



Melland High School, Gorton Education Village SEN School

Noise Assessment for Planning Purposes

1.0 INTRODUCTION

- 1.1 Acoustic and Engineering Consultants Limited (AEC) has been instructed by Bowker Sadler Architecture to undertake a noise assessment for the proposed extension to Melland High School, in relation to an associated planning submission.
- 1.2 It is understood that the school will require teaching spaces specifically for students with Special Education Needs (SEN) and this has been considered.
- 1.3 The existing school site is bound by fields to the north, residential properties to the east and west and industrial units to the south, as identified on the attached Figure 1.
- 1.4 The nearest roads to the site are Wembley Road and Holmcroft Road situated approximately 100m to the northeast of the site.
- 1.5 The proposed site layout for the scheme is as indicated on the attached Figure 2. The scheme includes 19 new parking bays located to the sound of existing buildings with a loss of 8 existing ones as identified on the attached Figure 2.
- 1.6 This report presents details of the noise survey undertaken by AEC and discusses the implications of the measured noise levels on the design of the proposed school building. The impact of noise break-out from the activities associated with the school on the nearest noise sensitive properties is also considered with reference to the requirements of Manchester City Council (MCC) and Building Bulletin 93: Acoustic Design of Schools (BB93).

2.0 NOISE MEASUREMENTS

- 2.1 An attended noise level survey was undertaken by AEC on Wednesday 10 November 2021 between approximately 0845 and 1045h. Measurements were undertaken at a single location around the development site identified as A on the attached Figure 1.
- 2.2 AEC could not measure noise levels close to the footprint of the proposed building as it was used by minivans to drop off children and hence Location A was chosen as an appropriate position.
- 2.3 All measurements were undertaken in general accordance with BS7445-1: 2003 '*Description and measurement of environmental noise. Guide to quantities and procedures*'.
- 2.4 A full measurement procedure is presented in Appendix A and the measured data is presented in Table A1.

- 2.5 The ambient noise levels measured at Location A was consistently around 50dB_{LAeq,15mins} due to distant road traffic on Wembley Road and Holmcroft Road. The ambient noise level in the worst case 15-minute period between 0915 and 0930h was around 53dB_{LAeq,15mins} due to a number of minivans entering and dropping off children in addition to noise from children queuing up at the entrance.
- 2.6 The maximum noise level measured at Location A was around 60dB_{LA1,15mins} due to minivan entering the school premises.
- 2.7 It was observed on site that whilst noise from the industrial units to the south was audible at times its contribution to the measured ambient noise levels was negligible.

3.0 ACOUSTIC CRITERIA

Internal Noise Level Limits

- 3.1 The upper limits for indoor ambient noise levels (IANL)s are presented in Table 1 of BB93. The same is reproduced below as Table 3.1 for the relevant room types of the scheme. It should be noted that the IANL limits relate to the combination of external noise intrusion and noise from any mechanical plant serving the rooms.

Table 3.1 – Upper Limits for IANL

Type of Room	Noise Level, dB _{LAeq,30min}
Classrooms	30
Safe Room / Therapy	35
Meeting Room / Nurse / Living Skill	40
Store / Records	45
Hygiene / WC	50

- 3.2 BB93 also states that *‘In order to protect students from regular discrete noise events, eg, aircraft or trains, indoor ambient noise levels should not exceed 60dB_{LA1, 30mins}. This is achieved by default for spaces with IANLs up to 40dB_{LAeq, 30min}, but requires assessment in spaces with higher IANL limits, eg, 45 and 50dB.’*
- 3.3 The above limits are a requirement of Building Regulations and as such not strictly a planning requirement.

Noise Break-out

- 3.4 With respect to noise break out from mechanical services plant, MCC’s Planning & Noise Technical Guidance (P&NTG) states that *‘Externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location’.*
- 3.5 In relation to noise from car park, there is no guidance available specifically for assessing noise from car park activity. However, as car parking is an existing noise source, it is considered that provided car parking noise does not increase by more than 1dB as a result of the new spaces, there would be a negligible or low impact, and this should be deemed acceptable.

4.0 NOISE BREAK-IN ASSESSMENT

- 4.1 As identified above, the main source of noise affecting different elevations of the proposed school envelope is distant road traffic on Wembley Road and Holmcroft Road.
- 4.2 The free-field noise levels external to the different elevations is provided in Table 4.1 and Figure 4.1, below.

