

Grant Ayres
Berkeley Homes (Oxford & Chiltern) Ltd
Berkeley House, Mill Lane
Taplow
Maidenhead
SL6 0AG

Date: 31st May 2025
Reference: R10314-22 Rev 0

Dear Grant,

Re: Blocks B and C Vastern Road - MVHR

I am pleased to provide 24 Acoustics' findings with regard to the proposed variation of planning condition 47 (permitted on 27th March 2024). This assessment follows a fire strategy review which precludes use of common air ductwork vertically through the building to and from the roof, to supply MVHR systems within dwellings.

1.0 INTRODUCTION

- 1.1 24 Acoustics Ltd has been instructed by Berkeley Homes to review the potential for noise entering the building through the proposed MVHR systems in Blocks B and C.
- 1.2 Amended planning condition 47 (reference 231673) is shown below.

47. Prior to the first occupation of the relevant residential unit (s) within Block B - The Goods Warehouse all glazing and ventilation details shown on the following approved plans shall have been provided in full:

Block B and C - MVHR Proposal Glazing and Ventilation Plans 448.PL.BC.V.100 Rev B

Block B and C - MVHR Proposal First Floor Plan 448.PL.BC.V.101 Rev B

Block B and C - MVHR Proposal Second Floor Plan 448.PL.BC.V.102 Rev B

Block B and C - MVHR Proposal Third Floor Plan 448.PL.BC.V.103 Rev B

Block B and C - MVHR Proposal Fourth Floor Plan 448.PL.BC.V.104 Rev B

Block B and C - MVHR Proposal Fifth Floor Plan 448.PL.BC.V.105 Rev B

Block B and C - MVHR Proposal Sixth Floor Plan 448.PL.BC.V.106 Rev B

Block B and C - MVHR Proposal Seventh Floor Plan 448.PL.BC.V.107 Rev B

Block B and C - MVHR Proposal Eighth Floor Plan 448.PL.BC.V.108 Rev B

Block B and C - MVHR Proposal Ninth Floor Plan 448.PL.BC.V.109 Rev B

Block B and C - MVHR Proposal Tenth Floor Plan 448.PL.BC.V.110 Rev B

Block B and C - MVHR Proposal Roof Plan 448.PL.BC.V.111 Rev B

As all received on 11/01/2024

The provided glazing and ventilation details shall be retained and maintained as such thereafter.

- 1.3 Drawing 448.BL.BC.V1.100 has been amended to Revision C, shown in Figure 1.
- 1.4 For clarity, drawing Block BC First Floor Plan 448.PL.BC.V.101 Rev C is shown in Figure 2.
- 1.5 This assessment has been undertaken to examine sound transmission from SSE equipment arising via MVHR installed in line with manufacturer's recommendations. The existing SSE equipment comprises two power transformers and associated cooling fans. It is understood that the cooling equipment, which was the basis of the original design to route ductwork from the roof, operates according to the following conditions:
1. Testing, typically undertaken for a short period (10 minutes) per month, during the daytime.
 2. Upset conditions, a rare event where one transformer fails and the power is diverted to the other to provide cooling. A higher power rating is needed and achieved when forced air is running.
 3. If power to both transformers goes off then no power is available for the fans (Nb, most of Reading would also be offline).
- 1.6 Under condition (1), it is considered unlikely that this would give rise for concern. Condition (2) is understood to occur very infrequently and condition (3) even more infrequently, though this presents no noise risk.
- 1.7 An explanation of acoustical terms used in this report is provided in Appendix A. All sound pressure levels in this report are given in dB re: 20 μ Pa.

2.0 CRITERIA

- 2.1 Although none of the planning conditions refer to noise criteria, discussions with Reading Borough Council at the application stage referred to the low frequency criteria in NANR 45 (Ref DEFRA) during upset conditions. The limiting noise criteria are shown below.

