

Victoria House Manchester

Condition 16 Discharge Report

28367/RP3

08 April 2024

For:
Domis
Unit 2
Block C
14 Hulme Street
Salford
M5 4ZG



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Condition 16 Discharge 28367/RP3

Contents	Page
1.0 Introduction	1
2.0 Objectives	1
3.0 Planning Condition 16	1
4.0 Commissioning Overview	2
5.0 Survey Results & Discussion	9
6.0 Discussion	10

Attachments

Appendix A – Time History Graphs



Internal Noise Level Test Report 28367/RP3

Document Control

Rev	Date	Comment	Prepared by	Checked by	Authorised by
1	08/04/2024	Additional measurements undertaken			
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0	19/01/2024				
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1.0 Introduction

A new-build residential development has been constructed at Victoria House, Great Ancoats Street, Manchester. The development is subject to various conditions of planning and Condition 16 requires the contractor to demonstrate that internal noise levels within apartments are compliant with BS8233:2014 requirements.

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 16.

Our findings are presented herein.

2.0 Objectives

To undertake an automated noise level survey within 1No available apartments and attended sample measurements in available apartments to ascertain L_{Aeq} and L_{Amax} internal noise levels.

To compare the results against the requirements of Planning Condition 16 and comment upon the acceptability.

3.0 Planning Condition 16

Planning Condition 16 states:

“16) Before the development commences a scheme for acoustically insulating and mechanically ventilating the residential accommodation against noise from adjacent roads the adjacent tram and any mitigating vibration and reradiated noise levels associated with the operation of the adjacent tram line shall be submitted to and approved in writing by the City Council as local planning authority.

The approved noise insulation scheme and vibration and reradiated noise mitigation scheme shall be completed before any of the dwelling units are occupied.

The following noise criteria will be required to be achieved:

Bedrooms (night time – 23.00 – 07.00)	30 dB L_{Aeq} (individual noise events shall not exceed 45dB $L_{Amax,F}$ by more than 15 times)
Living Rooms (daytime – 07.00 – 23.00)	35 dB L_{Aeq}
Gardens and terraces (daytime)	55 dB L_{Aeq}



Prior to occupation a post completion report to verify that all of the recommended mitigation measures have been installed and effectively mitigate any potential adverse noise impacts in the residential accommodation shall be submitted and agreed in writing by the City Council as local planning authority. Prior to occupation any non compliance shall be suitably mitigated in accordance with an agreed scheme.”

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 $L_{Aeq,8hour}$
	Garden/Terrace	55 dB $L_{Aeq,16hour}$	-

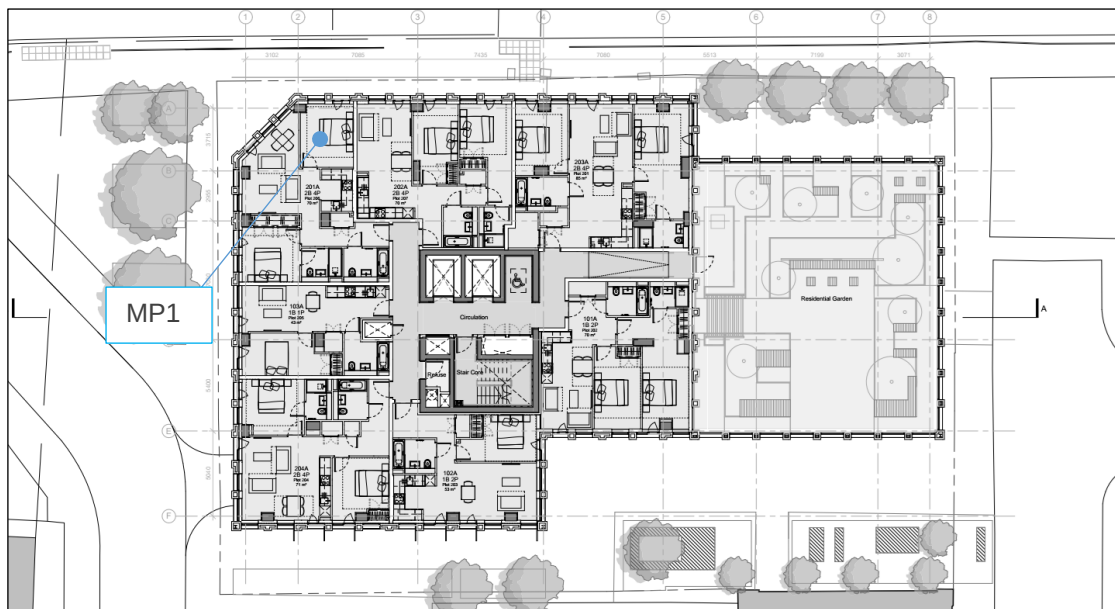
4.0 Internal Ambient Noise Level Commissioning

4.1 Automated Measurement Locations

Automated sound level loggers were installed within 1No apartment bedroom, as described below. The logger was set up to continuously record L_{Aeq} and L_{Amax} noise levels over 15-minute periods over a period of not less than 24 hours.

