

21002-BT-L04

Chris Keating
Eric Wright Construction Ltd
Sceptre House
Sceptre Way
Bamber Bridge
Preston PR5 6AW

09/02/2023

Dear Chris,

ANCOATS DISPENSARY – ACOUSTICS, VENTILATION AND OVERHEATING ASSESSMENT

It is understood that Manchester City Council has requested further information in order to discharge planning condition 14a contained within planning application re. CDN/22/0759., which states;

“Notwithstanding the Noise Impact Assessment prepared by dBx Acoustics Ltd stamped as received by the City Council, as Local Planning Authority 11 May 2021, prior to any above ground work a scheme for acoustically insulating the proposed residential accommodation against noise from the local traffic network shall be submitted for approval in writing by the City Council, as Local Planning Authority. The approved noise insulation scheme shall be completed before the first occupation of the development

Noise survey data must include measurements taken during a rush-hour period and night time to determine the appropriate sound insulation measures necessary. The following noise criteria will be required to be achieved:

- *Bedrooms (night time - 23.00 - 07.00) 30 dB L Aeq (individual noise events shall not exceed 45 dB L Amax,F by more than 15 times)*
- *Living Rooms (daytime - 07.00 - 23.00) 35 dB L Aeq*
- *Gardens and terraces (daytime) 55 dB L Aeq”*

Although this does not directly concern overheating, an emailed query was received from Jennifer Atkinson, Principal Planning Manager at Manchester City Council (MCC), dated 28 November 2022, which stated;

‘The submitted acoustic report (dBx Acoustics, Stage 4 Acoustic Design Report, 24 October 2022) has identified that a detailed overheating assessment, including an TM59 assessment, is required for apartments on the southeast and northeast elevations to provide more detail on the frequency and duration of overheating events. This information is required as part of condition 14a as it forms part of the acoustic design as additional ventilation (mechanical) may be required for impacted apartments. The overheating assessment should be undertaken with consideration of the acoustic report to ensure that both thermal and acoustic comfort are designed in.’

A TM59 assessment identified that Plots 33 and 34 at the rear of the site (third floor) fail the overheating assessment, and must therefore be considered with reference to the guidance set out in the *Acoustics Ventilation and Overheating: Residential Design Guide (AVO)* published by the Association of Noise Consultants.

dBx Acoustics Ltd has therefore prepared a noise impact assessment relating to the redevelopment of Ancoats Dispensary to provide residential accommodation.

NOISE SURVEY

Due to significant development in the surrounding area since the original planning noise survey, dBx Acoustics Ltd undertook additional noise measurements at the façade of Plots 33/34 between Friday 20th - Monday 23rd January 2023 to confirm the ambient noise levels affecting the flats in question.

Noise levels were measured across the weekend period as agreed with MCC Environmental Health Officer, Laura Miller. This was to avoid noise impact from the ongoing construction work being carried out throughout the week.

