

Addendum 01 to Report LRG-CDL-ZZ-XX-T-AS-45260

Project 123 Levenshulme Road	Project No. 1046729	Date 27/08/2025
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1.0 Introduction

This document is a technical addendum to the Internal Noise Level Commissioning Report, reference LRG-CDL-ZZ-XX-T-AS-45260, issued on 10 July 2025.

The original report was prepared and submitted to Manchester City Council (MCC) to present the results of internal noise levels within habitable rooms of the new dwellings at 123 Levenshulme Road, with respect to demonstrating compliance with planning condition 11) b).

The findings of the initial report identified that additional noise mitigation measured would be required to the MVHR units in Plot 1 (similarly in Plots 2, 3, and 6) and Plot 20 (similarly in 9, 10, 25, 14, 15, 29, 21, and 34).

This report addendum summarises the mitigation works undertaken since the original report was issued, including details of noise levels measured before and after the implementation of these works.

The current revision of this addendum addresses additional comments received by MCC on 18 August, following the submission of the first addendum issue.

Further commentary is provided on the operational duties of the MVHR units and the corrections applied for future furnishing of the premises.

The mitigation measures applied in both Plot 1 and Plot 20 have each demonstrated that the resultant noise levels in the Bedrooms are at least 2 dB lower than those measured prior to the mitigation being adopted. Accordingly, the internal ambient noise levels in Bedroom 1 of Plot 1 and the Bedroom of Plot 20 are now considered to be compliant with the MCC internal noise limits.

2.0 MVHR Operating duties

The MVHR units can operate at trickle, boost or summer bypass modes.

The default setting for all units will be trickle mode. Tenants then have the ability to manually boost the MVHR units for higher air flow rates, as required.

Summer bypass mode increases the amount of supply air that the unit will draw in so that it will not recover as much heat through the heat exchanger. This increases the supply air by nominally 25% compared to the base setting.

The design flow rates for trickle and boost modes are presented in Table 2-1, below for the 1- and 2-bed dwellings.

Dwelling	Trickle mode	Boost mode	Summer Bypass
1-bed	38 l/s	46 l/s	47.5 l/s (supply air)
2-bed	50 l/s	60 l/s	62.5 l/s (supply air)

Table 2-1: MVHR Design flow rates

The published noise levels from the manufacturer, replicated below in Figure 2-1, indicate that there is a nominal 6 dB difference between the airflow rates closest to the design rates for trickle and boost/summertime mode.

envirovent

Acoustic Datasheet

Product: energiSava 250

Test Standard: BS EN 13141-7:2010

					SOUND POWER LEVELS (Lw dB(A))									Sound Pressure Level (SPL)
					Frequency (Hz)									
Unit Setting	Flow (m3/h)	Flow (l/s)	Mode	RPM	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	TOTAL dB(A)	dB(A) at 3m
100%	280.46	77.91	Extract	2375	29.3	42.3	53.5	48.5	41.6	45.3	37.4	28.8	55.7	35.16
			Supply		38.1	53.4	54.5	56.6	49.4	52.5	48.9	40.7	61.2	40.66
			Breakout		34.5	48.5	61.3	60.3	57.2	57.3	51.4	47.8	65.7	45.16
80%	215.43	59.84	Extract	1900	27.4	37.8	48.7	42.6	36.4	39.3	29.3	23.4	50.5	29.96
			Supply		35.4	48.0	49.3	49.5	41.9	45.2	40.9	31.4	54.8	34.26
			Breakout		31.3	44.2	55.8	54.0	52.6	50.9	45.3	40.4	60.0	39.46
60%	145.53	40.43	Extract	1425	23.9	32.4	41.7	34.8	29.5	28.1	23.7	22.3	43.4	22.86
			Supply		31.9	42.1	42.7	40.8	33.0	35.1	31.3	23.5	47.4	26.86
			Breakout		27.2	41.0	48.3	46.4	46.6	40.9	36.5	29.1	52.7	32.16
40%	74.13	20.59	Extract	950	20.0	29.3	31.0	25.6	22.8	22.2	22.5	22.2	35.2	14.66
			Supply		23.6	34.2	32.0	30.2	23.8	24.7	23.3	22.2	38.1	17.56
			Breakout		23.8	40.2	37.4	36.0	35.7	28.1	24.1	22.3	44.0	23.46

All sound measurements are hemispherical. For spherical figures, subtract 3dB from the value.

Figure 2-1: Manufacturers acoustic test data

During the initial noise monitoring presented in report reference LRG-CDL-ZZ-XX-T-AS-45260, and the additional post-mitigation noise tests, presented herein, all MVHR units were operating in **boost mode** and therefore represent the reasonable worst-case noise levels to be expected.

