Victoria Riverside Manchester

Condition 23(b) Discharge Report
Tower A & Midrise A

28499/CDR6

2 July 2026

For:
DEX Construction Group Limited
2nd Floor Northern Assurance Building
9-21 Princess Street
Manchester
M2 4DN

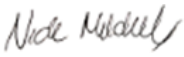
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Condition 23(b) Discharge Report
Internal Ambient Noise Level Test Report
28499/CDR6

Document Control

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Hann Tucker Associates

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1.0 Introduction

Hann Tucker Associates Limited (Hann Tucker) has been commissioned by DEX Construction Group Limited to undertake validation measurements and prepare a verification report to assist with the discharge of planning condition 23(b) on Tower Block A and Midrise A for the development referred to as Victoria Riverside, Manchester.

The development was granted Planning Permission in January 2021 (*Planning Reference: 126944/FO/2020*).

The tests were carried out across the development for validation internal ambient noise levels measurements on a number of elevations within Tower A and Midrise A.

A combination of unattended and attended noise loggers were utilised in critical areas around the development to establish the as-built operation internal noise levels against the worst-case noise incident in relation to road and rail traffic noise.

2.0 Planning Conditions

Planning Condition 23, part (b), requests that evidence of the noise mitigation measures installed are capable of achieving the required acoustic verification and satisfy agreed limits be submitted to the local planning authority. The conditions are below with relevant text highlighted in bold.

> *23. Notwithstanding the Chapter 12 Noise and Vibration, prepared by ARUP of the ES stamped as received by the City Council, as Local Planning Authority, on 19 May 2020,*
>
> ***(b). Prior to the first occupation of each phase of the development, a verification report for that phase of development will be required to validate that the work undertaken conforms to the recommendations and requirements approved as part of part (a) of this planning condition. The verification report shall include post completion testing to confirm the noise criteria has been met. In instances of non-conformity, these shall be detailed along with mitigation measures required to ensure compliance with the noise criteria. Any mitigation measures shall be implemented in accordance with a timescale to be agreed with the City Council, as Local Planning Authority, and thereafter retained and maintained in situ.***

As such, this technical report details the validation of on-site measurements following completion in order to reduce noise to within acceptable levels in accordance with relevant standards/guidance and conditions set by Manchester City Council (MCC).

3.0 Criteria

The wording of the condition draws upon the noise impact assessment undertaken by Arup at the planning stage. The criteria set out in the Arup report references the Manchester City Council (MCC) Technical Guidance 2015 document that draw upon guidance documents ProPG:2017 and BS8233:2014.

Internal and external noise criteria are presented in section 3.6.1.1 for residential developments:

- *"Bedrooms (night time 23:00 to 07:00): 30dBLAeq and individual noise events should not normally exceed 45 dBLAmax,F more than 15 times per night*
- *Living Rooms (daytime 07:00 to 23:00): 35dBLAeq*

4.0 Condition 23(b) Commissioning Details

4.1 Overview

Internal ambient noise levels have been measured in accordance with the requirements of the ARUP Report, and typical good practice guidance (ANC Noise Measurement in Buildings, Parts 1 and 2).

4.2 Reverberation Time Corrections

The surveys were undertaken in unfurnished rooms. Bedrooms were carpeted and Living/Kitchen/Dining rooms included LVT flooring. The BS8233:2014 noise break-in calculation assumes a flat reverberation time of 0.5 seconds. As such, reverberation time corrections have been applied the measured results throughout.

For completeness, the reverberation corrections for both Bedrooms and Living Rooms have been established in octave bands based on the average reverberation time across a sample of rooms.

Location	Averaged Measured Reverberation Time, T_{20}, (s) at each Octave Band Centre Frequency (Hz)				
	125	250	500	1000	2000
Bedroom	1.14	1.02	0.77	0.88	0.84

Location	Averaged Measured Reverberation Time, T_{20}, (s) at each Octave Band Centre Frequency (Hz)				
	125	250	500	1000	2000
Living Room	0.92	1.45	1.61	1.61	1.35

Based on the above, the following table sets out the corrections to be applied between a non-furnished and furnished room.

