



Technical Note

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Client	Domis
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St. Michaels (Ph3 Bl.A), Manchester Ventilation Noise to Habitable Rooms

1.0 Introduction

- 1.1 Hotel guestrooms and apartments shall be ventilated by means of local mechanical ventilation heat recovery (MVHR) with air conditioning on the roomside supply ducting by means of a fan coil unit (FCU).
- 1.2 The technical note confirms the strategy for achieving acceptable internal noise levels from the operation of these internal ventilation/cooling systems. However, equipment selections have not yet been finalised and so no detailed review of the services can be provided at this stage.
- 1.3 Note, in some localised areas additional façade attenuators will be required to control external noise intrusion through façade-duct terminations. For guidance on façade attenuator specifications and locations, see Report 22024-RP-2-R1 '*Noise Insulation Scheme*'.

2.0 Criteria

- 2.1 Noise levels from the operation of the ventilation and cooling systems to apartments and hotel guestrooms shall be designed to achieve the following Noise Rating (NR) limits. These are set with the aim of satisfying UK industry standards & guideline internal noise levels (namely, BS 8233) as well as the project requirements set out in the Marriott Design Specification.

Sector	Room	Noise Rating Level (Upper Limit)
Residences	Living Room (daytime)	Trickle NR 30 Boost NR 35 (Cooker hoods NR 55 max)
	Bedroom (night-time)	Trickle NR 25 Boost NR 30
	Bathroom/En-Suite	NR 37
Hotel	Guestroom	Trickle: Night NR 25, Day NR 30 Boost: Night NR 30, Day NR 35
	Guestroom En-Suite	NR 37

- 2.2 The above limits are for design guidance purposes. Final design criteria shall be governed by the dB L_{Aeq} values whereby $L_{Aeq} \approx NR + 5$.

- 2.3 NB: In boost mode, a +5 dB relation is proposed in apartments in line with the Acoustics, Ventilation & Overheating (AVO) design guide, as this mechanical solution in boost provides the overheating mitigation in lieu of openable windows.

3.0 Noise Attenuation Strategy

- 3.1 Note, we are awaiting finalised selections of MVHR/FCUs for the scheme. In lieu, preliminary selections have been reviewed and provisions have been made to install acoustic attenuators onto roomside supplier and extract ductwork, as required. The attenuation shall be achieved by either an in-duct attenuator (e.g. by Verplas, circa 1.0 metre in length) or the introduction of acoustic flexi-duct to the final duct connection onto the grille.
- 3.2 Note, whilst it is important to ensure the above internal noise limits are achieved, it is also important to ensure the systems are not over-attenuated. The services will provide a steady-state background noise climate within the habitable rooms, which will act to mask noise intrusion from extraneous sources, such as neighbouring apartment/hotel room noises and external plant.
- 3.3 Casing radiated noise from the operation of the preliminary MVHR/FCU system selection has been reviewed. The casing radiated noise shall be designed to achieve a level at least 5 dB below the above noise limits to ensure it is not the dominant noise source in the room. Preliminary calculations indicate the plasterboard ceilings should provide sufficient attenuation without the need to upgrade or acoustically lag the casings (note, no free-area return air grilles are proposed).
- 3.4 Full details of MVHR/FCU duct attenuation solutions can be provided once this information is available.

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