Sound Pressure Level (dB) per 1/3 Octave Band Frequency (Hz)						
40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz
49	43	42	40	38	36	34

Table 1: NANR 45 Criteria

- 2.2 Where the noise occurs in the daytime (as would be the case for periodic testing), a +5 dB relaxation is applied.

3.0 ASSESSMENT

3.1 The proposed MVHR systems would be supplied by Vectaire Ltd and include attenuators on the inlet and extract ductwork, of the type shown in Figure 3. For clarity, the inlet and extract ductwork are connected to a central fan unit, hence the path for sound is via the ductwork, into the fan box, and back out on the room side branch.

3.2 The source sound pressure levels at the nearest block are shown in Table 2, below.

Sound Pressure Level (dB) per 1/3 Octave Band Frequency (Hz)						
40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz
59	66	59	61	61	57	55

Table 2: Cooling Fan SPLs

3.3 These values are not dissimilar to those found adjacent to the road network. 24 Acoustics has specified MVHR systems for a large number of residential schemes where noise is a factor and on no occasion has break-in noise via the MVHR ductwork been an issue.

3.4 Calculations have been undertaken using the above values and assume a 1.5m attenuator is fitted (as shown in Figure 2). Resultant values are shown in Table 3 below.

Sound Pressure Level (dB) per 1/3 Octave Band Frequency (Hz)						
40 Hz	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz
31	35	26	27	24	19	15

Table 3: Resultant SPLs

3.5 The values are significantly lower than the NANR 45 criteria and, additionally, below the threshold of hearing.

3.6 The secondary glazing used in the updated assessment is 6mm thick glass, as per drawing 448.PL.BC.V.100 Rev C.

4.0 DISCUSSION AND CONCLUSIONS

- 4.1 The assessment confirms that noise levels arising from the proposed changes are acceptable, being well below the NANR 45 criteria.
- 4.2 On this basis, planning condition 47 from the 2024 consent may be amended in line with the updated drawings 448.PL.BC.V100-111.

I trust the above is in order – please call if you have any queries.

Yours sincerely
For 24 Acoustics Ltd

Steve Gosling BEng (Hons) FIOA FRSA MAES
Principal Consultant

APPENDIX A: ACOUSTIC TERMINOLOGY

Noise is defined as unwanted sound. The range of audible sound is from 0 to 140 dB. The frequency response of the ear is usually taken to be around 18 Hz (number of oscillations per second) to 18000 Hz. The ear does not respond equally to different frequencies at the same level. It is more sensitive in the mid-frequency range than the lower and higher frequencies and because of this, the low and high frequency components of a sound are reduced in importance by applying a weighting (filtering) circuit to the noise measuring instrument. The weighting which is most widely used and which correlates best with subjective response to noise is the dBA weighting. This is an internationally accepted standard for noise measurements.

For variable sources, such as traffic, a difference of 3 dB is just distinguishable. In addition, a doubling of traffic flow will increase the overall noise by 3 dB. The 'loudness' of a noise is a purely subjective parameter, but it is generally accepted that an increase/ decrease of 10 dB corresponds to a doubling/ halving in perceived loudness.

External noise levels are rarely steady, but rise and fall according to activities within an area. In attempt to produce a figure that relates this variable noise level to subjective response, a number of noise indices have been developed. These include:

i) The L_{Amax} noise level

This is the maximum noise level recorded over the measurement period.

ii) The L_{Aeq} noise level

This is "equivalent continuous A-weighted sound pressure level, in decibels" and is defined in British Standard BS 7445 as the "value of the A-weighted sound pressure level of a continuous, steady sound that, within a specified time interval, T, has the same mean square sound pressure as a sound under consideration whose level varies with time".

It is a unit commonly used to describe construction noise and noise from industrial premises and is the most suitable unit for the description of other forms of environmental noise. In more straightforward terms, it is a measure of energy within the varying noise.

iii) The L_{A90} noise level

This is the noise level that is exceeded for 90% of the measurement period and gives an indication of the noise level during the quieter periods. It is often referred to as the background noise level and is used in the assessment of disturbance from industrial noise.