Location	Averaged Measured Reverberation Time, T_{20}, (s) at each Octave Band Centre Frequency (Hz)				
	125	250	500	1000	2000
Bedroom	1.14	1.02	0.77	0.88	0.84
BS 8233:2014, T_{20} (s)	0.5	0.5	0.5	0.5	0.5
Bedroom Correction (dB)	3.59	3.11	1.88	2.44	2.28
Living Room, T_{20} (s)	0.92	1.45	1.61	1.61	1.35
BS 8233:2014, T_{20} (s)	0.5	0.5	0.5	0.5	0.5
Living Room Correction (dB)	2.64	4.62	5.07	5.07	4.33

The above octave corrections typically relate to A-weighted corrections of approximately 4-5 dB for a Living Room and between 2-3 dB for a bedroom. The measured data has therefore been corrected to account for reverberation.

4.3 Unattended Measurement Locations

Unattended sound level loggers were installed within 4No apartments, as described below. These rooms were selected for the unattended surveys as they are representative of worst affected locations of the development as a whole.

Test Ref.	Apartment	Tower	Room	Test Dates
MP1	3407	A	Bedroom	09/06/2026 to 10/06/2026
MP2	707		Bedroom	09/06/2026 to 10/06/2026
MP3	401		Bedroom	09/06/2026 to 10/06/2026
MP4	308		Bedroom	09/06/2026 to 10/06/2026

Unattended measurements were attempted within Midrise A, however, were affected by intermittent fire alarm bleeps and therefore were aborted.

The overall number of locations selected for the unattended monitoring exceeded the typical coverage (%) required, and included locations expected to experience the highest railway noise exposure (i.e. Rooms 01, 07 and 08 in Tower A, which are closest to the railway line).

Therefore, the attended spot measurements undertaken in Midrise A are considered sufficient to characterise peak rail noise levels and address any uncertainty arising from the aborted unattended (night-time) measurement of Midrise A.

4.4 Attended Measurement Locations

Internal ambient noise level measurements were taken in 26No. different apartments across the Tower A and Midrise A development. The noise levels were typically measured for 15-minute durations in Bedrooms (BED) and the Living/Kitchen/Dining (LKD) areas.

Test Ref.	Location	Apt No.	Room Type	Test Date	Test Time
IANL1	Tower A	2106	LKD	09/06/2026	17:58 – 18:13
IANL2	Tower A	808	BED	09/06/2026	19:33 – 19:48
IANL3	Tower A	1208	BED	09/06/2026	20:04 – 20:19
IANL4	Tower A	508	LKD	10/06/2026	16:37 – 16:52
IANL5	Tower A	2602	BED	09/06/2026	16:57 – 17:12
IANL6	Tower A	1605	BED	09/06/2026	18:15 – 18:30
IANL7	Tower A	904	BED	09/06/2026	19:20 – 19:35
IANL8	Tower A	705	LKD	10/06/2026	15:51 – 16:06
IANL9	Tower A	505	BED	10/06/2026	16:43 – 16:58
IANL10	Midrise A	403	LKD	10/06/2026	18:58 – 19:13
IANL11	Midrise A	506	BED	10/06/2026	17:42 – 17:57
IANL12	Tower A	2101	BED	09/06/2026	17:49 – 18:04
IANL13	Tower A	803	LKD	09/06/2026	19:28 – 19:43
IANL14	Tower A	1302	LKD	09/06/2026	19:57 – 20:12
IANL15	Tower A	1105	LKD	09/06/2026	20:24 – 20:39
IANL16	Tower A	702	BED	09/06/2026	22:20 – 20:35
IANL17	Tower A	1703	LKD	09/06/2026	17:12 – 17:27
IANL18	Tower A	1508	LKD	09/06/2026	18:27 – 18:42
IANL19	Tower A	906	LKD	09/06/2026	19:18 – 19:33
IANL 20	Tower A	901	LKD	10/06/2026	16:27 – 16:42
IANL 21	Midrise A	406	LKD	10/06/2026	17:39 – 17:54
IANL 22	Midrise A	301	LKD	10/06/2026	18:30 – 18:45
IANL 23	Tower A	3004	LKD	09/06/2026	16:31 – 16:46
IANL 24	Tower A	606	LKD	09/06/2026	19:45 – 20:00

Test Ref.	Location	Apt No.	Room Type	Test Date	Test Time
IANL 25	Tower A	101/201	BED	09/06/2026	19:53 – 20:08
IANL 26	Tower A	304	BED	09/06/2026	20:10 – 20:25

4.5 Equipment

The equipment used, as detailed below, was calibrated prior to and on completion of the survey. No significant calibration drift occurred (not more than 0.3 dB).