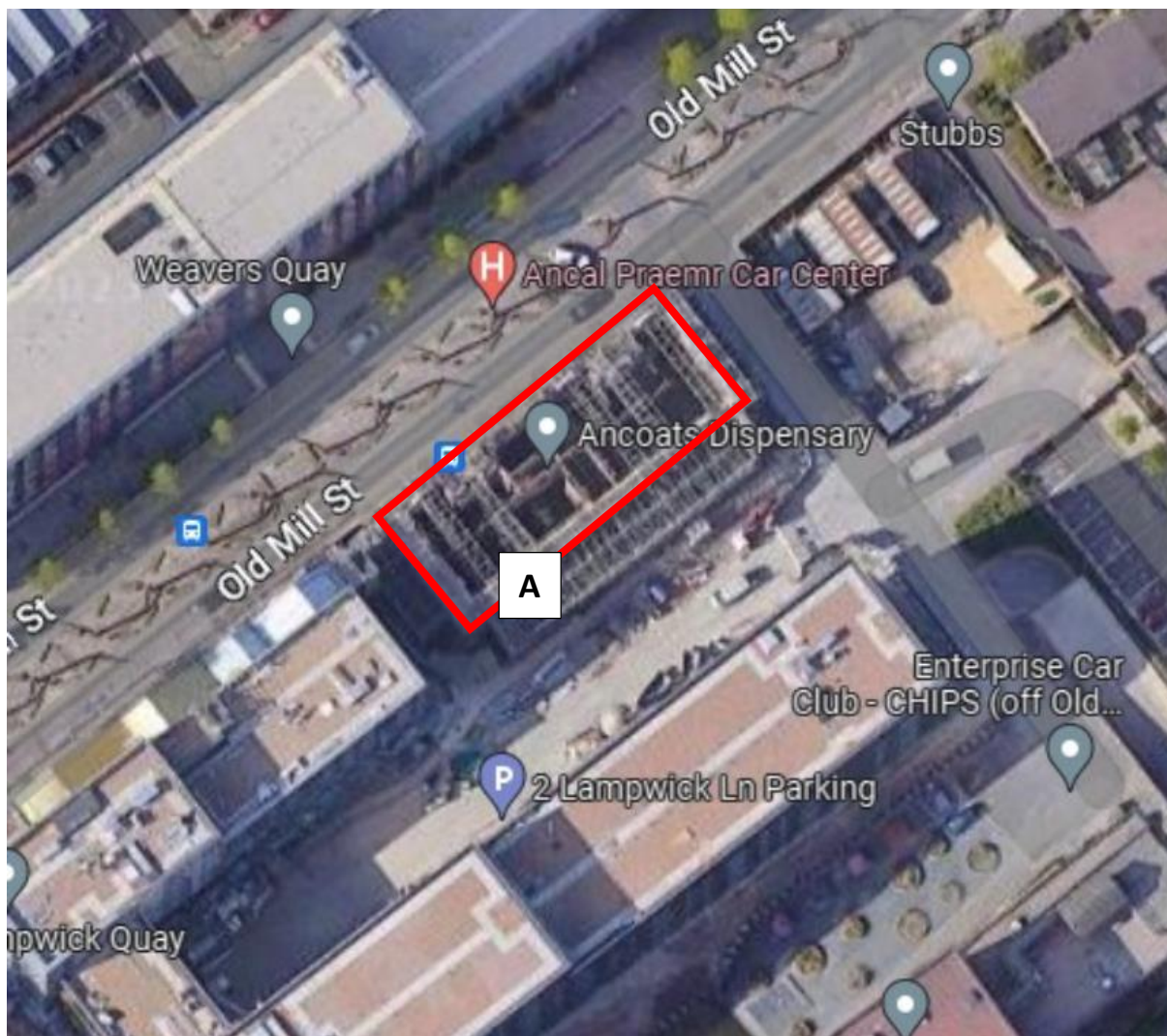
Noise Measurement Location and Noise Climate

A continuously logging noise monitor was located at third floor level at the rear of the site, representative of Plots 33/34, as located in Figure 1, below.

The prevailing noise source at the site is road noise from Old Mill Street and the surrounding road network, Great Ancoats Street (A665) is located 300m South-West of the site.

The sound level meter was deployed on the third floor of the development at Location A, indicated in Figure 1 below.

Figure 1: Noise Measurement Location



Equipment Used

The equipment used during the environmental noise survey is detailed in Table 1, below;

Table 1: Equipment Used

Equipment	Manufacturer & Part No.	Serial Number
Sound Level Meter	NOR 140	1403443
Microphone	NOR 1225	18437
Calibrator	B&K 4231	1821323

The sound level meter was calibrated before and after measurements, with no significant drift recorded. An accredited laboratory calibrated the equipment not more than two years prior to the measurements being made, with the exception of the calibrator, which had been calibrated not more than one year prior to the survey.

Weather Conditions

Weather conditions during the measurement period were generally cool and cloudy. Wind speeds were within suitable parameters for the measurement of environmental noise (i.e. generally under 5 ms^{-1}). All microphones were protected with a windshield for the duration of the survey.

