Viadux Phase 1
Manchester

Condition 22 Discharge Report

27528/RP-2

30 May 2024

For:
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Hann Tucker Associates

Condition 22 Discharge
27528/RP-2

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Attachments

Appendix A – Time History Graphs

This report has been prepared by Hann Tucker Associates Limited (HTA) with all reasonable skill, care and diligence in accordance with generally accepted acoustic consultancy principles and the purposes and terms agreed between HTA and our Client. Any information provided by third parties and referred to herein may not have been checked or verified by HTA unless expressly stated otherwise. This document contains confidential and commercially sensitive information and shall not be disclosed to third parties. Any third party relies upon this document at their own risk.

Internal Noise Level Test Report 27528/RP-2

Document Control

Rev	Date	Comment	Prepared by	Checked by	Authorised by
1	30/05/2024	Updated with additional test results			
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1.0 Introduction

A new-build residential development has been constructed at Viadux Phase 1, Manchester. The development is subject to various conditions of planning and Condition 22 requires the contractor to demonstrate that internal noise levels within apartments are compliant with the requirements of Manchester City Council (MCC).

Hann Tucker Associates has therefore been commissioned to carry out internal noise measurements within a selection of apartments to assist in the discharge of Condition 22.

Our findings are presented herein.

2.0 Objectives

To undertake automated noise levels survey within 5No available apartments and attended sample measurements in 33No available apartments to ascertain L_{Aeq} and L_{Amax} internal noise levels.

To compare the results against the requirements of Planning Condition 22 and comment upon the acceptability.

3.0 Planning Condition 22

Planning Condition 22 states:

"22) Notwithstanding the noise assessment prepared by Fisher Acoustics stamped as received by the City Council, as Local Planning Authority, on the 31 March 2017,

(a) Prior to the first occupation of the residential accommodation hereby approved, the accommodation shall be insulated in accordance with a scheme submitted for approval by writing by the City Council, as Local Planning Authority. (b) The approved scheme shall be implemented and prior to the first occupation of the residential element and post construction survey (including appropriate mitigation measures and timescales for implementation if necessary) shall be submitted for approval in writing by the City Council as Local Planning Authority. The measures agreed thereafter retained and maintained in situ.

Reason – To secure a reduction in noise from the traffic, trams and Manchester Central or other sources in order to protect future residents from noise disturbance pursuant to policies SP1, H1 and DM1 of the Core Strategy (2007) and saved policy DC26 of the Unitary Development Plan for the City of Manchester (1995).”

As such, internal ambient noise levels must adhere to the criteria stipulated in BS 8233:2014, as shown in the table below.

Activity	Location	Desirable Ambient Criteria	
		07:00 – 23:00	23:00 – 07:00
Resting	Living Rooms	35 dB $L_{Aeq,16hour}$	-
Dining	Dining Room/Area	35 dB $L_{Aeq,16hour}$	-
Sleeping (Daytime Resting)	Bedroom	35 dB $L_{Aeq,16hour}$	30 dB $L_{Aeq,8hour}$

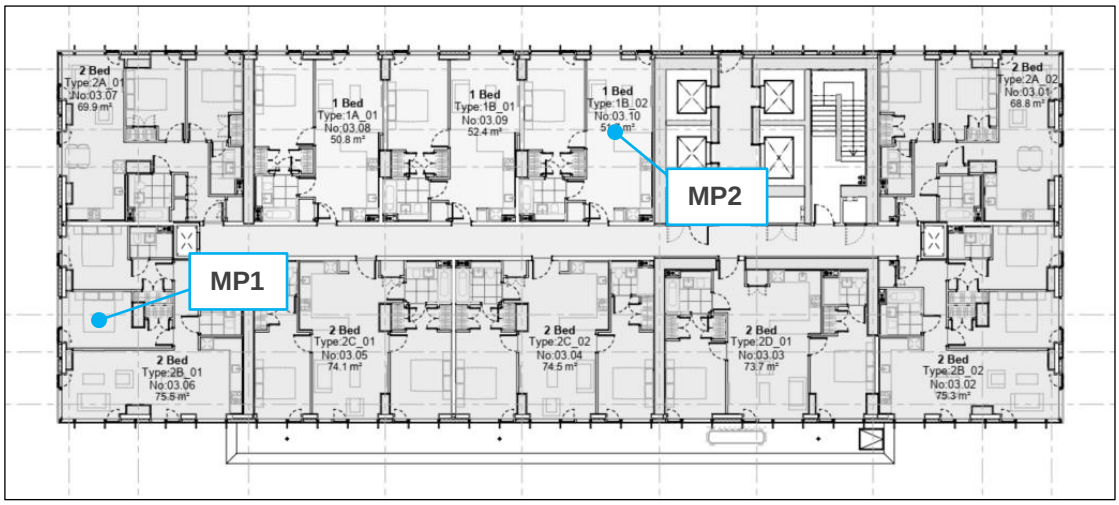
4.0 Internal Ambient Noise Level Commissioning

4.1 Automated Measurement Locations

Automated sound level loggers were installed within 5No apartment bedrooms, as described below. The loggers were set up to continuously record L_{Aeq} and L_{Amax} noise levels over 2-munitre and 15-minute periods over a period of not less than 24 hours.

Test Ref.	Apartment	Room	Test Dates
MP1	0306	Bedroom	09/02/2024 – 13/02/2024
MP2	0310	Living Room	09/02/2024 – 13/02/2024
MP3	0506	Bedroom	09/02/2024 – 13/02/2024
MP4	0503	Bedroom	09/02/2024 – 13/02/2024
MP5	0502	Living Room	09/02/2024 – 13/02/2024

The rooms selected were chosen to represent the worst case apartments on each façade in terms of incoming noise and are shown on the mark-ups presented overleaf.



