirements of the Local Authority.

This report presents the methodology and findings of our noise survey and assessment in the context of the National Planning Policy Framework (NPPF).

2.0 OBJECTIVES

To establish, by means of fully automated environmental noise monitoring, the existing A-weighted (dBA) L_{90} , L_{eq} and L_{max} environmental noise levels at selected accessible positions

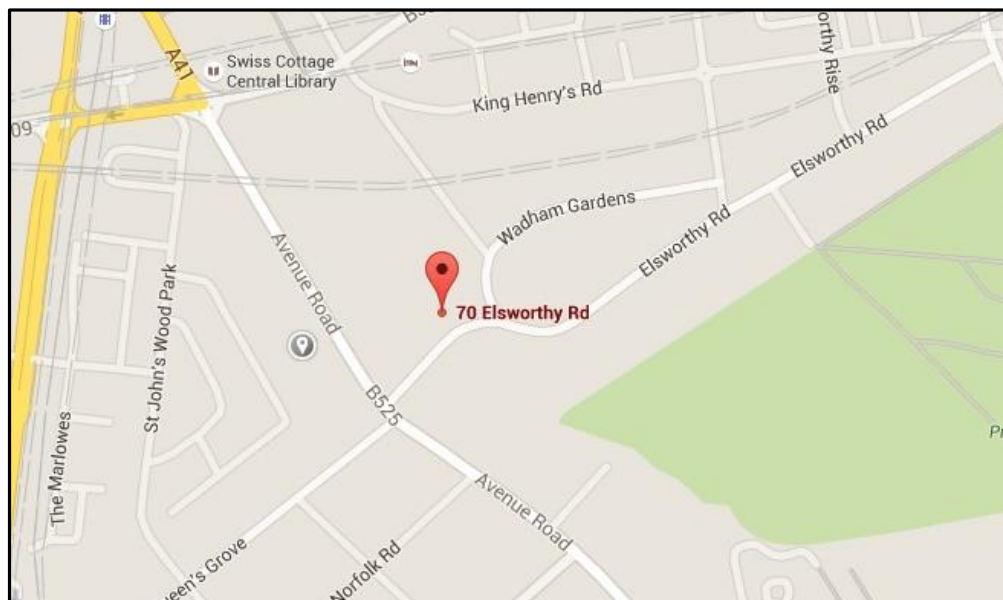
Based upon the results of the noise survey data, and guidance of the NPPF undertake a noise assessment to assess the suitability of the proposed development for residential use.

Based on the results of the noise survey, and with reference to the requirements of the Local Authority, to recommend suitable plant noise emission criteria.

3.0 SITE DESCRIPTION

3.1 Location

The site is located at 70 Elsworthy Road, NW3 3BP and falls within Camden Council's jurisdiction. See Location Map below.



Location Map (maps.google.co.uk)

3.2 Description

The site is bounded by residential properties to the North East, North West and South West of the site boundary and Elsworthy Road to the South East. The main building on site is a ground plus one story building. There is also a gate house on within the grounds.

The main source of noise on site is considered to be traffic on surrounding roads and currently ongoing construction work nearby.



Site Plan (maps.google.co.uk)

4.0 ACOUSTIC TERMINOLOGY

For an explanation of the acoustic terminology used in this report please refer to Appendix A enclosed.

5.0 METHODOLOGY

The survey was undertaken by Lewis Stonehouse BA(Hons)MSc AMIOA.

5.1 Procedure

Fully automated environmental noise monitoring was undertaken from approximately 10:00 hours on Wednesday 29 June 2015 to 10:00 hours on Thursday 30 June 2015.

Due to the nature of the survey, i.e. unmanned, it is not possible to accurately comment on the weather conditions throughout the entire survey period.

However at the beginning and end of the survey period the wind conditions were calm and the sky was generally clear. We understand that generally throughout the survey period the weather conditions were similar to this. These conditions are considered suitable for obtaining representative measurements.

Measurements were taken continuously of the A-weighted (dBA) L_{90} , L_{eq} and L_{max} sound pressure levels over 15 minute periods.

5.2 Measurement Positions

The noise level measurements were undertaken at 2No. positions around the development site. The measurement positions are described in the table and shown in the plan below.

Position No	Description
1	The microphone was attached to a pole on the first floor balcony approximately 1m away from the south eastern façade of the main house facing Elsworthy Road.
2	The microphone was attached to a tree at a height of approximately 1.5m at the north western boundary of the site, approximately 1m from reflecting surfaces.



