

MPF/PR0534/L21

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Dear Isabelle

DEANS_GATE SQUARE, COMMERCIAL UNIT 2A, PLANNING CONDITIONS 24 & 27

We write in relation to conditions 24 and 27 of the planning approval for Deansgate Square and in particular in relation to commercial unit 2A of the Development.

INTRODUCTION

The planning approval for Deansgate Square, Manchester includes a condition which requires that a noise study is conducted in relation to activity noise egress and plant noise from the commercial units that are ancillary to the residential accommodation at the development.

Fisher Acoustics Ltd has been commissioned by Renaker Build Limited to determine the allowable activity noise levels within commercial unit 2A and to advise on compliance with the requirements of the planning approval for the Development.

PLANNING CONDITION

Planning Conditions 24 and 27 of the Planning Approval for Deansgate Square, Manchester (Planning Application number 111719/FO/2016/C1) states:

24) Before any A3 use hereby approved commences, the premises shall be acoustically insulated and treated to limit the break out of noise in accordance with a noise study of the premises and a scheme of acoustic treatment that has been submitted to and approved in writing by the City Council as local planning authority.

Reason - To safeguard the amenities of the occupiers of the building and occupiers of nearby properties, pursuant to policies SP1 and DM1 of the Core Strategy..

27) Before first occupation of the development the building, together with any externally mounted ancillary equipment, shall be acoustically insulated in accordance with a scheme submitted to and approved in writing by the City Council as local planning authority in order to secure a reduction in the level of noise emanating from the equipment.

Reason - To safeguard the amenities of the occupiers of nearby residential accommodation, pursuant to policies SP1 and DM1 of the Core Strategy.

The closest residential properties to Unit 2A are the apartments within the residential tower of Deansgate Square and proposed new residential properties at Plot E1, Great Jackson Street, Manchester (Crown Street, Phase III Development).

COMMERCIAL USE

Commercial unit 2A is occupied by a French bistro-inspired restaurant operated by Medlock Canteen. The opening hours are 8 am to midnight, Monday to Saturday and 9 am to 8 pm on Sunday.

Figure 1 shows the location of Unit 2A within the context of the Deansgate Square development.

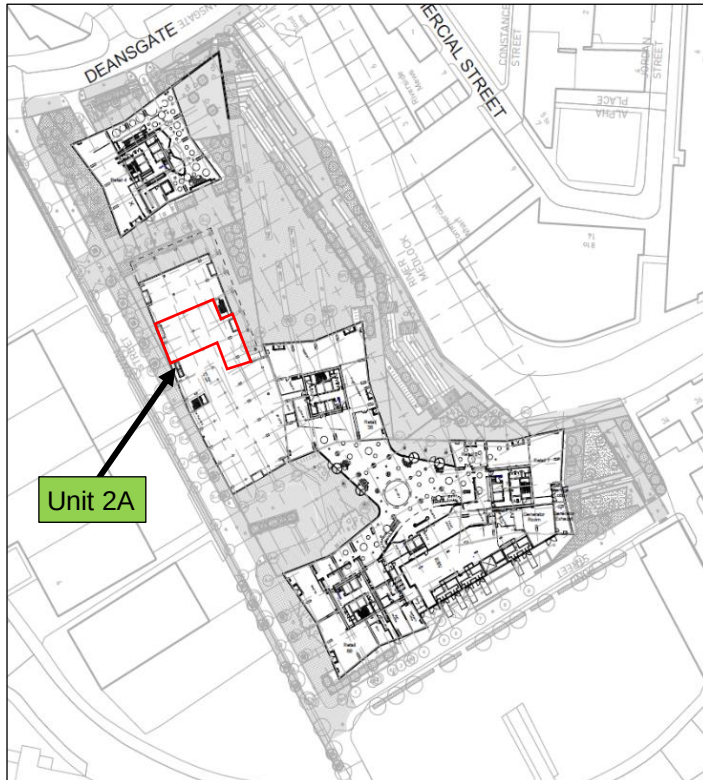


Figure 1: Location of commercial unit 2A

ENVIRONMENTAL NOISE CRITERIA

Noise egress from Unit 2A must be controlled to appropriate levels so as to avoid noise nuisance to existing sensitive receptors.