Mark-up Showing Unattended Measurement Locations - Level 03



Mark-up Showing Unattended Measurement Locations - Level 05

4.2 Attended Measurement Locations

Internal ambient noise level measurements were taken in 15No different apartments across the development in the following locations

Test Ref.	Apt No.	Room Type	Test Date	Test Time
IANL1	0701	Living Room	15/02/2024	21:44
IANL2	0707	Bedroom	15/02/2024	22:05
IANL3	0904	Living Room	15/02/2024	22:19
IANL4	0910	Bedroom	15/02/2024	22:40
IANL5	1102	Bedroom	15/02/2024	22:55
IANL6	1106	Bedroom	15/02/2024	23:21
IANL7	1109	Bedroom	15/02/2024	23:45
IANL8	1204	Bedroom	15/02/2024	23:38

Test Ref.	Apt No.	Room Type	Test Date	Test Time
IANL9	1207	Bedroom	15/02/2024	23:05
IANL10	1302	Bedroom	15/02/2024	21:21
IANL11	1303	Living Room	15/02/2024	21:51
IANL12	1306	Bedroom	15/02/2024	22:17
IANL13	1308	Living Room	15/02/2024	22:46
IANL14	1502	Bedroom	15/02/2024	20:05
IANL15	1509	Living Room	15/02/2024	20:47
IANL16	2907	Bedroom	29/05/2024	17:49
IANL17	2908	Bedroom	29/05/2024	17:43
IANL18	3002	Bedroom	29/05/2024	17:58
IANL19	3006	Bedroom	29/05/2024	18:26
IANL20	3008	Bedroom	29/05/2024	18:29
IANL21	3105	Bedroom	29/05/2024	18:33
IANL22	3109	Bedroom	29/05/2024	19:07
IANL23	3201	Bedroom	29/05/2024	18:58
IANL24	3208	Bedroom	29/05/2024	19:43
IANL25	3209	Bedroom	29/05/2024	19:34
IANL27	3302	Bedroom	29/05/2024	18:58
IANL28	3303	Bedroom	29/05/2024	19:48
IANL26	3308	Bedroom	29/05/2024	19:01
IANL29	3403	Bedroom	29/05/2024	18:47
IANL30	3406	Bedroom	29/05/2024	18:40
IANL31	3503	Bedroom	29/05/2024	18:01
IANL32	3705	Bedroom	29/05/2024	17:42
IANL33	3706	Bedroom	29/05/2024	17:51

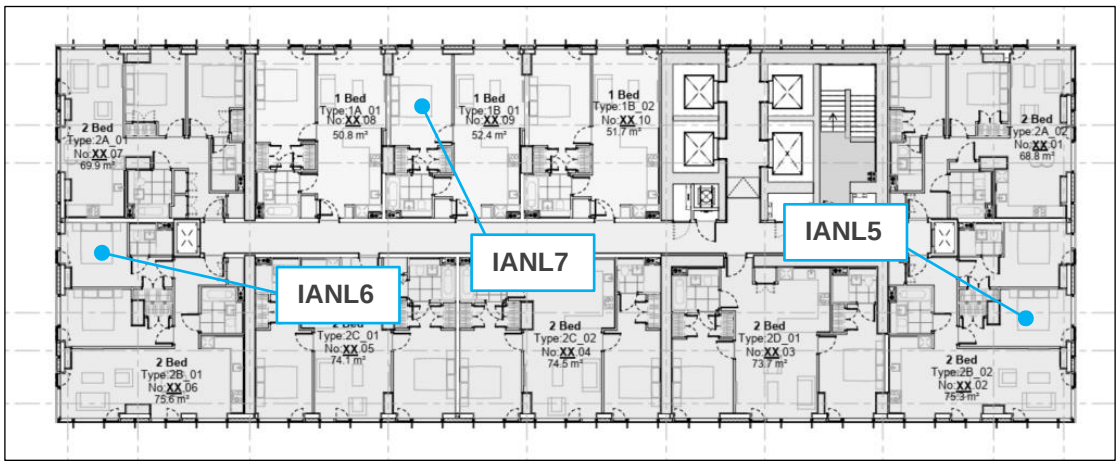
The above rooms were selected to give obtain measurements across all facades. The following plans indicate the locations.



Plan Showing Level 7 Attended Survey Positions



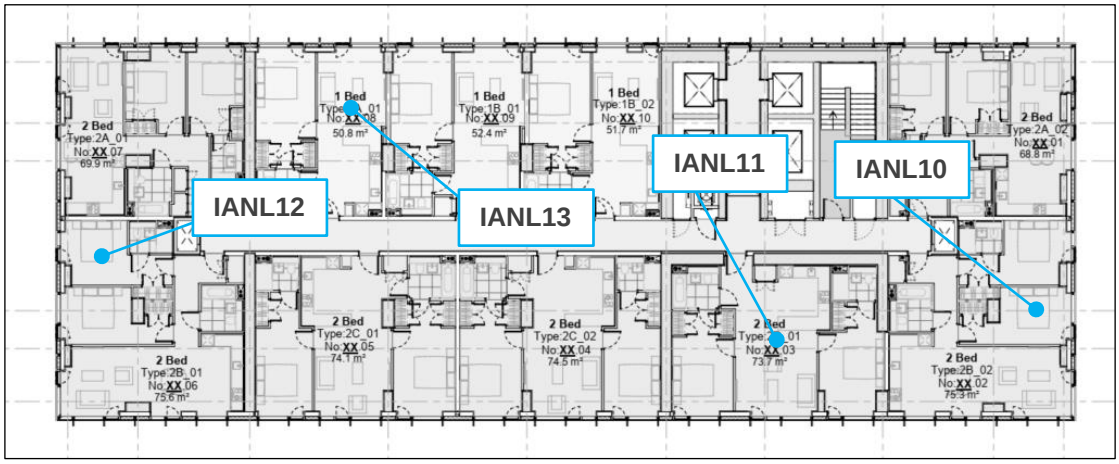
Plan Showing Level 9 Attended Survey Positions



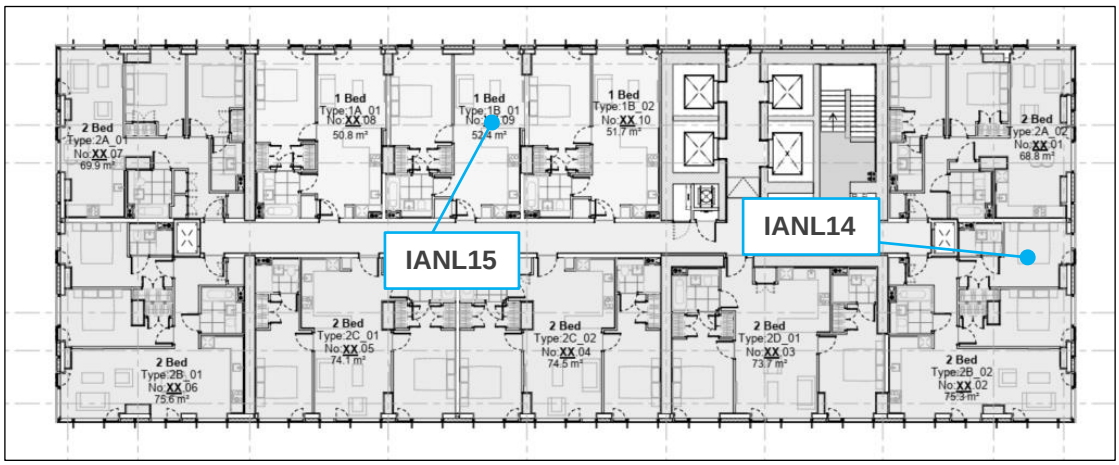
Plan Showing Level 11 Attended Survey Positions



