

MPF/PR0573/L03A

18 October 2021

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Dear John

CHESTER ROAD, LEISURE FACILITY ENVIRONMENTAL NOISE ASSESSMENT

We write with confirmation of the expected external noise levels due to the proposed leisure uses at Chester Road, Manchester.

INTRODUCTION

The planning approval for 2-4 Chester Road, Manchester includes a condition which requires that a noise study is conducted in relation to activity noise egress from the proposed leisure uses that are ancillary to the residential accommodation at the Development.

Fisher Acoustics Ltd has been commissioned by Renaker Limited to determine the expected external noise levels generated by the proposed leisure uses, which include a gym and exercise studio, and to advise on compliance with the requirements of the planning approval for the Development.

PLANNING CONDITION

Planning condition 22 of the planning approval for 2-4 Chester Road, Manchester, M15 4QG (Planning Application number 113870/FO/2016) states:

22) Before any leisure uses provided ancillary to the residential accommodation hereby approved commence, 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 the leisure units are the apartments within 2-4 Chester Road and the existing adjacent residential dwellings at Castlegate Apartments, 2 Chester Rd.

PROPOSED LEISURE USES

The proposed leisure uses at Chester Road for the sole use of residents are as follows:

Block A

- Entertainment Space Ground Floor

Block B

- Gym Ground Floor
- Spa Ground Floor

Figures 1 and 2 show the locations of the leisure uses.

