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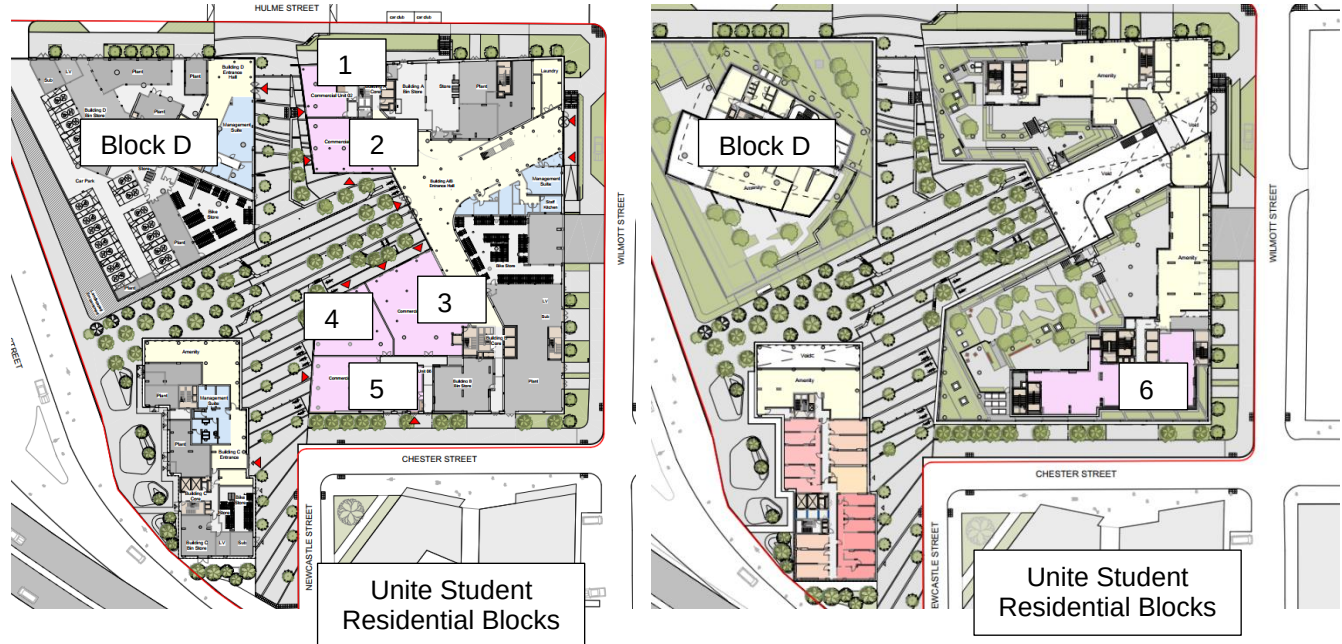
First Street, Blocks A & B

Assessment of Noise Impact of Commercial Units on Nearest Noise Sensitive Receptors

1.0 Introduction and Site Layout

- 1.1 Acoustic and Engineering Consultants Ltd (AEC) has been appointed by Downing Construction to assess the noise breaking out of the six proposed commercial units on the ground and first floor podium levels of Blocks A and B of their First Street development. It should be noted that no specific tenants have been identified at this stage.
- 1.2 The assessment has been requested by Manchester City Council (MCC) following Downing Construction's request to change the use class of the units. Currently the units can operate as a café (Use Class A3 (now E(b))) and a gym (Use Class D2 (now E(d))). The following uses are now being considered:
- Class E(a) – display or retail sale of goods, other than hot food
 - Class E(b) – sale of food and drink for consumption (mostly) on the premises
 - Class E(ii) – professional services (other than health or medical services)
 - Class E(iii) – other appropriate services in a commercial, business or service locality
 - Class E(d) – indoor sport, recreation or fitness (not involving motorised vehicles or firearms or use as a swimming pool or skating rink)
 - Use Sui Generis - public houses, wine bars, or drinking establishments, drinking establishments with expanded food provision
- 1.3 It is expected that the majority of uses would only operate during the daytime hours only (0700 to 2300h), however, some uses may operate in the night-time period up to around 0100 or 0200h.
- 1.4 The locations of the six commercial units are presented in Figure 1.1, below.
- 1.5 The nearest noise sensitive receptors to the commercial units are the apartments in Blocks A & B and Block D of this development and the Unite Student residential blocks to the south. These are also presented in Figure 1.1.