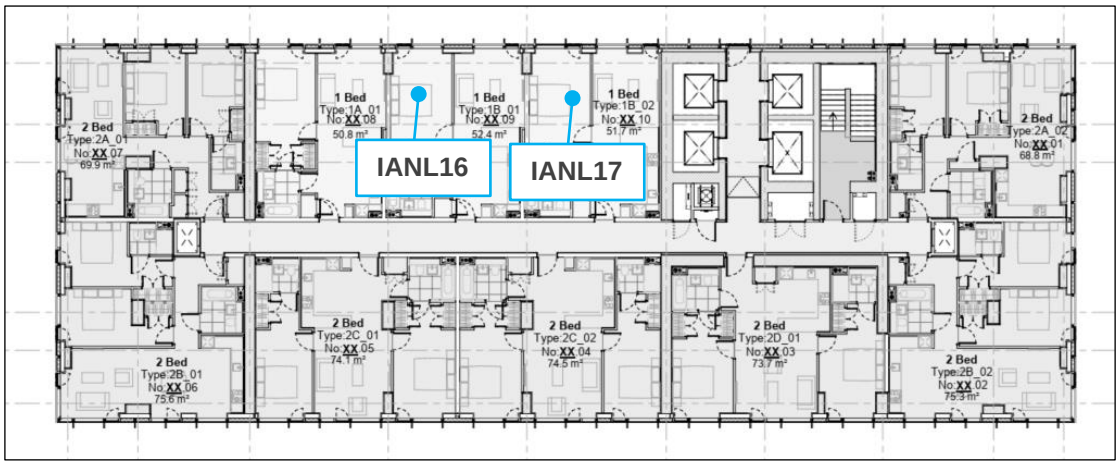
Plan Showing Level 12 Attended Survey Positions



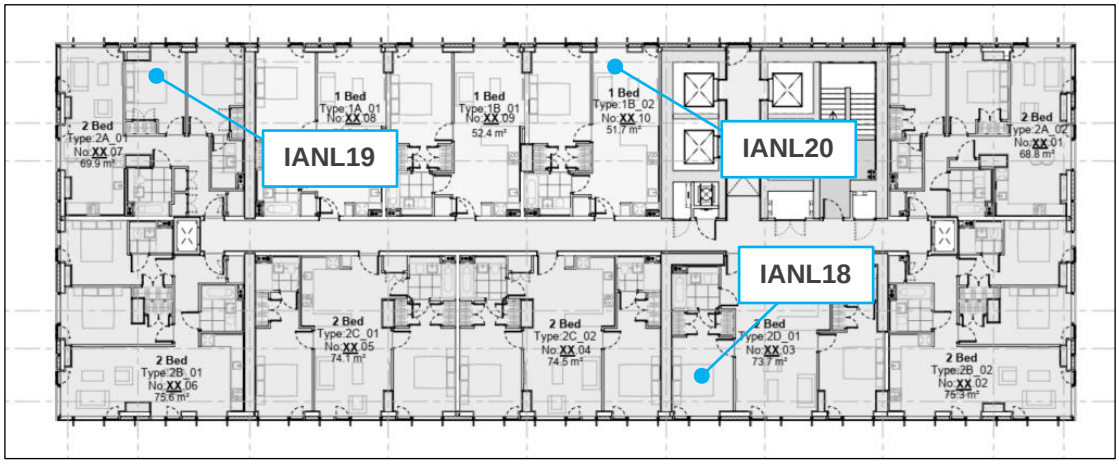
Plan Showing Level 13 Attended Survey Positions



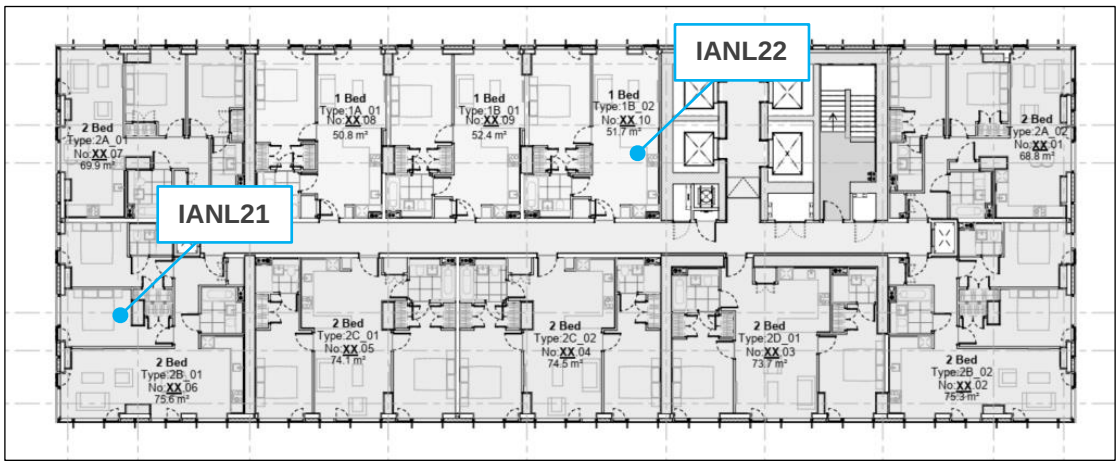
Plan Showing Level 15 Attended Survey Positions