A sound system for background music replay is installed within Unit 2A. Therefore an assessment of potential music noise egress from the unit has been carried out.

'Planning & Noise, Technical Guidance' issued by Manchester City Council in October 2022 gives guidance on the preferred approach to environmental noise assessments. In relation to entertainment venues, Section 3.7.1.2 of the document states:

- 'When considering the potential impact of a proposal for an entertainment venue, consultants should consider the overall noise level (LAeq) and the 63 Hz and 125 Hz octave band noise levels (Leq). Music noise in the 63 Hz and 125 Hz octave bands, which is often described as "bass noise", is particularly difficult to contain and the impulsive and non-steady character of low frequency music noise is particularly disturbing for local residents exposed to it.

A planning application for a new entertainment venue that is structurally detached from other building uses should demonstrate that music noise from the proposal will not be 'audible' in nearby residential properties, assuming that the residential properties in question have their windows open. The criterion here is: Entertainment noise (LAeq) should be controlled to 5dB below the typical background noise level (LA90) in each octave band at the nearest noise sensitive location.

A criterion that would achieve a condition of 'inaudible' / 'virtually inaudible' which is applicable for new residential developments that are structurally connected to entertainment venues (or vice versa) would be: 'Music noise levels in the 63Hz and 125Hz octave centre frequency bands (Leq) should be controlled so as not to exceed (in habitable rooms) 47dB and 41dB (Leq), respectively.

This criterion may also be applicable for new residential developments that are structurally separate from an existing entertainment venue'.

The above guidance recommends that the 'LAeq' noise level external to the nearest residential properties due to music noise egress from an entertainment venue is at least 5 dB lower than the 'LA90' background noise level external to those properties in each octave band.

The environmental noise study that was conducted as part of the planning submission for Deansgate Square included noise surveys within and around the site. These noise surveys allowed the establishment of the maximum allowable noise levels at residential receptors both within and around the Deansgate Square development due to operational activity noise. The noise and vibration chapter of the Environmental Statement for Deansgate Square identified these allowable noise levels.

Similarly, the environmental noise study that was conducted as part of the planning submission for Crown Street Phase III included noise surveys within and around the site. These noise surveys allowed the establishment of the maximum allowable noise levels at residential receptors within the Crown Street Phase III development. The noise and vibration chapter of the Environmental Statement for Crown Street Phase III identified these allowable noise levels.

The closest residential receptors to Unit 2A are apartments within the North Tower of Deansgate Square at level 2 and in the proposed residential development at Plot E1 of Crown Street Phase III.

Figure 2 shows the locations of Unit 2A, Plot E1 and the North Tower.

