

ACOUSTIC DESIGN TECHNOLOGY
Noise and Vibration Consultants

ADT 3490

14 March 2023

Cushman & Wakefield (Manchester)
1 Marsden Street
MANCHESTER
M2 1HW

86 – 88 MARKET STREET, MANCHESTER

POST COMPLETION TESTING

ACOUSTIC CONSULTANCY REPORT ADT 3490/PCT

Revision	Date	Issued By	Revision Notes
-	14 March 2022	Chris Middleton	first issue

1.0 SUMMARY

Post completion acoustic testing has been undertaken to demonstrate compliance with condition 12 of planning permission 118823/FO/2018, which reads as follows:

12) A post completion acoustic report shall be submitted to, and approved in writing by, the City Council, as local planning authority upon development completion to confirm that the recommended glazing and internal acoustic measures have been adopted and also to confirm that internal noise criteria has been achieved and residents are protected against noise from surrounding building uses, gym, plant and street noise.

Reason: To secure a reduction in noise from traffic or other sources in order to protect future residents from noise disturbance, pursuant to policies SP1 and DM1 of the Core Strategy.

The glazing and internal acoustic measures referenced in this condition are described in the previously issued report ADT 2680/SSM dated 11 September 2018. It is understood that the measures described in that report have been implemented.

A post construction survey has now been undertaken to confirm that the criteria have been achieved. Measurements of external noise intrusion have been taken over a typical 24 hour period in 4 sample rooms, and the results are all within the noise criteria in planning condition 11.

The test results therefore demonstrate compliance with planning condition 12.

2.0 POST COMPLETION TESTING

2.1 Acoustic Design Criteria

The noise criteria in planning condition 11 are as follows:

Location	Noise criterion
Bedrooms (night)	30 dB $L_{Aeq,8hour}$ 45 dB L_{Amax} *
Living rooms (day)	≤ 35 dB $L_{Aeq,16hour}$

* Note:- not normally to be exceeded more than 15 times over the night

Noise from the adjoining gym at 90-100 Market Street was raised as an issue during the planning process, and condition 11 also includes a requirement to control the associated noise to ≤ 47 dB at 63 Hz and ≤ 41 dB at 125 Hz.

2.2 Site Particulars

The development is located at 86 -88 Market Street, Manchester.

At the time of testing the building envelope was complete and the test apartments were structurally completed but not furnished. Construction works were ongoing between 07:00 hours and 17:00 hours daily and will continue up until occupation, and the tests have therefore by necessity been undertaken around ongoing construction noise.

3.0 TEST PROCEDURE

3.1 Purpose of Tests

Noise measurements were undertaken in a sample of rooms to check compliance with the applicable Manchester City Council indoor ambient noise criteria, towards discharge of planning condition 12.

3.2 Instrumentation

The instrumentation used, and the field calibration values before and after the survey are detailed in Appendix B of this report.

3.3 Procedure

It is understood that for this type of testing, Manchester City Council expect readings in at least 10% of the dwellings. In this case there are 18 apartments, and 4 test rooms have been selected to account for the varied noise climate around the building.

Survey periods were selected to cover a sample of typical environmental noise in this pedestrianised shopping street location, and the typical operation of the adjoining gym including timetabled group classes.

The test room locations, the survey periods and the instrumentation used are set out in the following table. The test room locations are also illustrated on the attached site plan 3490/SP1.

Test room	Location	Period	Instrument	Notes
R1	Market Street living room	9 to 10 March 2023	Rion NL-31	Street noise
R2	Market Street bedroom	9 to 10 March 2023	Norsonic 140	Street noise
R3	Rear bedroom on separating wall to gym	9 to 10 March 2023	01dB Solo	Potential gym / plant noise
R4	Rear living room	16 to 17 February 2023	Norsonic 140	General traffic / plant on surrounding buildings

Please note that test room R2 on the 6th floor is the only bedroom facing Market Street itself, the other rooms are living rooms. Test room R4 has the clearest view of the rear plant area.