Figure 1.1 – Site Layout and Nearest Noise Sensitive Receptors



2.0 Basis of Assessment

Local Authority Requirements

- 2.1 Noise from the commercial units associated with the development is covered in Planning Condition 17 which is presented in MCC's Planning Permission document for application 125573/FO/2019 dated 09 March 2021. Planning Condition 17 is presented below:

"Before each of (a) the residential accommodation and (b) each of the Class A3 (Cafe and Restaurant) use and D2 (Gym) units within Block B commences a scheme for acoustically insulating the ground floor commercial to ensure that there is no unacceptable level of noise transfer from the ground floor uses to the residential accommodation above shall be submitted to and approved in writing by the City Council as local planning authority.

Where entertainment noise is proposed the LAeq (entertainment noise) shall be controlled to 10dB below the LA90 (without entertainment noise) in each octave band at the facade of the nearest noise sensitive location, and internal noise levels at structurally adjoined residential properties in the 63Hz and 125Hz octave frequency bands shall be controlled so as not to exceed (in habitable rooms) 47dB and 41dB, respectively.

The approved noise insulation scheme shall be completed before any of the approved uses commence.

Prior to occupation a post completion report to verify that all of the recommended mitigation measures have been installed and effectively mitigate any potential adverse noise impacts in adjacent residential accommodation arising directly from the proposed development shall be submitted and agreed in writing by the City Council as local planning authority. Prior to occupation any non compliance shall be suitably mitigated in accordance with an agreed scheme.

Reason - To secure a reduction in noise in order to protect future residents from noise nuisance, pursuant to policies SP1 and DM1 of the Core Strategy and saved UDP Policy DC26."

- 2.2 Based on the above, AEC understand that entertainment noise needs to be controlled to no greater than 47dB and 41dB in the 63Hz and 125Hz octave frequency bands within Blocks A and B. In addition, as Block D is part of the same development, and the sound insulation performance of the glazing is known, that this criteria applied to this building as well.
- 2.3 The aspect of the above planning condition which relates to internal noise transfer into the adjoining apartments within Blocks A & B has been covered in AEC's acoustic design report and will be further developed once the tenants have been confirmed.
- 2.4 Section 3.7.1.2 '*Entertainment Venues*' of MCC's document '*Planning & Noise – Technical Guidance (P&NTG)*' (2022) suggests that entertainment noise relates to noise from sources including recorded music, live bands or karaoke. AEC's interpretation is that this does not include cafes or retail uses which may play low level background music.
- 2.5 P&NTG does not provide noise level limits for noise from uses which are not considered entertainment venues. Therefore, it is proposed that that ambient and maximum noise levels breaking out of units which do not play amplified music (including background music) do not exceed the existing background and ambient noise levels, respectively, external to the noise sensitive receptors. This would result in noise from these sources being just perceptible and would not be considered intrusive in most instances.

Noise Level Limits

- 2.6 Based on the above, and noise levels previously measured by AEC, entertainment noise (from restaurants/bars or gym) playing loud amplified music, should be controlled to not exceed the daytime and night-time noise levels presented in Table 2.1, below, external to the nearest noise sensitive receptors not associated with the scheme.

Table 2.1 – Music Noise Level Limits in each Octave Band Centre Frequency at the Nearest Noise Sensitive Receptors

Period	Noise Level Limit, dBL _{eq} @ Octave Band Centre Frequency, Hz						
	63	125	250	500	1k	2k	4k
Daytime	53	44	42	42	45	36	30
Night-time	51	42	39	39	42	34	28

- 2.7 In units which are not entertainment venues, e.g. a shop or café, daytime and night-time ambient and maximum noise levels would need to be controlled to not exceed the limits presented in Table 2.2, below.

Table 2.2 – Daytime and Night-Time Noise Level Limits for Non-Music Source at the Nearest Noise Sensitive Receptors

Period	Noise Level Limits	
	Maximum, dBL _{Amax,F}	Ambient, dBL _{Aeq,T}
Daytime (0700-2300h)	60	57
Night-Time (2300-0700h)	57	54

3.0 Source Noise Levels

- 3.1 Based on AEC's experience it is expected that the noisiest uses would include a restaurant/bar which plays amplified music, a gym and a café with low level background music. Noise from the restaurant/bar and gym will be assessed against the entertainment noise level requirement and noise from the café will be assessed against AEC's proposed limits.
- 3.2 Ambient and maximum noise levels measured in a restaurant/bar and gym with loud amplified music and in a café with low level background music are presented in Table 3.1, below. Please note that the ambient and maximum noise levels in a café are considered to be worst-case for a non-entertainment noise usage.

