

AVO Strategy Summary

Project Title	Land to the west of Rodney Street, Manchester		
Subject	AVO strategy Summary	Date	08/06/22
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An AVO Strategy Summary for RIBA stage 3 was prepared for the proposed residential development located at Land to the west of Rodney Street, Manchester, on behalf of the client, Wates Construction Ltd.

The approach has been informed by consultation with MCC Environmental Health and Planning Officers and technical input relating to the following disciplines, details of which are contained in the following and attached technical reports:

- Thermal Comfort Report (Method LLP)
- 3D Modelling & Level 2 AVO Assessment (Sandy Brown)
- Façade Design Note (Buttress)

Approach to AVO

- An operational AVO model has been prepared which demonstrates compliance with the mandatory thermal comfort requirements as set out in CIBSE Technical Memorandum 59 (TM59) *“Design methodology for the assessment of overheating risk in homes”*, throughout the day for a sample of dwellings’ rooms amongst the development.
- The model also demonstrates compliance with thermal comfort requirements as set out in CIBSE Technical Memorandum 52 (TM52) *“The Limits of Thermal Comfort: Avoiding Overheating in European Buildings”*, for both residential and communal spaces.

Opening windows to mitigate overheating through use of natural ventilation can often lead to uncomfortable levels of internal noise being experienced inside a space if there are loud external sources.

Block A, to the north of the development site has been categorised as 'Medium Risk' due to its close proximity to a busy road, and therefore an AVO Assessment (*22013-M004-E 3D modelling and level 2 AVO assessment*) was conducted by Sandy Brown in line with the *Acoustics, Ventilation and Overheating, Residential Design Guide*. This assessment predicted a risk of uncomfortable internal ambient noise levels, varying in sensitivity, in living rooms and bedrooms in Block A based on the sample of rooms provided by Method LLP.

Internal noise levels were predicted based on partially open windows, for both daytime (07:00-23:00) and night-time (23:00-07:00).

It is recognised that there is a balance to be struck between opening windows to mitigate against overheating and producing comfortable internal noise levels. However, although there is some scope to open windows for different portions of time during the daytime depending on the space in question, windows have been modelled as closed during the problem period (daytime). This enables the ventilation required to mitigate against overheating to be sized against a conservative and future-proofed set of results.

Headline Results

It can be seen in the AVO Assessment, that in all instances assessed, the predicted noise levels fall below the AVO SOAEL thresholds even if the windows are open 'most of the time', except for a select few spaces listed below.

- A00: Flat 007 – Bedroom 1 (Double)
- A00: Flat 007 – Bedroom 2 (Double)
- A01: Flat 004 – Bedroom 1 (Double)
- A01: Flat 004 – Bedroom 2 (Double)
- A01: Flat 004 – Living Room
- A01: Flat 004 – Kitchen
- A01: Flat 005 – Bedroom 1 (Double)*
- A01: Flat 005 – Bedroom 2 (Double)*
- A01: Flat 005 – Living Room*
- A01: Flat 005 – Kitchen*
- A07: Flat 004 – Living Room
- A07: Flat 004 – Kitchen

* It should be noted that A01: Flat 005 was added to the sample after the Level 2 AVO assessment was carried out and therefore has been assumed to have the same noise levels as a worst-case adjacent apartment.

The AVO Assessment states that the spaces that are at risk of uncomfortable internal noise levels are at risk during the daytime only. The Thermal Comfort assessment demonstrates that with increased mechanical ventilation rates, and with the windows in these spaces openable at night for night-cooling, that it is achievable to meet mandatory TM59 overheating criteria for dwellings and TM52 criteria for dwellings and communal spaces, with the windows closed throughout the day in all acoustically affected spaces.

Using mechanical purge ventilation as a means of controlling indoor temperatures ensures that the building will likely be able to cope under more extreme future weather conditions via opening windows, without any form of retrofitting required.

Conclusions

From the analysis undertaken, it has been determined that there are 12 spaces within the sampled apartments, located along the north corner of Block A, that are at risk of breaching the SOAEL threshold for uncomfortable internal noise levels.

It has been shown through thermal modelling using IES VE in conjunction with an AVO assessment prepared by Sandy Brown, that these spaces comply with mandatory TM59 requirements, whilst maintaining a desirable level of acoustic comfort, if the windows in these spaces remain closed throughout the day, alongside the introduction of purge ventilation above a setpoint temperature of 22°C.