In each room, the microphone was mounted on a tripod approximately 1.2 metres above the floor in the centre of the room and set to log over a typical 24 hour period. The MVHR units serving the apartments on the front elevation were understood to be operating at normal duty for the duration of the tests.

The meters were set to log the 100ms L_{Aeq} and $L_{Amax(F)}$ for the duration of the relevant survey period, for subsequent post processing.

4.0 RESULTS

4.1 Recorded Data

The calculated $L_{Aeq, 1 \text{ hour}}$ for each test room corrected for site noise and room conditions are listed in the attached table 3490/T1, along with the calculated $L_{Aeq,T}$ for the portion of the day time period unaffected by site noise (i.e. 17:00 to 23:00 hours) and for the whole of the night time period (23:00 – 07:00). For test room R3 adjoining the gym, the 63 Hz and 125 Hz levels are also provided.

The night time $L_{Amax,F}$ for the bedroom test rooms R2 and R3 are shown on the attached graphs 3490/G1 – G2, at 1 minute resolution.

4.2 Discussion of Results

As site work was continuing throughout the period, the data from 07:00 hours to 17:00 hours was affected by site noise to varying degrees and is therefore not representative.

In the absence of site noise, observations and analysis of audio samples indicates that the noise levels were generally controlled by street activity on Market Street. Some of the street noise radiated through to the test room at the rear (R3), but only faintly, while in the rear living room the noise levels were controlled by low level plant noise.

