

Maplefields School Corby

ENVIRONMENTAL NOISE SURVEY REPORT 15406/ENS1

For :

Building Services Design
Brisbane House
Corbygate Business Park
Priors Haw Road
Corby
Northamptonshire
NN17 5JG

2 April 2009

HANN TUCKER ASSOCIATES

Consultants in Acoustics
Noise and Vibration

Head Office

Duke House
1-2 Duke Street
WOKING
Surrey GU21 5BA

Tel : 01483 770595
Fax : 01483 729565

Northern Office

First Floor
346 Deansgate
MANCHESTER
M3 4LY

Tel : 0161 832 7041
Fax : 0161 832 8075

E-mail : Enquiries@HannTucker.co.uk
www.hanntucker.co.uk

REPORT 15406/ENS1

CONTENTS	Page
1.0 INTRODUCTION.....	1
2.0 OBJECTIVES.....	1
3.0 SITE DESCRIPTION.....	1
4.0 ACOUSTIC TERMINOLOGY	1
5.0 METHODOLOGY	2
6.0 RESULTS.....	3
7.0 DISCUSSION OF NOISE CLIMATE.....	3
8.0 PLANT NOISE EMISSION CRITERION.....	3
9.0 INCIDENT TRAFFIC NOISE LEVELS.....	4
10.0 CONCLUSIONS	4

APPENDIX A

1.0 INTRODUCTION

A new educational development comprising a main school building and a sports hall and vocational education building is proposed on vacant land at the end of Tower Hill Road, Corby. The site is situated adjacent to a main road, an existing school and residential properties.

Hann Tucker Associates have been appointed to undertake an environmental noise survey of the site.

This report presents the survey methodology and findings. The survey data may be used as the basis for various acoustic assessment purposes.

2.0 OBJECTIVES

To establish, by means of detailed daytime fully manned environmental noise survey, the existing A-weighted (dBA) L_{10} , L_{90} , L_{eq} and L_{max} environmental noise levels at the site.

To measure L_{A10} , L_{A90} , L_{Aeq} and L_{Amax} octave band spectra noise levels for typical daytime periods at the site in order to obtain a more detailed description of the noise climate.

Based on the results of the noise survey, and in conjunction with the Local Authority, to recommend suitable plant noise emission criterion.

Based on the results of the noise survey data, to specify the typical worst case incident traffic noise levels for each façade of the proposed development. (These incident noise levels may subsequently be used to carry out detailed calculations in order to determine the acoustic performance requirements of the external building fabric).

3.0 SITE DESCRIPTION

The development site is currently vacant land and is surrounded by a field to the North with residential premises beyond, Beanfield School and residential premises to the East, residential premises to the South and Uppingham Road (A6003) to the West.

4.0 ACOUSTIC TERMINOLOGY

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

5.0 METHODOLOGY

5.1 Procedure

Fully manned environmental noise monitoring was undertaken between approximately 08:00 hours and 15:00 hours on 16 March 2009.

During the survey period the wind conditions were calm and the sky was generally patchy cloud. There was no rain during the survey and road surfaces were dry throughout the survey period. These conditions are considered suitable for obtaining representative measurement results.

Measurements were taken continuously of the A-weighted (dBA) L_{10} , L_{90} , L_{eq} and L_{max} sound pressure levels over 15 minute periods.

In addition, at each position typical L_{10} , L_{90} , L_{eq} and L_{max} octave band spectra (from 63Hz to 8kHz) were taken in order to gain a more detailed description of the prevailing noise climate.

5.2 Measurement Positions

The noise level measurements were undertaken at a single at the development site. The position was selected in order to assess typical noise levels incident at the building façade for subsequent use in calculating the acoustic requirements of the external building fabric. In addition, to assess typical noise levels for subsequent use in setting suitable plant noise emission criterion. The measurement position is described below, and the approximate location is indicated on the enclosed Site Plan 15406/SP1.

Position	Description
A	The microphone was positioned at a height of approximately 1.5m above ground level at the approximate location of the West facade of the proposed main school building.

