



Ref: P4807/L05/AGB

3 June 2025

Prepared by:	Andy Burke	Checked by:	David Terry
--------------	------------	-------------	-------------

Sandilands School

Pre-Completion Testing Results

Further to AEC's pre-completion testing undertaken on Wednesday 21 May and 2 June 2025 the results and discussion are presented below.

Testing was undertaken in line with the *Association of Noise Consultants (ANC) 'ANC Good Practice Guide – Acoustic Testing of Schools' Ver 2*. November 2015. Furthermore, the results are compared to the requirements of the Department for Education and Education Funding Agency's Building Bulletin 93 '*Acoustic design of schools – performance standards*' (Feb 2015).

1.0 SOUND INSULATION

Airborne Sound Insulation

Measurements were undertaken in accordance with ISO 16283-1:2014 Acoustics — '*Field measurement of sound insulation in buildings and of building elements Part 1: Airborne sound insulation*'. However, in all instances, cabinet speakers were used.

The measured airborne sound insulation performances in different areas are presented in the following Table 1.1 and compared to the required values.

When reviewing the results, it should be noted that a difference in sound insulation performance of up to 2dB is not perceptible for people with normal hearing. As such, where the measured performance is up to 2dB below the required limit, this is considered a pass within reasonable tolerance.

Table 1.1 – Measured Airborne Sound Insulation Performance Compared to Requirements

Source Room	Receive Room	Type	Sound Insulation, dB D _{nT,w} (T _{mf} max)		Requirements Achieved?
			Required	Measured	
00-102 Playroom 2	00-103 Reception 1	Wall	45	48	✓
00-102 Playroom 2	01-117 Junior Class 7	Floor	45	59	✓
00-816 Hygiene	00-103 Reception 1	Wall	45	52	✓
00-105 Infant 1 Class	00-106 Infant 2 Class	Wall	45	57	✓
00 -05 Infant 1 Class	00-403 SEN Resource	Wall	50	52	✓
00-105 Infant 1 Class	00-119 Shared Teach	Floor	45	62	✓
00-105 Infant 1 Class	01-102 Junior Class 2	Floor	45	52	✓

Source Room	Receive Room	Type	Sound Insulation, dB D _{nT,w} (T _{mf} max)		Requirements Achieved?
			Required	Measured	
00-107 Infant 3 Class	00-106 Infant 2 Class	Wall	45	44	✓
00-107 Infant 3 Class	00-108 Infant 4 Class	Wall	45	57	✓
00-107 Infant 3 Class	01-120 Shared Teach	Floor	45	60	✓
00-403 SEN Resource	00-407 Small Group 1	Wall	50	48	✓
00-403 SEN Resource	01-111 Junior Class 1	Floor	50	62	✓
00-302 Activity	01-501 Staff	Wall	50	54	✓
01-113 Junior Class 3	Deputy office	Wall	45	39	? (See note 1)
01-113 Junior Class 3	01-112 Junior Class 2	Wall	45	46	✓
01-120 Shared Teach	01-104 Small Group 1	Wall	45	53	✓
01-116 Junior Class 6	00-405 Small Group 2	Wall	45	43	✓
01-116 Junior Class 6	01-117 Junior Class 7	Wall	45	44	✓
Note 1 – The failure was due to gaps over the top of the ceiling. It is understood that all gaps have been sealed using flexible mastic. Assuming this has been completed correctly (as per other areas of the school) the acoustic requirements will be achieved.					

Impact Performance

The measured impact sound insulation compared to the requirements are presented in the following Table 1.2. It should be noted that for impact sound insulation, the lower the figure, the better the performance.

Table 1.2 – Measured Impact Sound Insulation Performance Compared to Requirements

Source Room (1F)	Floor Finish	Receive Room	Sound Insulation, dB L _{nT,w} (T _{mf} max)		Requirements Achieved?
			Required	Measured	
01-111 Junior Class 1	Carpet	00-403 SEN Resource	55	45	✓
00-119 Shared Teach	Carpet	00-105 Infant 1 Class	60	42	✓
01-201 Food Bay 1	Vinyl	00-101 Playroom 1	60	49	✓

2.0 REVERBERATION TIMES

Reverberation time (RT) measurements were undertaken in general accordance with the methodology in BS EN ISO 3382-2: 2008 '*Acoustics – Measurement of room acoustic parameters – Part 2: Reverberation time in ordinary rooms*'.