3.0 Plot 1 Mitigation

3.1 Recommended mitigation

The original report recommended the following mitigation measures:

A secondary enclosure, as indicated below in Figure 5-1, formed of a single layer of plasterboard, plywood, MDF or similar, with a mass of at least 10 kg/m² and lined internally (facing the MVHR unit) with a 25mm tissue faced mineral wool or foam material, would reduce the noise levels within the cupboard space by at least 3 dBA.

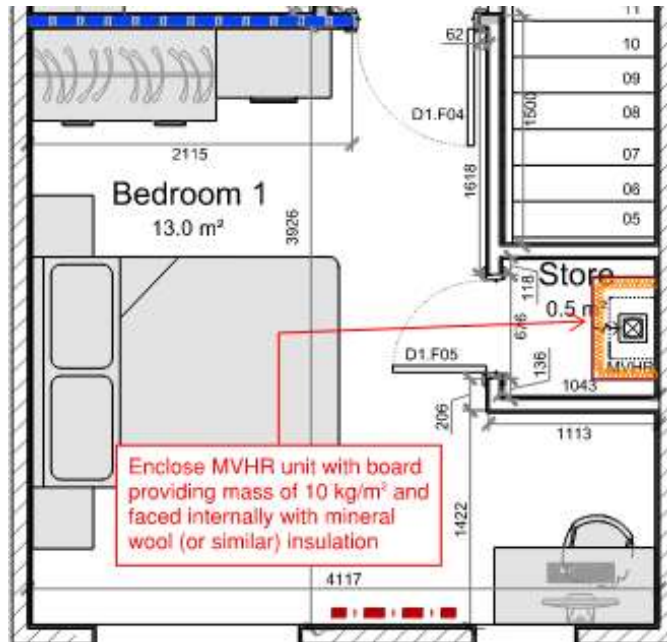


Figure 5-1: Noise mitigation to Plot 1 MVHR unit

3.2 Implemented mitigation measures

Figure 3-1, right, indicates the duct connections off the top of the MVHR unit being completely boxed-in with additional mineral wool insulation packed around the sides and top of the MVHR unit (which will then be boxed-in as per the ductwork above, leaving the main face and bottom of the MVHR unit exposed for access and maintenance).



Figure 3-1: Plot 1 Mitigation measures

3.3 Mitigated noise levels

Noise measurements were made on Thursday 31 July using an NTi-XL2 Class 1 sound level meter which was field-calibrated before and after each survey period.

Measurements were taken at the same positions as those described in the original report, with additional measurements undertaken at various locations within the cupboard housing the MVHR units as deemed appropriate.

Table 3-1, below summarises the noise levels measured with and without the mineral wool (acoustically absorbent) lagging encompassing the MVHR unit.

Condition	Measured noise level, dB L _{Aeq,T}	
	Inside cupboard	In Bedroom 1
Prior to mitigation measures applied	54	38
With mitigation measures included	48	36

Table 3-1: Noise levels with and without mitigation applied

The mitigation measures applied, even prior to final boxing-out, has resulted in the MVHR unit noise level reducing by 6 dB within the utility cupboard.

Observations on site during these repeat tests have identified that the dominant source of the MVHR unit noise emissions is emitted from the back sides of the unit. The acoustically absorbent mineral wool insulation lagging the sides of the MVHR unit and packed up the rear wall of the cupboard provide a significant reduction to these noise emitting elements of the MVHR unit.

Further reductions to the noise levels inside the utility cupboard are anticipated once the mineral wool insulation is boxed-in with a suitable lining, however, it is deemed that the insulation alone has provided sufficient noise mitigation and the linings will no longer need to meet the minimum mass requirements specified in the original report.

3.4 Results

As a result of the additional acoustically absorbent insulation applied around the MVHR unit, the resultant noise level inside the bedroom has reduced by 2 dB (some contribution is still present from the supply air grille in the bedroom ceiling).

This reduction, in combination with the future furnishing of the bedroom, will therefore be sufficient to see that the internal ambient noise levels in Bedroom 1 of Plot 1 will comply with the MCC internal noise limits.

As per the original report, the mitigation measures applied within Plot 1 have been replicated in Plots 2, 3, and 6.

4.0 Plot 20 Mitigation

4.1 Recommended mitigation

The original report recommended the following mitigation measures:

It is therefore recommended that the MVHR unit is structurally isolated from the partition with the Bedroom. This could either be achieved by means of an independent frame fixed to the floor/ceiling of the store room, or by relocating the MVHR unit to the adjacent wall of the store room, as indicated in Figure 5-2, below.

