

MPF/PR0631/L13

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David Rothwell
Vinci Construction Ltd
Ditton Road
Widnes
Cheshire
WA8 0PG

Flint Glass Works
64 Jersey Street
Manchester M4 6JW

0161 605 0905 📞
info@fisheracoustics.co.uk 📧
www.fisheracoustics.co.uk 🌐

Dear David

NEW VICTORIA, PLANNING CONDITION 20b

I write to confirm the results of sound transfer measurements conducted between amenity spaces and apartments and between amenity spaces and external areas at New Victoria, Corporation Street, Manchester. The measurements have been conducted to determine the allowable internal activity noise levels within amenity areas such that residential amenity can be maintained.

INTRODUCTION

The planning approval for New Victoria includes a condition which requires that post-completion noise measurements are carried out in relation to internal activity noise transfer and activity noise egress and from the non-residential spaces that are ancillary to the residential accommodation at the development.

Fisher Acoustics Ltd has been commissioned by Vinci Construction Limited to measure the levels of noise transfer from amenity spaces to apartments and to external areas, and to advise on compliance with the requirements of the planning approval for the development.

PLANNING CONDITION

Planning Condition 20 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.

With reference to the second paragraph of condition 20, the closest residential properties to the non-residential areas are the apartments within the New Victoria development itself.

AMENITY SPACES

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
- Open plan Lounge (includes Library, Café and Games Room)
- Private Dining Room Kitchen
- Cinema Room

Figure 1 shows the location of the amenity spaces.

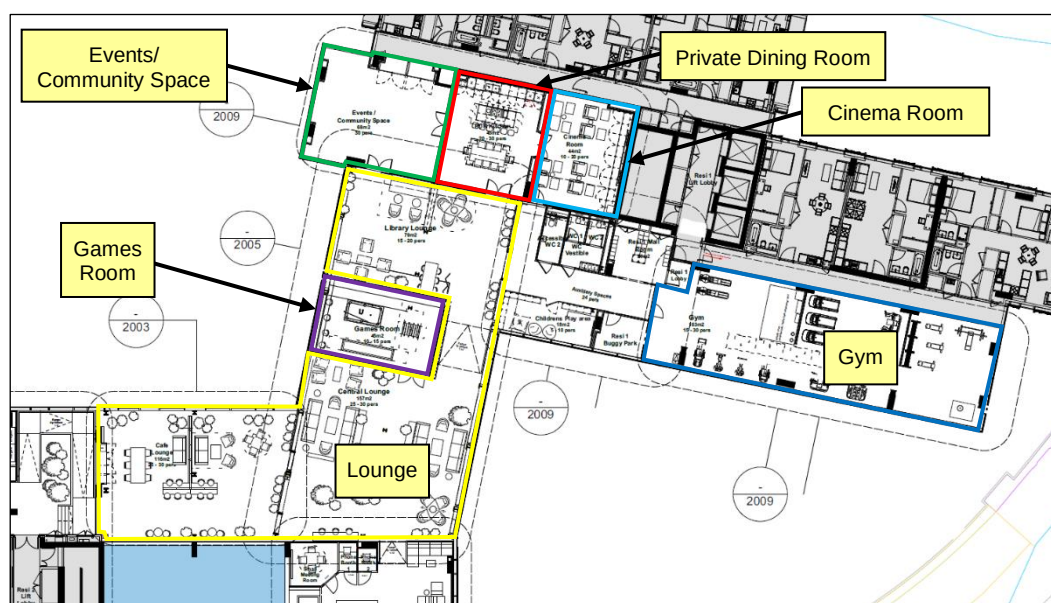


Figure 1: Amenity spaces - Ground floor, New Victoria

There are also two commercial units within the New Victoria development. It has been confirmed by the environmental health section of Manchester City Council that the future tenants would be required to carry out a noise study to determine the allowable activity noise levels within each unit.

