



OPERATIONAL NOISE ASSESSMENT

PUREGYM PRESCOT

PUREGYM

AUGUST 2025

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Client: PureGym
2nd Floor Bravington House
Regents Quarter
Kings Cross
London
N1 9AF

Report by: Anderson Acoustics Limited
Tempus Wharf
33A Bermondsey Wall West
London
SE16 4ST

www.andersonacoustics.co.uk

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Author Jack Naumann
Senior Consultant
MEng PhD MIOA

13 August 2025

Reviewed Joe Baggaley
Director
MSc BSc (Hons) MIOA

13 August 2025

Approved Joe Baggaley
Director
MSc BSc (Hons) MIOA

13 August 2025

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APPENDIX A: EQUIPMENT DETAILS

1 INTRODUCTION

Anderson Acoustics Ltd has been commissioned by PureGym Ltd to undertake a noise impact assessment in relation to operational noise of a proposed gym in a mezzanine unit within an existing Tesco Extra store in Prescott.

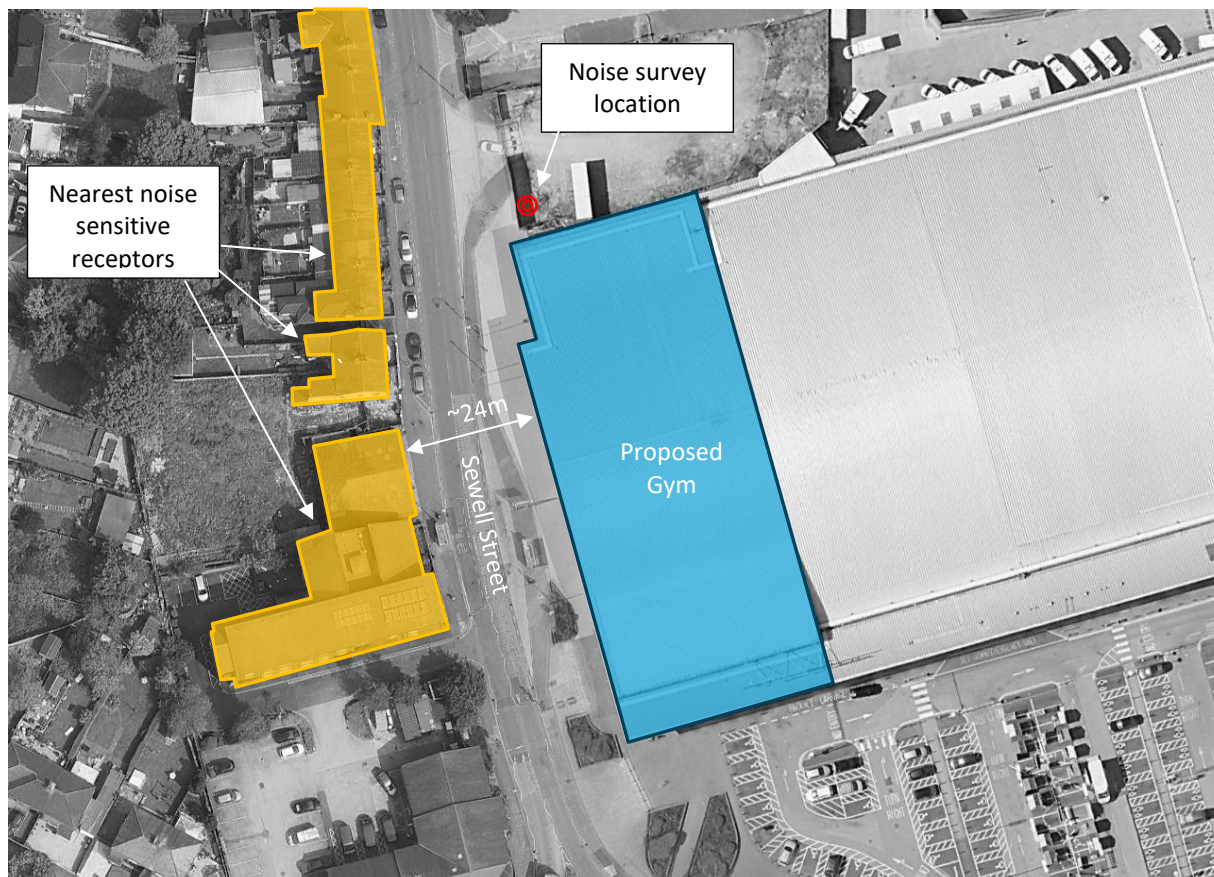
An unattended noise survey was carried out on 16-17th July 2025 to determine existing background noise levels in the vicinity of the gym. Whilst on site, the sound insulation performance of the existing façade was measured.

