

MPF/PR0534/L17

7 January 2022

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Dear James

DEANSGATE SQUARE, COMMERCIAL UNIT 8, ENVIRONMENTAL NOISE ASSESSMENT

We write in relation to condition 24 of the planning approval for Deansgate Square and in particular in relation to commercial unit 8 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 from the proposed 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 8 and to advise on compliance with the requirements of the planning approval for the Development.

PLANNING CONDITION

Planning Condition 24 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..

The closest residential properties to commercial unit 8 are the apartments within the residential towers of Deansgate Square and in particular the residential dwellings above at Tower B, Deansgate Square.

PROPOSED COMMERCIAL USE

The proposed use for commercial unit 8 is a florist to be operated by Flourish.

Figure 1 shows the location of Unit 8 within the context of the Deansgate Square development.

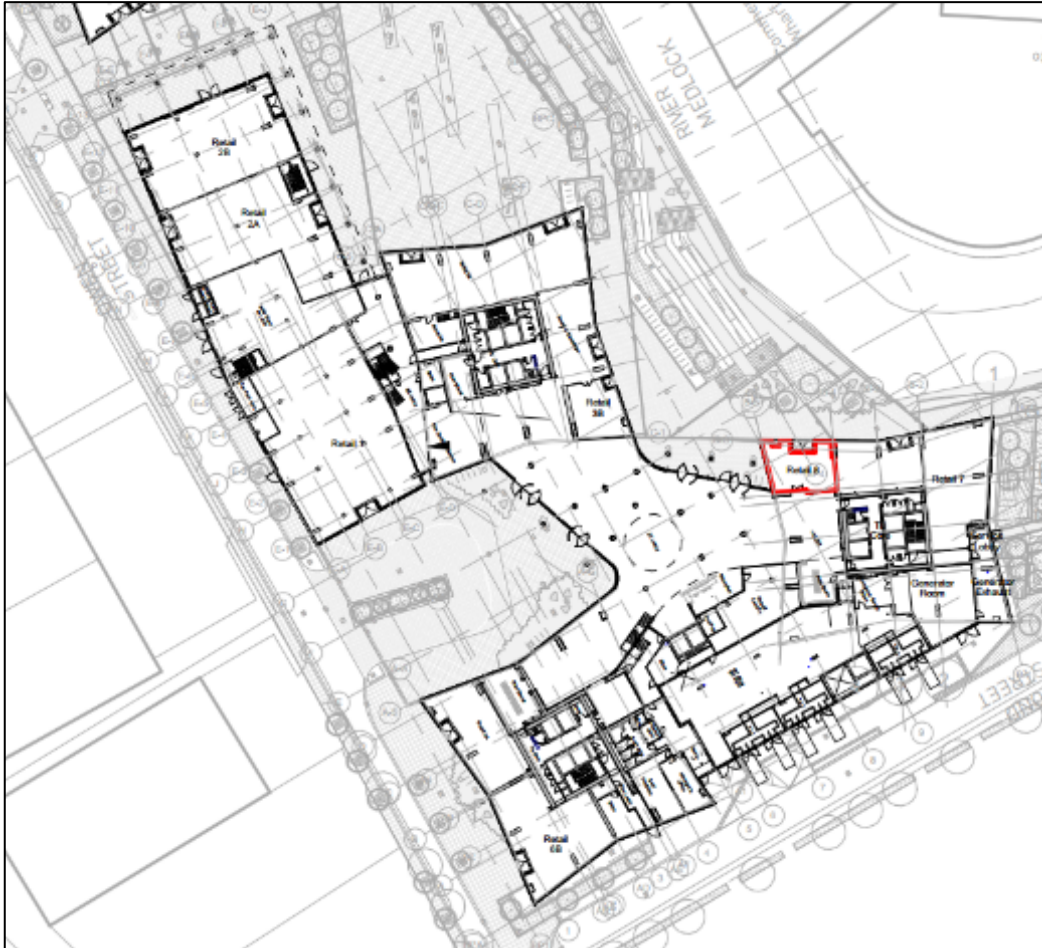


Figure 1: Location of commercial unit 8

ENVIRONMENTAL NOISE CRITERIA

Noise egress from Unit 8 must be controlled to appropriate levels so as to avoid noise nuisance to existing sensitive receptors.