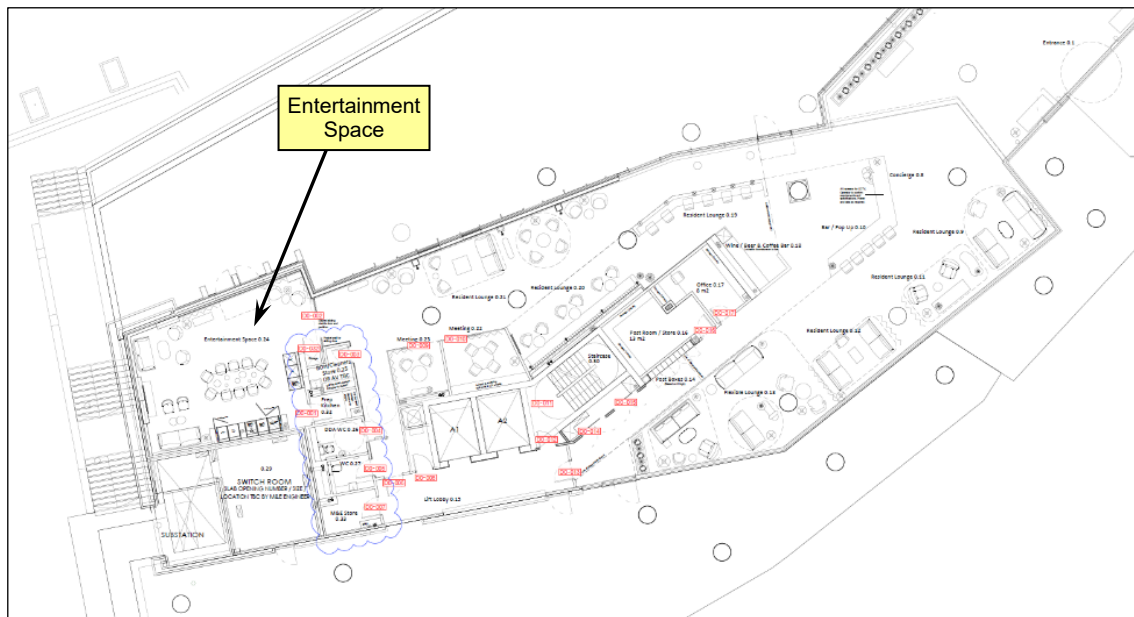


Figure 1: Block A, Ground Floor, 2-4 Chester Road

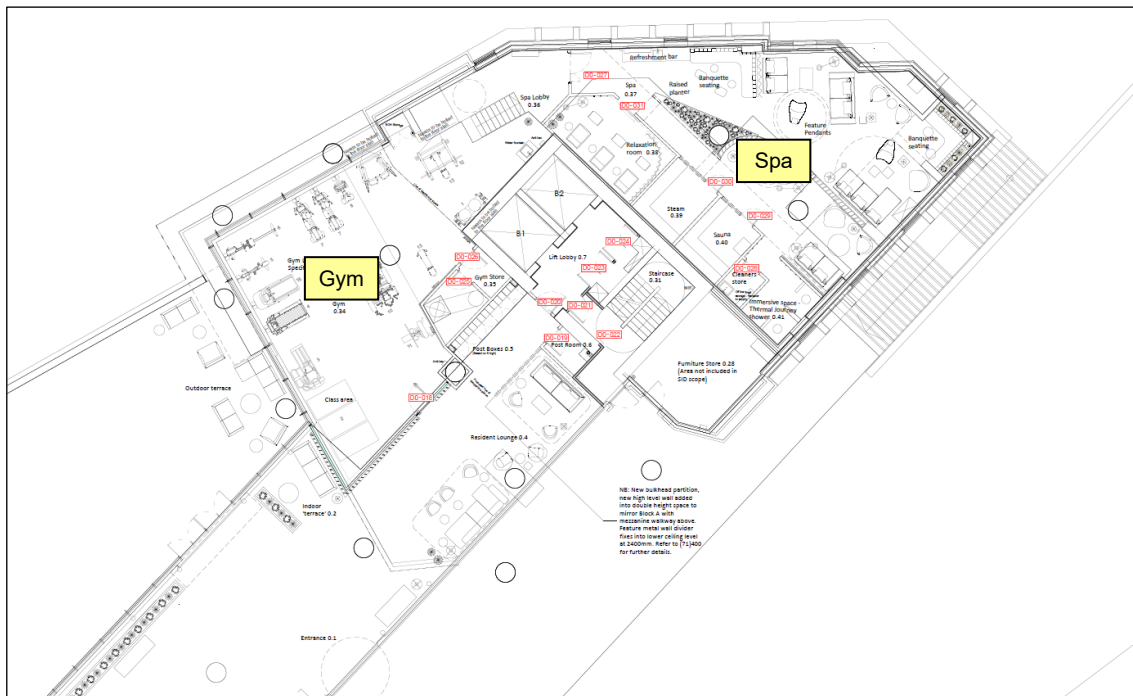


Figure 2: Block B, Ground Floor, 2-4 Chester Road

An external terrace for the use of residents is to be provided between Block A and Block B. No loudspeakers are to be located on the external terrace.

ENVIRONMENTAL NOISE CRITERIA

Noise egress from the proposed leisure uses must be controlled to appropriate levels so as to avoid noise nuisance to existing sensitive receptors.

There is the potential for music noise egress from the following leisure uses:

- Gym
- Spa
- Entertainment Space

'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 music noise within the nearest residential properties due to noise egress from the proposed development is inaudible and to achieve this, recommends that music noise levels external to a residential property are at least 10dB lower than the pre-existing background noise level external to the property at each octave band.

The pre-existing background noise levels at the neighbouring residential properties (e.g. within Castlegate Apartments) can be established from existing noise survey data.

An environmental noise survey was carried out at the site as part of the environmental noise study that was conducted for the planning submission for 2-4 Chester Road. The noise and vibration chapter of the Environmental Statement for Chester Road identifies the pre-existing background noise levels at the site at a location in line with the rear elevations of Castlegate and of 2-4 Chester Road. The measurement location was screened from local road noise and thus represents the prevailing noise climate at the façades of Castlegate and of 2-4 Chester Road that do not have line of sight to road traffic on Chester Road.

Table 1 identifies the determined pre-existing background noise levels at the site at a location in line with the rear elevations of Castlegate and of 2-4 Chester Road

Period	Sound Pressure Level (dB Leq) @ Octave Band Centre Frequency (Hz)							dB(A)
	63	125	250	500	1k	2k	4k	
Day time (07:00 to 23:00)	57	54	51	49	52	45	31	54
Night time (23:00 to 07:00)	49	46	43	41	44	37	23	46

Table 1: Pre-existing background noise levels at rear of site, screened from Chester Road traffic noise

Table 2 identifies the maximum allowable octave band noise levels at the closest residential properties due to activity noise breakout from the proposed leisure spaces so as to achieve compliance with the recommendations of Manchester City Council discussed above. For information, the overall A-weighted noise level of the combined octave band noise levels are also presented in the Table.