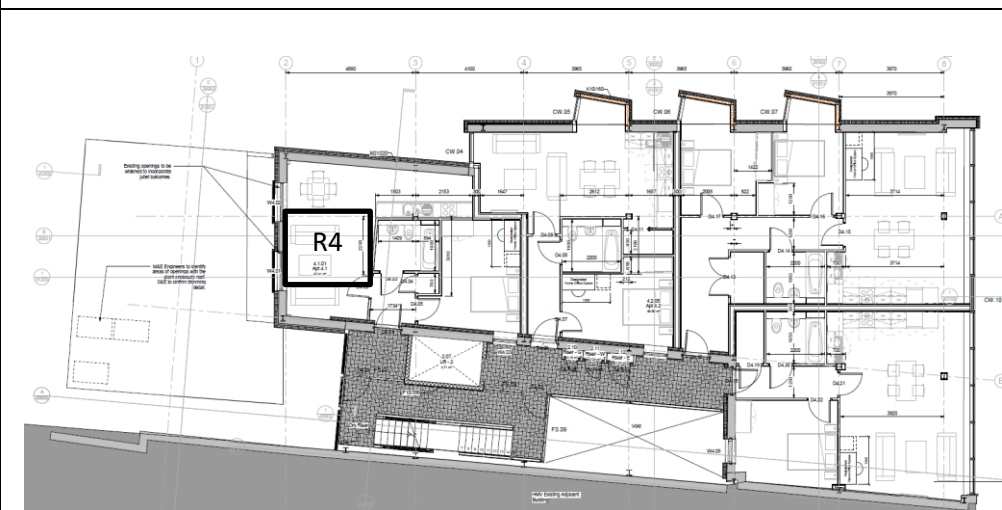
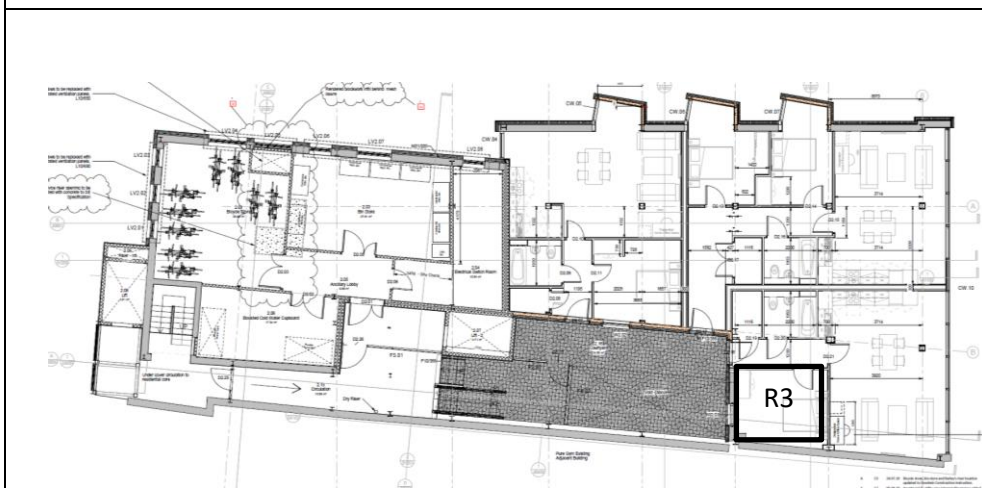
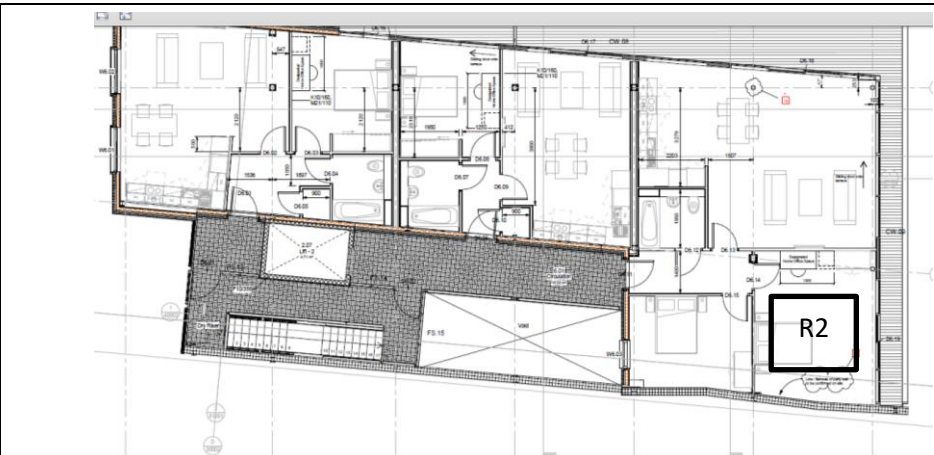
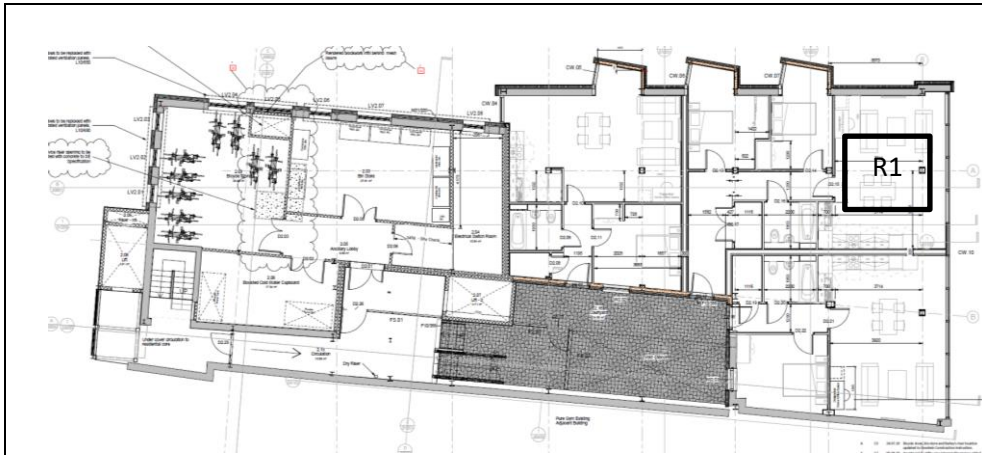
Reference to the attached table 3490/T1 shows that the measured $L_{Aeq,T}$ over the surveyed portion of the day time period outside site opening hours, and over the whole night time period are within the required day time $L_{Aeq, 16 \text{ hour}} \leq 35 \text{ dB}$ and the night time $L_{Aeq, 8 \text{ hour}} \leq 30 \text{ dB}$. In test room R3 adjoining the gym, the noise levels at 63 Hz and 125 Hz are within the required limits of 47 dB and 41 dB respectively.