This noise impact assessment establishes design targets and details an assessment of airborne noise transfer from the proposed gym activities to nearby sensitive receptors. Outline mitigation measures are presented where necessary

2 SITE DETAILS

The development site is shown below in Figure 2.1.

Figure 2.1: Site location plan (location of first floor mezzanine unit in blue)



Imagery: Google Maps, Airbus, Bluesky, Infoterra Ltd & COWI A/S 2025 (annotated by Anderson Acoustics)

The existing site consists of a large double height retail unit which is currently occupied by Tesco Extra. The site is located in Cables Retail Park in Prescot, with several commercial units located to the east of the site.

It is proposed to locate the PureGym area on the existing first floor mezzanine which is understood to be formed of a metal composite deck of unknown density and thickness. The external building envelope was observed to be fully glazed.

The noise climate was noted to consist of road traffic noise from the surrounding road network and large car park to the south of site.

2.1 Proposed Use

The proposed fit-out may comprise the installation of a free-weights area, functional area, Women's Workout Space (WWS), Enhanced Flex/Lite lifting area, Main Gym including treadmills, fixed-pin machines, a studio area and welfare facilities.

The Gym will be open 24/7 whilst studio activities will be limited to between 06:00 and 23:00 hrs.

3 OPERATIONAL NOISE ASSESSMENT

3.1 Background Noise Survey

A background noise survey was undertaken to establish baseline noise levels at the nearest noise-sensitive receptor to assist in determining noise emission limits for plant associated with the new gym.

A noise monitor, with the microphone mounted at 1.5m height at ground floor level and was positioned at a location representative of the neighbouring noise-sensitive receptors (see Figure 2.1) under free-field conditions between 14:30 on the 16th July and 09:30 on the 17th July 2025.

The weather conditions were suitable for noise monitoring during the measurement period. Details of the equipment used for the background noise survey are presented in Appendix A.

3.2 Survey Results

Results of the measured typical background sound levels are shown in Table 3.1.

Table 3.1: Results from the attended noise survey (free-field)

Period	Average noise level, dB L _{Aeq,T}	Typical background noise level, dB L _{A90,15mins}	Maximum noise level dB, L _{AFMax}
Daytime (0700 – 2300)	53	42	63-90
Night-time (2300 – 0700)	44	36	40-70
Studio (0600 – 22:30)	53	42	63-90

3.3 Proposed External Noise Emission Limits

In relation to noise, the Planning Consultation Response from the Environmental Health and Consumer Protection Service of Knowsley Council recommends the following condition is imposed:

Development shall not commence until a scheme has been submitted to and approved in writing by the local planning authority which specifies the provisions to be made for the control of noise emanating from the site. The scheme shall be based on the results of a noise assessment which suitably characterises the noise climate at nearby residential dwellings both prior to and following the operation of the development permitted.

*The following noise levels shall be met after implementation of the scheme;
For fixed plant, the rating level of noise emitted from the site, measured at the closest boundary of the nearest residential dwellings shall be at least 5dB(A) below the existing background level. For other operations on site the rating level of noise shall not exceed the existing background level at the positions described above. Measurement and assessment shall be made according to British Standard BS 4142:2014.*

All works which form part of the scheme shall be implemented in full in accordance with the scheme as agreed. Documentary evidence of the works shall be submitted to and approved in writing by the Local Planning Authority prior to first use of the development.

The recommended condition sets out the design criteria for operational noise, which is considered to be noise of gym activities breaking out through the external building façade.

This reports specifically considers operational noise. Please see report reference 8057_002R_1-0_JN_Plant_Noise_Assessment for an assessment of plant noise.

Based on the criteria given in the recommended condition, operational noise should be controlled to levels presented in Table 3.2 at the nearest sensitive receptor.

Table 3.2: Operation noise limits at nearest noise sensitive receptors.

Receiver	Noise Target at 1m from Receiver façade, dB(A)		
	Daytime (0700 – 2300)	Night-Time (2300 – 0700)	Studio (0600 – 22:30)
Residential properties on Sewell Street	42	36	42

The consultation response specifically mentions the residents on Williams Street and Chester Street. However, since the receptors on Sewell Street highlighted in Figure 2.1 are closer to the facades through which noise from the loudest gym activities will pass, these are considered the worst affected. Controlling noise break-out at these properties will thus ensure operational noise at Williams Street and Chester Street residents meets the design criteria.

3.4 Source Levels, Gym Activity

Table 3.3 summarises the typical music/activity noise levels within PureGym establishments. These measurements were conducted by Anderson Acoustics across a range of gyms across the country on behalf of PureGym.