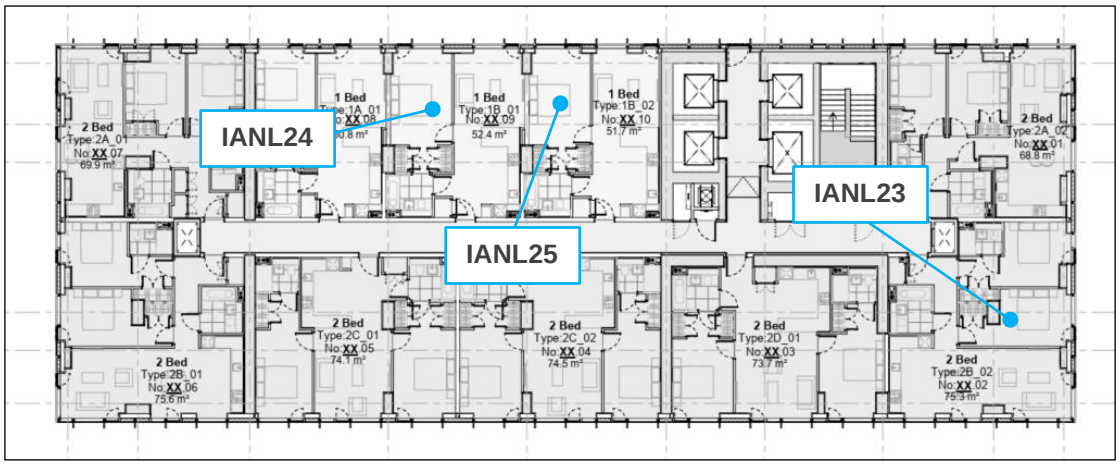
Plan Showing Level 29 Attended Survey Positions



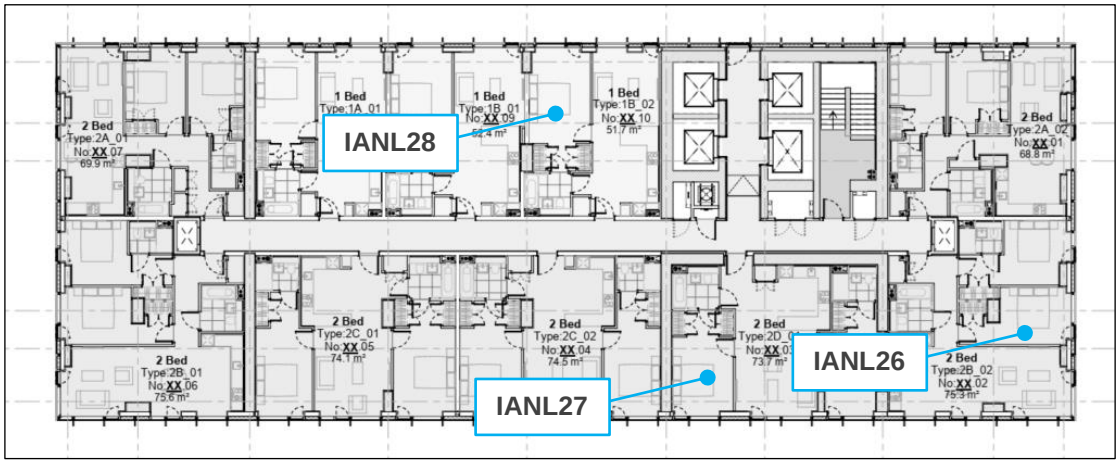
Plan Showing Level 30 Attended Survey Positions



Plan Showing Level 31 Attended Survey Positions



Plan Showing Level 32 Attended Survey Positions



Plan Showing Level 33 Attended Survey Positions



Plan Showing Level 34 Attended Survey Positions



Plan Showing Level 35 Attended Survey Positions



Plan Showing Level 37 Attended Survey Positions

4.3 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 0.1 dB).

Location	Description	Manufacturer	Type	Serial Number	Calibration
MP1 IANL23, 20, 17	Type 1 Precision Sound Level Meter	Larson Davis	LxT	6490	Calibration on 08/09/2023
MP2 IANL 24, 19, 16	Type 1 Precision Sound Level Meter	Larson Davis	LxT	5104	Calibration on 30/05/2023
MP3 IANL 31, 26, 27	Type 1 Precision Sound Level Meter	Larson Davis	LxT	4569	Calibration on 30/05/2023
MP4 IANL 33, 29, 25	Type 1 Precision Sound Level Meter	Larson Davis	LxT	5111	Calibration on 30/05/2023

Location	Description	Manufacturer	Type	Serial Number	Calibration
MP5 IANL 22, 21, 18	Type 1 Precision Sound Level Meter	Larson Davis	LxT	4568	Calibration on 30/05/2023
MP1 – 5	Calibrator	Larson Davis	Cal200	3083	Calibration on 27/03/2023
IANL1 – 8	Type 1 Precision Sound Level Meter	Larson Davis	LxT	5103	Calibration on 30/05/2024
IANL 32, 30, 28	Type 1 Precision Sound Level Meter	Larson Davis	LxT	4086	Calibration on 30/05/2023
IANL9 – 15	Type 1 Precision Sound Level Meter	Bruel & Kjaer	2250	3007292	Calibration on 25/01/2024
IANL1 – 8	Calibrator	Larson Davis	Cal200	3083	Calibration on 27/03/2023
IANL9 – 15	Calibrator	Bruel & Kjaer	4231	2271905	Calibration on 05/09/2023

4.4 Site Conditions

4.4.1 Automated Survey

The following pre-requisites were requests from site in order to obtain representative measurements results:-

- Test rooms to be locked off for the duration of the measurement (no access for trades).
- Windows to be closed.
- Mechanical ventilation systems (understood to be) balanced and operating at design duty.

On weekdays, construction works occur typically between 07:00-16:00 hr, therefore the noise survey was undertaken encompassing a full weekend period as to avoid extraneous site noise.

It was noted that Lunar New Year celebration occurred during the period of the automated survey. As such, any data unduly influenced by fireworks has been removed from the processed data.

The test rooms were largely finished but did not contain any furnishings.

4.4.2 Attended Survey

The following pre-requisites were requests from site in order to obtain representative measurements results:-

- Rooms were to be finished, unfurnished and unoccupied
- Windows to be closed.
- Mechanical ventilation systems (understood to be) balanced and operating design duty.
- Extraneous noises from site construction works were excluded as far as reasonably possible

All measurements were carried out of typical construction hours to avoid impact from construction sites. In most of the rooms, internal ambient noise levels were dominated by external traffic noise, which was noted to be flowing at a consistent rate.

4.5 Survey Results & Discussion

4.5.1 Automated

The results of the internal noise level surveys have been plotted on Time History Graphs 27528/TH1 to 27528/TH5 enclosed. These graphs presenting the 15 minute A-weighted (dBA) L_{eq}, L_{90} and L_{max} levels at each measurement position.

The table below summarises the highest $L_{Aeq,16hr}$ (daytime), $L_{Aeq,8hr}$ (night-time) measurements and the 15th highest $L_{AFmax,2min}$ (night-time) noise levels at each measurement position. The Manchester City Council (MCC) noise level limit is also presented to judge compliance.

