

DESIGN DEVELOPMENT NOTE



Job Title	East Sussex Academies – The Eastbourne Academy
Project Number	24018
Date	November 2011
Title	DDN AC01 Planning Application Report - Acoustics

1.0 Introduction

This document summarises WSP Acoustic's input for the planning application for The Eastbourne Academy. The proposals are for a part refurbish and part new build scheme to be located on existing site of the existing school in East Sussex.

WSP Acoustics have been appointed to advise on the acoustic aspects of the design proposals. Generally, the acoustic design will be compliant with the guidance in Building Bulletin 93 "Acoustics of Schools". Alternative performance standards will be proposed in accordance with paragraph 1.2.1 of BB93 where appropriate. For more details on this, please see WSP Acoustics design report "ITT Bid Submission – Acoustic Strategy Report" (October 2011).

In terms of planning considerations, the relevant aspect of the acoustic design is likely to be the noise emissions from the plant equipment associated with the development affecting both the school itself and nearby premises.

2.0 Site Background Noise Levels

Environmental noise monitoring, incorporating both attended and unattended measurements, was undertaken between 13.00 hours on Thursday 28th July 2011 and 01.25 hours on Sunday 31st July 2011. Additional attended measurements were also carried out between 12.45 and 13.30 hours on Tuesday 2nd August. The survey was carried out during the summer holiday period in order to exclude school activity noise in accordance with BB93 standards.

Based on the results of the noise measurement surveys, the daytime ambient noise levels affecting the school site are summarised in the table below.

Summary of noise levels at each building façade

Measurement Period	$L_{Aeq,30min}$ (dB)	$L_{Amax,fast}$ (dB)	$L_{A10,30min}$ (dB)	$L_{A1,30min}$ (dB)
School Day (09:00 – 16:00)	37-48	51-72	39-50	43-59

These measured levels have been used in predictions of external noise intrusion within internal school teaching spaces.

3.0 Plant Noise Emissions – Design Criteria

In order to establish the likely appropriate criteria for plant noise emissions, prior to a planning condition being stipulated, this assessment has been conducted in accordance with *British Standard 4142: Method for rating industrial noise affecting mixed residential and industrial areas*.

This standard sets out a method to assess whether noise from industrial installations is likely to give rise to complaints from noise sensitive receptors in the vicinity. It sets out a method for measuring the specific noise source $L_{Aeq,T}$ (noise source under investigation) and the background noise level $L_{A90,T}$ (noise level in the absence of the specific source) over a reference time period (T).

Where the noise contains a distinguishable discrete continuous note, “whine, hiss, screech, hum etc.” or if the noise is irregular enough to attract attention, then a correction of +5dB is added to the specific noise level to obtain the rating level, $L_{Ar,Tr}$. In some cases a prominent tonal component may be detected in the one-third octave band spectral if the level of one of the individual frequency bands exceeds the level in both adjoining frequency bands by 5dB or more (ISO 1996-2: *Acoustics – Description and measurement of environmental noise – Part 2: Acquisition of data pertinent to land use*).

The likelihood of complaints is then determined by subtracting the background noise level from the rating level. BS 4142 states that:

- If the difference is around +10 dB or more the complaints are likely.
- If the difference is around +5dB then this is of marginal significance.
- If the rating level is more than 10dB below the measured background noise level then this is a positive indication that complaints are unlikely.

In order to meet BREEAM requirements (credit Pol 8), plant noise emissions rated in accordance with BS 4142 methodology should not be greater than the existing background noise. However, it is also recommended that the design aims to ensure that plant noise emissions do not increase the existing background noise levels around the site significantly, in order to address likely requirements set by the Local Authority. As such, we recommend at this stage that the criteria for the rated plant noise emissions from the development be established at 5 dB below the existing prevailing background noise level at the nearest noise sensitive properties.

4.0 Plant Noise Emissions - Targets

Based on the information presented in Section 3.0, the minimum daytime and night time noise levels close to the residential properties to the east of the site are presented in the table below. This data will be used for the setting of noise emission limits for future items of building services plant associated with the scheme.

Summary of minimum measured noise levels at residential boundary

Measurement Period	Minimum background noise level, $L_{A90,T}$ (dB)
Day (07:00 – 23:00)	27.7 dB $L_{A90,1hour}$ @ 22:00, 28/07/2011
Night (23:00 – 07:00)	22.4 dB $L_{A90,5min}$ @ 03:00, 30/07/2011

In its Scope BS4142 states that, “*For the purposes of this standard, background noise levels below 30dB and rating levels below 35dB are considered very low.*” In these ranges the rating method given in the standard should not be applied. As such, it is considered that where the rating level in accordance with the methodology in Section 4.0 falls below 35 dB, a rating level of 35 dB is applied.

Based on the target of the rated noise level of the plant being 5 dB below the prevailing background noise level, all rating levels would fall below the 35 dB minimum required for BS4142. As such, it is recommended that plant noise emissions are controlled to 30 dB $L_{Ar,Tr}$ at the nearest residential premises all times of day.

A detailed plant noise assessment will be carried out once planning conditions have been issued by the local authority and details of proposed plant items are known.

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