5.3 Instrumentation

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

Description	Manufacturer	Type	Serial Number	Latest Verification
Type 1 Data Logging Sound Level Meter	Larson Davis	824	3157	LD calibration on 14/05/2007
Type 1 ½" Condenser Microphone	Larson Davis	2541	2470596	LD calibration on 14/05/2007
Type 1 Calibrator	Larson Davis	CAL200	3083	LD calibration on 13/10/2008

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

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

6.0 RESULTS

The results have been plotted on Time History Graphs 15406/TH1 to 15406/TH2 enclosed presenting the 15 minute A-weighted (dBA) L_{10} , L_{90} , L_{eq} and L_{max} levels at Position A throughout the duration of the survey.

The lowest measured $L_{90,15min}$ background noise level measured for the survey period is detailed below.

Position	Lowest Measured $L_{90,15min}$ Background Noise Level (dBA)
A	50

7.0 DISCUSSION OF NOISE CLIMATE

Throughout the survey period the dominant noise source was noted to be constant road traffic from the adjacent Uppingham Road (A6003). Occasional road traffic from local roads and children playing outside the existing school during breaks also contributed towards the noise climate.

8.0 PLANT NOISE EMISSION CRITERION

The site falls within the jurisdiction of Corby Borough Council. We understand the council do not have any generic requirements for controlling plant noise emissions, but rather just each case individually.

Hann Tucker Associates would normally advise that the cumulative L_{eq} noise level from all plant should be designed to a level of 5dB below the existing lowest L_{90} background noise level, during the period in which the plant is operational, in order to have reasonable confidence that complaints are unlikely.

Based on the above and the minimum $L_{90 (15min)}$ noise level measured during our environmental noise survey, we propose the following future plant noise emission criterion to be achieved (with all plant operating simulations under normal conditions) at 1 metre from the nearest noise sensitive facades.

Position	Daytime Plant Noise Emission Criterion (dBA)
A	45

We would suggest that plant which contains noise of a tonal or irregular quality be subject to a 5dB penalty in accordance with BS 4142: 1997.

It should be noted that the above criterion is subject to final approval by Corby Borough Council.

9.0 INCIDENT TRAFFIC NOISE LEVELS

The following table presents the typical worst case incident traffic noise levels for each façade (with suitable corrections made for distance and screening losses). The data may be used in subsequent analysis to establish sound performance specifications for each of the external building fabric elements.

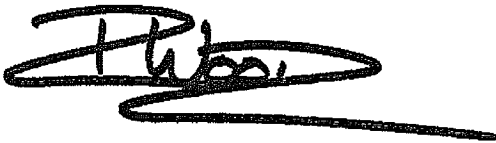
Façade	L _{eq,30min} Sound Pressure Level (dB) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
North / South / West	65	57	47	52	55	48	37	28	57
East	56	48	38	43	46	39	28	19	48

10.0 CONCLUSIONS

A detailed daytime fully manned environmental noise survey has been undertaken in order to establish the currently prevailing environmental noise climate at the site.

Suitable plant noise emission criterion has been recommended based on the results of the noise survey and in conjunction with the Local Authority.

Typical worst case incident traffic noise levels for each façade of the proposed development have been specified based on the results on the noise survey data.



Robin Wood
HANN TUCKER ASSOCIATES

Appendix A

The acoustic terms used in this report are as follows:

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.

dB(A) : 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 dB(A) level.