Eliminating the structure-borne noise component from the MVHR unit is expected to result in a noticeable reduction to the ambient noise level in the Bedroom

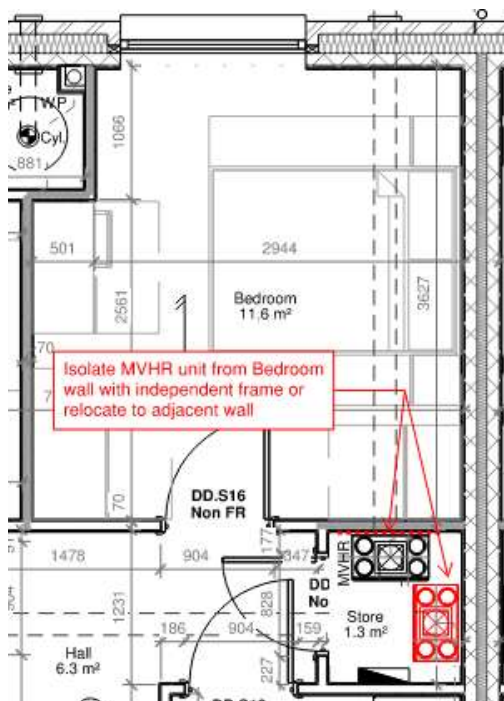


Figure 5-2: Noise mitigation to Plot 20 MVHR unit

4.2 Implemented mitigation measures

Due to the duct routings, it was not practical to relocate the MVHR unit to a different wall.

Instead, initial measures comprised an additional layer of dense plasterboard mounted between the MVHR unit and the internal bedroom wall. Short-term measurements undertaken on 31 July however, demonstrated that this did not demonstrate any significant change (< 1.0 dB) to the noise levels measured prior to the works being undertaken.

Figure 4-1, right, shows a Class O open cell acoustic foam applied to the rear wall of the storeroom, behind and around the MVHR unit. The foam provides acoustic absorption to the rear of the MVHR unit and expands to seal the gaps along the rear sides of the unit and wall, mitigating the overall noise level within the utility cupboard.

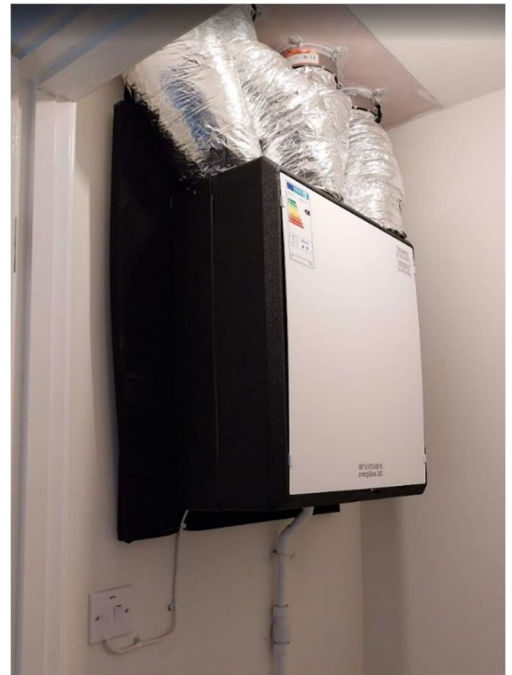


Figure 4-1: Plot 20 Mitigation measures

4.3 Mitigated noise levels

Short-term noise measurements were undertaken at the same position as described in the original report, on Tuesday 19 August, using an NTi-XL2 Class 1 sound level meter which was field-calibrated before and after each survey period.

Prior to any mitigation measures being adopted, the long-term noise monitoring in the Bedroom of Plot 20 averaged 38 dB $L_{Aeq,T}$ but did not record any noise levels lower than 37 dB $L_{Aeq,15min}$ (reference Appendix D of Report LRG-CDL-ZZ-XX-T-AS-45260).

The noise levels measured inside the bedroom, following these mitigation measures averaged 35 dB $L_{Aeq,T}$, demonstrating a 2-3 dB reduction compared to the pre-mitigated levels.

4.4 Results

As a result of the additional acoustically absorbent insulation applied around and behind the MVHR unit, the resultant noise level inside the bedroom has reduced by at least 2 dB.

This reduction, in combination with the future furnishing of the bedroom, will therefore be sufficient to see that the internal ambient noise levels in Bedroom Plot 20 will comply with the MCC internal noise limits during the day and night-time periods.

As per the original report, the mitigation measures applied within Plot 20 have been replicated in Plots 9, 10, 25, 14, 15, 29, 21, and 34.

5.0 Future furnishings

The original report discussed corrections to the internal noise levels that could be expected when the rooms are furnished with floor finishes and soft furniture such as beds, sofas, curtains etc. An example calculation was included in Appendix E of the report that contained a typo error that was then used in the summary calculations.