Measurement Results

Table 2, below, summarises the measurement results.

Table 2: Summary of Unattended Noise Monitoring

Date	Measurement Period	Ambient Noise Level ($\text{dBL}_{\text{Aeq,T}}$) ¹	Typical Maximum Noise Level ($\text{dB L}_{\text{AFmax}}$) ²
20/01/2023 (Friday)	Day (15:02-22:48)	55	-
	Night (23:00-07:00)	48	65
21/01/2023 (Saturday)	Day (07:00-23:00)	54	-
	Night (23:00-07:00)	56	82*
22/01/2023 (Sunday)	Day (07:00-23:00)	51	-
	Night (23:00-07:00)	51	64

Notes: ¹ Logarithmic average over the day / night survey periods

² Level not normally exceeded more than 10-15 times per night per WHO guidance

It should be noted that noise levels during the evening / night time period on Saturday 21st January were higher than on the other days measured. This is thought to be due to Chinese New Year celebrations in the city, including fireworks. The noise levels measured on this night have therefore been excluded from this assessment as being atypical, as agreed with the Local Authority.

AVO LEVEL 1 AND LEVEL 2 ASSESSMENT

A noise impact assessment for the overheating condition has been undertaken in accordance with the guidance outlined within *Acoustics Ventilation and Overheating: Residential Design Guide (AVO)*, as per Manchester City Council's *Planning and Noise Technical Guidance 2022*.

The AVO Level 1 assessment is used to determine the 'Potential Effect without Mitigation' and to establish if there is a requirement for a Level 2 Assessment. The Level 1 risk category assessment table from AVO is reproduced in Appendix A.

The Level 1 assessment is summarised in Table 3, below.

Table 3: Level 1 Assessment

Date	Typical Daytime Noise Levels (dB L _{Aeq,T})	Typical Night-time Noise Levels (dB L _{Aeq,T})	Typical Maximum Noise Level (dB L _{AFmax})	Risk Category
20/01/2023 (Friday)	55	48	65	Low
21/01/2023 (Saturday)	54	Excluded	Excluded	Low
22/01/2023 (Sunday)	51	51	64	Low

It can be seen that the ambient noise levels for this site during both the day and night-time periods are within the 'Low' risk category therefore a Level 2 Assessment is 'optional'. A Level 2 assessment has been provided below for completeness.

AVO Level 2 Assessment – Daytime

The AVO Level 2 assessment implies an upper limit for Internal Ambient Noise Levels (IANL) in the daytime period (07:00-23:00h) of 50dB during the overheating condition. The Level 2 assessment guidance is reproduced in Appendix B.

AVO specifies an expected reduction from external to internal noise levels of -13dB when a window is open. On this basis, with reference to the measured noise levels presented in Table 2, above, the predicted daytime IANL within the affected plots is shown in Table 4, below.

Table 4: Predicted Daytime IANL

Date	IANL Daytime (dB L _{Aeq,T})	Upper Limit Outlined in AVO
20/01/2023 (Friday)	42	>50dB L _{Aeq,16h}
21/01/2023 (Saturday)	41	
22/01/2023 (Sunday)	38	

As shown in Table 4, the daytime IANL within the affected plots during overheating are significantly below the upper limit outlined within AVO, which therefore indicates that noise would not be expected to cause a material change in occupant behaviour.

AVO Level 2 Assessment - Night

The AVO Level 2 assessment for the night-time period implies an upper limit for IANL at night during the overheating condition of 42dB $L_{Aeq,8h}$.

The predicted IANL in the affected plots during the night-time period is presented in Table 5, below.

Table 5: Predicted Night Time IANL

Date	IANL Night-time (dB $L_{Aeq,T}$)	Upper Limit Outlined in AVO
20/01/2023 (Friday)	35	>42dB $L_{Aeq,8h}$
21/01/2023 (Saturday)	(excluded)	
22/01/2023 (Sunday)	38	

It can be seen that during the night time period, the IANL with windows open to control overheating would be within the upper limit suggested by AVO and no material change in occupant behaviour due to noise would be expected.