Location	Description	Manufacturer	Type	Serial Number	Calibration due on
IANL1, IANL2, IANL3, IANL4, MP4	Type 1 Data Logging Sound Level Meter	ACOEM	CUBE	10631	22/10/2026
	Type 1 ½" Condenser Microphone	ACOEM	PRE22	10628	22/10/2026
	Preamp	GRAS	40CD	207243	22/10/2026
IANL5, IANL6, IANL7, IANL8, IANL9, IANL10, IANL11, IANL25	Type 1 Data Logging Sound Level Meter	Larson Davis	LxT	5104	28/04/2027
	Type 1 ½" Condenser Microphone	PCB	PRML x TL1	69922	28/04/2027
	Preamp	PCB	377B02	317684	28/04/2027
IANL12, IANL13, IANL14, IANL15, IANL16, MP3	Type 1 Data Logging Sound Level Meter	ACOEM	CUBE	10623	22/10/2026
	Type 1 ½" Condenser Microphone	ACOEM	PRE22	10582	22/10/2026
	Preamp	GRAS	40CD	217	22/10/2026
IANL17, IANL18, IANL19, IANL20, IANL21, IANL22, IANL23, IANL24, IANL26, MP2	Type 1 Data Logging Sound Level Meter	Larson Davis	LxT	6490	05/01/2027
	Type 1 ½" Condenser Microphone	PCB	PRML x TL1	070074	05/01/2027
	Preamp	PCB	377B02	347391	05/01/2027
MP1	Type 1 Data Logging Sound Level Meter	Larson Davis	LxT	4569	05/01/2027
	Type 1 ½" Condenser Microphone	PCB	PRML x TL1	42842	05/01/2027
	Preamp	PCB	377B02	318357	05/01/2027
All	Type 1 Calibrator	Larson Davis	Cal200	3083	04/03/2027

4.6 Site Conditions

The following pre-requisites were requests given to the site in order to obtain representative measurement results:

- Rooms were to be finished, unfurnished and unoccupied.
- Test rooms to be locked for the duration of the measurement (no access for trades).
- Windows to be closed, as ventilation provided by mechanical ventilations systems.
- Mechanical ventilation systems to be balanced and operating at design duty for the duration of the noise surveys.
- Extraneous noises from site construction works were excluded as far as reasonably possible.

All attended measurements were carried out during daytime and evening hours (typically between 16:00-23:00 hrs), as to include road/rail traffic noise during peak hours.

5.0 Assessment Results

5.1 Unattended Measurements

The table below summarises the measured night-time $L_{Aeq,T}$ and 10^{th} to 15^{th} highest $L_{Amax,T}$ metric values at each measurement position, which aligns with the ARUP Report and 2015 MCC guide to which the building was designed.

All broadband measurements were A-weighted and used a fast time constant (0.125s) using discrete 15-minute and 5-minute interval periods.

The Manchester City Council (MCC) night-time noise criteria are also presented to allow an assessment of compliance.

Due to extraneous noise associated with the active construction site, only the unattended night-time measurement data are presented, as the daytime data are not considered representative of typical conditions.

The time history graphs for each position are however provided in Appendix B for completeness.

Test Ref	Measurement Location	Parameter	Measured Noise Level (dB)	MCC Limit (dB)	Compliance?
MP1	Tower Block: A Plot Reference: 3407 Room: BED	Night-time $L_{Aeq,T}$	23	30	✓
		Night-time $L_{Amax,T}$	39	45	✓
MP2	Tower Block: A Plot Reference: 707 Room: BED	Night-time $L_{Aeq,T}$	28	30	✓
		Night-time $L_{Amax,T}$	44	45	✓
MP3	Tower Block: A Plot Reference: 401 Room: BED	Night-time $L_{Aeq,T}$	27	30	✓
		Night-time $L_{Amax,T}$	45	45	✓
MP4	Tower Block: A Plot Reference: 308 Room: BED	Night-time $L_{Aeq,T}$	23	30	✓
		Night-time $L_{Amax,T}$	41	45	✓

Both the internal night-time ambient noise level and maximum event levels comply with the criteria.

