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To whom it may concern,

20765: ADDENDUM TO KR ASSOCIATES REPORT, EVEREST HOUSE DEVELOPMENT, SOPERS ROAD KR06604

Details on the refusal of the planning application (ref: 6/2020/0447/PN11) state that concerns have been raised over the internal noise levels within habitable spaces with open windows. The following letter outlines a peer review of the KR Associates Report and gives recommendations to the Local Authority.

Predicted Noise Levels

The KR Associates report shows that BS8233:2014 Daytime and Night-time internal noise level criteria would be comfortably met (i.e. 26dB $L_{Aeq,\,T}$) [1] with existing secondary glazing and ventilation supplied by an MVHR system within the rooms exposed to external noise from the commercial units (i.e. those subject to an external noise level of 73dB $L_{eq,T}$). This assessment is deemed to be overly onerous as it assumes that commercial noise sources (e.g. Cuffley Community Centre, Cuffley Motor Co and Travis Perkins) are to be fully active for a consecutive 24-hours. While these premises may carry out some noise producing activity during both the daytime and night-time period, they would not be active and creating noise for a full 16-hour daytime and 8-hour night-time period. In this case the average night-time ambient noise levels could be significantly lower.

Attenuation of Partially Open Window

As stated in the decision notice, although 10-15dB is generally accepted as a good estimate of attenuation from a partially open window (BS8233:2014), the report written by KR Associates refers to a specific study in

1 It is assumed maximum noise levels referred to within the third table on Page 3 of KR Associates report KR0660 have been done so in error, and they should be referring to ambient (L_{eq}) noise levels.

2007 whereby the octave band sound insulation performance of partially opened windows for alternative window types is assessed. It is KP Acoustics belief that using this sound insulation data along with calculation in accordance with BS EN ISO 12354 – Part 3: 2017 is an acceptable methodology and therefore their estimate of internal noise levels with partially open windows is agreeable provided there are no errors in the calculations.

Internal Layout

The internal layout of the development has been amended since the issue of the KR Associates report (ref: KR0660), so that the highest level of external noise due to surrounding units incident upon any habitable rom is now 64dB $L_{Aeq,hour}$ (i.e. 9dB lower than the previous prediction). Based on the KR Associates calculations, this would reduce the highest internal noise level with open windows to **40dB $L_{eq,T}$** and with closed windows to **17dB $L_{eq,T}$** during both the daytime and the night-time.

Ventilation Strategy

The Local Authority has stated the following regarding ventilation (Page 9, KR Associates report KR06604).

"If opening windows will negate the acoustic insulation provided by windows leading to noise levels higher than those within BS8233:2014 then extra measures will be required. A suitable mechanical ventilation system will need to be incorporated into the building which must comply with the ventilation requirements as stipulated in The Noise Insulation Regulations 1975. We must stress that the use of mechanical ventilation is a last resort. Attenuation should be sought by good acoustic design in the first instance."

As per the above statement, it is our belief that it is not a requirement for openable windows to be a part of the ventilation strategy. The ANC Guide to Acoustics, Ventilation and Overheating states the following with regards to ventilation:

Approved Document F outlines the three main types of ventilation as whole house ventilation (continuous ventilation of rooms or spaces at a relatively low rate to dilute and remove pollutants and water vapour), extract ventilation (typically for kitchens or bathrooms), and purge ventilation (manually controlled ventilation of rooms or spaces at a relatively high rate to rapidly dilute pollutants and / or water vapour, provided by natural or mechanical means).

It also provides four template systems which can be adopted to demonstrate compliance with the Building Regulations, which are outlined in Table 1.1 below.

Ventilation System	Provision with ADF System / Purpose		
	Whole Dwelling Ventilation	Extract Ventilation	Purge Ventilation
System 1 – Trickle vents & intermittent extract fans	Trickle vents	Intermittent extract fans	Typically provided by opening windows
System 2 – Passive stack	Trickle vents and passive stack ventilation	Continuous via passive stack	Typically provided by opening windows
System 3 – Cont. mechanical extract (MEV)	Continuous mechanical extract – min. low rate Trickle vents for inlet air	Continuous mechanical extract – min. high rate Trickle vents for inlet air	Typically provided by opening windows
System 4 – Cont. mechanical supply & extract with heat recovery (MEV)	Continuous mechanical supply and extract – min. low rate	Continuous mechanical supply and extract – min. high rate	Typically provided by opening windows

Table 1.1 ADF template systems

It is important to note that the recommended internal noise levels criteria whilst providing adequate ventilation (as outlined by Approved Document F), but the purge/overheating condition should allow a relaxed standard internal sound environment, as follows:

'…it is considered reasonable to allow higher levels of internal ambient noise from transport sources when higher rates of ventilation are required in relation to the overheating condition'.

The rationale behind this is that the overheating condition would only apply for a relatively short period of time, and residential occupants would typically accept higher acoustic conditions internally whilst having control over thermal comfort within their property.

In the case of mechanical ventilation, systems should be designed to meet the internal noise levels as defined in CIBSE Guide A (2015), as shown in Table 1.2.

Room Type	L_{Aeq}, dB	NR
Bedrooms	30	25
Living Rooms	35	30
Kitchen	45-50	40-45

Table 1.2 CIBSE Guide A 2015 guidance levels for mechanical building services

Conclusion

With the new proposed layout, it is possible to reduce internal noise levels to 17dBA with the use of mechanical ventilation and secondary glazing. With recalculation of source noise levels due to a reduction in on-time, it is likely that this could be reduced even further.

In all cases, purge ventilation would be provided by openable windows. As outlined previously the internal noise level requirement would not be applicable during purge conditions as this would only occur occasionally. During these periods the internal ambient noise level would likely not exceed 40dB $L_{eq,T,}$ which is acceptable given the short occasional duration.

We trust that the above information is sufficient with regards to answering the key issues raised.

Yours sincerely,

Oliver Packman AMIOA

KP Acoustics Ltd