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

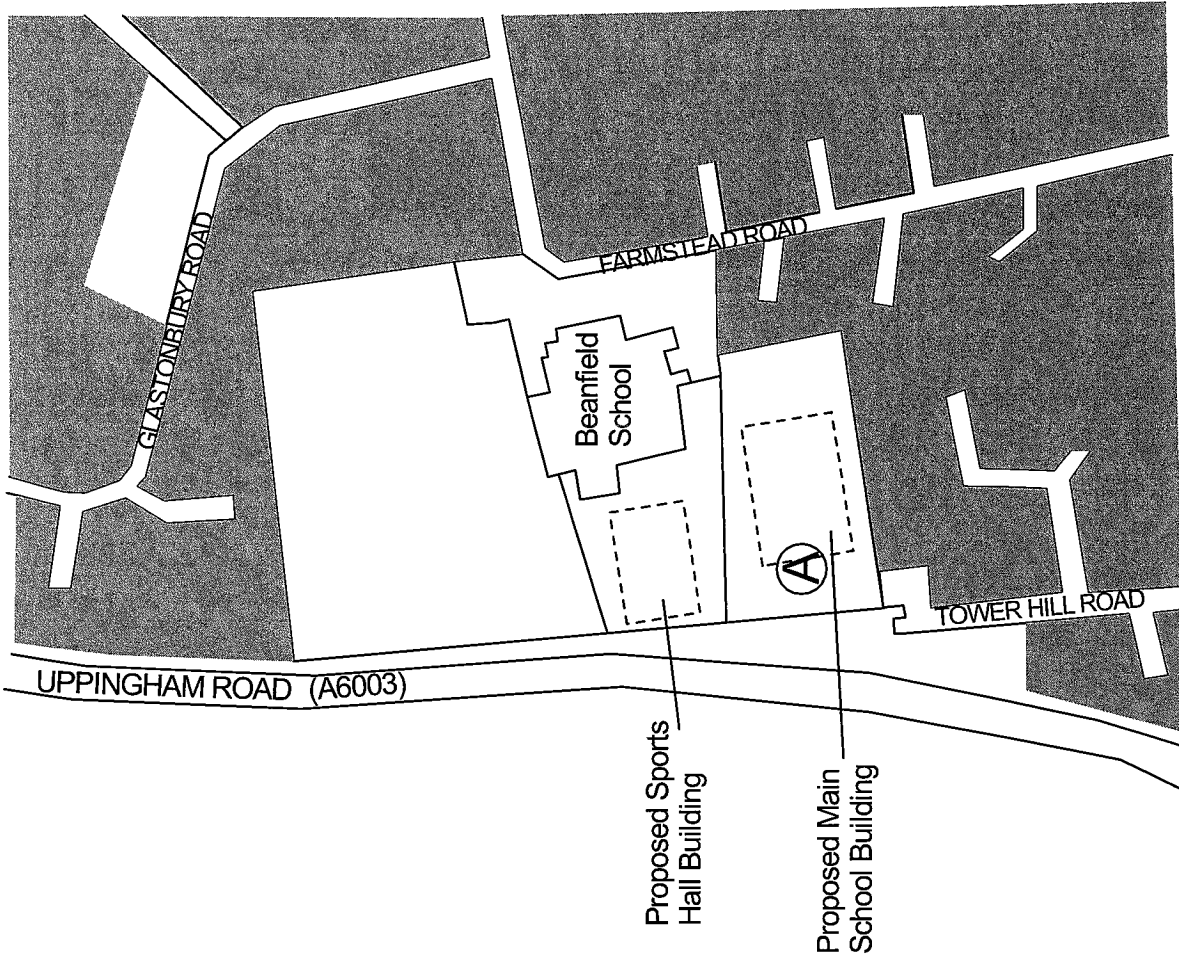
It is common practice to use the L₁₀ index to describe traffic noise, as being a high average, it takes into account the increased annoyance that results from the non-steady nature of traffic noise.

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.



Measurement Position
 Residential

Title :

Site Plan Showing
 Approximate Location
 of Measurement Positions

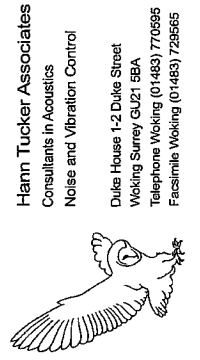
Figure :

15406/SP1

Date : 02/04/2009

Scale : N.T.S.