5.2 Attended Measurements

The table below summarises the $L_{Aeq,15minute}$ measurements at each measurement position during the daytime. The Manchester City Council (MCC) noise level limit is also presented to judge compliance.

Test Ref.	Measurement Location	Time Period (mins)	Measured L_{eq} (dB)	MCC Criterion $L_{Aeq,16hr}$ (dB)	Compliance
IANL1	Tower: A Plot Reference: 2106 Room: LKD	15	33	35	✓
IANL2	Tower: A Plot Reference: 808 Room: BED	15	31	35	✓
IANL3	Tower: A Plot Reference: 1208 Room: BED	15	32	35	✓

Test Ref.	Measurement Location	Time Period (mins)	Measured L_{eq} (dB)	MCC Criterion $L_{Aeq,16hr}$ (dB)	Compliance
IANL4	Tower: A Plot Reference: 508 Room: LKD	15	31	35	✓
IANL5	Tower: A Plot Reference: 2602 Room: BED	15	28	35	✓
IANL6	Tower: A Plot Reference: 1605 Room: BED	15	26	35	✓
IANL7	Tower: A Plot Reference: 904 Room: BED	15	32	35	✓
IANL8	Tower: A Plot Reference: 705 Room: LKD	15	27	35	✓
IANL9	Tower: A Plot Reference: 505 Room: BED	15	29	35	✓
IANL10	Midrise: A Plot Reference: 403 Room: LKD	15	24	35	✓
IANL11	Midrise: A Plot Reference: 506 Room: BED	15	24	35	✓
IANL12	Tower: A Plot Reference: 2101 Room: BED	15	33	35	✓
IANL13	Tower: A Plot Reference: 803 Room: LKD	15	32	35	✓
IANL14	Tower: A Plot Reference: 1302 Room: LKD	15	24	35	✓

Test Ref.	Measurement Location	Time Period (mins)	Measured L_{eq} (dB)	MCC Criterion $L_{Aeq,16hr}$ (dB)	Compliance
IANL15	Tower: A Plot Reference: 1105 Room: LKD	15	26	35	✓
IANL16	Tower: A Plot Reference: 702 Room: BED	15	30	35	✓
IANL17	Tower: A Plot Reference: 703 Room: LKD	15	29	35	✓
IANL18	Tower: A Plot Reference: 1508 Room: LKD	15	31	35	✓
IANL19	Tower: A Plot Reference: 906 Room: LKD	15	31	35	✓
IANL20	Tower: A Plot Reference: 901 Room: LKD	15	32	35	✓
IANL21	Midrise: A Plot Reference: 406 Room: LKD	15	29	35	✓
IANL22	Midrise: A Plot Reference: 301 Room: LKD	15	24	35	✓
IANL23	Tower: A Plot Reference: 3004 Room: LKD	15	29	35	✓

Test Ref.	Measurement Location	Time Period (mins)	Measured L_{eq} (dB)	MCC Criterion $L_{Aeq,16hr}$ (dB)	Compliance
IANL24	Tower: A Plot Reference: 606 Room: LKD	15	30	35	✓
IANL25	Tower: A Plot Reference: 101/201 Room: BED	15	28	35	✓
IANL26	Tower: A Plot Reference: 304 Room: BED	15	23	35	✓

5.3 Conclusion

Hann Tucker has undertaken internal ambient noise measurements within a representative sample of apartments in Tower A and Midrise A at the Victoria Riverside development.

The survey comprised unattended measurements and attended measurements within bedrooms and living/kitchen areas, with windows closed and, where applicable, building services operating under normal conditions.

The measurements were undertaken in accordance with the Arup report and recognised good practice guidance, including ANC Noise Measurement in Buildings. The results represent typical internal noise levels experienced by occupants under standard operating conditions.

