

Technical Letter

Site Address:	Nursing Care Home, Victoria Road, Oswestry, SY11 2HX
Project Reference No:	NP-010166
Subject:	Technical Summary of Internal Noise Levels
Client:	Greenchurch Developments Ltd (GDL)
Reported By:	D. Hagan, PGDip, MIOA
Checked By:	M. Caley, MSc, MIOA
Date:	15/01/2024

1. Introduction

NOVA Acoustics Ltd has been commissioned by Greenchurch Developments Ltd (GDL) to provide post-completion acoustic testing at the above address. The testing specifically relates to the noise emissions from the mechanical ventilation systems installed within a selection of bedrooms.

The purpose of this assessment is to discharge condition 6c of the approved planning application (ref. 21/02720/FUL).

2. Planning Conditions and Criteria

Planning condition 6c is worded as follows:

“The noise from mechanical ventilation shall not exceed L_{Aeq} 26dB in Bedrooms and L_{Aeq} 30dB in Living Rooms to meet ventilation standards set out in Approved Document F of the building regulations and shall not exceed L_{Aeq} 30dB(+/-5dB) on occasions when cooling is required to avoid overheating”.

Further to the above, Condition 6 also states that in the absence of any mechanical ventilation, the acoustic design criteria provided in Table 4 of BS8233:2014 should be adhered to. The criteria are reproduced below:

BS8233:2014 Acoustic Design Criteria			
Activity	Location	Daytime (07:00 – 23:00)	Night-time (23:00 – 07:00)
Resting	Living Room	35 dB $L_{Aeq,16hr}$ / NR30	--
Dining	Dining Room/Area	40 dB $L_{Aeq,16hr}$ / NR35	--
Sleeping (Daytime resting)	Bedroom	35 dB $L_{Aeq,16hr}$ / NR30	30 dB $L_{Aeq,8hr}$ / NR25 45 dB L_{AFmax} *

Table 1 – Internal Acoustic Design Criteria

3. Testing Locations and Procedure

The following bedrooms were selected for testing:

- Bedroom 9
- Bedroom 11
- Bedroom 12
- Bedroom 14
- Bedroom 16

GA plans showing the locations of the bedrooms can be found in Appendix A.

3.1 Testing Procedure

For all testing, the sound level meter was set to the 'fast' time weighting and measurements were logged every second.

The microphone of the sound level meter was affixed to a tripod located in the centre of each room, approximately 2m from the fan outlet and 1.5m above the floor, as shown below:



Figure 1 – Measurement Location Positions

As the existing site was still active, site noise could often be heard from the first-floor area. To account for this, obviously anomalous peaks in sound pressure level have been removed from the analysis.

4. Results

Short-term measurements were undertaken on the 22nd December 2023. It was confirmed by the site manager that the fan speeds in all rooms are preset and not controllable by the occupant. A boost switch is available within the rooms; however, this can only be activated when held down and cannot be left to run independently.

Whilst on site, the site engineer was informed that all fans will be commissioned to operate at 'Fan Speed 1'. As such, all testing has been carried out with the fans running at this speed, and it is assumed that this will provide the required levels of ventilation in accordance with Approved Document F. Testing was also carried out without the fans in operation in order to calculate the specific noise emissions from the fans and general noise break in individually. The results are shown in Table 2 below.

Fan On / Off	Location				
	Bedroom 9	Bedroom 11	Bedroom 12	Bedroom 14	Bedroom 16
Fan OFF	31 dB(A)	29 dB(A)	28 dB(A)	28 dB(A)	30 dB(A)
Fan ON	39 dB(A)	44 dB(A)	28 dB(A)	30 dB(A)	44 dB(A)
Specific Fan Noise	37 dB(A)	44 dB(A)	[1]	25 dB(A)	44 dB(A)

Table 2 – Measured Values and Analysis

Note [1] – Cannot be calculated.

Note [2] – As previously stated, construction work was being carried out on site during the measurements. As such, short periods of the measurements have been removed from the analysis.