Individual Night-time Noise Events

The guidance provided within AVO as presented in Appendix A, details that individual noise events during overheating should 'not normally exceed 65dB L_{AFmax} ' internally.

Based on the noise levels measured on site, in a location representative of Plots 33 and 34, and the noise reduction of -13dB provided by openable windows, internal ambient noise levels during overheating as a result of individual noise events would typically be no more than 52dB L_{AFmax} .

The assessment therefore indicates that for Plots 33 and 34, with windows open to control overheating, noise would not be expected to cause a material change in occupant behaviour. Therefore, control of overheating via openable windows is considered an acoustically appropriate strategy for these plots.

CONCLUSION

dBx Acoustics Ltd has undertaken an unattended noise survey at Ancoats Dispensary, Old Mill St, Ancoats, Manchester M4 6EB between Friday 20th January and Monday 23rd.

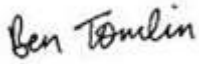
Long term noise monitoring equipment was deployed on the third floor at the rear of the site to measure levels impacting plots 33 and 34, which have been identified as being at risk of overheating by a TM59 assessment.

The measured levels were used in accordance with the assessment criteria in the Acoustics Ventilation and Overheating: Residential Design Guide (AVO) to consider the impact on residential amenity of opening windows for ventilation during the overheating condition.

The assessment undertaken outlines that overheating mitigation via openable windows would be sufficient in maintaining amenity to residents within plots 33 and 34.

Planning Condition 14a can therefore be discharged.

Yours Sincerely,

A handwritten signature in black ink that reads 'Ben Tomlin'.

Ben Tomlin, Associate

Checked By: Susan Witterick, Director

APPENDIX A – AVO LEVEL 1 GUIDANCE

Table 3-2 Guidance for Level 1 site risk assessment of noise from transport noise sources ^[Note 1] relating to overheating condition

Risk category for Level 1 assessment [Note 5]	Potential Effect without Mitigation	Recommendation for Level 2 assessment
$L_{Aeq, T}$ [Note 2] during 07:00 - 23:00 $L_{Aeq, 8hr}$ during 23:00 - 07:00 High Medium Low Negligible	Increasing risk of adverse effect	Recommended Optional
	Use of opening windows as primary means of mitigating overheating is not likely to result in adverse effect	Not required

APPENDIX B – AVO LEVEL 2 GUIDANCE

Table 3-3 Guidance for Level 2 assessment of noise from transport noise sources^[Note 1] relating to overheating condition

Internal ambient noise level ^[Note 2]			Examples of Outcomes ^[Note 5]	
$L_{Aeq,T}$ ^[Note 3] during 07:00 – 23:00 ^[Note 4]	$L_{Aeq,24h}$ during 23:00 – 07:00	Individual noise events during 23:00 – 07:00 ^[Note 4]		
> 50 dB	> 42 dB	Normally exceeds 65 dB $L_{AEP,max}$	Noise causes a material change in behaviour e.g. having to keep windows closed most of the time	Avoiding certain activities during periods of intrusion. Having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.
			Increasing likelihood of impact on reliable speech communication during the day or sleep disturbance at night	At higher noise levels, more significant behavioural change is expected and may only be considered suitable if occurring for limited periods. As noise levels increase, small behaviour changes are expected e.g. turning up the volume on the television; speaking a little more loudly; having to close windows for certain activities, for example ones which require a high level of concentration. Potential for some reported sleep disturbance. Affects the acoustic environment inside the dwelling such that there is a perceived change in quality of life. At lower noise levels, limited behavioural change is expected unless conditions are prevalent for most of the time. ^[Note 6]
≤ 35 dB	≤ 30 dB	Do not normally exceed $L_{AEP,max}$ 45 dB more than 10 times a night	Noise can be heard, but does not cause any change in behaviour	Noise can be heard, but does not cause any change in behaviour, attitude, or other physiological response ^[Note 5] . Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.