Although it is not currently proposed that a sound system is installed within Unit 8, a sound system could be installed in the future and so an assessment of potential music noise egress from the commercial unit has been carried out.

'Planning & Noise, Technical Guidance' issued by Manchester City Council in December 2015 gives guidance on the preferred approach to environmental noise assessments. In relation to 'entertainment noise, Section 3.6.1.5.1 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 character of this 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 10dB below the background noise level (LA90) without the entertainment noise present, 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 10dB 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.

The closest residential receptors to Unit 8 are the apartments within Tower B of Deansgate Square. Achievement of the applicable noise limits at these apartments would ensure that noise levels at the more distant pre-existing residential properties beyond the Deansgate Square development also maintain residential amenity.

Table 1 identifies the recommended maximum allowable Leq noise levels external to the apartments of Tower B 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
07:00 to 23:00	50	41	41	40	42	35	26
23:00 to 07:00	49	40	38	39	41	35	26

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 8. 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 the unit 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 proposed to Unit 8, 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/ 11.5mm 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/ 11.5mm 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 8 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 8 has then been determined.

As identified above, the closest residential receptors to Unit 8 are the apartments within Tower B of Deansgate Square.

Table 3 identifies the calculated noise levels that could be generated within Unit 8 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 8 Daytime (0700 hrs to 2300 hrs)	72	68	70	72	74	67	58
Commercial Unit 8 Night time (2300 hrs to 0700 hrs)	71	67	67	71	73	67	58

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 relatively quiet restaurant with low-level background music replay to be accommodated.

Given the proposed operation of Unit 8 as a florist with no 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 8 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 8, Daytime	79	77	84	90	93	85	83
Commercial Unit 8, Night time	78	76	81	89	92	85	83

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

Given the proposed operation of Unit 8 as a florist shop with no music replay, compliance with the noise limits given in Table 4 is fully expected. However, given the absence of a door lobby to the unit, Table 3 gives the appropriate operational noise limits for Unit 8 in relation to noise breakout.

INTERNAL NOISE TRANSFER

There are residential apartments directly above Unit 8 within Tower B of Deansgate Square. There is therefore the possibility of internal noise transfer between Unit 8 and the apartments above via the party floor structural slab.

The party floor between Unit 8 and the apartments directly above is a 250 mm thick flat concrete slab.

In order to avoid potential noise nuisance, it is recommended that the internal noise levels within an apartment due solely to music replay in Unit 8 do not exceed the values given in Table 5.

Room	Sound Pressure Level (dB) @ Octave Band Centre Frequency (Hz)						
	63	125	250	500	1k	2k	4k
Commercial Unit 8	40	30	23	20	17	15	12

Table 5: Maximum recommended noise levels in apartments due to music replay in commercial units

Given the party floor slab and associated structures, Table 6 identifies the calculated maximum allowable music noise levels in Unit 8 without exceeding the noise limits given in Table 5.

Room	Sound Pressure Level (dB) @ Octave Band Centre Frequency (Hz)						
	63	125	250	500	1k	2k	4k
Commercial Unit 8	76	70	67	71	77	77	80

Table 6: Maximum allowable noise level in Unit 8 – re internal noise transfer

The noise levels detailed in Table 6 would allow a typical retail outlet, café/cocktail bar or restaurant with background music replay to be accommodated.

Given the proposed operation of Unit 8 as a florist with no music replay, compliance with the noise limits given in Table 6 is fully expected.

CONCLUSION

The maximum allowable noise levels in commercial unit 8 have been calculated such that the identified external noise limits at the closest residential receptors are not exceeded.

In addition, the maximum allowable noise levels in commercial unit 8 have been calculated such that the recommended maximum allowable internal noise levels within apartments directly above Unit 8 are not exceeded.

The calculated allowable noise levels within Unit 8 are fully commensurate with the operation of the unit as a florist with no background music replay.

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

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

Yours sincerely



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