ENVIRONMENTAL NOISE CRITERIA

Fisher Acoustics letter reference MPF/PR0631/L09 dated 28 March 2023 identifies the maximum recommended free-field external noise levels at apartments due to activity noise from the amenity areas of New Victoria, as identified in Table 1.

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

Condition 20a advises that

- *'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 condition does not stipulate allowable noise levels at frequency bands above 125 Hz. However, section 3.7.1.2 'Entertainment Venues' of 'Planning & Noise, Technical Guidance' issued by Manchester City Council in June 2022 states that in relation to entertainment noise 'the [NR15] curve may be too stringent at mid and higher frequencies'. It is therefore suggested that at frequency bands above 125 Hz, the allowable noise level in apartments due to activity noise from adjoining amenity spaces lies between NR15 and NR20.

In order to comply with the requirements of condition 20a, the internal noise levels within an apartment due solely to music replay in the non-residential spaces should 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	47	41	26	20	17	15	12

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

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

The sound level difference between these spaces and the apartments directly above has been measured. From these measurements, the maximum allowable activity noise level, including music replay, in the amenity spaces has been determined.

Table 3 identifies the maximum music noise levels that could be generated in the amenity spaces 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	82	83	70	67	72	75	84
Events/ Community Space	84	83	75	73	77	78	84
Private Dining Room Kitchen	86	85	81	85	87	93	93
Cinema Room	89	95	88	92	95	100	97
Commercial Units	85	87	72	71	80	80	85

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

The allowable noise levels identified in Table 3 for the gym, events/community space and reception would allow background music replay to be accommodated, appropriate for the intended room uses.

The allowable noise levels identified in Table 3 for the Private Dining Room and the Cinema Room would allow high levels of music 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.

Reference must also be made to the section below relating to noise egress.

NOISE EGRESS FROM AMENITY SPACES

Of the amenity spaces, only the gym and the events/community space have an external façade. (The open plan reception/lounge/games room has an external façade but it has been agreed with Manchester City Council that the noise levels within these connected spaces are not expected to be sufficient to give rise to compliant due to noise egress to external areas). The sound breakout level from the gym and from the events/community space has been measured. From the measurements, the allowable internal noise levels to ensure compliance with the external noise limits identified in Table 1 has been determined.

In particular, sound breakout from the gym to a position 5 metres in front of the main glazed external wall of the gym has been measured. This position is deemed to be representative of the sound propagation to the external façade to the apartments which lie above the gym.

Sound breakout has also been measured from the events/community space to the balcony of the closest apartment to the space, which lies 2.4 m to the north of the side façade of the events/community space.

From these measurements, the maximum allowable activity noise levels within the two amenity spaces in question has been determined.

Table 4 identifies the maximum music noise levels that could be generated in the gym and events/community space without exceeding the noise limits given in Table 1.

Location	Sound Pressure Level (dB) @ Octave Band Centre Frequency (Hz)						
	63	125	250	500	1k	2k	4k
Gym – 07:00 to 23:00	93	84	89	92	90	87	84
Gym – 23:00 to 07:00	91	82	87	90	88	85	82
Events/ Community Space – 07:00 to 23:00	96	90	91	92	89	83	75
Events/ Community Space – 23:00 to 07:00	94	88	89	90	87	81	73

Table 4: Maximum allowable noise levels in New Victoria amenity spaces re internal noise transfer

It will be noted that the allowable internal noise levels detailed in Table 4 are typically greater than those in Table 3. The applicable internal noise limits for the gym and events/community space are the lower of the values in Tables 3 and 4.

INTERNAL NOISE TRANSFER

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. The free weights area has been provided with a proprietary resilient gym flooring designed to minimise impact noise.

Measurements of the levels of impact noise in the apartment directly above the gym has been undertaken, involving the dropping of free weights in the gym and the measurement of the subsequent noise level generated in the apartment.