Plan Showing Unmanned Measurement Positions (maps.google.co.uk)

5.3 Instrumentation

The instrumentation used during the survey is presented in the Table below:

Description	Manufacturer	Type	Serial Number	Calibration
Type 1 Data Logging Sound Level Meter	Larson Davis	824	3541	LD calibration on 16.12.2013
Type 1 Data Logging Sound Level Meter	Larson Davis	824	3839	LD calibration on 05.06.2015

Each sound level meter, including the extension cable, was calibrated prior to and on completion of the survey. No significant changes were found to have occurred (no more than 0.1 dB).

Each sound level meter was located in an environmental case with the microphone connected to the sound level meter via an extension cable. Each microphone was fitted with a microphone windshield.

6.0 RESULTS

The results have been plotted on Time History Graphs 21163/TH1 to 21163/TH2 enclosed presenting the 15 minute A-weighted (dBA) L_{90} , L_{eq} and L_{max} levels at each measurement position throughout the duration of the survey.

6.1 Lowest Measured L_{90} 's

The following table presents the lowest measured L_{A90} background noise levels during the survey:

Lowest measured L_{A90} background noise level (dB re 2.0 x 10 ⁻⁵ Pa)			
Position	Daytime (07:00-23:00)	Night-Time (23:00 – 07:00)	24 Hours
1	41dBA	33dBA	33dBA
2	41dBA	38dBA	38dBA

6.2 L_{eq} Noise Levels

In order to compare the results of our survey with suitable guidelines it is necessary to convert the measured $L_{Aeq(15\text{ minute})}$ noise levels into single figure daytime $L_{Aeq(16\text{-hour})}$ (07:00-23:00 hours) and night-time $L_{Aeq(8\text{-hour})}$ (23:00-07:00 hours) levels.

The daytime $L_{Aeq(16\text{-hour})}$ and night-time $L_{Aeq(8\text{-hour})}$ noise levels for each position are presented in the Tables below.

Position	Daytime $L_{Aeq(16\text{-hour})}$	Night-Time $L_{Aeq(8\text{-hour})}$
1	58dBA	45dBA
2	54dBA	44dBA

7.0 DISCUSSION OF NOISE CLIMATE

Due to the nature of the survey, i.e. unmanned, it is not possible to accurately describe the dominant noise sources, or specific noise events throughout the entire survey period. However at the beginning and end of the survey period the dominant noise sources were noted to be construction noise from a nearby site and road traffic.

8.0 PLANT NOISE EMISSION CRITERIA

The site lies within the jurisdiction of Camden Council.

Camden Council's requirements for new installation of building services plant affecting residential properties are as follows:

"Noise levels at a point 1 metre external to sensitive facades shall be at least 5dBA less than the existing background measurement (L_{A90}), expressed in dBA 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 10dBA below the L_{A90} , expressed in dBA."

We therefore propose the following plant noise emission limits to be achieved at 1m from the façades of the nearest neighbouring buildings:

Plant Noise Emission Criteria (dB re 2×10^{-5} Pa)	
Daytime (07:00 – 23:00 hours)	Night-time (23:00 – 07:00 hours)
31dBA	23dBA

It should be noted that the above plant noise emission limits are subject to approval from Camden Council.

Hann Tucker Associates received XCO2 preliminary Building Services Scheme Design dated July 2015. Whilst an assessment has yet to be carried out it may be possible to meet the above criteria with suitably selected acoustic attenuation measures.

9.0 PLANNING POLICY/GUIDANCE

9.1 National Planning Policy Framework (NPPF)

The following paragraph is from the NPPF:

"123.Planning policies and decisions should aim to:

- avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;
- mitigate and reduce to a minimum other adverse impacts 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; 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.”

9.2 Local Development Plan

There are no criteria in current Building Regulations concerning external noise intrusion. We also understand the Planning Authority have not imposed any noise criteria for external noise intrusion in residential or commercial properties. Therefore, there are no statutory requirements for controlling external noise intrusion on this project. We would be please to advise on the external building fabric of the commercial units at the detailed design stage.

Various reference documents including BS 8233: 2014 edition and WHO Community Noise Guidelines present acoustic criteria for residential premises, as outlined below. These guidelines are entirely discretionary.

9.3 BS8233: 2014

British Standard 8233: 2014 “Guidance on sound insulation and noise reduction for buildings” states that it is desirable that internal ambient noise levels do not exceed the following guideline values:

Activity	Location	Desirable Internal Ambient Criteria	
		07:00 – 23:00	23:00 to 07:00
Resting	Living Rooms	35 dB L _{Aeq,16hour}	-
Dining	Dining Room/Area	40 dB L _{Aeq,16hour}	-
Sleeping (Daytime Resting)	Bedroom	35 dB L _{Aeq,16hour}	30 dB L _{Aeq,8hour}

9.4 Proposed Criteria

On the basis of the above we would propose the following internal noise levels be adopted as minimum design targets in the worst affected dwellings.