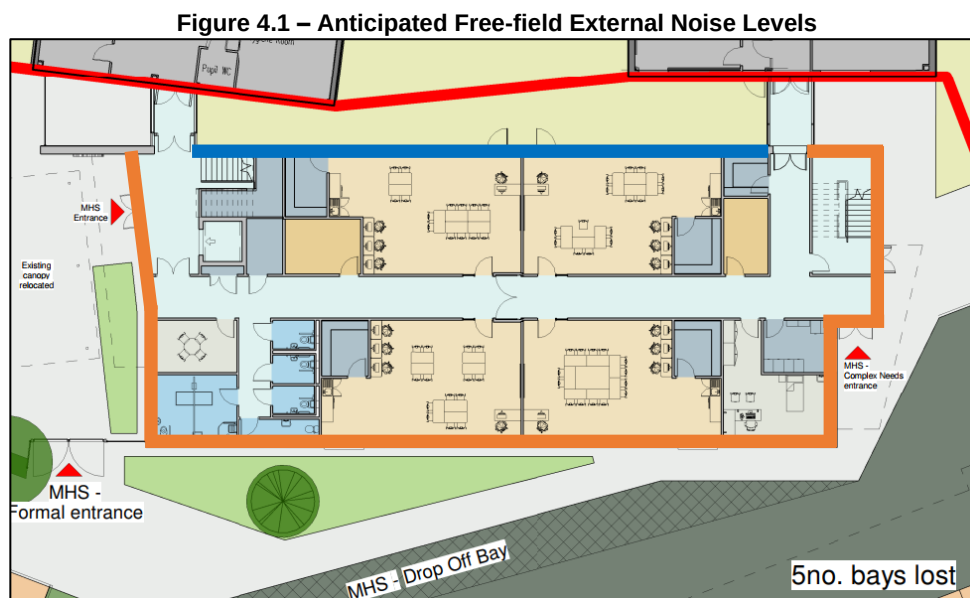


Table 4.1 – Anticipated Free-field External Noise Levels

Colour	Noise Level, dBAeq,30mins
Orange	53
Blue	<53

- 4.3 AEC understands that all classrooms will be ventilated using NVHR units and will have a purge ventilation door for summertime cooling. As such, opening windows will not be relied upon for normal ventilation conditions during teaching.
- 4.4 Based on the above, any well sealed standard thermal glazing that has a minimum sound insulation performance of 29dBR_w can be used to all windows and an appropriate level of acoustic sound insulation will be achieved in order to meet the IANL mentioned in table 3.1. This level of performance can be achieved, for example, using 4mm/6-16mm/4mm double glazing.
- 4.5 In addition, based on the measured external noise levels, in all instances, appropriate L_{A1} noise levels will also be achieved.
- 4.6 In terms of mechanical plant noise, this will be reviewed as part of the detailed design assessment, which AEC is appointed to undertake.

5.0 NOISE BREAK-OUT ASSESSMENT

Plant Noise Break-out

- 5.1 Based on the measured lowest background noise level of around 43dBL_{A90}, the external free-field noise level at the nearest noise sensitive receptor should be controlled to no greater than 38dBL_{Aeq} from all the plant items combined.
- 5.2 In addition, the free-field noise level external to classrooms of the existing school is to be controlled to no greater than 47dBL_{Aeq} from all the plant items combined due to the proximity. This will control internal noise levels to 35dBL_{Aeq} assuming windows are open for ventilation purposes.
- 5.3 There is no externally mounted mechanical plant and with regard to the internal plant that has atmospheric noise emissions, AEC is appointed to undertake the detailed design and a full review of the plant will be undertaken when details of the items are made available. However, given the ventilation means and distance to the nearest noise sensitive properties, there are no concerns with regarding to achieving the above limits.

Noise Break-out from Car Park Activities

- 5.4 As mentioned above, the school currently has an existing car parking facility consisting of about 150 parking spaces.
- 5.5 Calculations undertaken by AEC indicate that the increase in noise level by the addition of 19 parking spaces and loss of the 8 parking spaces is less than 1dB and hence this is deemed acceptable.

Noise Break-out from Internal School Activities

- 5.6 There are no music rooms or other potentially high noise activities that will occur in the new school extension. As such there are no concerns relating to internal activity noise break-out.

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FIGURE 1 – Existing Site Showing Monitoring Locations



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APPENDIX A – Noise Survey Details

Date & Time of Survey:	Wednesday 10 November 2021, 0845 to 1045h.					
Personnel:	Naveen Ramesh Simha (AEC).					
Equipment Used:	Cirrus CR:171B Real Time Analyser (AEC Kit 3).					
Calibration:	The sound level analyser, which conforms to BS EN 61672-1: 2013 ' <i>Electroacoustics – Sound level meters - Part 1 Specifications</i> ' for Class 1 Type Z meters, was in calibration and check calibrated before and after the measurement periods using a Brüel & Kjær type 4231 (94dB) calibrator. There was no significant drift of calibration. Calibration certificates are available on request.					
Weather Conditions:	Date	Period	Wet/Dry	Temp°C	Wind Speed & Direction	Cloud Cover
	10/11/2021	Day	Dry	15°C	Northward and 2 m/s	60%
Measurement Locations:	Measurements were undertaken at a single location around the development site. Identified as A on Figure 1 and described below. A – 30m from nearest carriageway of Rawsthorne Avenue.					
Measurement Details:	Measurements were undertaken over various periods in terms of L_{eq} , L_{10} , L_{90} , and L_{max} .					
Façade / Free-Field:	A - free-field.					
	Full results for the attended measurements are given in Table B1.					
Measured Data:	Full octave band centre frequency data was obtained for all measurements.					

TABLE A1 – Measured Daytime Noise Levels

Location	Period, h	Noise Level, dB				Comments
		L_{Aeq}	L_{A1}	L_{A90}	$L_{Amax, F}$	
A	0845 – 0900	49.7	59.3	42.8	67.1	Ambient noise level due to distant road traffic noise. Ambient noise level between 0900 and 0930 are due to minivans parking and dropping off children and from children queuing up at the entrance.
	0900 – 0915	51.0	59.7	45.2	63.8	
	0915 – 0930	53.4	59.2	49.6	62.8	
	0930 – 0945	49.9	55.2	47.1	61.2	
	0945 – 1000	50.7	55.0	46.9	57.4	
	1000 – 1015	49.4	54.1	46.5	59.2	
	1015 – 1030	48.1	53.8	44.8	62.8	
	1030 – 1045	47.6	51.8	43.9	62.1	