Figure 3 shows the approximate location 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 the installed gym flooring were measured in the living room and bedroom 2 of Apartment 01.10. The following sources were used to generate impact noise on the flooring materials:

- a) 20 kg kettlebell, dropped from a height of approximately 450 mm (approximately knee height)
- b) 6 kg kettlebell, dropped from a height of approximately 450 mm

The flooring installed in the weights area of the gym is as follows:

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

The 'average' (LAeq) noise level generated by the dropping of the kettlebells on the 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 to 7 show the measured noise levels in the apartment rooms directly above the gym due to each impact source on the installed floor covering.

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 to 7 (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.

Figures 4 to 7 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.

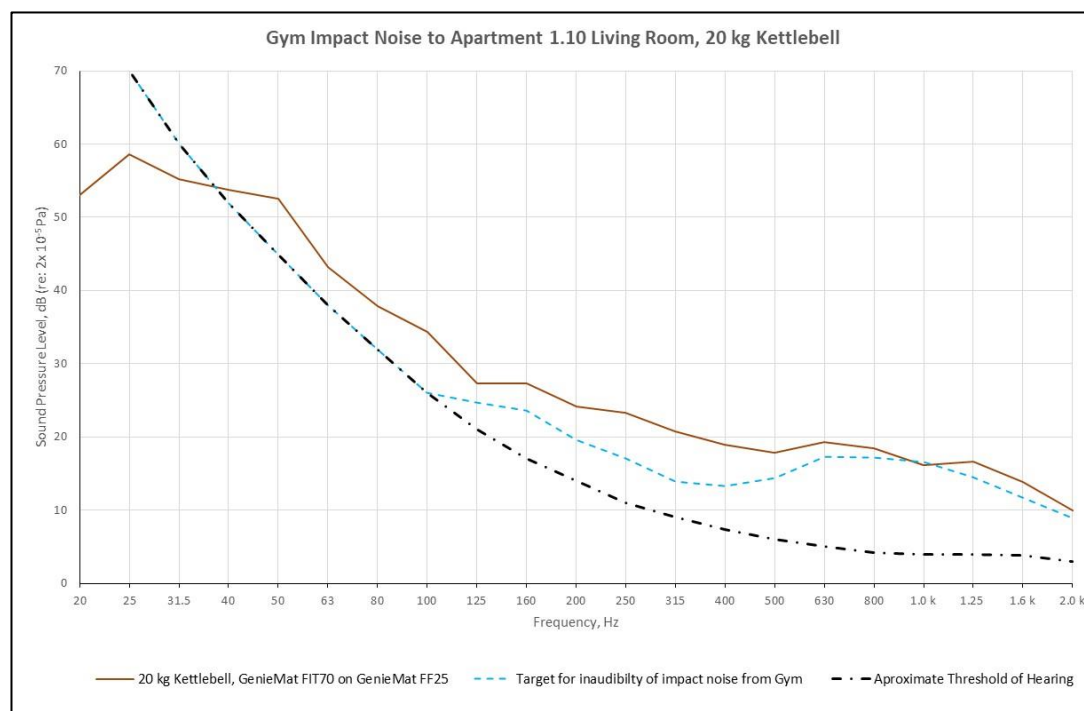


Figure 4: Measured gym impact noise levels in Apartment 1.10 living room - 20kg kettlebell