Activity	Location	Desirable Internal Ambient Criteria	
		07:00 – 23:00	23:00 to 07:00
Resting	Living Rooms	35 dB L _{Aeq,16hour}	-
Dining	Dining Room/Area	40 dB L _{Aeq,16hour}	-
Sleeping (Daytime Resting)	Bedroom	35 dB L _{Aeq,16hour}	30 dB L _{Aeq,8hour}

10.0 MITIGATION MEASURES

Provision exists to provide additional sound insulation as required. The following noise mitigation measure is proposed:

- The external envelope of the proposed residence will incorporate suitably specified glazing, so as to achieve the proposed criteria summarised above.

At this stage of the design scheme the precise types of window to be used is not known. Nor have selections of acoustic vents been made.

The Local Planning Authority could expect to be provided with details of the sound insulation treatments when available. Therefore in granting consent it could be appropriate for planning conditions to be imposed along the following lines:

“Construction work shall not begin until a scheme for protecting the dwellings against noise from 70 Elsworthy Road has been submitted to and approved by the Local Planning Authority; for each applicable dwelling all works which form part of the scheme for that dwelling shall be completed before the dwelling is occupied.”

11.0 ACHIEVABLE INTERNAL NOISE LEVELS

We have predicted the levels that would be achievable in the worst-case habitable rooms closest to the dominant noise source.

Annex 6 of PPG24 states the following:

The following table indicates “Typical noise reduction of a dwelling façade with windows set in brick/block wall.”

Difference Between External and Internal Noise Levels			
Noise Source	Single Glazing	Thermal Double Glazing	Secondary Glazing
Road Traffic	28dBA	33dBA	34dBA
Civil Aircraft	27dBA	32dBA	35dBA
Military Aircraft	29dBA	35dBA	39dBA
Diesel Train	28dBA	32dBA	35dBA
Electric Train	30dBA	36dBA	41dBA

A simple assessment based on the above indicates the following noise levels may be expected within the proposed worst case dwellings thermal double glazing.

Daytime $L_{Aeq}(16\text{-hour})$	Night-time $L_{Aeq}(8\text{-hour})$
25dBA	<15dBA

These predicted worst case internal noise levels comfortably meet the proposed criteria. It is thus demonstrated that acceptable internal noise levels could be achievable.

12.0 CONCLUSIONS

A detailed environmental noise survey has been undertaken in order to establish the currently prevailing environmental noise climate around the site.

Appropriate internal noise criteria have been proposed. These are achievable using conventional constructions.

The environmental noise impact upon the proposed dwelling has been assessed in the context of the NPPF. Mitigation advice to reduce to a minimum the adverse impact on health and quality life arising from environmental noise have been recommended.

Based upon the results of our survey and subsequent assessment the proposed development is considered. compliant with the local policy of Camden Council.



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Appendix A

The acoustic terms used in this report are explained below:

dB : Decibel - Used as a measurement of sound pressure level. It is the logarithmic ratio of the noise being assessed to a standard reference level.

dBA : The human ear is more susceptible to mid-frequency noise than the high and low frequencies. To take account of this when measuring noise, the 'A' weighting scale is used so that the measured noise corresponds roughly to the overall level of noise that is discerned by the average human. It is also possible to calculate the 'A' weighted noise level by applying certain corrections to an un-weighted spectrum. The measured or calculated 'A' weighted noise level is known as the dBA level.

Because of being a logarithmic scale noise levels in dBA do not have a linear relationship to each other. For similar noises, a change in noise level of 10dBA represents a doubling or halving of subjective loudness. A change of 3dBA is just perceptible.

L₁₀ & L₉₀: If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The L_n indices are used for this purpose, and the term refers to the level exceeded for n% of the time, hence L₁₀ is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, L₉₀ is the average minimum level and is often used to describe the background noise.

It is common practice to use the L₁₀ index to describe traffic noise, as being a high average, it takes into account the increased annoyance that results from the non-steady nature of traffic noise.

L_{eq} : The concept of L_{eq} (equivalent continuous sound level) has up to recently been primarily used in assessing noise in industry but seems now to be finding use in defining many other types of noise, such as aircraft noise, environmental noise and construction noise.

L_{eq} is defined as a notional steady sound level which, over a stated period of time, would contain the same amount of acoustical energy as the actual, fluctuating sound measured over that period (e.g. 1 hour).

The use of digital technology in sound level meters now makes the measurement of L_{eq} very straightforward.

L_{max} : L_{max} is the maximum sound pressure level recorded over the period stated. L_{max} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the L_{eq} noise level.