

MPF/PR0631/L09

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Dear David

NEW VICTORIA, PLANNING CONDITIONS 20 AND 30

We write with confirmation of the expected external noise levels due to the proposed amenity spaces and commercial units at New Victoria, Manchester, with particular reference to the planning approval for the development.

INTRODUCTION

The planning approval for New Victoria, Manchester includes conditions which requires that a noise study is conducted in relation to activity noise egress from the proposed non-residential spaces that are ancillary to the residential accommodation at the development.

Fisher Acoustics Ltd has been commissioned by Vinci Construction Limited to determine the expected external noise levels generated by the non-residential spaces, which include a gym, and to advise on compliance with the requirements of the planning approval for the Development.

PLANNING CONDITION

Planning Condition 20 and Planning Condition 30 of the Planning Approval for New Victoria (Planning Application number 128667/JO/2020) state:

- *20) a) 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. The scheme shall be implemented in full before the use commences or as otherwise agreed 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.

If a gym is implemented within the development hereby approved an assessment of noise and vibration for gym activities shall be submitted to and approved in writing by the City Council as Local Planning Authority prior to use as a gym. For the avoidance of doubt this should include, but not restricted to, measures such as recommendations with regard to acoustic build up of free weights areas and insulation of impact machines, assessment of any sound transmission paths or flanking routes and recommendations with regard to any necessary acoustic treatment of these areas. The above entertainment noise criteria and restrictions shall apply to any amplified sound associated with any gym use.

b) Upon completion of the development a verification report will be required to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved acoustic consultant's report. The report shall also undertake post completion testing to confirm that acceptable criteria has been met. Any instances of non-conformity with the recommendations in the report shall be detailed along with any measures required to ensure compliance with the agreed noise criteria. If a gym is to be implemented within the development, the proposals for verification shall be submitted to and approved in writing by the City Council as Local Planning Authority prior to verification taking place.

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

- *30) The proposed development shall be carried out in accordance with the recommendations in the Noise Survey section of the Environmental Statement prepared by Arup and Deloitte and stamped as received by the City Council, as local planning authority on 15 April 2016 in relation to NSE1 and subject to the following:*

(b) Prior to the first use of the commercial units, a scheme of acoustic insulation shall be implemented for the commercial units in accordance with the noise recommendations in the Noise Survey section of the Environmental Statement prepared by Deloitte and stamped as received by the City Council, as local planning authority on 15 April 2016. The approved scheme shall be retained and maintained for as long as the development remains in use and any non-compliance suitably mitigated in accordance with an agreed scheme prior to occupation.

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 the non-residential areas are the apartments within the New Victoria development itself.

PROPOSED AMENITY SPACES AND COMMERCIAL UNITS

The proposed amenity spaces at New Victoria are for the sole use of residents of the building and are located on the ground floor. The amenity spaces are as follows:

- Gym
- Events/ Community Space
- Lounge (includes Library and Café)
- Games Room
- Private Dining Room Kitchen
- Cinema Room

Figure 1 shows the location of the amenity spaces.