The correct calculation is presented below:

Corrections for room furnishings

Item / Description		Broadband dB	Octave Band Centre Frequency, Hz					
			125	250	500	1k	2k	4k
Outside to inside noise transmission:	$L_{p,rev} = L_{p,ext} + TL + 10 \times \text{Log}(S) - 10 \times \text{Log}(A) + D$							
Where:	$L_{p,rev}$ = internal reverberant noise level							
	$L_{p,ext}$ = external noise level							
	TL = façade sound insulation							
	S = surface area of façade							
	A = internal room absorption							
	D = diffuse field correction: 6 for low absorption, 3 for medium-high absorption							
Therefore, when $L_{p,ext}$, TL, and S are all constant, the internal reverberant noise level ($L_{p,rev}$) will change with different levels of absorption (A) and diffuse field (D) correction in the room								
Bedrooms and Living Rooms:								
For unfurnished bedroom/living room, D = 6 and A(u) =			8	6	4	2	3	4
For carpeted bedroom/living room, D = 3 and A(c) =			9	7	7	10	12	13
{10 Log A(u) + D} - {10 Log A(c) + D}			3	4	6	9	10	8
Typical measured internal reverberant noise level in unfinished room	34 (A)		34	40	29	25	20	18
Predicted internal reverberant noise level in room furnished with carpet	29 (A)		30	37	23	16	10	9
	Typical future reduction:	5 (A)						
Kitchen / Living / Dining								
For unfurnished kitchen/living/dining room, D = 6 and A(u) =			13	9	6	4	4	6
For furnished living/kitchen/dining room, D = 6 and A(c) =			16	14	12	10	11	13
{10 Log A(u) + D} - {10 Log A(c) + D}			1	2	3	4	4	3
Typical measured internal reverberant noise level in unfinished room	38 (A)		35	41	36	32	28	26
Predicted internal reverberant noise level in room furnished with carpet	35 (A)		34	39	33	27	23	23
	Typical future reduction:	3 (A)						

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6.0 Conclusions

Based on the results of the measurements undertaken post-mitigation, as discussed herein, and the corrected adjustments for future room furnishings, the following internal ambient noise levels are expected, once dwellings are occupied.

Plot/Room	Measured daytime $L_{Aeq,16hr}$ (07:00 – 23:00 hrs)	Measured night-time $L_{Aeq,8hr}$ (23:00 – 07:00 hrs)	Correction for mitigation measures	Correction for room furnishings	Furnished daytime $L_{Aeq,16hr}$ (07:00 – 23:00 hrs)	Furnished night-time $L_{Aeq,8hr}$ (23:00 – 07:00 hrs)
Plot 1 Living Room	35	35	n/a	-5 dBA	30 (complies with MCC requirement)	30
Plot 1 Bedroom 1	40	37	-2 dBA	-5 dBA	33	30 (complies with MCC requirement)
Plot 5 Living/Kitchen	38	38	n/a	-3 dBA	35 (complies with MCC requirement)	35
Plot 5 Bedroom 1	35	34	n/a	-5 dBA	30	29 (complies with MCC requirement)
Plot 19 Living/Kitchen	38	38	n/a	-3 dBA	35 (complies with MCC requirement)	35
Plot 19 Bedroom	36	35	n/a	-5 dBA	31	30 (complies with MCC requirement)
Plot 20 Living/Kitchen	34	31	n/a	-3 dBA	31 (complies with MCC requirement)	28
Plot 20 Bedroom	38	38	-2 - -3 dBA	-5 dBA	30-31	30-31 (borderline compliant with MCC requirement)

Table 6-1: Corrected ambient noise levels for mitigation measures adopted and occupied/furnished rooms

It should be noted that all of the above noise levels are based on measurements undertaken when the MVHR units (where applicable) are operating in boost mode.

Under normal conditions, when the MVHR units are operating in trickle mode, the internal noise levels are expected to be up to 6 dB lower than predicted.

The resultant internal ambient noise levels, following the adopted mitigation measures, and once all dwellings are furnished, indicate that all rooms will comply with the requirements of the MCC Planning and Noise Technical Guidance 2022 under normal background ventilation conditions.

When mechanical ventilation rates are boosted, under the control and discretion of the tenants, the internal noise levels will mostly be within the MCC requirements but may potentially exceed the limit by up to 1 dB in the bedroom of Plot 20.

Given that this potential 1 dB exceedance is only expected to occur under boost conditions and can be controlled by the tenant, it is considered that the measures undertaken and results of the assessment are sufficient to discharge Condition number 11b of the consented development.