

Cowbridge Primary School

ADDITIONAL SITE NOISE MEASUREMENTS

FORMANT.

STRAIGHTFORWARD ACOUSTIC DESIGN

Intended for:
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Revision -

As discussed in the recent DTM, we have reviewed the pre-tender Environmental Noise Assessment Report (the ENA Report) prepared by Mach Acoustics (ref RP 201119) and have identified a number of issues with the assessment of environmental noise affecting the facades of the proposed school buildings. Following discussions with the design team about the potential issues, we have been to undertake additional measurements and to assess the validity of the façade acoustic design assessment in the ENA Report.

This note summarises the results of the additional noise measurements made on 18 May 2021 and the implications for the design of the school.

BASELINE SURVEY MEASUREMENTS

MEASUREMENT METHODOLOGY

Environmental noise measurements were undertaken at positions MP1 to MP4 by Paul Driscoll between 10:30 and 11:30 hrs on 18 May 2021. Noise measurements were undertaken approximately 1.3 metres above local ground level, at a distance of at least 2.5 metres from the façade of buildings and are considered representative of free field measurements. Measurements were made in line with BS 7445:2003 *Description of Environmental Noise*.

EQUIPMENT

The following measurement equipment was used to conduct the survey:

- Nti XL2 Class 1 Sound level meter, SNo. A2A-18665-E0,
- Nti Larson Davies CAL200 Calibrator, SNo. 18652

All measurement equipment owned or hired and operated by Formant has annual or bi-annual calibration checks carried out by external companies traceable to UKAS or national standards. Copies of all calibration records are kept and can be provided upon request.

DESCRIPTION OF NOISE CLIMATE AND WEATHER CONDITIONS

The noise climate around the site during the survey was dominated by traffic noise from the A48 Cowbridge Bypass at all measurement positions. Traffic on Aberthin was audible but at a lower level and with many fewer vehicle numbers than the A48. Other contributions to the noise measurements included birdsong and pupils moving around the school site, but these did not significantly affect the results

WEATHER CONDITIONS

Weather conditions during the measurements were clear and sunny with a slight breeze. Some periods of rainfall had occurred in the morning prior to the measurements but the conditions were considered to be representative of 'normal' noise levels.



NOISE PARAMETERS

A full range of noise data was captured during the survey including the following parameters:

- L_{Amax} The sound pressure level of the single noisiest event during the measurement period.
- L_{Aeq} Time averaged sound pressure level. This is generally considered to be an acceptable representative descriptor of environmental noise.
- L_{A90} Sound pressure level exceeded for 90% of the measurement period, this is generally accepted to be indicative of the continuous background noise level.

MEASUREMENT RESULTS




Position and description	Parameter	Result	Photo
<p>MP1</p> <p>School fields, location of southern corner of proposed school. Noise climate dominated by traffic on the bypass road, with minor contributions from pupil activity around the school, birdsong and occasional vehicles on Aberthin Rd.</p>	Time	12:30 hrs	
	Duration	10 mins	
	L_{Aeq}	55 dB	
	L_{Amax}	65 dB	
	L_{A90}	51 dB	
<p>MP2</p> <p>School fields, location of southwest corner of proposed school building. Noise climate as per MP1.</p>	Time	12:42 hrs	[no image]
	Duration	10 mins	
	L_{Aeq}	55 dB	
	L_{Amax}	66 dB	
	L_{A90}	49 dB	
<p>MP3</p> <p>School fields, location of northwest corner of proposed school building. Noise climate as per MP1, but traffic on Aberthin Rd not audible most of the time.</p>	Time	11:53 hrs	
	Duration	10 mins	
	L_{Aeq}	54 dB	
	L_{Amax}	70 dB	
	L_{A90}	50 dB	
<p>MP4</p> <p>School fields, location of northeast corner of proposed school building. Noise climate as per MP1, but traffic on Aberthin Rd not audible most of the time.</p>	Time	12:04 hrs	
	Duration	10 mins	
	L_{Aeq}	54 dB	
	L_{Amax}	66 dB	
	L_{A90}	46 dB	

Table 1: Noise survey results summary



COMPARISON BETWEEN RESULTS

The following table summarises the comparison between the ENA report results and the additional measurements:

ENA Report	Additional measurements findings	Implications
Noise levels are constant across the site (based on one measurement position)	Noise levels are fairly constant but there is variation due to the screening provided by the existing school buildings to Aberthin Rd and varying distance from the A48.	Facades which are screened by the existing school buildings will be subject to less noise from Aberthin Rd
Noise levels are affected by traffic noise from both roads.	Although traffic on Aberthin Rd is just audible, it is at a significantly lower level than traffic from the A48, which completely dominates the noise climate across the whole site.	Noise from Aberthin Rd will only have a marginal effect on the noise levels at the school facades. Noise from the A48 is the only major issue.
Noise levels vary between 51 and 57 dB (based on data from an unattended logger located adjacent to an external terrace and footpath, both of which are used by pupils during break and lunchtimes)	Noise levels from the A48 were consistent with a constant flow of vehicles. Although we only undertook a relatively short sample of measurements, we are confident that they are representative of typical conditions and were not affected by pupil activity within the school, which may have accounted for the 56-57 dB results recorded in the ENA Report.	Typical noise levels would not be expected to significantly exceed 55 dB at any façade.

Table 2: Comparison between ENA Report results and additional measurement results.

VENTILATION STRATEGY

Having visited the site, undertaken additional measurements and experienced the nature of the noise climate we are unable to explain how the conclusions have been drawn on the façade markups in the ENA Report. The only possible explanation we can come up with is that the markup was done by someone who had mis-read the plans and understood that the school would be oriented on an east-west axis? This would explain why the east and west façades are in the red and green categories respectively, despite being equally exposed to traffic from the A48.

Based on the additional measurement results and our knowledge of the site, we would expect the **north façade to be ≤ 50 dBL_{Aeq,30mins} (green category) and the other facades to be between 51-55 dBL_{Aeq,30mins} (orange category).**

When the internal space planning is taken into consideration, this means that in line with BB93, **the predicted façade levels would support natural ventilation via cross-vent or roof-vent for all spaces within the school.**