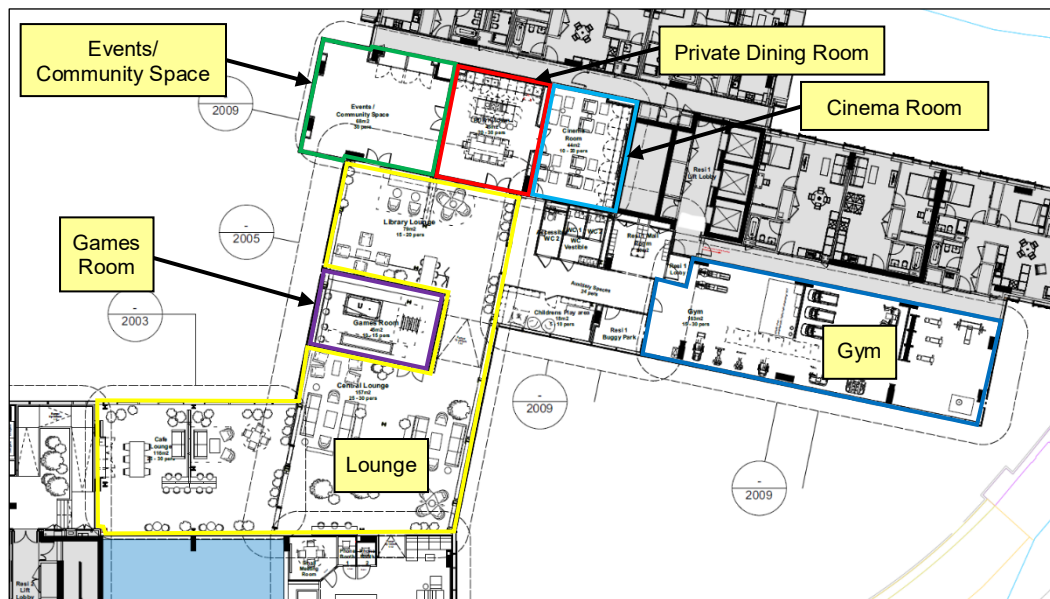


Figure 1: Amenity spaces - Ground floor, New Victoria

Figure 2 shows the location of the commercial units within New Victoria.

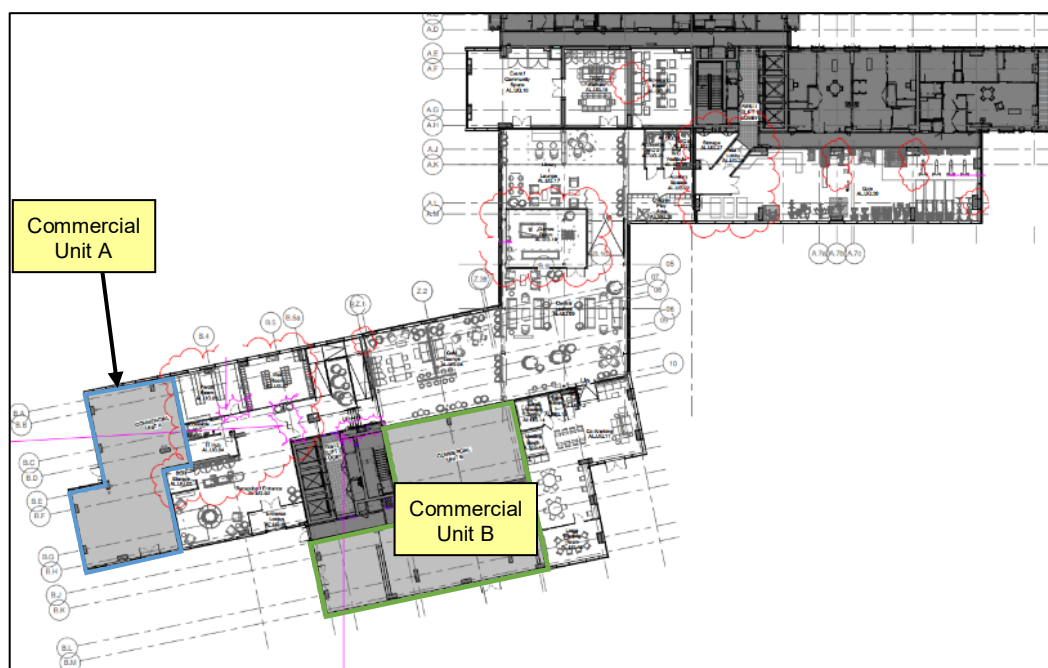


Figure 2: Commercial units – Ground floor, New Victoria

ENVIRONMENTAL NOISE CRITERIA

The noise survey section of the Environmental Statement prepared by Arup and Deloitte referred to by condition 30 of the planning approval did not include any recommendations or noise criteria in relation to noise egress from the amenity spaces or commercial units. It is therefore proposed that reference is made to the stated criteria of condition 30 of the planning approval and subsequent guidance published by Manchester City Council.