Maplefields School
 Corby



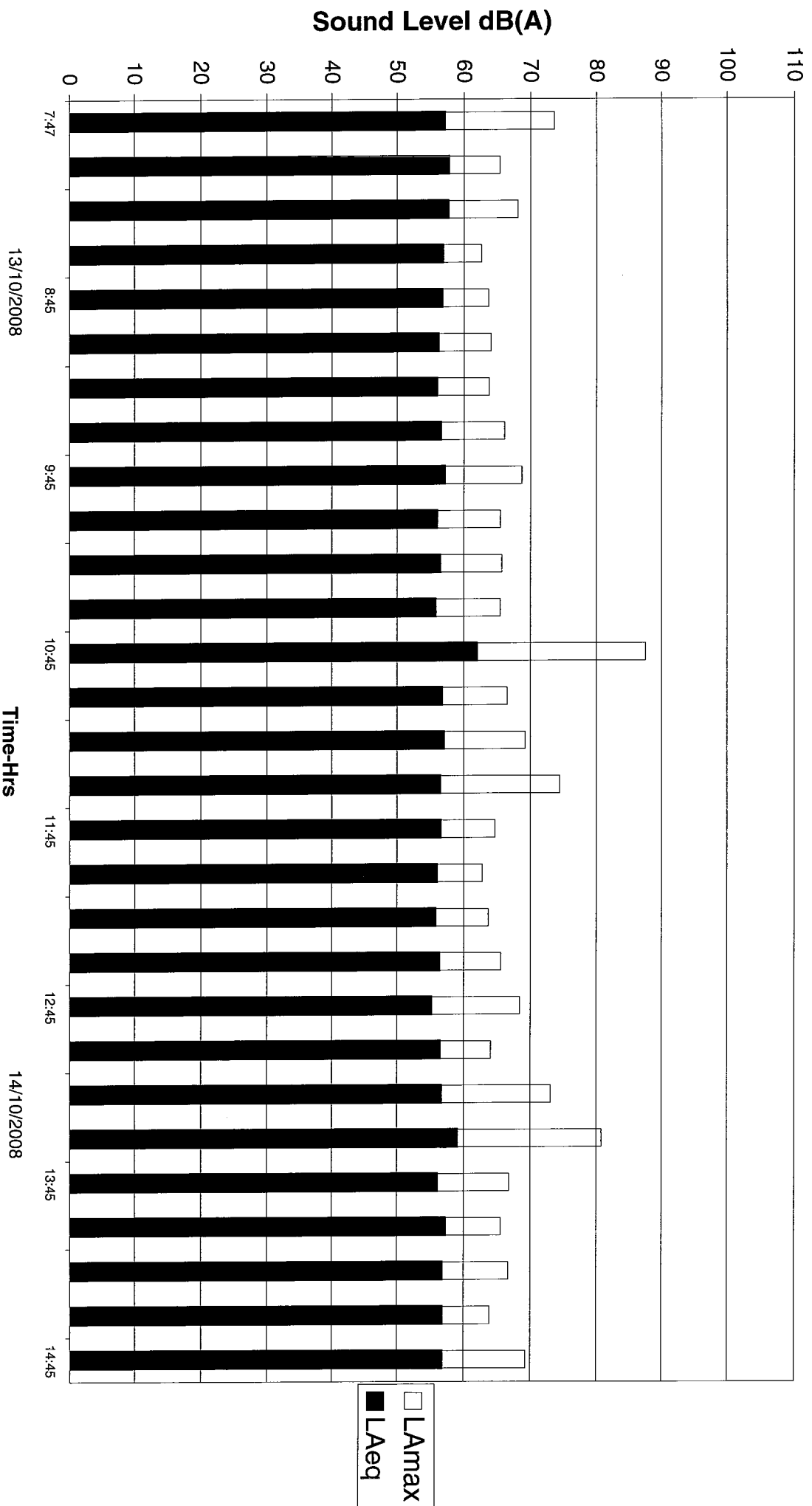
Hamm Tucker Associates
 Consultants in Acoustics
 Noise and Vibration Control
 Dukes House 1-2 Duke Street
 Woking Surrey GU21 5BA
 Telephone Woking (01483) 770966
 Facsimile Woking (01483) 729565

Maplefields School, Corby, Northants

Position A

L_{Amax} and L_{Aeq} Noise Levels

Monday 16/03/2009



Maplefields School, Corby, Northants Position A

L_{A10} and L_{A90} Noise Levels
Monday 16/03/2009

