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Jordan Hedgeland
Senior Design Manager
Bowmer & Kirkland
North West Regional Office
1st Floor, Altitude
Atlas Business Park
Manchester
M22 5PR

Dear Jordan

Media City Plot D3 - Glazing Review and Mechanical Services Internal Noise Limits

Summary

The proposed glazing at Media City Plot D3 is capable of meeting the internal noise level criteria in BS8233:2014 in all dwellings. These criteria have informed the requirements of planning condition 8 of permission 19/74447/FUL.

Planning condition 8 gives specific spectral requirements for glazing systems at the development (which were given in the report prepared by Cole Jarman to support the planning application). There are many ways that you can meet the internal noise levels in BS 8233. However, the wording of the planning condition implies that you must match or exceed the glazing specification as a first priority. I therefore recommend we ask the Local Authority to accept the alternative glazing system proposals (which comfortably meet the criteria given in BS 8233) as a way of satisfying planning condition 8.

The noise break in levels at the site are predicted to be significantly below the internal ambient noise level design criteria in BS8233 which means that there is a greater allowance for mechanical services noise contribution in dwellings. Mechanical services noise limits are therefore recommended to be **L_{Aeq} 34 dB/NR28 in living rooms** and daytime habitable rooms, and **L_{Aeq} 29/NR23 in bedrooms**.

Planning criteria

Planning condition 8 of permission 19/74447/FUL states:

"Prior to occupation of any residential unit acoustic glazing and ventilation, designed to achieve the minimum noise reduction values specified in table 1 below shall be installed;

Table 1: Acoustic Glazing / Ventilation Requirements

Location	Glazing Insertion Loss (dB) Octave Band Centre Frequency (Hz)					
	125	250	500	1k	2k	4k
North façade living areas & bedrooms	26	27	35	40	39	39
All other façades, living areas and bedroom	20	19	29	38	36	36

* SRL note - these glazing specifications equate to a R_w (C ; C_{tr}) performance requirement of 37 (-1; -3) dB for the north façade and 32 (-2; -5) dB for all other façades.

These glazing requirements are taken from the planning report prepared by Cole Jarman (report ref: 18/0278/R1 dated 7 November 2019) and were set as one way of meeting the internal noise criteria in BS 8233:2014.

Table 2: Guideline indoor noise levels for dwellings from BS 8233:2014

Location	07:00 to 23:00 hours	23:00 to 07:00 hours
Living Room	35 dB L_{Aeq} , 16 hour	-
Bedroom	35 dB L_{Aeq} , 16 hour	30 dB L_{Aeq} , 8 hour

The Cole Jarman report also states that the glazing and facade specification is set to control night-time maximum noise levels in bedrooms to be no greater than 45 - 55 dB L_{Amax} (excluding 10 - 15 events per night).

You intend to install the following glazing at the development.

Table 3: Acoustic data for proposed glazing systems, dB

Glazing build up	R_w (C; C_{tr}) *	Glazing Insertion Loss (dB) **					
		Octave Band Centre Frequency (Hz)					
		125	250	500	1k	2k	4k
8 mm Planiclear 16 mm Argon filled cavity 12 mm Planiclear	39 (-2; -5)	22	32	31	40	39	49
3 mm Planiclear / PVB standard (2 x 0.38 mm) / 3 mm Planiclear 16 mm Argon filled cavity 6 mm Planiclear	34 (-2; -5)	20	20	34	43	35	42

* As reported by Saint Gobain using their Calumen Live application.

** Saint Gobain have supplied this data to us and confirmed that it is predicted/modelled data only and not laboratory measured

You can see, where highlighted in red, that at some octave bands the glass system proposed for the north façade does not meet the requirements of planning condition 8. The single figure R_w (C; C_{tr}) performance for each unit does however exceed the equivalent performance of those specified in the planning condition..

There are many ways that you can meet the internal noise levels in BS 8233. However, the wording of the planning condition implies that you must match or exceed the glazing specification as a first priority. **We should seek clarification from the Local Authority that they can accept this alternative glazing system** (which meets the criteria given in BS 8233) as a way of satisfying planning condition 8.

Noise break in assessment

Noise survey data

Cole Jarman did an unattended survey at one location on the site in October 2019 to validate data they collected in 2015. In summary, the noise break in assessment uses the following measured noise levels at the site:

Table 4: Reported external noise data

Location	Daytime	Night-time	
	$L_{Aeq,16hr}$	$L_{Aeq,8hr}$	L_{Amax}
On Broadway, on build line of development	62	57	74

Cole Jarman do not report 1/1 octave band data for their survey. I have used the following spectrum shape, typical of road traffic, in my assessment of noise break in:

Table 5: Assumed spectral data used in calculations

Assessment period and parameter	dB(A)	Octave Band Centre Frequency (Hz), dB					
		125	250	500	1k	2k	4k
Daytime $L_{eq,16hr}$	62	62	60	58	57	55	51
Night-time $L_{eq,8hr}$	57	57	55	53	52	50	46
Night-time L_{max}	74	77	73	68	69	67	63

Predicted internal noise levels

Based on the glazing performance data in table 3 and external noise levels in tables 4 and 5, I predict the following noise levels within the worst affected dwellings within Media City Plot D3 (i.e. north facing rooms looking onto Broadway).

Table 5: Predicted single figure internal noise levels

Room	Daytime $L_{Aeq,16hour}$		Night-time $L_{Aeq,8hour}$	
	Predicted internal level	Criterion	Predicted internal level	Criterion
Living room	25	35		
Bedroom			23	30

I also predict internal maximum noise levels in bedrooms at night will not exceed 45 dB L_{Amax} .

The assessment demonstrates that the internal levels at the development will be comfortably below the BS 8233 criteria in all spaces. I therefore suggest that even though the North façade glazing specification marginally differs from the planning criterion in two 1/1 octave bands, the proposed glazing systems are acoustically appropriate and condition 8 can be discharged.

Mechanical services noise limits

The design criteria mean that the **combined noise from external sources and mechanical services** need to not exceed the identified L_{Aeq} noise limits. As noise from outside breaking into the development is better controlled than is required as a 'minimum', this gives us greater allowance for contributions from mechanical services noise.

Based on the predicted internal noise levels, the following mechanical services noise level limits are therefore proposed in each room.

Table 6: Mechanical services noise level limits, habitable rooms

Room	$L_{Aeq,T}$	NR
Living rooms	34	28
Bedrooms	29	23

The limits given are for the noise from mechanical services in the applicable habitable room (not in corridors, utility cupboard etc).

The criteria must be met by the ventilation system when it is providing whole dwelling ventilation (i.e. trickle, or background ventilation). The criteria are not designed to be met when the ventilation system is operating in extract or boost mode.

Yours sincerely,

Heulwen Peters BSc (Hons) MIOA

For and on behalf of

SRL Technical Services Limited

Tel: 01787 247595

Email: hpeters@srltsl.com