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

- *'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,5min), respectively'. This criterion may also be applicable for new residential developments that are structurally separate from an existing entertainment venue'.*

With regard to proposals for new entertainment venues, 'Planning & Noise, Technical Guidance' states:

- *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,5min) should be controlled to 5dB below the typical background noise level (LA90) in each octave band at the nearest noise sensitive location'.*

It is therefore proposed that noise egress from the amenity spaces and commercial units adhere to the most recent (2022) guidance published by Manchester City Council in lieu of the stated requirement of condition 20.

The closest residential receptors to the proposed amenity areas and commercial units are the apartments of New Victoria that lie directly above.

The environmental noise study that was conducted as part of the planning submission for New Victoria included noise surveys within and around the site. These noise surveys, carried out in September 2015 identified the typical pre-existing background noise level at the site interior as follows:

- Daytime: 54 dB LA90
- Night time: 52 dB LA90

A subsequent daytime noise survey conducted by Fisher Acoustics in October 2019 identified the typical pre-existing background noise level at the site interior to be:

- Daytime: 51 dB LA90

It is therefore intended to base the external noise limits on the lower background noise level measured by Fisher Acoustics.

Table 1 identifies the maximum recommended free-field external noise levels at the New Victoria apartments due to activity noise breakout from the amenity areas and commercial units.

Period	Sound Pressure Level (dB Leq) @ Octave Band Centre Frequency (Hz)						
	63	125	250	500	1k	2k	4k
07:00 - 23:00	56	47	45	43	42	36	26
23:00 - 07:00	54	45	43	41	40	34	24

Table 1: Maximum recommended external noise levels at apartments due to activity noise from New Victoria amenity areas and commercial units

INTERNAL NOISE TRANSFER

AIRBORNE NOISE

Within New Victoria there are residential apartments directly above the Gym, Events/ Community Space, Private Dining Room Kitchen, Cinema Room and commercial units. There is therefore the possibility of internal noise transfer between these spaces and the apartments above via the party floor structural slab.

The party floor between all of the non-residential spaces and the apartments directly above is a 250 mm thick flat concrete slab.

In addition, in order to provide an improvement in the sound insulation of the party floor, the following spaces are provided with an imperforate solid plasterboard ceiling with mineral wool insulation within the ceiling void:

- Events/ Community Space
- Private Dining Room Kitchen
- Cinema Room

In order to avoid potential noise nuisance to residents, it is recommended that the internal noise levels within an apartment due solely to music replay in the non-residential spaces do not exceed the values given in Table 2.

Location	Sound Pressure Level (dB) @ Octave Band Centre Frequency (Hz)						
	63	125	250	500	1k	2k	4k
New Victoria Apartments	40	30	23	20	17	15	12

Table 2: Maximum recommended noise levels in apartments due to music replay in amenity spaces and commercial units

It will be noted that the maximum recommended noise levels in apartments at 63 Hz and 125 Hz are lower than those stipulated by Condition 20. Therefore compliance with the recommended values in Table 2 will provide a substantial margin of comfort that the requirements of the planning condition will be achieved.

Given the party floor slab and associated structures in New Victoria, Table 3 identifies the calculated maximum allowable music noise levels that could be generated in the amenity spaces and commercial units without exceeding the noise limits given in Table 2.

Location	Sound Pressure Level (dB) @ Octave Band Centre Frequency (Hz)						
	63	125	250	500	1k	2k	4k
Gym	78	68	68	70	70	70	70
Events/ Community Space	78	78	80	83	80	78	75
Private Dining Room Kitchen	78	78	80	84	85	85	85
Cinema Room	78	78	80	84	85	85	85
Commercial Units	78	68	68	70	70	70	70

Table 3: Maximum allowable noise levels in New Victoria amenity spaces and commercial units re internal noise transfer

The allowable noise levels identified in Table 3 for the gym and commercial units would allow background music replay to be accommodated.