Test Ref	Measurement Location	Parameter	Average Measured Weekend Noise Level (dB)	MCC Limit (dB)	Compliance
MP1	0306 Bedroom	Daytime $L_{Aeq,16hr}$	33	35	✓
		Night-time $L_{Aeq,8hr}$	29	30	✓
		Night-time L_{Amax}	45	45	✓
MP2*	0310 Living Room	Daytime $L_{Aeq,16hr}$	35	35	✓
		Night-time $L_{Aeq,8hr}$	30	N/A	-
		Night-time L_{Amax}	45	N/A	-
MP3	506 Bedroom	Daytime $L_{Aeq,16hr}$	27	35	✓
		Night-time $L_{Aeq,8hr}$	28	30	✓
		Night-time L_{Amax}	43	45	✓
MP4	0503 Bedroom	Daytime $L_{Aeq,16hr}$	30	35	✓
		Night-time $L_{Aeq,8hr}$	26	30	✓
		Night-time L_{Amax}	43	45	✓

Test Ref	Measurement Location	Parameter	Average Measured Weekend Noise Level (dB)	MCC Limit (dB)	Compliance
MP5*	0502 Living Room	Daytime $L_{Aeq,16hr}$	36	35	×
		Night-time $L_{Aeq,8hr}$	32	N/A	-
		Night-time L_{Amax}	46	N/A	-

*MCC do not stipulate any criteria during the night time for living rooms, however the results have been included for completeness

4.5.2 Attended Measurements

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

Test Ref.	Measurement Location	Measured L_{Aeq} (dB)	Time Period	MCC Criterion $L_{Aeq,16hr}$ (dB)	Compliance
IANL1	0701	33	Daytime	35	✓
IANL2	0707	28	Daytime	35	✓
IANL3	0904	30	Daytime	35	✓
IANL4	0910	29	Daytime	35	✓
IANL5	1102	29	Night-time	30	✓
IANL6	1106	30	Night-time	30	✓
IANL7	1109	20	Night-time	30	✓
IANL8	1204	27	Night time	30	✓
IANL9	1207	27	Night time	30	✓
IANL10	1302	27	Daytime	35	✓
IANL11	1303	29	Daytime	35	✓
IANL12	1306	27	Daytime	35	✓
IANL13	1308	29	Daytime	35	✓
IANL14	1502	26	Daytime	35	✓
IANL15	1509	27	Daytime	35	✓
IANL16	2907	27	Daytime	35	✓
IANL17	2908	25	Daytime	35	✓
IANL18	3002	28	Daytime	35	✓
IANL19	3006	30	Daytime	35	✓
IANL20	3008	26	Daytime	35	✓
IANL21	3105	28	Daytime	35	✓

Test Ref.	Measurement Location	Measured L_{Aeq} (dB)	Time Period	MCC Criterion $L_{Aeq,16hr}$ (dB)	Compliance
IANL22	3109	27	Daytime	35	✓
IANL23	3201	27	Daytime	35	✓
IANL24	3208	26	Daytime	35	✓
IANL25	3209	24	Daytime	35	✓
IANL26	3302	27	Daytime	35	✓
IANL27	3303	26	Daytime	35	✓
IANL28	3308	25	Daytime	35	✓
IANL29	3403	26	Daytime	35	✓
IANL30	3406	29	Daytime	35	✓
IANL31	3503	28	Daytime	35	✓
IANL32	3705	27	Daytime	35	✓
IANL33	3706	28	Daytime	35	✓

5.0 Discussion

5.1 General Discussion

Based on the measured results, the levels of internal noise associated with environmental noise break-in and MVHR noise complied with the MCC requirements in all rooms tested with the exception of 0502 Living Room which failed by 1 dB, on average. Further discussion in relation to 0502 Living Room are provided in Section 5.2.

5.2 MP5 – 0502 Living Room

On the basis of the data recorded it is apparent that apartment 0502 has failed to achieve the daytime criterion by 1dB. However, on interrogation of the data it appears that this is due to elevated noise levels during the hours of 09:30 – 14:00 on Saturday 10 February with the remaining hours of the day achieving the limits. It is assumed that this is likely to be due to construction noise.

The data also infers that the daytime L_{Aeq} levels were suitable to achieve the criterion on Friday 09 February and Sunday 11 February. As such, we have excluded the affected hours from subsequent calculations as we believe the data to anomalous. On this basis the results for this position are as follows:

Test Ref	Measurement Location	Paramater	Average Measured Weekend Noise Level (dB)	MCC Limit (dB)	Compliance
MP5*	0502 Living Room	Daytime $L_{Aeq,16hr}$	34	35	✓
		Night-time $L_{Aeq,8hr}$	32	N/A	-
		Night-time L_{Amax}	46	N/A	-

*MCC do not stipulate any criteria during the night time for living rooms, however the results have been included for completeness

5.3 MP2 and MP4 – 0310 Living Room and 0503 Bedroom

While the data recorded at both of these positions indicates compliance with the criteria set out by MCC, elevated noise levels were noted during the same time period as MP5. For completeness the following table outlines the results of the survey at these positions with this anomalous data removed.

Test Ref	Measurement Location	Paramater	Average Measured Weekend Noise Level (dB)	MCC Limit (dB)	Compliance
MP3*	0310 Living Room	Daytime $L_{Aeq,16hr}$	28	35	✓
		Night-time $L_{Aeq,8hr}$	30	N/A	-
		Night-time L_{Amax}	45	N/A	-
MP4	0503 Bedroom	Daytime $L_{Aeq,16hr}$	28	35	✓
		Night-time $L_{Aeq,8hr}$	28	30	✓
		Night-time L_{Amax}	43	45	✓

*MCC do not stipulate any criteria during the night time for living rooms, however the results have been included for completeness

6.0 Conclusion

In conclusion, allowing for the removal of erroneous data during the unattended survey all spaces appear to achieve the criteria of Manchester City Council. As such, we feel that it is suitable to discharge planning Condition 22.