Table 3.1 – Ambient and Maximum Noise Levels in different Commercial Uses

Type of Use	Overall Level, dB		Noise Level, dB @ Octave Band Centre Frequency, Hz						
			63	125	250	500	1000	2000	4000
Restaurant/ Pub	Ambient	89 $L_{Aeq,5min}$	90	90	85	85	85	83	77
Gym	Ambient	82 $L_{Aeq,5min}$	82	87	82	76	73	71	76
Café	Ambient	67 $L_{Aeq,T}$	62	74	67	64	61	56	52
	Maximum	81 $L_{Amax, F}$	80	86	81	76	75	73	68

4.0 Determined Break-out Noise Levels and Assessment

- 4.1 The weakest element of the external envelope of the commercial spaces will be glazing and the doors. Based on the information provided, it is understood that the glazing to the commercial units will have the following build-up.
- 13.5mm PVB glass
 - 16mm cavity consisting of 90% Argon
 - 13.5mm PVB glass
- 4.2 Calculations indicate that the proposed glazing would achieve a sound insulation performance of around 41dBR_w. It is expected that the non-glazed elements would be at least 10dBR_w higher than the glazing.

Noise from Entertainment Sources

- 4.3 As a worst-case all six commercial units could be operated by users who play loud amplified music. Based on the layout of the scheme, the only residential apartments which would have direct line of sight of the commercial units would be Block D and the Unite Students residential blocks to the south.
- 4.4 Noise breakout calculations have been based on the internal noise levels presented in Table 3.1, the sound insulation performance and area of the glazing serving each commercial unit and distance attenuation.

- 4.5 The calculated noise levels external to Block D and the Unite Students residential blocks are presented in Table 4.1, below. It should be noted that noise breaking out of Units 1 to 5 would be completely screened from the Unite Students residential blocks, and therefore, have not been considered further.

Table 4.1 – Ambient and Maximum Noise Levels External to Nearest Noise Sensitive Receptors due to Entertainment Noise

Receptor	Source	Overall Level, dB	Noise Level, dB @ Octave Band Centre Frequency, Hz						
			63	125	250	500	1000	2000	4000
Block D	All Units	42 $L_{Aeq,5min}$	51	57	44	32	27	21	12
Unite Students	Unit 6 only	27 $L_{Aeq,5min}$	38	41	27	18	15	9	0

- 4.6 On the elevation of Block D which overlooks the commercial units, the lowest performing glazing and acoustic trickle ventilators provide a sound insulation performance of 43dBR_w and 38dBD_{n,e,w}, respectively.
- 4.7 Calculations based on the determined external noise levels in Table 4.1 outside Block D, the area and sound insulation performance of the glazing and acoustic trickle ventilators and the room size, indicates that MCC's internal noise limits in the 63Hz and 125Hz octave frequency bands would be met from entertainment noise inside Block D.
- 4.8 A comparison between the ambient noise level external to the Unite Students residential blocks in Table 4.1 and the daytime and night-time noise level limits in Table 2.1, indicate that Unit 6 could be operated by a user that plays amplified music.
- 4.9 The above assessment assumes the commercial units will have a lobbied door system and no openings in the building envelope i.e. no open windows or doors.

Noise from Non-Entertainment Sources

- 4.10 The calculated ambient and maximum noise levels external to Block D and the Unite Students residential blocks based on all six commercial units having tenancies other than entertainment venues is presented in Table 4.2, below.

Table 4.2 – Daytime and Night-Time Noise Levels External to Nearest Noise Sensitive Receptors from Non-Entertainment Source

Receptor	Noise Levels	
	Maximum, dBL _{Amax,F}	Ambient, dBL _{Aeq,T}
Block D	30	22
Unite Students Residential Blocks	29	10

- 4.11 A comparison between the noise levels presented in Table 4.2, and the noise level limits in Table 2.2, indicates that even if all six commercial units were operated by non-entertainment sources, AEC's proposed noise level limit would be met.

Summary

- 4.12 Based on the above assessment, even assuming a worst-case uses, noise breaking out of the six commercial units would be controlled to meet MCC's and AEC's proposed noise level limits. Therefore, all of the uses would be suitable in terms of controlling noise egress to residential receptors.