The allowable noise levels identified in Table 3 for the Events/Community Space, the Private Dining Room and the Cinema Room would allow reasonably high levels of music noise and soundtrack replay to be accommodated, appropriate for the intended room uses.

Given compliance with the noise limits given in Table 3, it is expected that the proposed amenity spaces within the development will be able to operate as intended without causing disturbance to existing and future residential receptors.

If the tenant of a commercial unit wished to generate higher internal noise levels than those identified in Table 3 above, the tenant may need to introduce an acoustically rated ceiling in order to comply with the recommended noise limits within the proposed apartments due to entertainment noise. Reference must also be made to the section below relating to noise egress.

IMPACT NOISE FROM GYM

The dropping of free weights (e.g. dumbbells and barbells) within gyms can cause relatively high levels of noise in vertically and horizontally adjacent apartments. The gym at New Victoria has a small area designated for free weights. An assessment of the potential levels of noise in the apartment directly above the gym has therefore been undertaken, involving the dropping of free weights in the gym and the measurement of the subsequent noise level generated in the apartment.

The tests were carried out between the Gym and the Living Room of Apartment 1.10. The walls of the apartments were completed and the curtain wall to both the apartment and the gym had been installed and was fully glazed.

The gym floor coverings under test were laid on the floor slab in the gym at a distance of approximately one metre from the nearest structural column. Figure 3 shows the approximate location of the sample floor coverings employed for the impact tests.

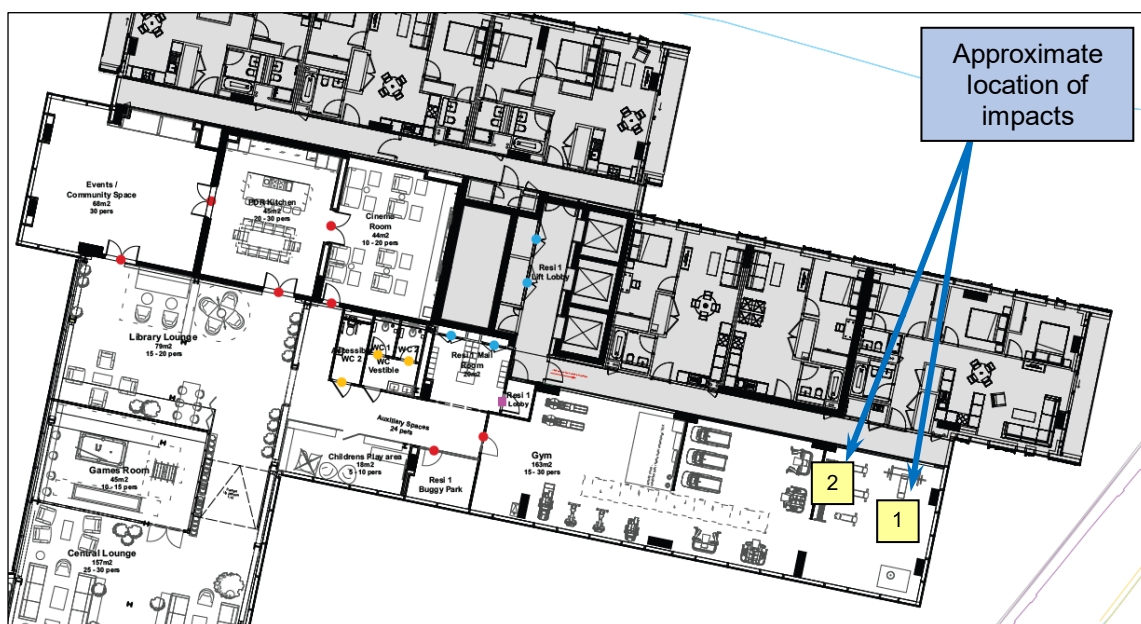


Figure 3: Approximate location of impact tests – New Victoria Gym Ground Floor

The noise levels generated by the dropping of kettlebells on a sample of gym flooring were measured in the living room of Apartment 1.10. The following sources were used to generate impact noise on the flooring materials:

