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Consultants in Acoustics, Noise & Vibration

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Old Granada Studios, Manchester

Acoustic planning report

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Summary

Sandy Brown has been appointed by 3D Reid to provide acoustic design advice for Old Granada Studios, Manchester. This report relates to the proposed Level 1 gym.

Environmental noise surveys have previously been carried out at the site to determine the existing noise climate in its vicinity. Full details of this survey can be found in Sandy Brown report 15037-R03-E *Acoustic planning report* dated 5 October 2020.

No plant is proposed specifically as part of the gym development and that a plant noise egress assessment for the overall development based on compliance with Planning Condition 15 will be provided separately.

Based on the requirements of Manchester City Council (MCC) and on the results of the noise survey, amplified sound egress limits have been set. These limits are cumulative noise levels and apply at 1m from the worst affected window of the nearby noise sensitive premises.

Guidance has also been provided on internal amplified sound limits to allow the cumulative amplified sound egress limits to be complied with. The internal limits are indicative, and the finalised amplified noise limits will need to be undertaken following pre-completion testing on site.

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1 Introduction

Sandy Brown has been appointed by 3D Reid to provide acoustic design advice for Old Granada Studios, Manchester. This report relates to the proposed Level 1 gym.

An environmental noise survey has previously been carried out, the purpose of which was to establish the existing ambient and background sound levels in the vicinity of the site and nearby noise sensitive premises.

The background sound levels measured during the survey are used as the basis for setting amplified noise egress limits.

No plant is proposed specifically as part of the gym development and that a plant noise egress assessment for the overall development based on compliance with Planning Condition 15 will be provided separately.

This report presents the noise survey methods, the results of the survey, a discussion of acceptable limits for noise emission for amplified noise egress and the internal amplified sound levels permissible to comply with these limits.

2 Site description

2.1 The site and its surroundings

The proposed development is outlined in yellow in Figure 1.

Approximately 25 m and 17 m to the west of the site is Manchester Goods Yard and 1 New Quay Street highlighted in red and pink respectively in Figure 1. This comprises of office premises and is therefore considered to only be a receptor during the daytime (07:00-23:00).

Approximately 17 m to the east of the site is Bauhaus, an apartment building. This residential receptor is highlighted in blue in Figure 1. This is considered to be sensitive during the day (07:00-23:00) and at night (23:00-07:00).



Figure 1 Site and its surrounding (courtesy of Google Earth Pro)

3 Proposed development

As part of the Old Grandad Studios development, a gym is proposed within Level 1 of Zone 4 and Zone 5, as shown in Figure 2.

Within Zone 5 is a gym lobby, as well as changing rooms, WCs, a sauna and steam room, two gym studios and gym machine area. Within Zone 4 are shower facilities, staff area and open plan gym area including weight racks.

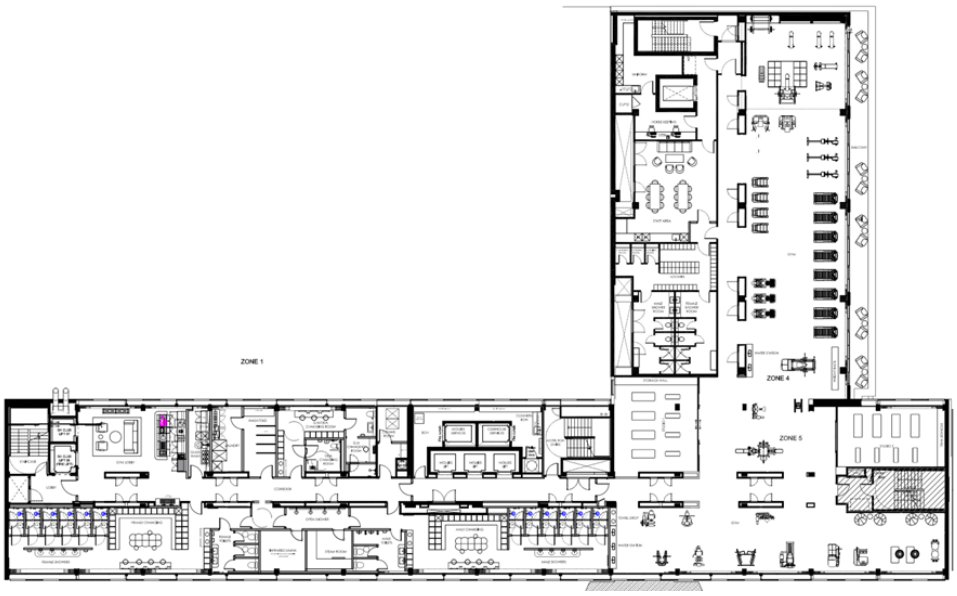


Figure 2 Proposed Level 1 gym layout

No plant is proposed specifically as part of the gym development and that a plant noise egress assessment for the overall development based on compliance with Planning Condition 15 will be provided separately.

4 Environmental noise survey

An attended and unattended environmental noise survey has previously been undertaken at the site to determine the existing noise levels in the vicinity of the site and nearby noise sensitive premises. Full details of this survey can be found in Sandy Brown report 15037-R03-E *Acoustic planning report* dated 5 October 2020.

The representative background noise levels measured applicable to receptors to the west and south of the site are provided in Table 1.

