

233 London Road Reading



**Acoustic Design Review
Report 29640.BS.01**

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Appendix A Glossary of Acoustics Terminology

1.0 INTRODUCTION

The aim of this report is to review the internal noise levels due to noise emissions from the mechanical ventilation heat recovery systems at 233 London Road, Reading, RG1 3NY. Performance specifications have been established in order to achieve the requirements of the Local Authority, Reading Borough Council.

Reading Borough Council Planning Condition 16 has been reproduced below:

“No development shall commence above foundation level until details and specifications of a mechanical ventilation heat recovery (MVHR) system with cool air bypass as means of cooling and ventilation for each dwelling hereby approved has been submitted to and approved in writing by Local Planning Authority. Noise from the system shall not result in BS8233 internal levels being exceeded. No dwelling shall be first occupied until the MVHR has been installed in accordance with the approved details and shall be permanently retained and maintained in accordance with the approved details and specifications thereafter.”

2.0 BUILDING SERVICES CRITERIA

Planning Condition 16 states that noise from the system shall not result in BS8233 internal levels being exceeded. Therefore, the MVHR systems shall be designed to meet the internal noise criteria outlined in BS8233:2014, reproduced in Table 2.1.

British Standard BS8233:2014 ‘Sound insulation and noise reduction for buildings’ describes recommended internal noise levels for residential spaces. These levels are shown in Table 2.1.

Activity	Location	07:00 to 23:00 L _{Aeq} , 16hour	23:00 to 07:00 L _{Aeq} , 8hour
Resting	Living Rooms	35 dB(A)	-
Dining	Dining Room/area	40 dB(A)	-
Sleeping (daytime resting)	Bedrooms	35 dB(A)	30 dB(A)

Table 2.1 BS8233 recommended internal background noise levels

3.0 PROJECTS PROPOSALS

The proposed MVHR systems and the associated manufacturer noise levels are presented in Table 3.1 below.

Plant Item	Flow Rate (L/s)	Descriptor	Octave Frequency Band (Hz)								Overall (dBA)
			63	125	250	500	1k	2k	4k	8k	
ESAVA26 O-L	10.56	SWL Supply	27.5	44.6	45.5	49.5	54.8	47.2	41.8	35.0	57.1
		SWL Extract	33.6	40.4	41.0	40.4	44.3	36.7	30.8	29.2	48.8
	22.22	SWL Supply	28.0	44.5	46.0	49.9	54.8	47.3	41.9	35.1	57.2
		SWL Extract	30.8	41.4	40.8	40.7	44.1	37.1	30.8	29.2	48.9
ESAVA26 O-R	10.56	SWL Supply	27.5	44.6	45.5	49.5	54.8	47.2	41.8	35.0	57.1
		SWL Extract	33.6	40.4	41.0	40.4	44.3	36.7	30.8	29.2	48.8
	22.22	SWL Supply	28.0	44.5	46.0	49.9	54.8	47.3	41.9	35.1	57.2
		SWL Extract	30.8	41.4	40.8	40.7	44.1	37.1	30.8	29.2	48.9

Table 3.1 Proposed plant noise levels

4.0 INTERNAL BUILDING SERVICES NOISE

Building services noise has been predicted in the spaces within this development. Table 4.1 presents the predicted noise levels compared to the criteria, with mitigation.

Location	Predicted $L_{Aeq, T}$ level (dB)	$L_{Aeq, T}$ Criteria (dB)
Proposed Block Unit 1 Ground Floor Kitchen / Living Room	34	35
Proposed Block Unit 1 First Floor Bedroom	23	30
Proposed Block Unit 2 First Floor Kitchen / Living Room	33	35

Location	Predicted $L_{Aeq, T}$ level (dB)	$L_{Aeq, T}$ Criteria (dB)
Proposed Block Unit 2 First Floor Bedroom	23	30
Proposed Block Unit 3 Second Floor Kitchen / Living Room	35	35
Proposed Block Unit 3 Second Floor Bedroom	28	30
New Build Block Unit 1 Ground Floor Kitchen / Living Room	35	35
New Build Block Unit 1 Ground Floor Bedroom 1	25	30
New Build Block Unit 1 Ground Floor Bedroom 2	25	30
New Build Block Unit 2 First Floor Kitchen / Living Room	35	35
New Build Block Unit 2 First Floor Bedroom 1	25	30
New Build Block Unit 2 First Floor Bedroom 2	25	30
New Build Block Unit 3 Second Floor Kitchen / Living Room	34	35
New Build Block Unit 3 Second Floor Bedroom 1	25	30

Table 4.2 Predicted noise levels within the habitable spaces

Table 4.2 above presents the predicted internal noise levels within the different habitable spaces in this development with proposed mitigation implemented. Recommended mitigation measures are outlined in Section 5.0.

4.1 Control Panels

Where located within party walls, recessed control panels should be backed with 2No. 12.5mm SoundBloc plasterboard or similar. The control panel should be fitted within the wall such that periphery gaps are minimal (less than 5mm width). The control panel fascia should incorporate a rubber gasket all round to ensure an effective acoustic seal with the plastered face of the wall. Control panels on either side of a wall should be offset by at least 500mm.

4.2 Access Panels

Where plant access panel have been proposed. We would recommend that a propriety acoustic access panel is proposed that achieves a minim acoustic rating of 32dB R_w .

5.0 NOISE CONTROL MEASURES

In order to achieve the internal noise levels shown in Table 4.1 above, the following noise control strategy should be adopted.

5.1 In-Line Ductwork Attenuators

In order to control the noise emissions from the MVHR units serving the bedrooms, acoustic silencers should be installed to the room side supply, providing the minimum insertion loss values outlined in Table 5.1.

Unit	Insertion Loss Levels (dB) in each Octave Frequency Band							
	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
All Roomside Supply Ductwork to Bedrooms	1	2	5	6	10	7	4	3

Table 5.1 Insertion loss figures to be provided by acoustic silencer

6.0 CONCLUSION

An appraisal of the drawings for the proposed building services at 233 London Road, Reading has been undertaken and suitable acoustic specifications have been determined.

Using manufacturer noise data, internal noise levels have been predicted within the habitable spaces within the development and compared to the criterion of Planning Condition 16.

The proposed internal building services plant installations should meet the requirements set out in Planning Condition 16, provided the mitigation measures outlined in Section 5 are implemented.