- 20 kg kettlebell, dropped from a height of approximately 450 mm (approximately knee height)
- 5 kg kettlebell, dropped from a height of approximately 450 mm

The following gym flooring layers were tested:

- iKoustic MuteMat Gym 70 (70 mm thick)
- iKoustic MuteMat Gym 70 on iKoustic MuteMat Gym B34 on 2 x iKoustic MuteMat USP 625-17 (138 mm total thickness)

The 'average' (LAeq) noise level generated by the repeated dropping of the kettlebells on each floor covering was measured.

Apartment 1.10 was unfurnished at the time of the testing. Furnishings will reduce the reverberation time of the room, which will in turn reduce the resultant noise levels in the room. The measured noise levels results have therefore been corrected to determine the expected noise levels upon furnishing of the apartment.

Figures 4 and 5 show the expected noise levels in the apartment directly above the gym due to each impact source on the floor coverings tested on 15 November 2022.

To allow an assessment of potential disturbance to be made, the target impact sound level to potentially achieve inaudibility of impact sound from the gym within the completed and furnished apartments is identified in Figures 4 and 5 (dashed blue line).

Impact sound levels that lie above the dashed blue line are expected to be audible in the apartments if there are no other noise sources in the apartment other than the MVHR system and road traffic noise ingress.

Figures 4 and 5 also show the approximate threshold of human hearing. This is frequency-dependent and is the level below which noise can be expected to be inaudible, regardless of the ambient noise level in the space.