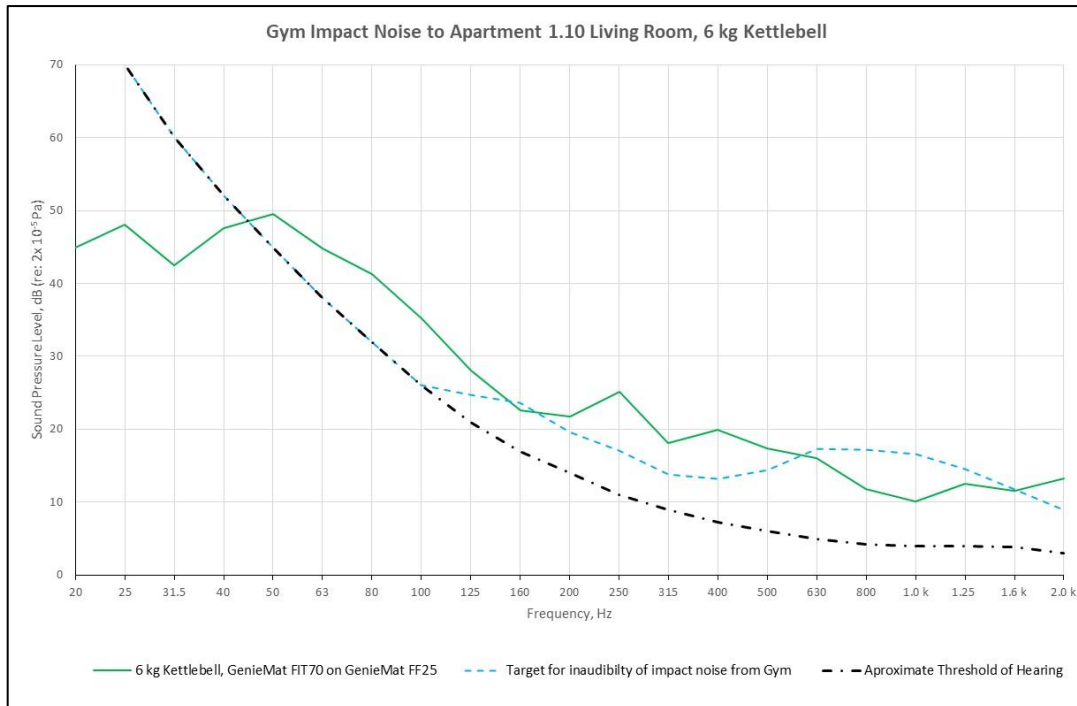


Figure 5: Measured gym impact noise levels in Apartment 1.10 living room - 6kg kettlebell

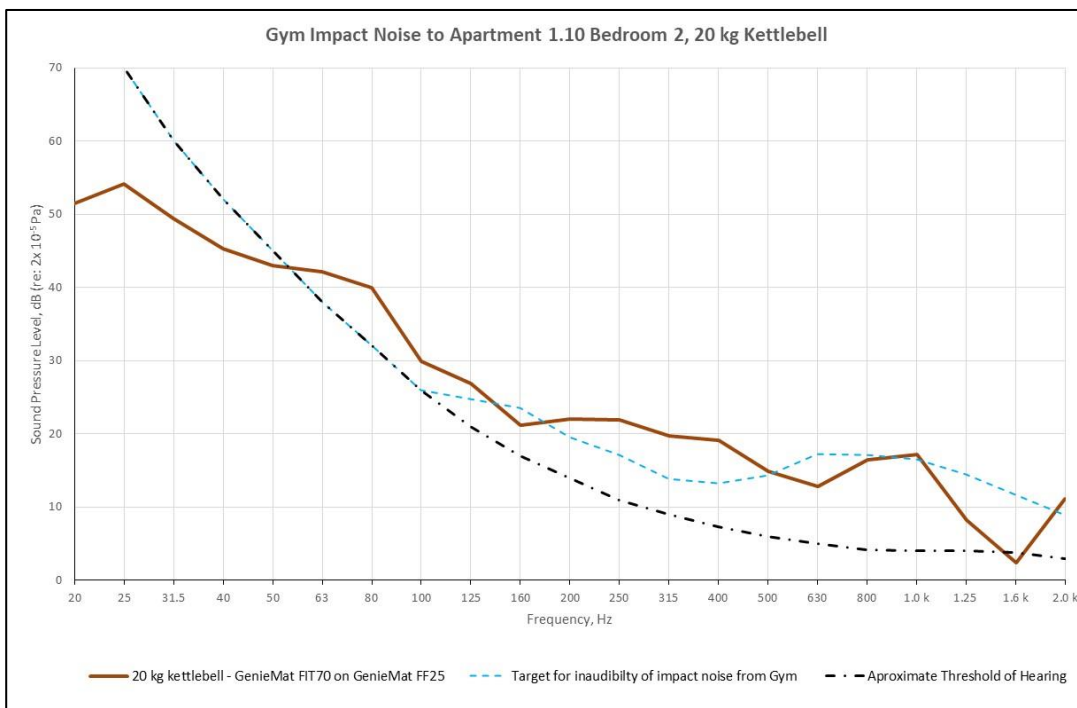


Figure 6: Measured gym impact noise levels in Apartment 1.10 bedroom 2 - 20kg kettlebell