Test Ref.	Apartment	Room	Test Dates
MP1	0206	Bedroom	11/01/2024 – 15/01/2024

This room was selected for the unattended survey as it can be considered to be worst case for noise break-in due to overlooking Great Ancoats Street. This is marked on the following plan.



Plan showing unattended survey position

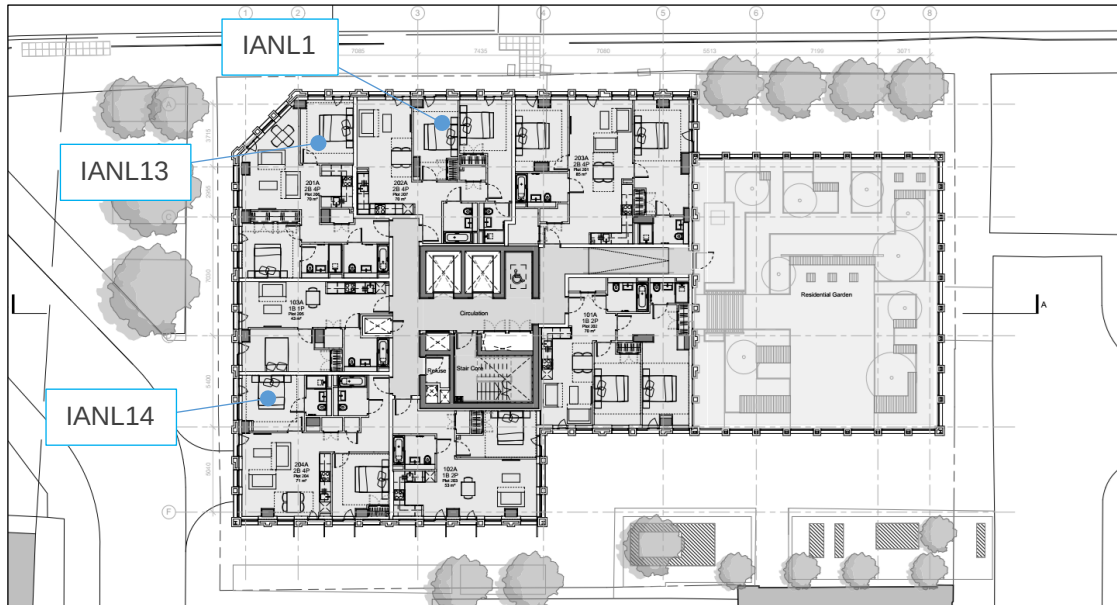
4.2 Attended Measurement Locations

Internal ambient noise level measurements were taken in 5No different apartments across the development in the following locations. The period and weather conditions relevant to each measurement are also provided in the table.