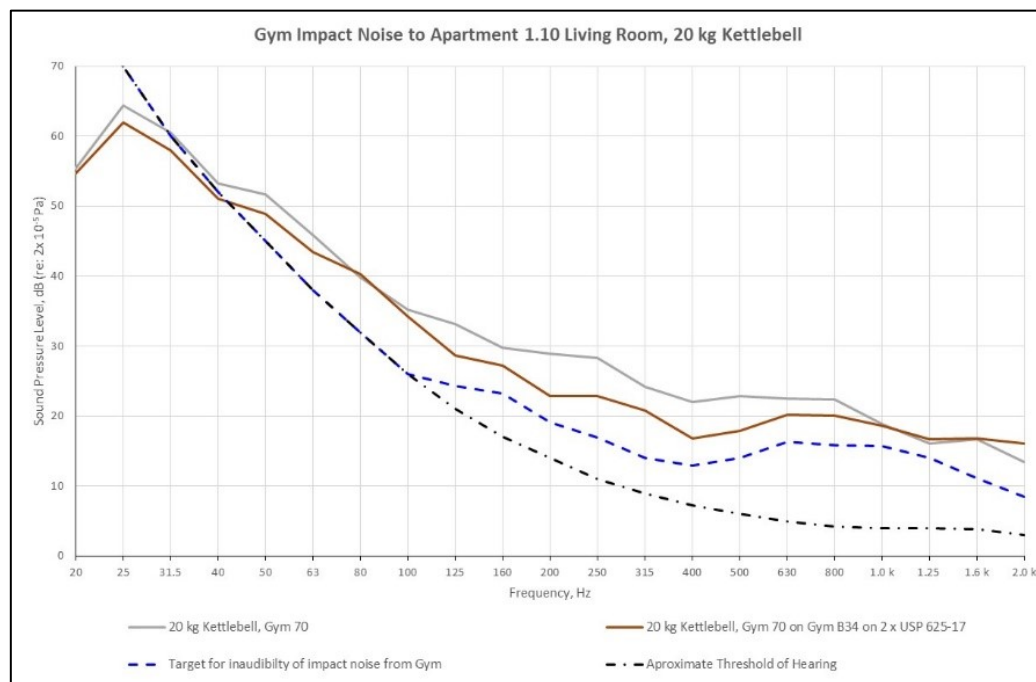


Figure 4: Measured impact noise levels on gym floor build-ups - 20kg kettlebell

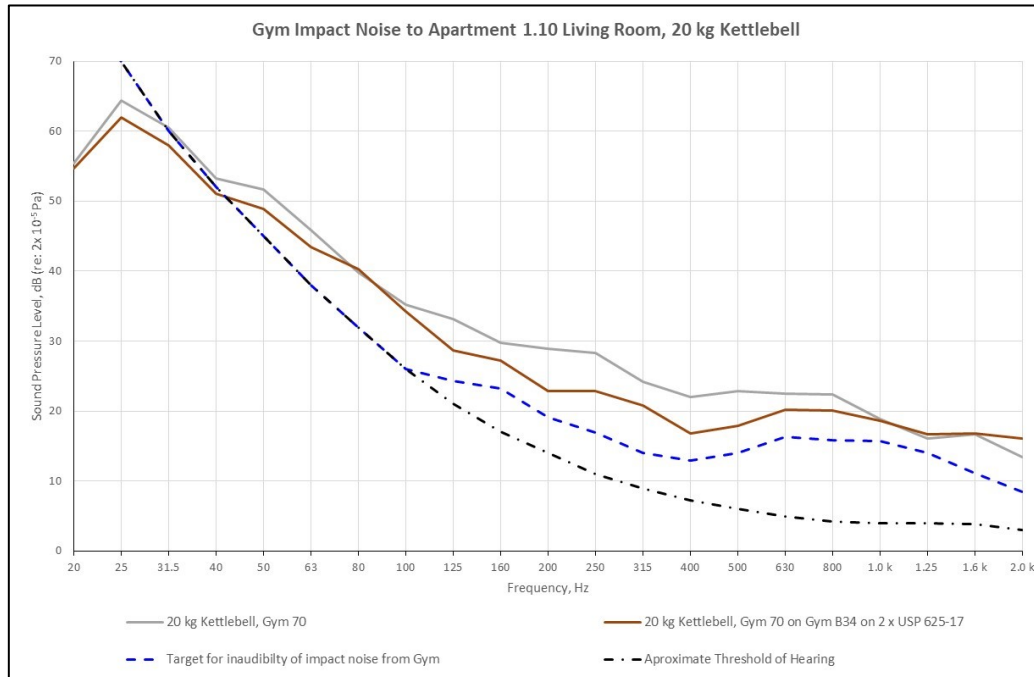


Figure 5: Measured impact noise levels on gym floor build-ups - 5kg kettlebell

It can be seen that the measured noise levels are approximately 3dB to 8dB above the 'inaudibility' curve. Therefore impact noise from the dropping of free weights is expected to be just audible in the apartment above if there are no other sources of noise within the apartment other than the ventilation system and road traffic noise.

Following the testing of the gym floor layers discussed above, impact test data that compares the performance of the 'MuteMat' flooring layers and an alternative flooring build-up has been forwarded to Fisher Acoustics. The data show that the alternative flooring layers should achieve a further reduction in impact noise levels of 2 dB to 3dB.

The alternative gym flooring system is as follows:

- GenieMat FIT70 (70 mm thick) on GenieMat FF25 (25 mm thick)

This alternative flooring system is to be installed within the free weights area of the gym.

Given the expected further reduction of impact noise achieved by the flooring to be installed in the New Victoria gym, the levels of impact noise due to the dropping of free weights is expected to lie just above the 'inaudibility' curve identified in Figures 4 and 5. In absolute terms, the levels of impact low frequency noise due to the dropping of free weights are expected to be no greater than the noise levels identified in Condition 20a of the planning approval.

It is therefore considered that the proposed flooring in the gym will allow the maintenance of residential amenity.

It should also be noted that the gym at new Victoria is for the use of residents only. Therefore users of the gym are expected to be instructed in the safe use of weights such that the dropping of free weights and weight stacks is minimised as far as possible.