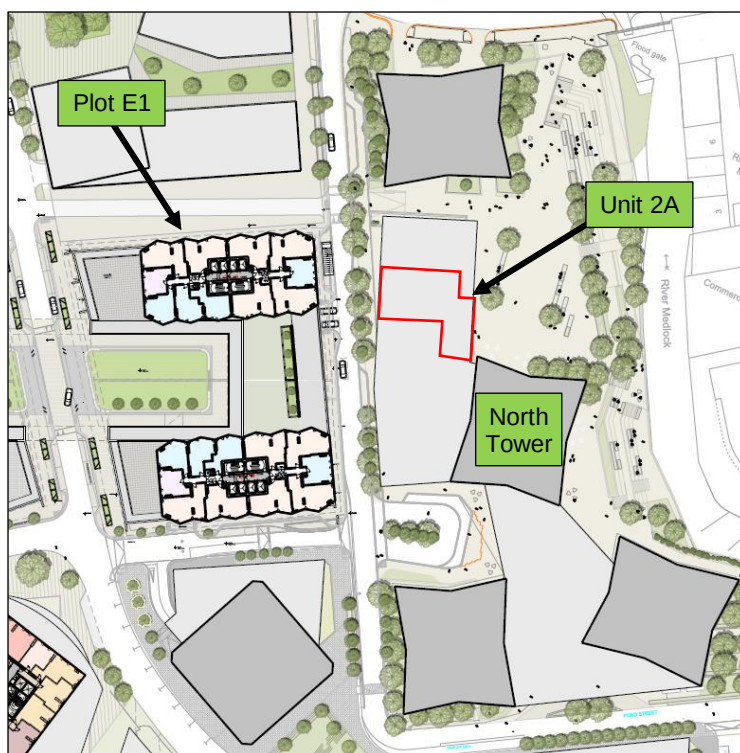


Figure 2: Location of commercial unit 2A

Table 1 identifies the maximum allowable Leq noise levels external to the apartments of North Tower and Plot E1 due to cumulative music noise breakout from all commercial units at Deansgate Square.

Period	Sound Pressure Level (dB Leq) @ Octave Band Centre Frequency (Hz)						
	63	125	250	500	1k	2k	4k
Deansgate Square 07:00 to 23:00	55	46	46	45	47	40	31
Deansgate Square 23:00 to 07:00	54	45	43	44	46	40	31
Plot E1 07:00 to 23:00	47	44	46	46	50	43	30
Plot E1 23:00 to 07:00	47	40	42	42	43	36	23

Table 1: Maximum recommended external noise levels at apartments due to music noise from all Deansgate Square commercial units

NOISE EGRESS CALCULATIONS

Noise egress calculations have been carried out to determine the expected noise level at the closest residential properties due to noise egress from the commercial units at Deansgate Square, including Unit 2A. Calculations of noise egress from a building requires the following information:

1. Dimensions of radiating surfaces (e.g. external wall)
2. Distance of radiating surfaces to sensitive receptor
3. Sound reduction index of radiating surfaces
4. Orientation of radiating surface to sensitive receptor

There are patron access doors within the curtain wall of Unit 2A and therefore the principal determinant of the sound insulation performance of the external envelope will be the installed glazing and the access doors.

As no door lobby is installed to Unit 2A, there could be intermittent increases of external noise during the movement of patrons in and out of the unit. Therefore, the assessment has included a worst-case scenario of open doors.

The glazing specification to the commercial units, installed as part of the main construction contract for Deansgate Square, is as follows:

- 13.5 mm laminate / 20mm cavity/ 13.5mm laminate

The expected minimum weighted sound reduction index of the above glazing specification and the patron access doors when closed are given in Table 2:

Building element	Sound Reduction Index (dB) @ Octave Band Centre Frequency (Hz)						
	63 Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz
Glazing - 13.5 mm laminate / 20mm cavity/ 13.5mm laminate	25	27	32	39	39	40	48
Doors	18	20	22	23	23	23	25

Table 2: Expected sound reduction index of commercial unit curtain wall elements

Calculations have been carried out to determine the allowable contribution of all the commercial units at Deansgate Square to the external noise level at the closest residential receptors to Unit 2A to ensure that the external noise limits identified in Table 1 are not exceeded when all of the commercial units are operating. The maximum allowable contribution to external noise at these closest receptors from Unit 2A has then been determined.

As identified above, the closest residential receptors to Unit 2A are the apartments within North Tower of Deansgate Square and at Plot E1, of the proposed Crown Street Phase III development.

Table 3 identifies the calculated noise levels that could be generated within Unit 2A with patron doors open, without exceeding the daytime and night time external noise limits given in Table 1.

Location	Sound Pressure Level (dB Leq) @ Octave Band Centre Frequency (Hz)						
	63	125	250	500	1k	2k	4k
Commercial Unit 2A Daytime (0700 hrs to 2300 hrs)	76	73	75	75	78	71	59
Commercial Unit 2A Night time (2300 hrs to 0700 hrs)	76	69	71	71	72	65	52

Table 3: Maximum allowable internal activity noise levels – daytime and night time, doors open

The noise levels detailed in Table 3 would allow a typical retail outlet or restaurant with low-level background music replay to be accommodated.

Given the operation of Unit 2A as a bistro-inspired restaurant with background music replay, compliance with the noise limits given in Table 3 is fully expected.

Calculations have also been carried out to determine the allowable internal noise levels to achieve compliance with the recommended maximum external noise levels assuming that the external doors to the commercial unit are closed.