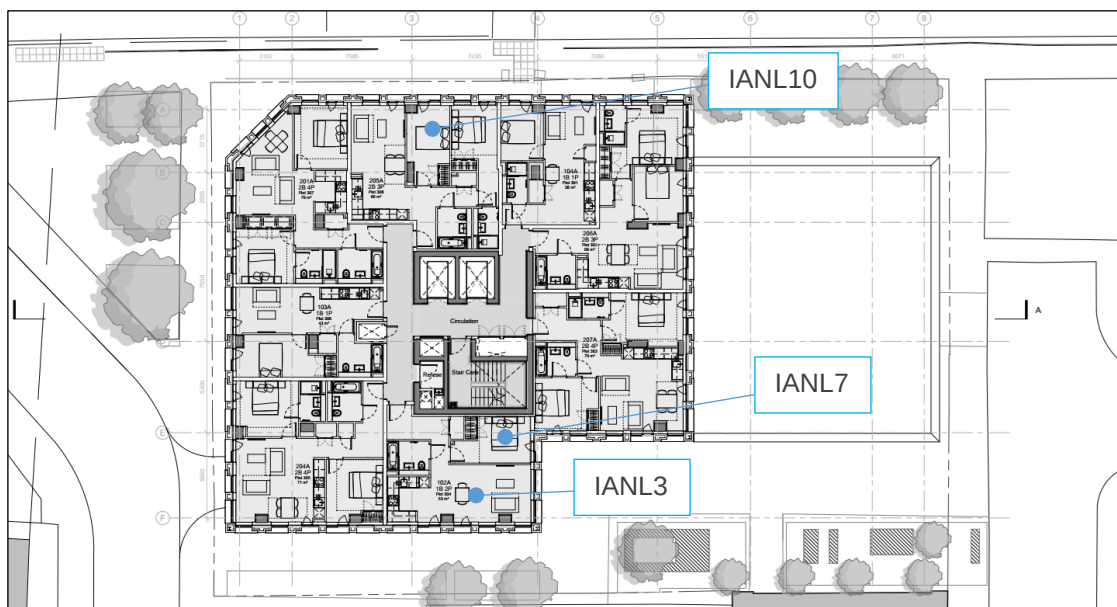
Test Ref.	Apt No.	Room Type	Test Date	Period	Weather Conditions
IANL1	0207	Bedroom	18/01/2024	Day	Dry
IANL2	0502	Bedroom	18/01/2024	Day	Dry
IANL3	0304	Living Room	12/01/2024	Day	Dry
IANL4	0408	Living Room	12/01/2024	Day	Dry
IANL5	0407	Bedroom	18/01/2024	Day	Dry
IANL6	1203	Bedroom	05/04/2024	Day	Wet
IANL7	302	Bedroom	05/04/2024	Day	Wet
IANL8	403	Bedroom	05/04/2024	Night	Wet
IANL9	704	Bedroom	05/04/2024	Night	Wet
IANL10	305	Bedroom	05/04/2024	Day	Wet
IANL11	504	Bedroom	05/04/2024	Night	Wet
IANL12	802	Bedroom	05/04/2024	Night	Wet
IANL13	201	Bedroom	05/04/2024	Day	Wet
IANL14	204	Bedroom	05/04/2024	Night	Wet
IANL15	601	Bedroom	05/04/2024	Night	Wet



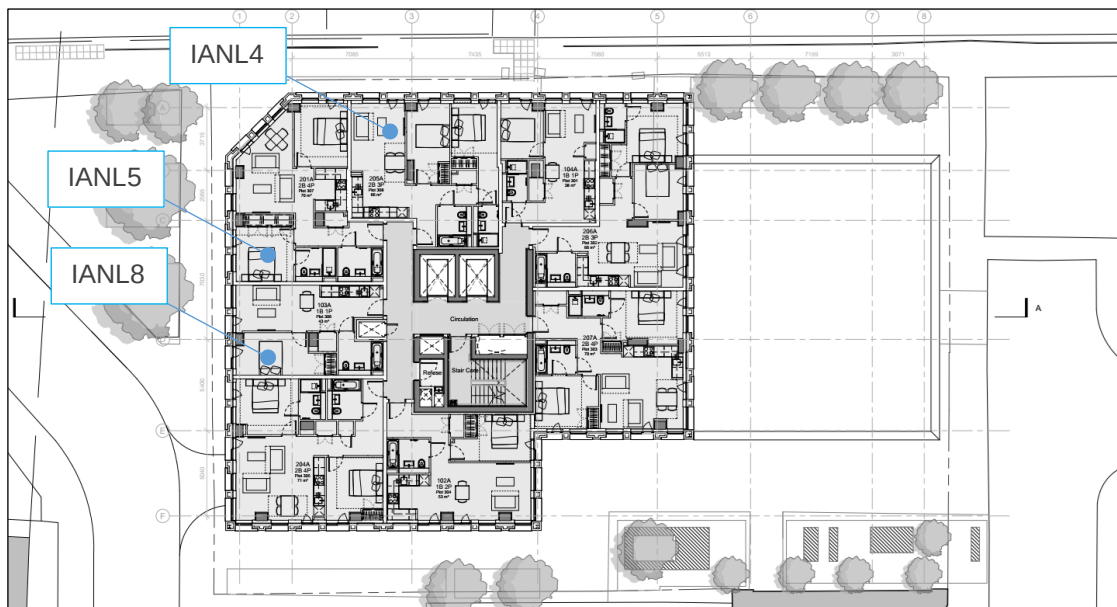
The above rooms were selected to give obtain measurements across all facades. The following plans indicate these locations.