Appendix A

(Including 5No. Graphs)

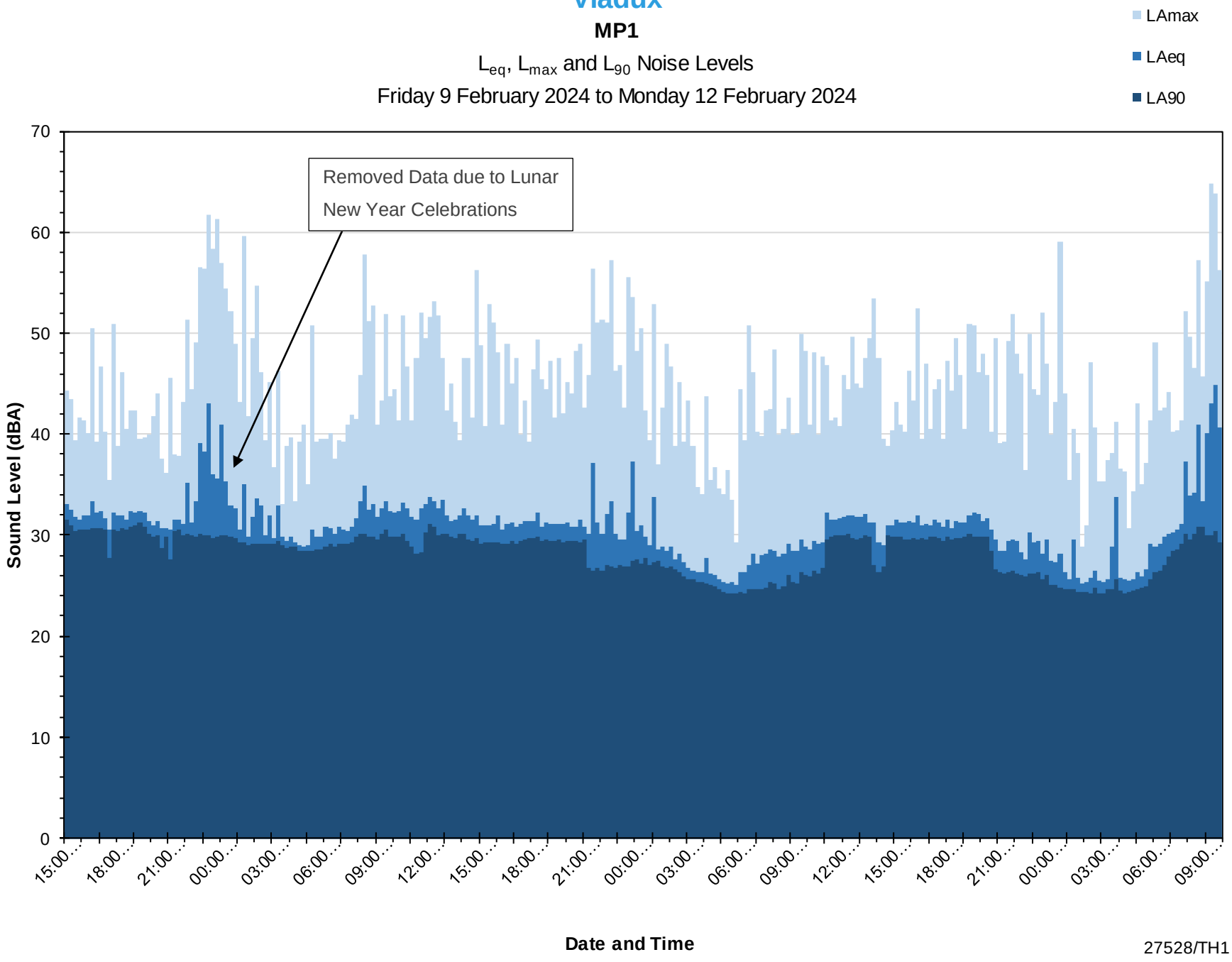
27528/TH1 to 27528/TH5

Viadux

MP1

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

Friday 9 February 2024 to Monday 12 February 2024



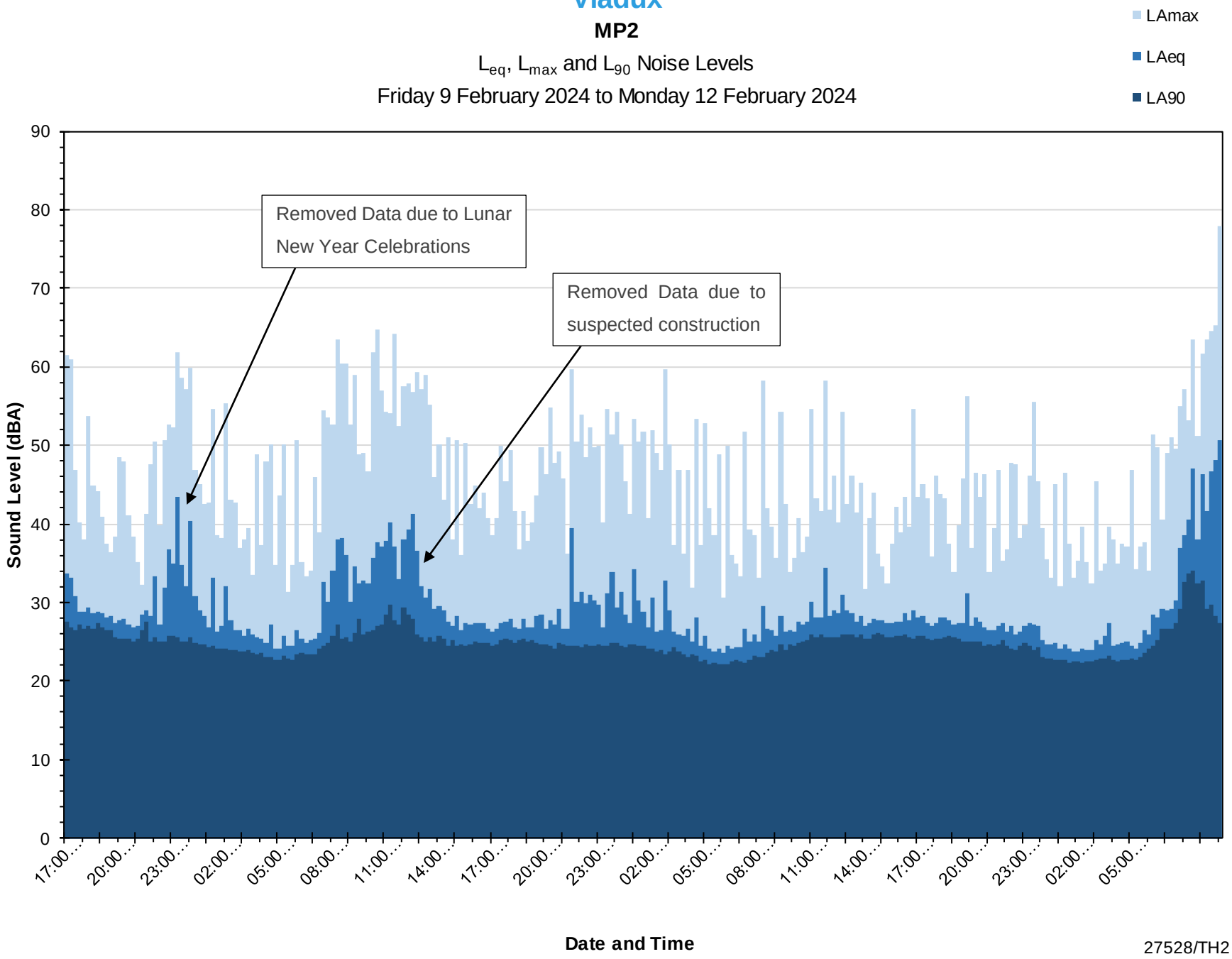
27528/TH1

Viadux

MP2