The measured RT compared to the required performance is presented in Table 2.1, below. As all rooms were empty during the testing, the values have been adjusted marginally to represent the situation in a

fully completed and furnished room (this doesn't include the activity studio or the hall which are assumed to contain no furniture).

Table 2.1 – Measured RT Compared to the Required Values

Room	RT, s (T _{mf} 500Hz to 2kHz)		Requirements Achieved?
	Required	Measured	
00 103 Reception 1	0.6	0.6	✓
01-117 Junior Class 7	0.8	0.6	✓
00 403 SEN Resource	0.4	0.4*	✓
00-106 Infant 2 Class	0.6	0.5	✓
00-108 Infant 4 Class	0.6	0.6	✓
00-301 301 Hall	1.2	1.0	✓
00-302 Activity Studio	1.0	0.7	✓
01-112 Junior Class 2	0.8	0.6	✓
01-104 Small Group 1	0.4	0.3*	✓
00-101 Playroom 1	0.6	0.4	✓

*T_{mf} 125Hz to 4kHz and no OBCF greater than 0.6

3.0 INDOOR AMBIENT NOISE LEVELS

All measurements of indoor ambient noise levels (IANL)s were undertaken in line with the Association of Noise Consultants (ANC) guidance for noise measurements in buildings. The measured noise levels are presented in Table 3.1 below, compared to the required values.

All ventilation plant was operating during the site visit. However, as plant is on an automatic control system the Monodraught heat recovery units (HRUs) located directly adjacent to external windows were not operating in any room tested. This was the case even though outdoor temperatures at the time of the measurements were some 19°C.

When considering the measured noise levels presented in the following Table 3.1, it should be noted that a difference in noise levels of up to 2dB is not perceptible for people with normal hearing. As such, where a noise level is within 2dB of the required limit, this is a pass within reasonable tolerance.

Table 3.1 – Measured IANLs Compared to Required

Room	Windows	IANL, dBL _{Aeq,30min}		Requirements Achieved?
		Required	Measured	
01-114 Junior Classroom 4	Open	35	33	✓ (See note 1)
01-120 Shared Teaching - HRU unit above	Open	35	44	X (See Note 2)
01-116 Junior Classroom 1	Open	35	32	✓ (See note 1)

Room	Windows	IANL, dBL _{Aeq,30min}		Requirements Achieved?
		Required	Measured	
01-121 Shared Teaching - HRU above	Open	35	32	✓
00-102 Nursery Playroom 2	Open	35	27	✓ (See note 1)
00-403 SEN Resource - HRU above	Open	30	58	X (See note 3)
00-407 Small Group Room Nursery - HRU in SEN resource	Open	30-35	47	X (See Note 3)
00-108 Small Class	Open	35	29	✓ (See note 1)
00-301 Main Hall - Wall Heaters & Speakers	--	35	44	X (See Note 4)
00-302 Studio	--	35	42	X (See Note 4)
Note 1 – As described in the text above the table, none of the Monodraught HRUs switched on during the time of the measurements due to the control systems. Assuming that the Monodraught HRUs generate noise levels no higher than the manufacturers stated levels, the BB93 requirements would be achieved.				
Note 2 – Noise levels were due to the ducted Nuaire HRU located below the soffit. It is considered that this unit wasn't balanced. Note that the HRU above shared teaching room 01-121 was operating during the measurements and the required noise limits were achieved in this room (see above).				
Note 3 – Noise was due entirely to the Nuaire HRU located above the ceiling of the SEN resource room. It was noted that a pure tone was clearly audible from the unit. It is considered that the unit and any associated dampers have not been balanced.				
Note 4 – The noise was due to the heaters on the walls of the two rooms. It is not known if these had been balanced. Furthermore, should attenuation be required to these units, the manufacturer would need to confirm if such a product is available. In addition to the above, the wall mounted speakers in the main hall also appeared to be adding to the noise climate. Lastly, if the teachers have local control over the units, the levels measured may be acceptable for shorter periods when activities in the space are not noise critical.				