Table 3.3: Source noise data for gym activity

Scenario	Octave Band Centre Frequency (dB)							
	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	dBA
Busy Main Gym Space L_{eq} (0700-2300)	68	67	67	68	66	63	61	71
Busy Main Gym Space L_{eq} (2300-0700)	62	65	64	62	60	58	56	65
Functional Space L_{eq} (0700-2300)	65	72	71	72	74	68	64	77
Studio L_{eq} (0600-2230)	79	79	77	79	76	71	66	81

3.5 Façade Performance Measurements

The test was carried out using 01 dB DUO analysers, which were checked for correct calibration before and after the measurements using a Rion NC-74 calibrator. The sound source used was an active cabinet loudspeaker. The tests detailed in this report were undertaken in general accordance with BS EN ISO 140-4.

The loudspeaker was positioned in the proposed unit to generate an even distribution of sound throughout the space. A signal generator was used to produce a steady random noise signal (pink noise) which was reproduced via the loudspeaker. The sound pressure level was measured in the source and receive locations over the one-third octave band frequency range 50 to 5000Hz. One manual sweep was made within the unit and while a simultaneous measurement was taken outside at 1m from the front facing (western) facade using a measurement period of 30 seconds.

The ambient noise level was measured in the receiving position immediately after the receive measurements, again using a manual 30 second sweep to account for the influence of extraneous sound sources. Post processing of the data was carried out to obtain octave band level differences 'D'. The results of the noise breakout tests are provided in Table 3.4.

Table 3.4: Façade performance measurements and calculations

	Octave Band Centre Frequency (dB)						
	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz
Internal level	92	95	85	86	85	84	83
External level	69	67	56	56	54	50	46
Background Noise	56	60	57	59	56	53	48
External Level (Corrected for background noise)	69	66	47	49	46	43	38
Level Difference D provided by Façade	23	29	38	37	39	41	45

Using the source data (Table 3.3) and the results of the noise breakout testing (Table 3.4), calculations have been carried out to predict the level of noise breakout from the proposed gym to 1m from the façade of the nearest residential receptor. The results are shown in Tables 3.5 and 3.6.

Table 3.5: Predicted noise breakout levels 1m from the façade of the proposed gym

		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	dBA
Main Gym Floor / Free-Weights	07:00 - 23:00	45	38	29	31	27	22	16	23
	23:00 - 07:00	39	36	26	25	21	17	11	17
Functional	07:00 - 23:00	42	43	33	35	35	27	19	29
Studio	06:00 - 22:30	56	50	39	42	37	30	21	33

Table 3.6: Predicted noise breakout levels 1m from the façade of the properties on Sewell Street

		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	dBA
Main Gym Floor / Free-Weights	07:00 - 23:00	34	28	18	20	17	12	6	12
	23:00 - 07:00	28	26	15	14	11	7	1	6
Functional	07:00 - 23:00	31	33	22	24	25	17	9	18
Studio	06:00 - 22:30	45	40	28	31	27	20	11	22

Gym noise transfer to the residential receptors, of which the properties on Sewell Street are the closest is expected to meet the noise targets set in Section 3.3 during day and night-time hours.

While a criterion for maximum noise levels was not provided in the suggested condition, additional correspondence with the EHO has requested some consideration from maximum noise levels due to internal gym activities.

Floor coverings have been selected such that re-radiated noise levels are controlled to 53dB L_{AFmax} within the Tesco Extra premises that is located directly under the proposed gym. These coverings will comfortably control any risk of re-radiated noise in the nearest noise sensitive receptors.

A greater risk is the breakout via the glazed façade. Our experience has found that music during exercise classes is the loudest noise source to be considered. This has been considered in Table 3.7 where it is shown the maximum noise level is predicted to be 35dBA at the façade of the nearest NSR or 22dBA with a partially open window.

Table 3.6: Predicted maximum noise levels at the nearest noise sensitive receptor

Studio L_{AFmax} - 06:00 - 22:30	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	dBA
Source level (internal)	89	92	93	94	91	89	81	94
External level (at façade)	66	63	55	57	52	48	36	46
External level (at NSR)	55	53	44	46	42	38	26	35

Based on the results of the unattended survey a maximum level of 35dBA L_{AFmax} is 28dBA below the lowest $L_{AFmax,15min}$ level while the studio may be operational and 10dB below the recommended maximum noise levels during the night period as specified in BS 8233.

APPENDIX A

SURVEY EQUIPMENT DETAILS

Table A.1: Equipment Details

Equipment	Make & Model	Serial No	Date Calibrated	Calibration Certification Number
Sound Level Meter	01dB DUO	10664	27/04/2025	10749
Sound Level Meter	01dB DUO	10667	27/04/2025	10585
Calibrator	RION NC-74	35125828	29/05/2025	TCRT25/1343