Triple Glazing:
9.5mm glass - 6mm airgap - 4mm glass - 14mm airgap - 4mm glass
Secondary Glazing:
200mm airgap - 6mm acoustic laminated glass
Ventilation:
No atmospheric termination on the roof.
All atmospheric termination on the facade.



Page 100



FIGURE 3 – PROPOSED ATTENUATOR TYPE (1.5M VARIANT)**DUCT SILENCER****FOR FITTING INTO "VPFDS" PLASTIC FLAT DUCTING**

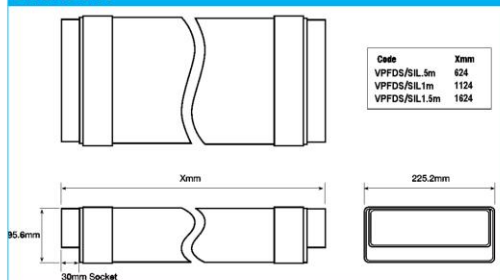
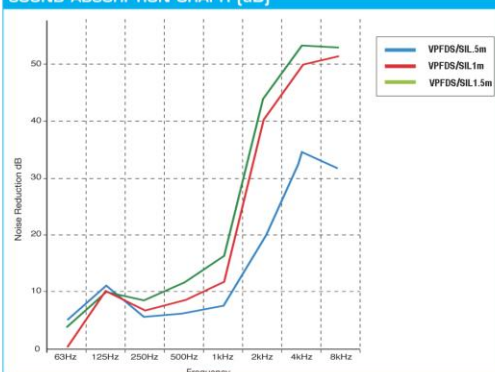
- Significantly reduces transmitted appliance noise and room-to-room cross-talk
- Excellent sound attenuating properties verified by the Sound Research Laboratory
- Facilitates user acceptance of continuous running of energy-efficient central ventilation systems
- Exceeds the current and proposed requirements of Approved Document F of the Building Regulations
- Low profile increases installation options when compared to traditional solutions
- Corrosion-proof, lightweight and easy to install
- Available in three lengths

GENERAL

- provide simple, cost effective solution for noise reduction in central ventilation systems
- lightweight, low profile construction ensures easy installation
- corrosion proof - eliminating need for future replacement
- 97mm depth allows installation in majority of roof and ceiling voids and along top of kitchen cupboards
- reduces potentially irritating noise in whole house ventilation systems
- excellent sound absorption over a range of audible frequencies
- available in three different lengths suiting performance required and space limitations
- for best noise absorption it is recommended that installation is room-side of ventilation appliance (or to limit room-to-room cross-talk installed near each inlet/outlet)
- Vectaire Ltd can supply all accessories for use with these units, including ducting and metal filters, outside grilles and wall cowl

RANGE

- VPFDS/SIL.5m - .5m length
- VPFDS/SIL.1m - 1m length
- VPFDS/SIL.1.5m - 1.5m length

DIMENSIONS**SOUND ABSORPTION GRAPH [dB]****SOUND ABSORPTION CHART [Hz/dB] (TESTED BY SRL)**

Model	63	125	250	500	1k	2k	4k	8k
VPFDS/SIL.5m	5.1	10.8	5.6	6.2	7.5	18.9	34.3	31.7
VPFDS/SIL.1m	0.1	10.1	6.6	8.3	11.6	40.0	49.8	51.4
VPFDS/SIL.1.5m	3.7	9.9	8.2	11.4	16.1	44.0	53.5	53.0

Tel: +44(0)1494 522333
Fax: +44(0)1494 522337

Vectaire Ltd
Lincoln Road, Cressex Business Park
High Wycombe, Buckinghamshire, HP12 3RH

Email: sales@vectaire.co.uk
Web: www.vectaire.co.uk