The results demonstrate that internal noise levels within the majority of tested habitable rooms satisfy the relevant acoustic criteria. In particular:

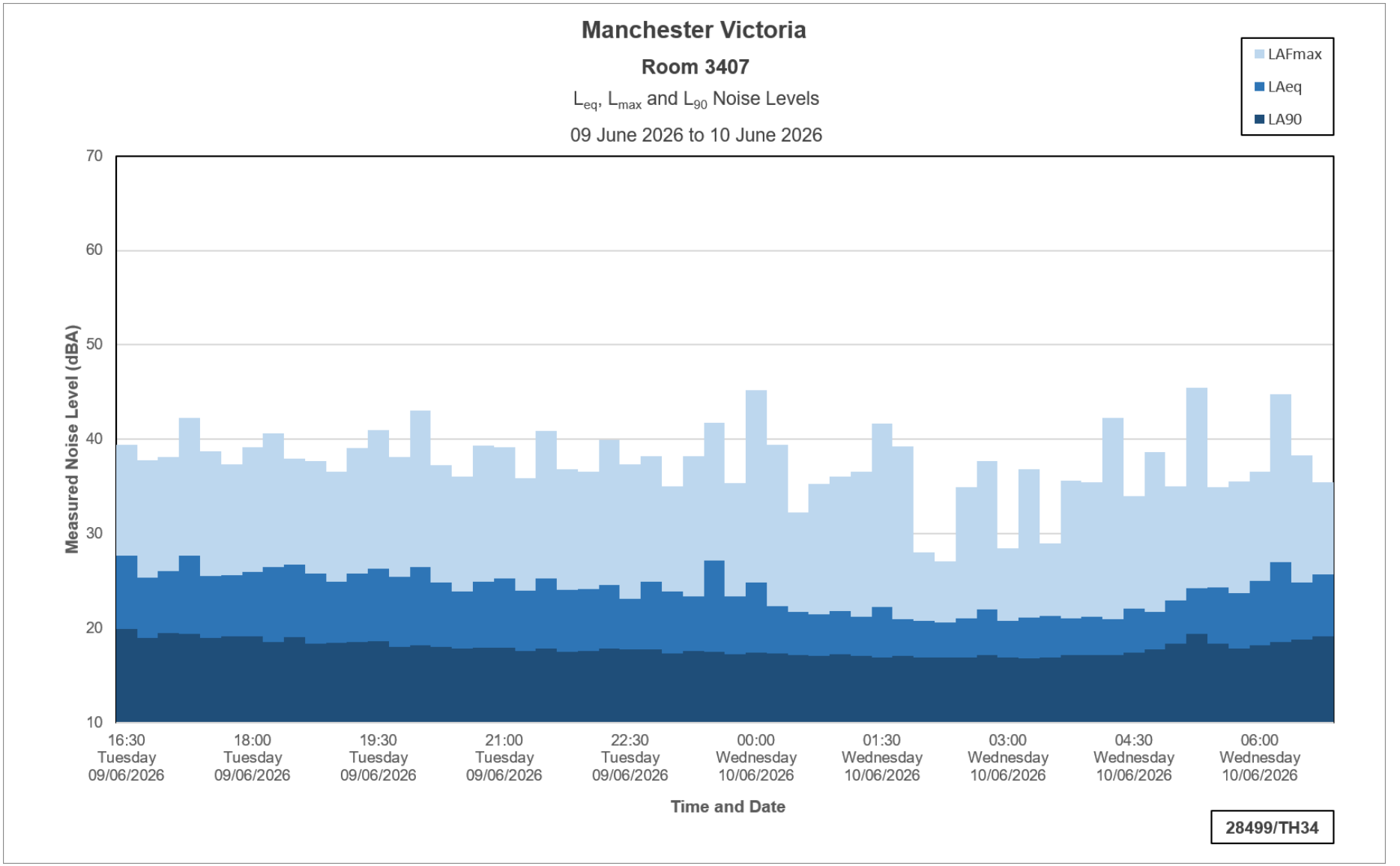
- Measured internal ambient L_{Aeq} noise levels comply with the guidance values set out in BS 8233:2014 for residential dwellings.

- Night-time maximum noise events within the monitored bedrooms also comply with the relevant guidance level of 45 dB $L_{Amax,T.}$

Based on the results documented within this Report, it is concluded that the acoustic mitigation measures implemented within Tower A and Midrise A are performing as intended and that the internal noise environment within the tested apartments meets the requirements of Planning Condition 23.