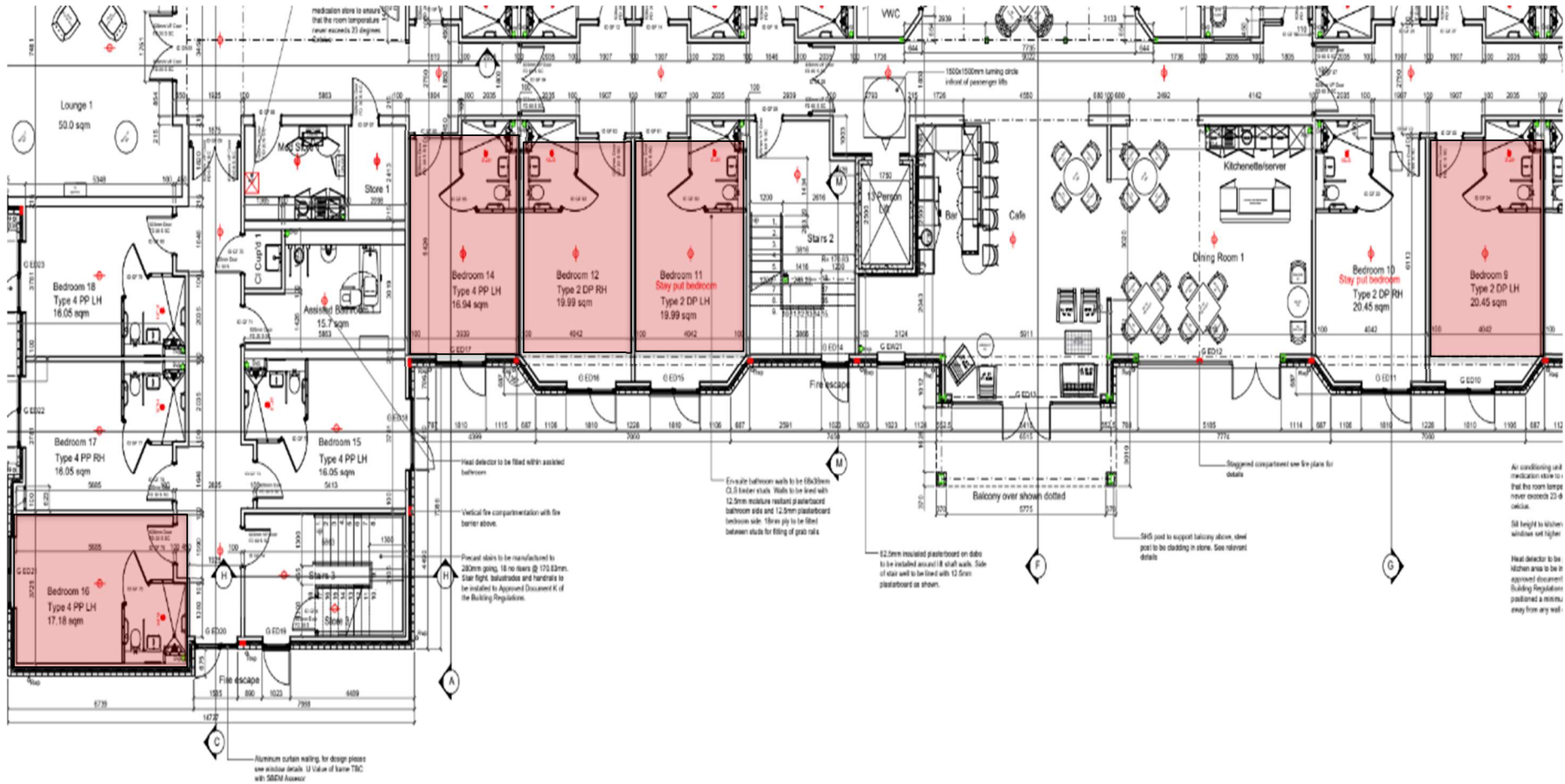
4.1 Discussion

As shown above, the noise emissions from the mechanical ventilation systems are within the criteria in bedroom 14. In bedroom 12, the specific noise emissions from the ventilation system cannot be calculated as the noise level with the fans operating is the same as the noise level with the fans off. However, considering that the measured level with the fan on is 28 dBA, it is highly likely that this is also within the criteria of ≤ 26 dBA.

The fan noise emissions in bedrooms 9, 11, and 16 were found to be above the criteria. However, the client has informed NOVA Acoustics that at this stage, only the units in bedrooms 12 and 14 have been fully commissioned, and the fans in the other rooms are set at their default speed. In the future, the client expects that all systems will run at the same operational level as the fans in bedrooms 12 and 14, meaning all noise levels are likely to be within the criteria.

It should also be noted that the noise levels in all the bedrooms were within the BS8233 criteria when the fans were not operational. This is a good indication that noise breaking in through the façades of the building is at an appropriate level to allow for good levels of residential amenity.

Appendix A – Testing Locations



Appendix B – Surveying Equipment

Piece of Equipment	Serial No.	Calibration Deviation
Svantek 977C Class 1 Sound Level Meter	97493	≤0.2
Svantek SV33B Class 1 Calibrator	901625	

Table 3 – Surveying Equipment

All equipment used during the survey was field calibrated at the start and end of the measurement period with a negligible deviation of ≤0.2 dB. All sound level meters are calibrated every 24 months, and all calibrators are calibrated every 12 months by a third-party calibration laboratory. All microphones were fitted with a protective windshield for the entire measurements period. Calibration certificates can be provided upon request.

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