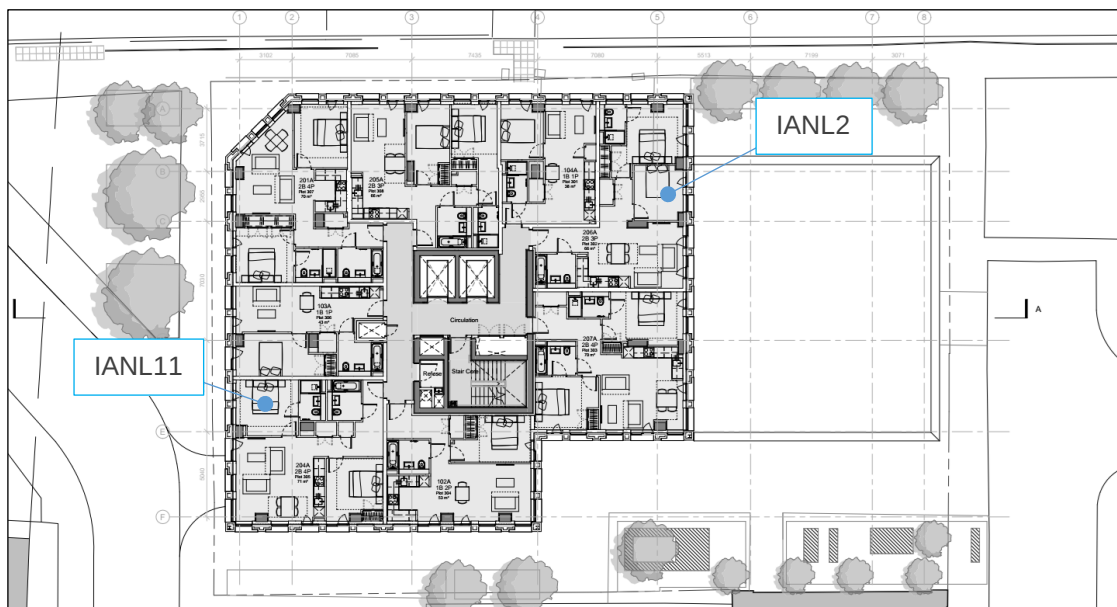
Plan Showing Level 2 Attended Survey Positions



Plan Showing Level 3 Attended Survey Positions



Plan Showing Level 4 Attended Survey Positions



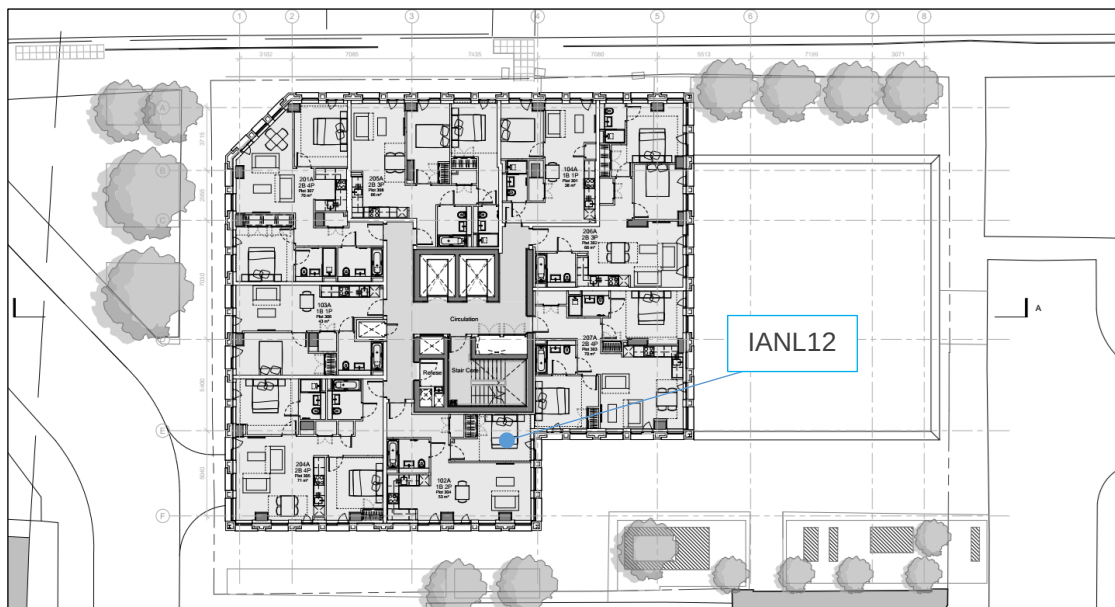
Plan Showing Level 5 Attended Survey Positions