Reference to the attached L_{Amax} time history graphs for the bedrooms reveals that the levels were generally less than the required limit of $L_{Amax,F} \leq 45 \text{ dB}$, and do not exceed that limit more than 15 times per night, as required by the planning condition.

4.3 Conclusion

The conclusion of this report is that the measured levels of external noise intrusion are within the indoor ambient noise criteria in planning condition 11, and therefore demonstrate compliance with condition 12.

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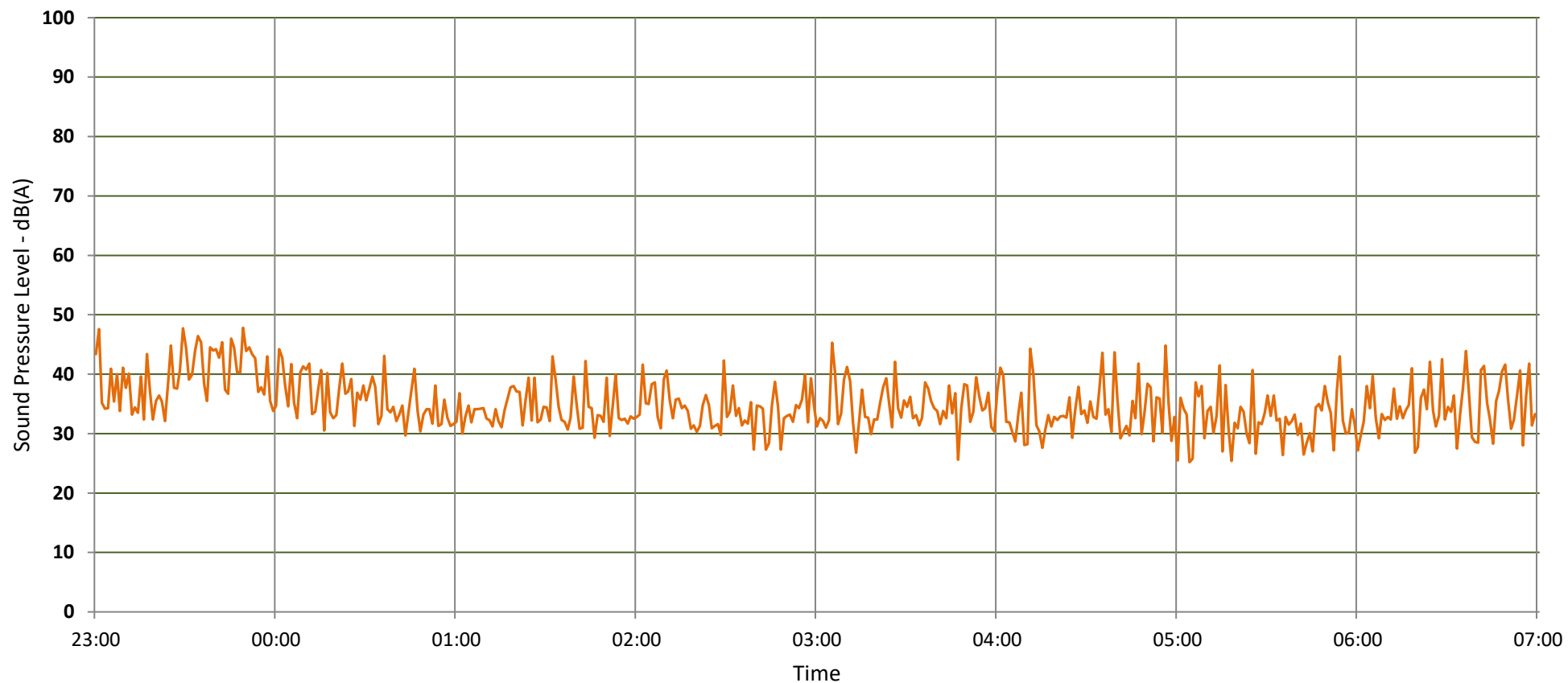
<u>Notes</u>	<u>Description</u> Test room locations		 ACOUSTIC DESIGN TECHNOLOGY Noise and Vibration Consultants
	<u>Project</u> 86 – 88 Market Street, Manchester		
	<u>Date</u> 14/03/2023	<u>Drawing No.</u> 3490/SP1	