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

Friday 9 February 2024 to Monday 12 February 2024



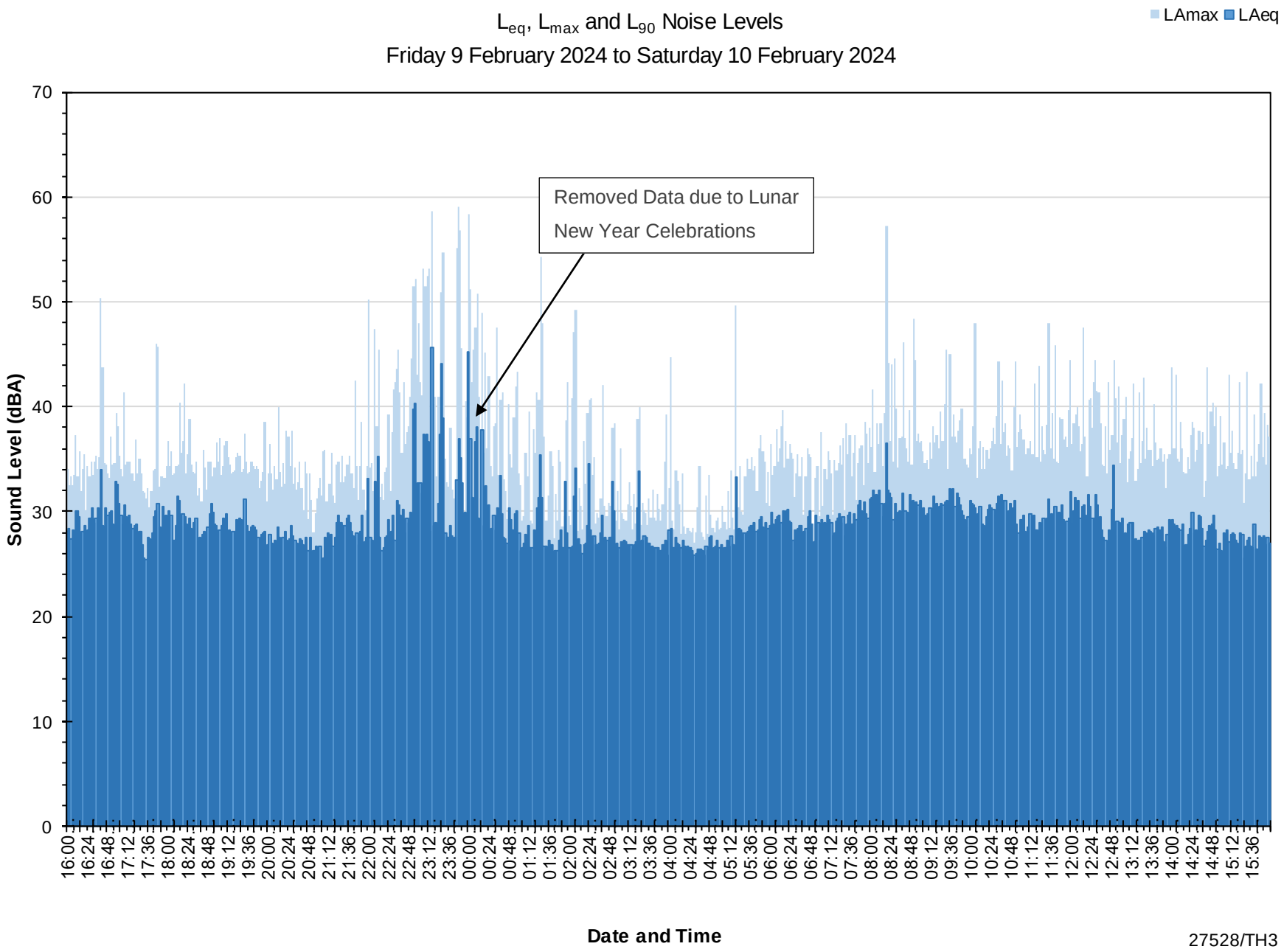
27528/TH2

Viadux

MP3

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

Friday 9 February 2024 to Saturday 10 February 2024



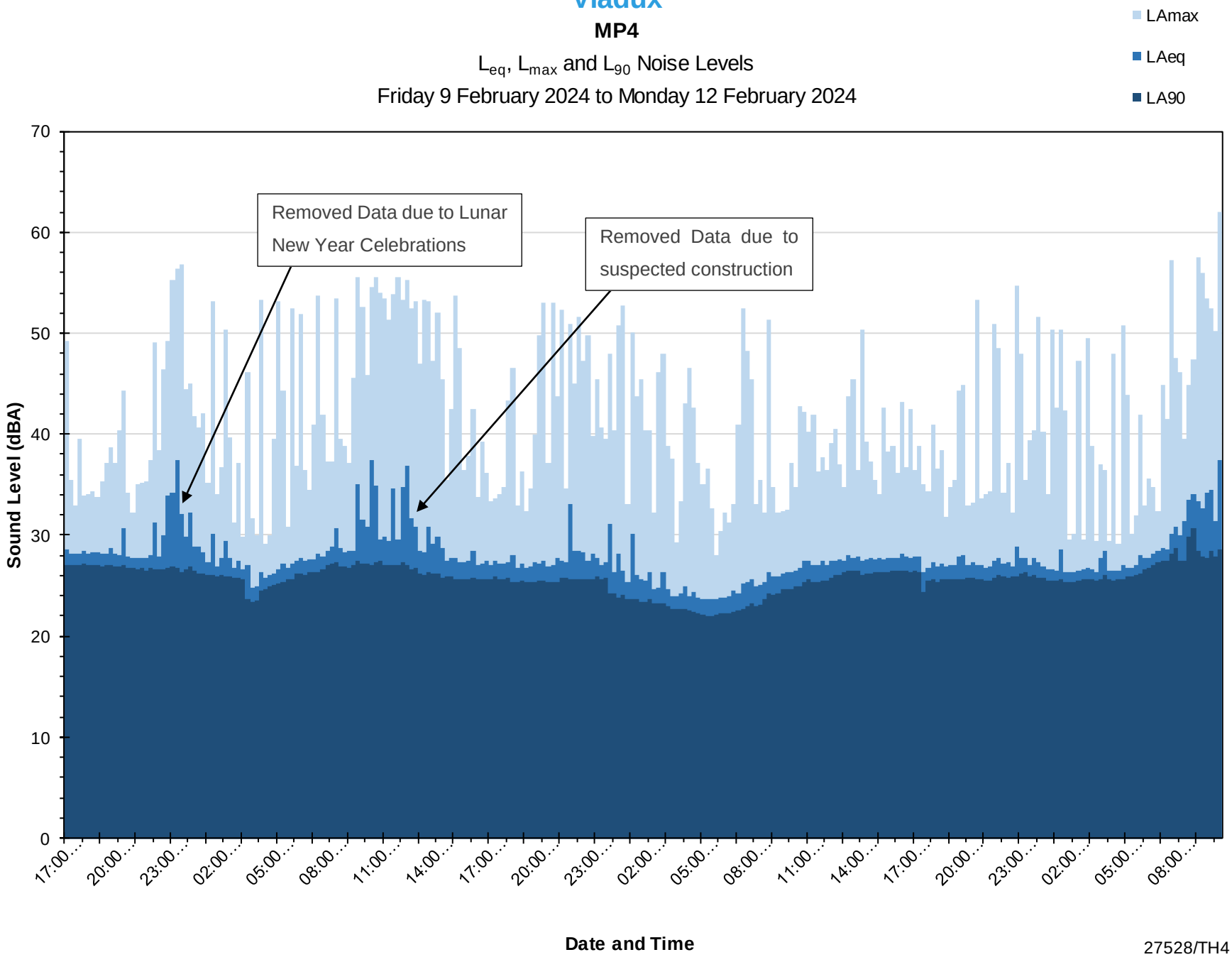