NOISE EGRESS CALCULATIONS

Noise egress calculations have been carried out to determine the expected noise level at the closest residential properties due to noise break-out from the non-residential uses. Calculations of noise egress from a building requires the following information:

1. Dimensions of radiating surfaces (e.g. curtain 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 surface of the non-residential uses is the predominantly glazed curtain wall. The non-residential spaces are provided with mechanical supply and extract ventilation and thus do not rely on opening elements for ventilation.

The glazing specifications to the non-residential uses, installed as part of the main Contract for New Victoria are as follows:

- Gym & Events/ Community Space: 15.5 mm laminate / 16 mm cavity / 13.5 mm laminate
- Commercial Units: 15.5 mm laminate / 16 mm cavity / 13.5 mm laminate
- Lounge & Games Room: 15.5mm acoustic laminate / 16 mm cavity / 13.5 mm acoustic laminate

The expected sound reduction index of the glazed curtain wall and associated framing is identified in Table 4.

Glazing specification	Sound Reduction Index (dB) @ Octave Band Centre Frequency (Hz)						
	63 Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz
15.5 mm laminate / 16mm cavity/ 13.5mm laminate	20	23	33	37	40	45	52
15.5 mm acoustic laminate / 16 mm cavity / 13.5 mm acoustic laminate	24	27	36	42	46	49	58

Table 4: Expected sound reduction index of vision panels to non-residential areas, including frame

The commercial units have patron access doors within the curtain wall. If the external doors to a space are opened for the access or egress of patrons, then the sound insulation of the envelope to the unit will be reduced. The calculations of noise egress therefore take into account the expected sound insulation performance of the access doors when closed and also include a worst case assessment of intermittently open doors.

Given the sound insulation performance and area of the curtain wall to the non-residential spaces and the distance and orientation of these spaces to the apartments above, Table 5 identifies the calculated noise levels that could be generated in the non-residential spaces without exceeding the external noise limits identified in Table 1.

Location	Sound Pressure Level (dB Leq) @ Octave Band Centre Frequency (Hz)						
	63	125	250	500	1k	2k	4k
Gym – 07:00 to 23:00	79	74	84	87	90	89	86
Gym – 23:00 to 07:00	77	72	82	85	88	87	84
Events/ Community Space – 07:00 to 23:00	80	78	87	90	91	90	87
Events/ Community Space – 23:00 to 07:00	78	76	85	88	89	88	85
Lounge – 07:00 to 23:00	86	82	89	94	99	95	95
Lounge – 23:00 to 07:00	84	80	87	92	97	93	93
Games Room – 07:00 to 23:00	89	83	92	96	99	96	97
Games Room – 23:00 to 07:00	87	81	90	94	97	94	95
Commercial Units– 07:00 to 23:00 (doors closed)	79	74	84	87	90	89	86
Commercial Units– 23:00 to 07:00 (doors closed)	77	72	82	85	88	87	84
Commercial Units– 07:00 to 23:00 (doors open)	78	72	74	73	74	69	61
Commercial Units– 23:00 to 07:00 (doors open)	76	70	72	71	72	67	59

Table 5: Maximum allowable internal activity noise levels – Daytime and night time

It will also be noted that the allowable internal noise levels detailed in Table 5 are typically greater than those in Table 3. The applicable internal noise limits in each space are the lower of the values in Tables 3 and 5.

If the tenant of a commercial unit wished to generate higher internal noise levels than those identified in Table 3 above, the tenant may need to introduce a door lobby such that intermittent increases in noise egress are minimized during the access and egress of patrons.

Reference must also be made to the section above relating to internal noise transfer.

CONCLUSION

With reference to the assessments detailed above, compliance with the requirements of conditions 20a and 30b of the planning approval for New Victoria, Manchester is expected, such that the proposed non-residential uses within the development will be able to operate as intended whilst maintaining residential amenity at residential receptors.

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