Appendix A

Internal Ambient Noise Levels - Time History Graphs

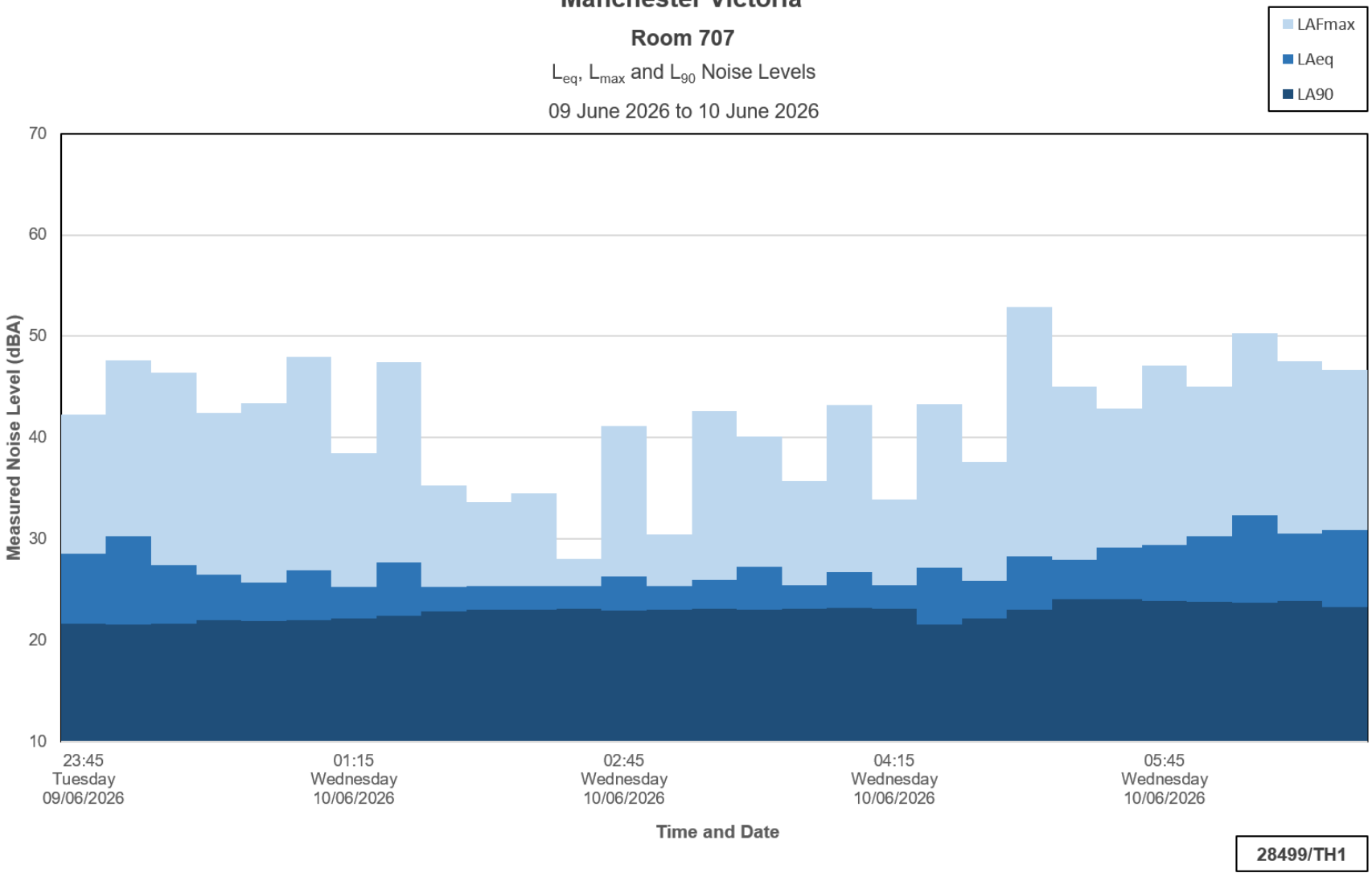

Manchester Victoria
Room 3407
L_{eq}, L_{max} and L_{90} Noise Levels
09 June 2026 to 10 June 2026
LAFmax
LAeq
LA90
Measured Noise Level (dBA)
70
60
50
40
30
20
10
16:30 Tuesday 09/06/2026
18:00 Tuesday 09/06/2026
19:30 Tuesday 09/06/2026
21:00 Tuesday 09/06/2026
22:30 Tuesday 09/06/2026
00:00 Wednesday 10/06/2026
01:30 Wednesday 10/06/2026
03:00 Wednesday 10/06/2026
04:30 Wednesday 10/06/2026
06:00 Wednesday 10/06/2026
Time and Date
28499/TH34