The representative background noise levels measured applicable to receptors to the east of the site are provided in Table 2.

Table 1 Typical background noise levels applicable to receptors to the west and south of the site

Time of day	Typical background noise level, L_{A90} (dB) Octave band centre frequency (Hz)						
	63	125	250	500	1k	2k	4k
Daytime (07:00 – 23:00)	52	51	50	49	47	40	30
Night (23:00 – 07:00)	52	52	50	49	46	38	29

Table 2 Typical background noise levels applicable to receptors to the east of the site

Time of day	Typical background noise level, L_{A90} (dB) Octave band centre frequency (Hz)						
	63	125	250	500	1k	2k	4k
Daytime (07:00 – 23:00)	60	54	48	46	48	42	35
Night (23:00 – 07:00)	60	55	43	40	40	34	27

5 Acoustic criteria

5.1 Planning condition 19

Planning Condition 19 imposed by MCC in relation to planning application *127612/FO/2020* states the following:

> *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 L_{Aeq} (entertainment noise) shall be controlled to 10dB below the L_{A90} (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.*
>
> *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.*

As the gym is a new addition to the Old Granada Studios development, and a new planning application is required to cover this, it is assumed that the latest MCC criteria would be applicable which is less onerous than that set by Planning condition 19.

The amplified sound egress criterion has been revised since the initial planning application. Manchester Planning and Noise technical guidance October 2022 Section 3.7.1.2 states the following in relation to entertainment noise:

> *Entertainment noise (L_{Aeq}) should be controlled to 5dB below the typical background noise level (L_{A90}) in each octave band at the nearest noise sensitive location.*

As this planning technical guidance supersedes Planning Condition 19, this criterion has been used to set limits and assess amplified sound egress associated with the Level 1 gym.

6 Amplified sound

6.1 Amplified sound egress limits

Based on the criteria discussed in Section 5.1, it is proposed that the amplified sound egress from the gym cumulative with amplified sound egress from the rest of the Old Granada Studios development be controlled to 5dB below the typical background noise level (L_{A90}) in each octave band at the nearest noise sensitive location. The cumulative amplified sound egress limits are set out in Table 3.

Table 3 Maximum amplified sound egress limits (cumulative limits for L1 gym + OGS development)

	Maximum sound pressure level at 1m from noise sensitive premises (dB)						
	Octave-band centre frequency (Hz)						
	63	125	250	500	1k	2k	4k
Nearest noise sensitive premises to the west and south of the site							
Daytime (07:00 – 23:00)	47	46	45	44	42	35	25
Night (23:00 – 07:00)	47	47	45	44	41	33	24
Nearest noise sensitive premises to the east of the site							
Daytime (07:00 – 23:00)	55	49	43	41	43	37	30
Night (23:00 – 07:00)	55	50	38	35	35	29	22

When considering the Old Granada Studios development being 10 dB below the typical background noise level (L_{A90}) in each octave band at the nearest noise sensitive location, the limits applicable to the gym only are set out in Table 4 such that the cumulative limits in Table 3 are complied with.

Table 4 Maximum amplified sound egress limits (gym specific limits)

	Maximum sound pressure level at 1m from noise sensitive premises (dB)						
	Octave-band centre frequency (Hz)						
	63	125	250	500	1k	2k	4k
Nearest noise sensitive premises to the west and south of the site							
Daytime (07:00 – 23:00)	45	44	43	42	40	33	23
Night (23:00 – 07:00)	45	45	43	42	39	31	22
Nearest noise sensitive premises to the east of the site							
Daytime (07:00 – 23:00)	53	47	41	39	41	35	28
Night (23:00 – 07:00)	53	48	36	33	33	27	20

6.2 Guidance on internal limits

6.2.1 Proposed amplified sound areas

Amplified sound is proposed within both the studios and open plan gym areas. These areas are highlighted in red within Figure 3.



Figure 3 Proposed extent of amplified noise

6.2.2 Facade sound insulation

Within Zone 4, a new facade has been constructed to provide a minimum sound insulation performance of R'_w+C_{tr} 40 dB.

Within Zone 5, 12.8 mm acoustic laminate secondary glazing with a 480 mm void is proposed to the primary glazing. This is expected to achieve a sound insulation performance of at least R'_w+C_{tr} 40 dB.

6.2.3 Internal amplified sound limits

Based on the facade sound insulation performance as per Section 6.2.2 and the daytime and night-time amplified noise egress limits as per Table 4, the maximum permissible amplified noise limits for the gym are set out in Table 5. These limits consider amplified sound within the studios and open plan gym areas simultaneously as a worst-case scenario.

Table 5 Maximum amplified noise limit for gym studios

Location	Maximum sound pressure level, L_{eq} (dB) per octave-band centre frequency (Hz)						
	63	125	250	500	1000	2000	4000
Gym studio	85	85	80	85	85	80	75

The above amplified noise levels equate to broadband sound pressure levels of $L_{Aeq,5min}$ 88 dB and would be expected to accommodate a reasonable level of amplified sound for gym studio classes etc.

Maximum amplified noise levels (L_{Fmax}) should not exceed 10 dB above these limits.

These amplified noise limits are indicative, and the finalised amplified noise limits will need to be undertaken following pre-completion testing on site.

7 Conclusion

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