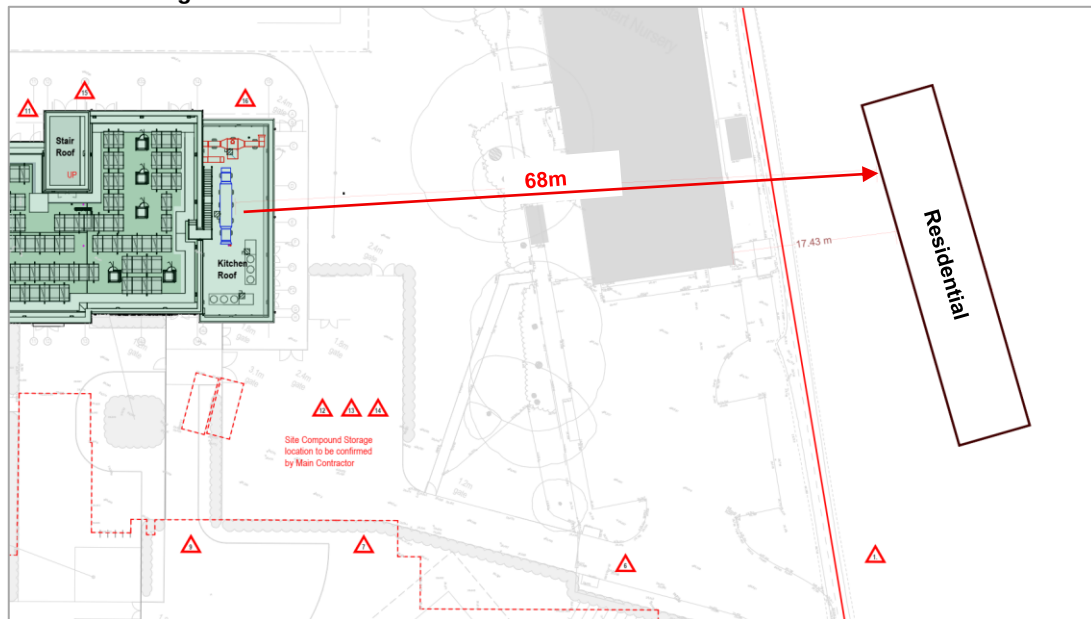
4.0 ROOFTOP PLANT NOISE

External plant will be located on the first-floor concrete roof to the east of the proposed building, some 68m from the nearest residential property on Yattendon Avenue as identified on Figure 4.1, below.

The roof contains the following plant items:

- 1 No Kitchen supply AHU and associated attenuation;
- 1 No Kitchen extract AHU and associated attenuation;
- 2 No. Lochinvar air source heat pumps.

Figure 4.1 – Distance Between Plant and Nearest Residential Receiver



Sound pressure levels measured on-site at 3m from the kitchen extract fan (including the exposed motor and the exhaust opening) were 67dB(A). The kitchen supply AHU was at least 10dB quieter than the supply fan.

Even though outdoor temperatures were around 19°C during the measurements, the ASHPs were only operating at partial duty resulting in a sound pressure level of approximately 58dB(A) at 2m. With reference to the manufacturers data, the noise levels for two pumps operating could be up to approximately 65dB(A) at 2m.

Based on the above, the anticipated noise levels at the residential properties are as presented in the following Table 4.1.

Table 4.1 - Rooftop Plant Noise Levels

Plant Description	Noise Level (dB)	@ Distance, m	Receiver distance, m	Number of Items	Barrier attenuation, dB	Resultant @ residential
Kitchen Extract	67	3	68	1	-10	30
Kitchen Supply	57	3	68	1	-10	20
ASHP	65	2	68	2	-3	31
Total free-field plant noise at residential						34

The daytime background noise levels affecting the residential properties was 39dBL_{A90} and the plant noise limit set was 5dB lower than this i.e. 34dB(A).

As there is no noise character associated with the plant, the above demonstrates that the plant noise limits have been complied with.