Table 4 identifies the calculated noise levels that could be generated in Unit 2A with doors closed without exceeding the daytime and night time external noise limits given in Table 1.

Location	Sound Pressure Level (dB Leq) @ Octave Band Centre Frequency (Hz)						
	63	125	250	500	1k	2k	4k
Commercial Unit 2A Daytime (0700 hrs to 2300 hrs)	88	85	89	93	95	88	81
Commercial Unit 2A Night time (2300 hrs to 0700 hrs)	88	83	86	91	92	85	74

Table 4: Maximum allowable internal activity noise levels – Daytime and night time, doors closed

Given the operation of Unit 2A as a bistro-inspired restaurant with background music replay, compliance with the noise limits given in Table 4 is fully expected.

PLANT NOISE

The closest residential receptors to Unit 2A are apartments within the North Tower of Deansgate Square at level 2 and in the proposed residential development at Plot E1 of Crown Street Phase III.

The environmental noise study issued as part of the planning submissions for Crown Street Phase III identified the results of daytime and night time environmental noise surveys at and around the site. The results of the noise surveys have been used to establish the allowable noise level due to building services plant serving commercial unit 2A such that compliance with planning condition 27 is achieved.

Table 5 reproduces the applicable building services noise limit.

Location	Rating level (dB LAeq)	
	Daytime (07:00 hrs to 23:00 hrs)	Night time (23:00 hrs to 07:00 hrs)
Plot E1	52	45
Plot E2	52	45
Deansgate Square, North Tower	52	51

Table 5: Environmental noise limits for non-emergency building services plant

BUILDING SERVICES PLANT

The only noise-generating building services plant within Unit 2A are internally mounted supply and extract fans whose ductwork terminates at the external façade of the unit. In particular, the following has been installed:

- 1 no. Supply air fan, Vent-N Centrifugal inline fan, Model no.: 400-N
- 1 no. Extract air fan, 560 CVAT-ND Model no.: CVAT/4-12000/560 ND 2.2

Figure 3 identifies the location of the supply and extract fans within Unit 2A.