Summary of L_{Aeq, 1 hour} dB

Periods affected by site noise highlighted in yellow, periods of scheduled gym classes highlighted in orange

Start	Stop	Test room 1 Market St bedroom L _{Aeq, T} dB	Test room 2 Market St living L _{Aeq, T} dB	Test room 3 Gym side bedroom L _{Aeq, T} dB	Test room 3 Gym side bedroom L _{eq, T} 63 Hz	Test room 3 Gym side bedroom L _{eq, T} 125Hz	Test room 4 Rear living room L _{Aeq, T} dB	Comments
13:00	14:00	60	51	43	51	45	56	Site noise
14:00	15:00	48	56	49	50	44	64	Site noise
15:00	16:00	42	45	51	50	46	75	Site noise
16:00	17:00	34	37	36	45	36	45	Site noise
17:00	18:00	33	29	28	41	29	43	Gym 'cycle' and step classes Gym absolute abs class Gym met con class
18:00	19:00	34	31	26	43	30	28	
19:00	20:00	37	35	24	43	30	27	
20:00	21:00	36	37	24	40	31	26	
21:00	22:00	34	30	24	39	27	25	
22:00	23:00	30	26	24	43	26	24	
23:00	00:00	34	31	24	40	27	24	
00:00	01:00	29	27	23	37	25	24	
01:00	02:00	28	23	23	36	25	24	
02:00	03:00	27	26	23	36	24	24	
03:00	04:00	27	25	23	36	24	24	
04:00	05:00	27	23	23	37	24	24	
05:00	06:00	26	25	23	37	24	25	
06:00	07:00	29	27	31	42	31	31	
07:00	08:00	41	42	40	43	43	66	Site noise
08:00	09:00	47	39	42	48	39	58	Site noise
09:00	10:00	49	45	54	51	42	64	Site noise
10:00	11:00	41	57	47	51	44	60	Site noise
11:00	12:00	54	50	65	58	61	66	Site noise
12:00	13:00	51	46	39	47	37	50	Site noise
Day L _{Aeq, T} dB*		35	33	25			26	
Night L _{Aeq, T} dB		29	26	25			25	

*Note:- averaged over the period unaffected by site noise (18:00 – 23:00).



Notes

$L_{Amax(F)}$ exceeded 45 dB 5 times

Description

1 minute $L_{Amax(F)}$ in Market Street bedroom (R2)