Period	Sound Pressure Level (dB Leq) @ Octave Band Centre Frequency (Hz)							dB(A)
	63	125	250	500	1k	2k	4k	
Day time (07:00 to 23:00)	47	44	41	39	42	35	21	44
Night time (23:00 to 07:00)	39	36	33	31	34	27	13	36

Table 2: Maximum recommended external noise levels at residential properties due to activity noise from 2-4 Chester Road leisure spaces

NOISE EGRESS CALCULATIONS

Noise egress calculations have been carried out to determine the expected noise level at the closest residential properties due to noise from the leisure uses. 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

The principal noise radiating surfaces of the leisure units are the glazed curtain wall to the gym, the windows to the spa and the external doors to the entertainment space. The leisure units are provided with mechanical supply and extract ventilation and thus do not rely on opening elements for ventilation.

The glazing specifications to the leisure spaces, installed as part of the main contract for 2-4 Chester Road, are as follows:

- Gym, curtain wall: 13.5 mm laminate / 20mm cavity/ 11.5mm laminate
- Spa, windows 12.8 mm laminate / 18 mm cavity / 10.8 mm laminate
- Entertainment Space, external doors: 10 mm float / 16 mm cavity / 11.5 mm laminate

The expected minimum weighted sound reduction index of the above façade elements are given in Table 2:

Glazing specification	Sound Reduction Index (dB) @ Octave Band Centre Frequency (Hz)						
	63	125	250	500	1k	2k	4k
Glazed doors to Entertainment Area	18	20	25	28	30	30	34
Windows to Spa	25	27	32	39	39	40	48
Curtain wall to Gym	24	26	34	39	39	40	48

Table 2: Sound reduction index of glazed façade elements to leisure uses

Calculations of noise egress via the facades of the leisure spaces have been carried out. The calculations are based on the sound insulation performance and area of the façade elements and the distance to the residential receptors.

Given the expected sound insulation performance and area of the façade elements to the leisure spaces and the distance and orientation of the façade elements to the closest apartments, Table 3 identifies the calculated octave band noise levels that could be generated in the leisure spaces without exceeding the daytime (0700 to 2300) and night time (2300 to 0700) noise limits given in Table 1, on the assumption that the doors to the entertainment space are closed. For information, the overall A-weighted noise level of the combined octave band noise levels are also presented in the Table.

Room		Sound Pressure Level (dB Leq) @ Octave Band Centre Frequency (Hz)							dB(A)
		63	125	250	500	1k	2k	4k	
Entertainment Space	Daytime	82	82	85	85	89	84	75	91
	Night time	74	74	77	77	83	76	65	85
Gym	Daytime	84	84	90	90	92	87	81	95
	Night time	76	76	82	84	85	81	75	88
Spa	Daytime	89	89	92	95	97	91	85	99
	Night time	81	81	84	88	91	84	78	93

Table 3: Maximum allowable internal activity noise levels – Daytime and night time, doors closed

If the external doors to the entertainment space are open, the allowable noise level within the space will reduce. Table 4 identifies the calculated octave band noise levels that could be generated in the entertainment space if each leaf of the double doors that lead onto the external terrace are open. For information, the overall A-weighted noise level of the combined octave band noise levels are also presented in the Table.

Room		Sound Pressure Level (dB Leq) @ Octave Band Centre Frequency (Hz)							dB(A)
		63	125	250	500	1k	2k	4k	
Entertainment Space	Daytime	63	61	60	60	64	59	47	66
	Night time	55	53	52	52	56	51	39	58

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

There are to be no spinning, 'HIIT' or similar classes within the gym and music noise levels in the areas discussed above will be 'background' only. The background music systems will be under the control of the management team only. It is therefore fully expected that compliance with the noise limits established above will be achieved such that residential amenity will be maintained.

CONCLUSION

The daytime noise limits in the leisure spaces with doors closed would be able to accommodate foreground noise levels from music replay systems or a television sound system that are in line with the proposed uses.

The night time noise limits in the leisure spaces with doors closed would be able to accommodate background noise levels from music replay systems or a television sound system that are in line with the proposed uses.

The noise limits in the entertainment space with the external doors to the terrace opened would be able to accommodate low levels of background music.

The background music systems in the public areas will be under the control of the management team only. It is therefore fully expected that compliance with the noise limits established above will be achieved.

The expected noise levels at the nearest residential properties due to the expected internal noise levels within the leisure spaces at 2-4 Chester Road are commensurate with the maintenance of residential amenity.

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', is written over a light blue rectangular background.

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