Manchester Victoria

Room 707

L_{eq}, L_{max} and L_{90} Noise Levels

09 June 2026 to 10 June 2026



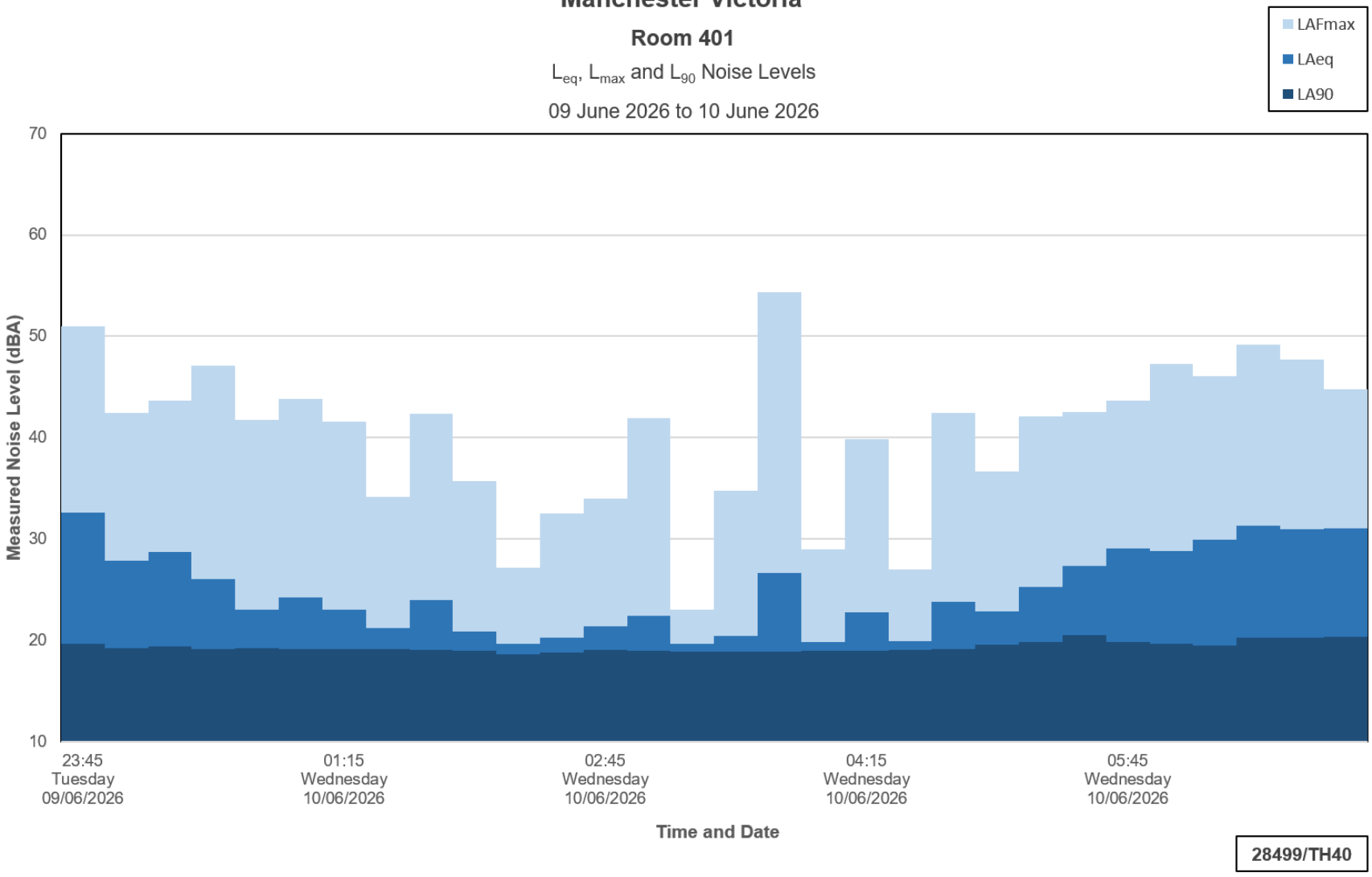
28499/TH1

Manchester Victoria

Room 401

L_{eq}, L_{max} and L_{90} Noise Levels