27528/TH3

Viadux

MP4

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

Friday 9 February 2024 to Monday 12 February 2024



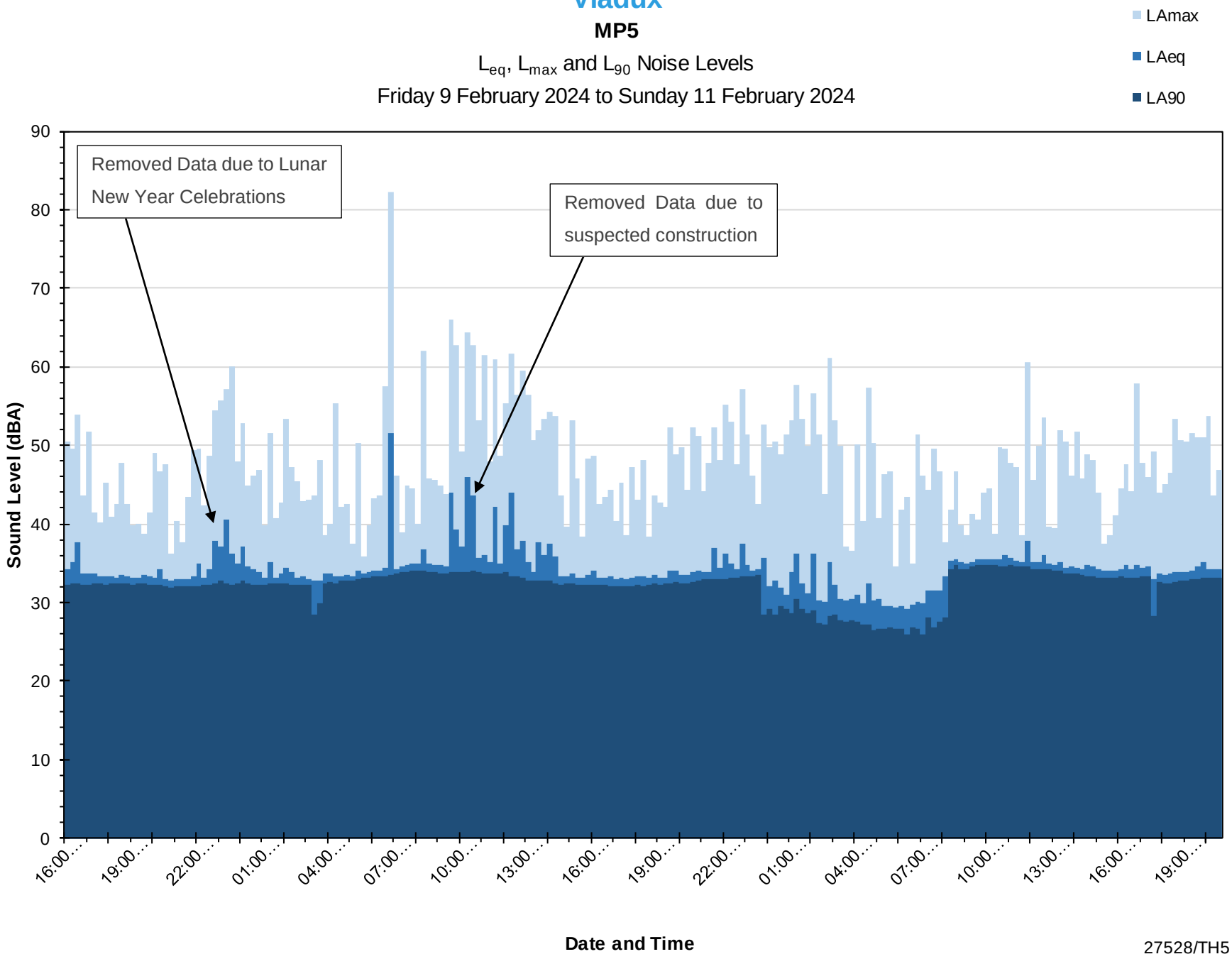
27528/TH4

Viadux

MP5

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

Friday 9 February 2024 to Sunday 11 February 2024



27528/TH5