

30 November 2021

Lee Tarbuck

Site Manager
Urban Splash
Brownsfield Mill

Dear Lee,

AVRO – INTERNAL NOISE LEVEL SURVEY RESULTS

Further to the deployment of noise monitoring equipment in Apartment 3.22, Bedroom 1 and Bedroom 2 from 25th to 26th November 2021, this letter summarises the results of the measured internal noise levels.

The noise monitoring equipment was placed in the centre of the rooms and was left unattended over the course of the surveying period.

In addition, further spot measurements were taken approximately 1m from the external façade so that the performance of the glazing could be assessed.

Measured Internal Noise Levels

The criteria by which Manchester City Council judge the internal ambient noise levels is laid out in Table 1, below;

Table 1: Internal Noise Level Criteria

Activity	Location	Daytime (07:00 – 23:00 hrs)	Night-time (23:00 – 07:00 hrs)
Sleeping (daytime resting)	Bedroom	35 dB L _{Aeq,16h}	30 dB L _{Aeq,8h}

Tables 2 and 3, below, show the measured internal ambient noise levels.

Table 2: Measured Internal Noise Levels – Bedroom 1 – Zone A

Date	Period	BS8233 Required Internal Ambient Noise Level (dBL _{Aeq,T})	Measured Ambient Noise Level (dBL _{Aeq,T})	Measured Internal Ambient Noise Level meets required Internal Ambient Noise Level
25/04/2021	Day	35	29	Yes
	Night	30	27	Yes
26/04/2021	Day	35	29	Yes

Table 3: Measured Internal Noise Levels – Bedroom 2 – Zone B

Date	Period	BS8233 Required Internal Ambient Noise Level (dBL _{Aeq,T})	Measured Ambient Noise Level (dBL _{Aeq,T})	Measured Internal Ambient Noise Level meets required Internal Ambient Noise Level
25/04/2021	Day	35	32	Yes
	Night	30	30	Yes
26/04/2021	Day	35	31	Yes

To assess the maximum noise levels, Manchester City Council uses the World Health Organisation (WHO) document “*Guidelines for Community Noise: 1999*” which recommends that internal maximum noise levels (dBL_{Amax,F}) do not exceed 45 dBL_{Amax,F} more than 10 times a night.

Table 3 shows the number of times the internal maximum noise level criteria was exceeded in the night-time periods measured, the highest and typical maximum noise levels measured.

Table 3: Measured Internal Maximum Noise Levels

Room - Zone	Date	Number of times 45dBL _{Amax,F} exceeded	Less than 10 exceedances	Highest Maximum Noise Level Measured (dBL _{Amax,F})	Typical Maximum Noise Level Measured (dBL _{Amax,F})
Bedroom 1 – Zone A	23/04/2021	4	Yes	51	39
Bedroom 2 – Zone B		8	Yes	56	45

As shown by Tables 1 - 3 above, the measured internal ambient and maximum noise levels meet the planning conditions set by Manchester City Council, and the planning condition can therefore be discharged.

Measured Glazing Performance

Using the measured external ambient noise levels, the performance of the glazing can be calculated as a Level Difference, D. Table 4, below shows the measured external and internal ambient noise levels and the calculated Level Difference for both Bedroom 1 and Bedroom 2.

All external measurements were 15 minutes in duration.

Table 4: Calculated Level Differences

Date – Time (dd/mm/yyyy hh:mm)	Measured External Noise Level (dBL _{Aeq,15mins})	Bedroom 1 – Zone A		Bedroom 2 – Zone B	
		Measured Internal Ambient Noise Level (dBL _{Aeq,15mins})	Level Difference (dBD)	Measured Internal Ambient Noise Level (dBL _{Aeq,15mins})	Level Difference (dBD)
(25/11/2021 12:00)	59	30	29	31	28
(25/11/2021 12:15)	60	31	30	32	29
(25/11/2021 12:30)	61	36	25	35	26
(25/11/2021 12:45)	60	28	32	30	30

The average Level Difference for Bedroom 1 is therefore 29 dBD and the average Level Difference for Bedroom 2 is 28 dBD.

The parameter R_w provided by manufacturers is a laboratory measured sound insulation performance, measured under very specific conditions, and as such, it is not possible to directly measure the weighted sound reduction index, dBR_w , of the glazing on site. However, the laboratory sound insulation performance of glazing (dBR_w) is typically 5 dB greater than the on site performance (dBD).

Table 5, below shows the estimated measured sound insulation performance of the glazing compared with the specified sound insulation performance of the glazing in the original acoustic design report, *Environmental Intrusive Noise Study* by Sol Acoustics dated 15th February 2017.

Table 5: Estimated Glazing Sound Insulation Performance

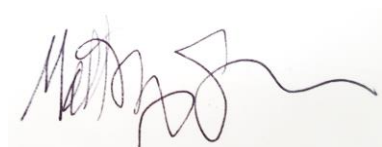
Bedroom - Zone	Estimated Glazing Sound Insulation Performance (dBR _w)	Specified Glazing Sound Insulation Performance (dBR _w)	Glazing Build up
Bedroom 1 – Zone A	34	38	10mm / 12mm Thermal Cavity / 6mm
Bedroom 2 – Zone B	33	31	4mm/ 16mm Thermal Cavity / 4mm

Table 5 shows that the installed glazing in Zone A appears to show a lower laboratory tested sound insulation performance than that of the glazing specified in the original acoustic design report, while the sound insulation performance of the glazing installed in Zone B appears better than that specified. This is likely due to the differing frequency content of the external noise source, which are not controlled as they are in a laboratory.

Regardless, Tables 2 and 3 show that glazing is sufficient to control the internal ambient and maximum noise levels to within the criteria set by Manchester City Council.

I trust the above is clear and useful but please do not hesitate to contact us if you have any questions.

Yours sincerely,



Matt Jones

GRADUATE ACOUSTIC CONSULTANT

CHECKED BY: BEN TOMLIN (PRINCIPAL ACOUSTIC CONSULTANT)