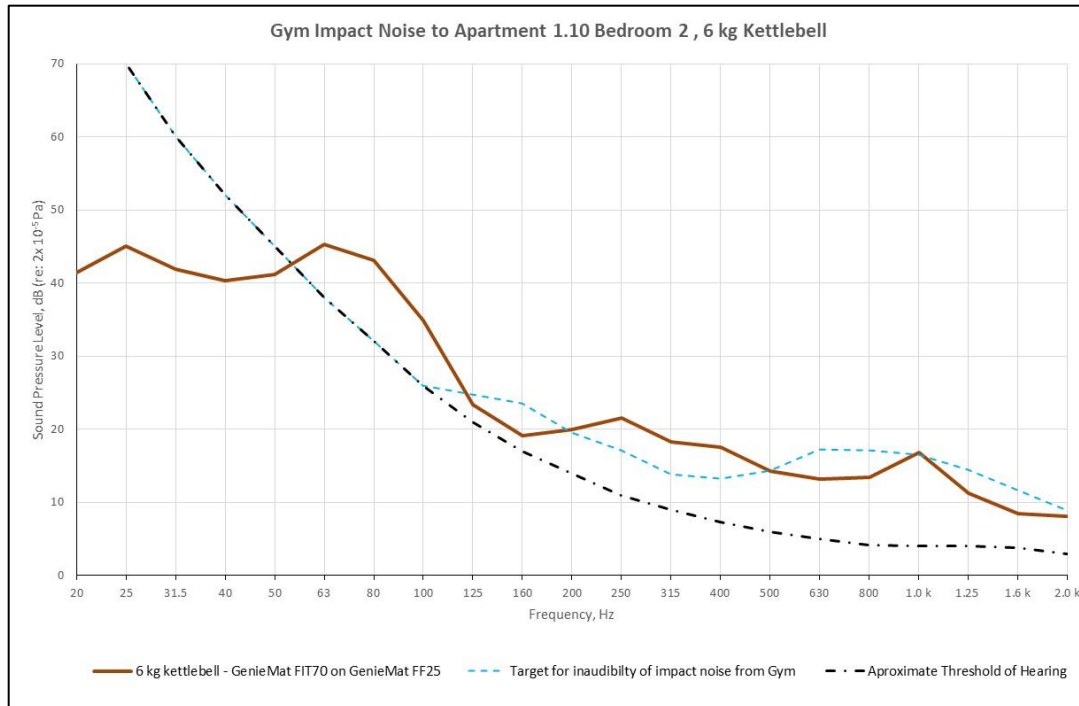


Figure 7: Measured gym impact noise levels in Apartment 1.10 bedroom 2 - 6kg kettlebell

It can be seen that the measured noise levels are approximately 2dB to 8dB above the 'inaudibility' curve in the living room between 40 Hz and 125 Hz and approximately 2dB to 10dB above the 'inaudibility' curve in the bedroom between 63 Hz and 125 Hz. (The identified exceedances over the 'audibility' curve above 125 Hz are expected to be due to low level road traffic noise ingress during the measurements). Therefore impact noise from the dropping of free weights is expected to be just audible in the apartment above the gym if there are no other sources of noise within the apartment other than the ventilation system. Low-level road traffic noise ingress is expected to provide a further degree of noise masking.

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 is minimised as far as possible.

CONCLUSION

With reference to the assessments detailed above, compliance with the requirements of conditions 20b 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

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