09 June 2026 to 10 June 2026



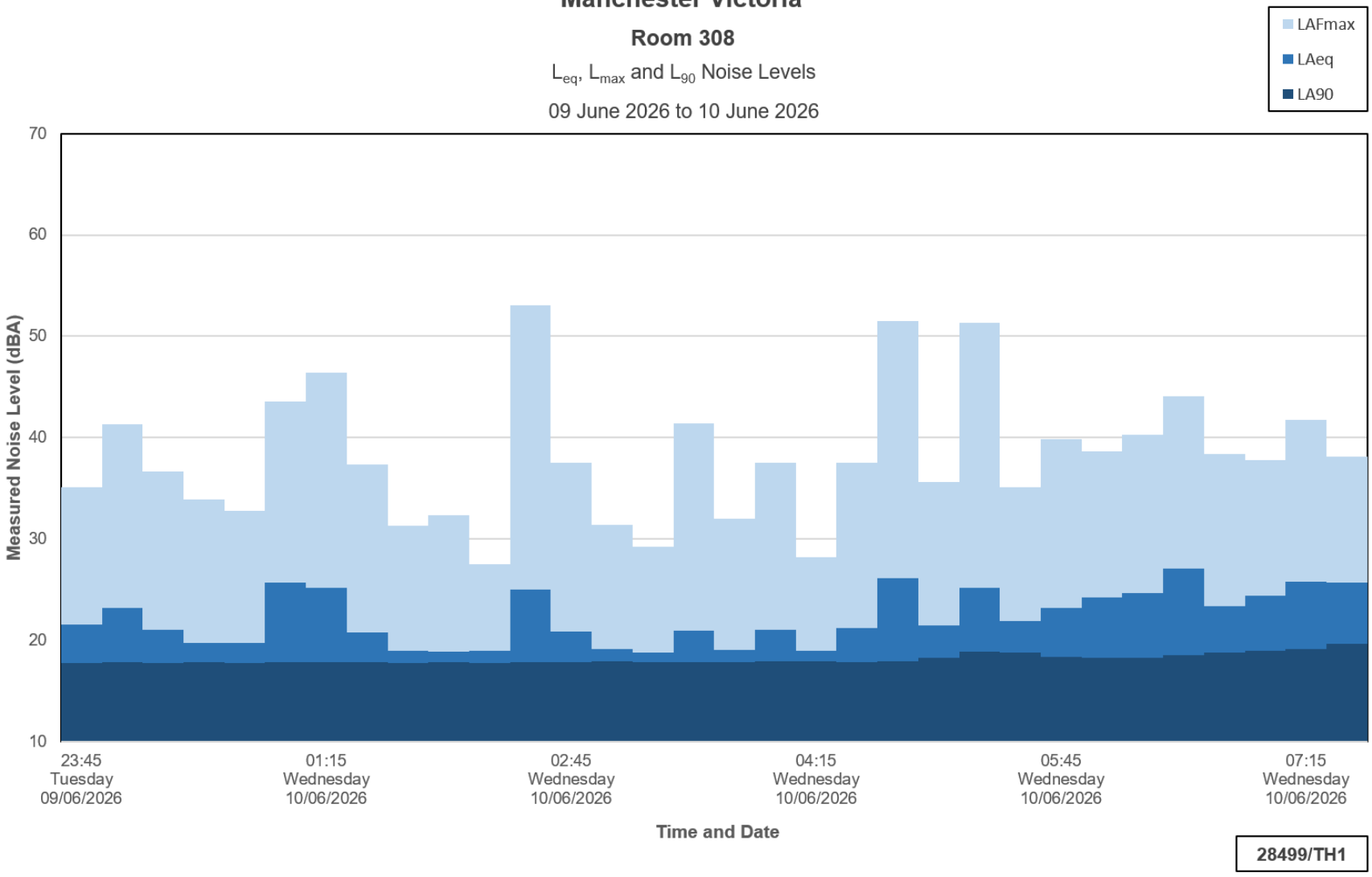
28499/TH40

Manchester Victoria

Room 308

L_{eq}, L_{max} and L_{90} Noise Levels

09 June 2026 to 10 June 2026



28499/TH1