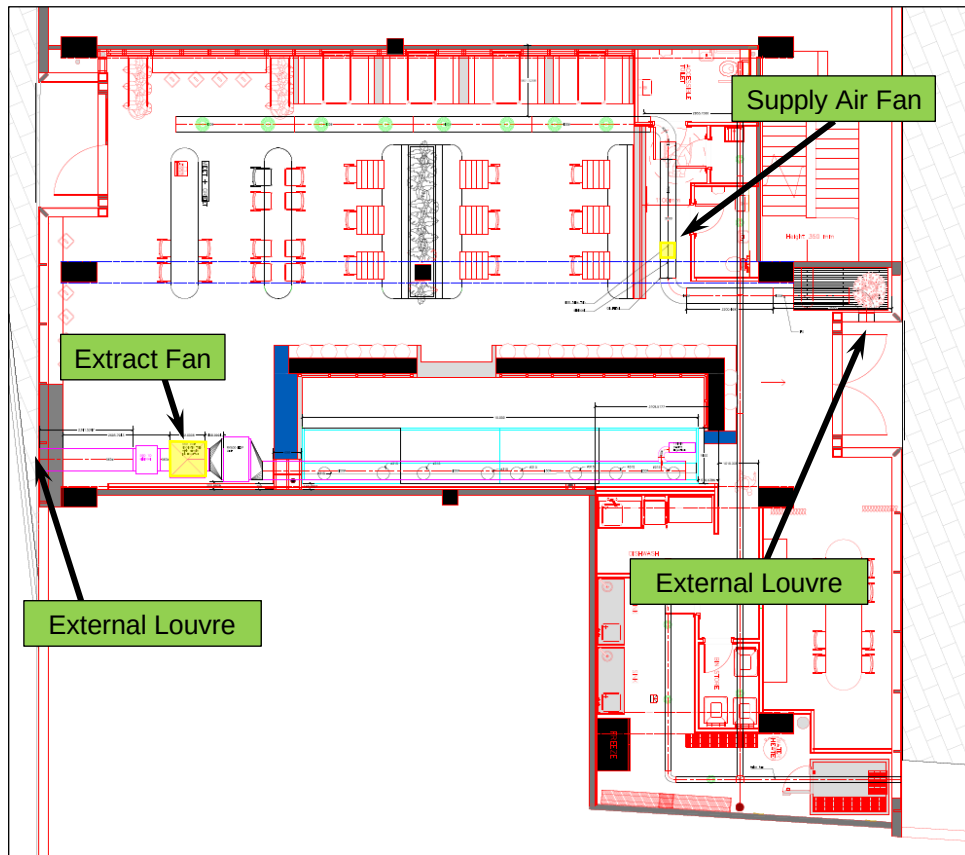


Figure 3: Location of internally mounted supply and extract fans and the external grille/ vent

Table 6 identifies the reported sound power levels of the supply and extract air fans that serve Unit 2A.

Building services plant item	Sound Power Level (dB re 1 x 10 ⁻¹² W)							
	dB(A)	Octave Band Centre Frequency (Hz)						
		63	125	250	500	1k	2k	4k
Vent-N Centrifugal inline fan, Model no.: 400-N, Inlet at 100% duty	73	73	77	74	72	67	63	60
Vent-N Centrifugal inline fan, Model no.: 400-N, Outlet at 100% duty	78	78	84	77	75	73	68	60
560 CVAT-ND Model no.: CVAT/4-12000/560 ND 2.2, Inlet at 100% duty	86	81	93	88	81	76	80	71
560 CVAT-ND Model no.: CVAT/4-12000/560 ND 2.2, Outlet at 100% duty	87	89	94	87	84	81	77	70

Table 6: Sound power levels of supply and extract air fans at unit 2A

Table 7 identifies the reported insertion losses of the attenuators fitted between the supply and extract air fans and the external louvres.

Attenuator	Static Insertion loss, Octave Band Centre Frequency (Hz)						
	63	125	250	500	1k	2k	4k
Inlet attenuator, Model no.: Supply 400	1	3	5	10	13	11	10
Exhaust attenuator, Model no.: Extract 560	2	4	7	14	14	9	10

Table 7: Insertion loss of the supply and extract system attenuators

EXPECTED NOISE LEVELS DUE TO BUILDING SERVICES PLANT

Based on the reported sound power levels of the supply and extract fans and the insertion loss of each attenuator, the expected noise levels at the nearest noise sensitive façade have been calculated. Table 8 identifies the calculated noise levels.

Location	Façade Sound Pressure Level (1m from façade)	
	Daytime (L_{Aeq}) (07:00 to 23:00 hrs)	Night time (L_{Aeq}) (23:00 to 07:00 hrs)
Deansgate Square, North Tower	41	41
Proposed Residences, Plot E1	25	25

Table 8: Calculated building services noise levels at the nearest noise sensitive facade

With reference to Table 5 and Table 8, it can be seen that the expected noise level at the nearest residential facade due to the operation of the supply and extract systems is substantially lower than the applicable environmental noise limits.

CONCLUSION

The maximum allowable internal noise levels within Unit 2A have been calculated such that the identified external noise limits at the closest residential receptors are not exceeded.

The calculated allowable noise levels are greater than those expected within Unit 2A, given the operation of the unit as a bistro-inspired restaurant with background music replay.

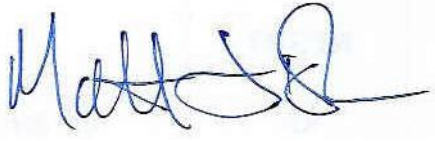
Compliance with the requirements of condition 24 of the planning approval is therefore fully expected.

The calculated noise levels at the nearest noise sensitive receptors due to the operation of building services plant within Unit 2A that vent to external louvres are substantially lower than the applicable noise limits.

Compliance with the requirements of condition 27 of the planning approval is therefore fully expected.

If there are any aspects that you would like to discuss, please do not hesitate to contact the undersigned.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'Matt Fisher', with a stylized flourish at the end.

MATT FISHER BEng (Hons) CEng MIOA
For and on behalf of Fisher Acoustics Limited