Project

86 – 88 Market Street, Manchester

Survey Date

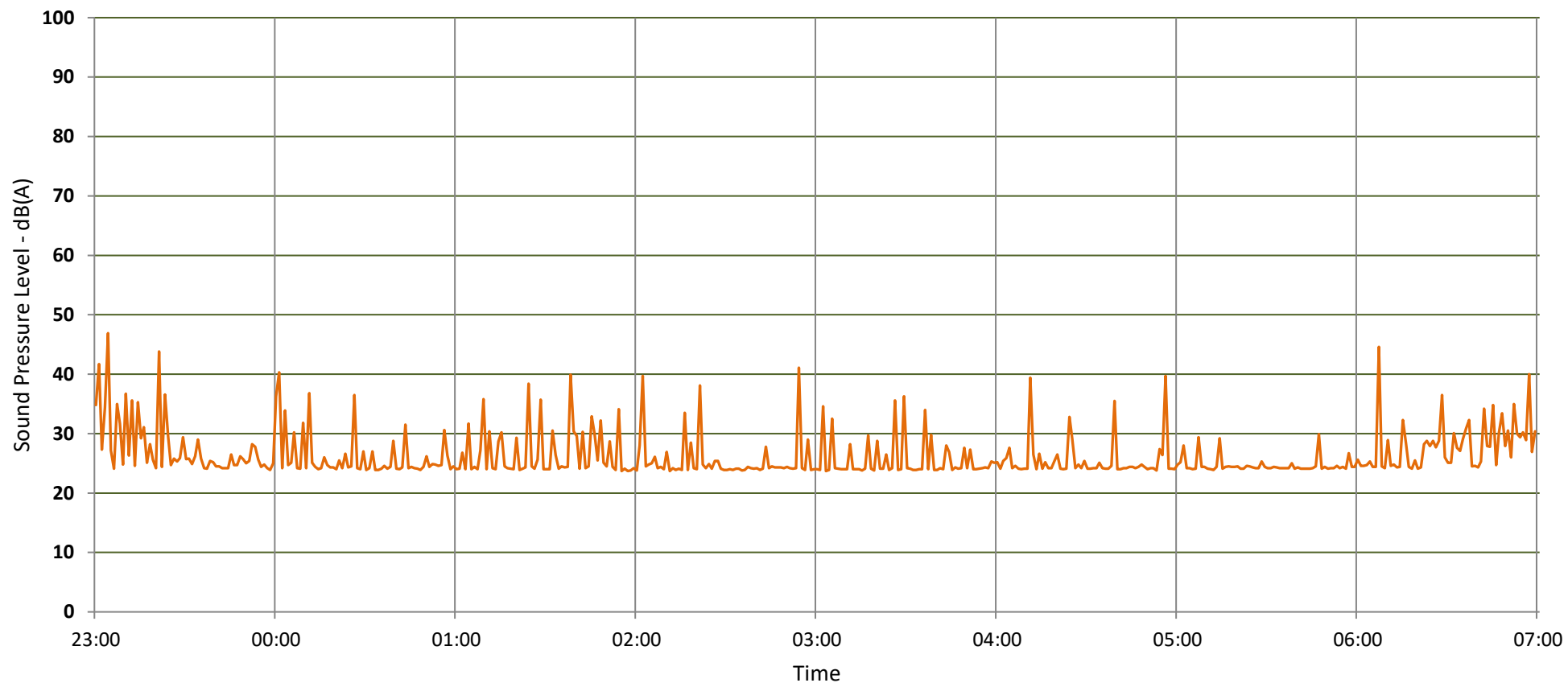
9 to 10 March 2023

Drawing No.

3490/G1



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Notes

$L_{Amax(F)}$ exceeded 45 dB once

Description

1 minute $L_{Amax(F)}$ in rear bedroom by gym (R3)

Project

86 – 88 Market Street, Manchester

Survey Date

9 to 10 March 2023

Drawing No.

3490/G2



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APPENDIX A

Instrumentation

Manufacturer	Type and / or Model	Serial Number	Last Laboratory Calibration	Calibrator Output (dB)	Free Field Correction (dB)	Initial reading (dB)	Final reading (dB)
01dB	(Black) Solo Class 1 Sound Level Meter	65201	November 2021		-0.10	113.9	113.9
01dB	PRE 21 S Pre-Amplifier	15619					
01dB	MCE 212 ½ inch Microphone	101204					
Norsonic	Nor140 Class 1 Sound Level Meter (SLM10)	1407647	February 2023		-0.2	113.8	114.0
Norsonic	Nor1225 ½" Microphone	413060					
Norsonic	Nor1209 Preamplifier	22847					
Rion	NL-31 Class 1 Sound Level Meter	110057	May 2021		0.0	114.0	114.0
Rion	UC-53 ½ inch Microphone	01306					
Rion	NH-21 Preamplifier	00159					
Norsonic	Nor1251 Calibrator (Cal 4)	33453	February 2022	113.99			