Plan Showing Level 6 Attended Survey Positions



Plan Showing Level 7 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	Type 1 Precision Sound Level meter	Larson Davis	LxT	4568	30/05/2023
IANL1, 2, 5	Type 1 Precision Sound Level meter	Nti	XL3	A3A-00412-D1	03/08/2023



Location	Description	Manufacturer	Type	Serial Number	Calibration
IANL3, 4	Type 1 Precision Sound Level meter	Bruel & Kjaer	2250	2600445	05/12/2022
IANL6	Type 1 Precision Sound Level meter	Larson Davis	LxT	5103	30/05/2023
IANL7, 8, 9	Type 1 Precision Sound Level meter	Larson Davis	LxT	4569	30/05/2023
IANL10, 11, 12	Type 1 Precision Sound Level meter	Larson Davis	LxT	4086	26/05/2023
IANL13, 14, 15	Type 1 Precision Sound Level meter	Larson Davis	LxT	4568	30/05/2023
MP1, IANL6 to 15	Calibrator	Larson Davis	Cal200	3083	27/03/2023
IANL1, 2, 5	Calibrator	Bruel & Kjaer	4231	2205779	04/07/2023
IANL3, 4	Calibrator	Bruel & Kjaer	4231	2115545	05/12/2022

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.

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

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. However, on facades not facing the road network, the MVHR units contributed.

It should be noted that the measurements carried out on 5 April 2024 were done in wet conditions. As such, external noise levels were likely to be elevated due to the roads being wet.

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

4.5 Survey Results & Discussion

4.5.1 Automated

The results of the internal noise level surveys have been plotted on Time History Graph 28367/TH1 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 $L_{AFmax,5min}$ (night-time) noise levels at each measurement position. The Salford City Council (SCC) 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	0206 Bedroom	Daytime $L_{Aeq,16hr}$	32	35	✓
		Night-time $L_{Aeq,8hr}$	26	30	✓
		Night-time L_{Amax}	41	45	✓

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 $L_{Aeq,15min}$ (dB)	MCC Criterion L_{Aeq} (dB)	Measured $L_{AFmax,2min}$ (dB)	MCC Criterion L_{AFmax} (dB)	Compliance
IANL1	0207-B	35	35	-	-	✓
IANL2	0502-B1	35	35	-	-	✓



Test Ref.	Measurement Location	Measured $L_{Aeq,15min}$ (dB)	MCC Criterion L_{Aeq} (dB)	Measured $L_{AFMax,2min}$ (dB)	MCC Criterion L_{AFmax} (dB)	Compliance
IANL3	0304-LKD	35	35	-	-	✓
IANL4	0408-LKD	35	35	-	-	✓
IANL5	0407-B	35	35	-	-	✓
IANL6	1203-B	31	35	-	-	✓
IANL7	302-B	35	35	-	-	✓
IANL8	403-B	31	30	34	45	See Below
IANL9	704-B	29	30	47*	45	✓
IANL10	305-B	31	35	-	-	✓
IANL11	504-B	25	30	42	45	✓
IANL12	802-B	33	30	41	45	See Below
IANL13	201-B	36	35	-	-	See Below
IANL14	204-B	30	30	46*	45	✓
IANL15	601-B	33	30	42	45	See Below
*Measured noise level presented is the maximum over a short period. Although the criteria has been exceeded it is likely that traffic would reduce over the night and the maximum noise levels may reduce in-line with the criteria.						

The measured noise levels in 403 Bedroom, 802 Bedroom, 201 Bedroom and 601 Bedroom exceeded the limits by up to 3 dBA. However, during these measurements the roads were wet which would have caused the external noise levels to be elevated. In addition to this, all the spaces were unfurnished and with the introduction of soft furnishings the reverberation time and hence the internal noise levels would likely reduce.

Furthermore, the measurements carried out during the night-time period were all taken within the first hour of the night. It is likely that as the night progresses the amount of traffic would reduce and that the overall night-time noise level (ie the 8 hour L_{Aeq}) would be in-line with the criteria. This assumption is strengthened by the fact that the unattended measurement carried out in 0206 Bedroom, which is overlooking Great Ancoats Street, complied with the limits.

5.0 External Noise Level Commissioning

As stated in Section 3.0 of this report, Condition 16 stipulates a maximum daytime noise level of 55 dB $L_{Aeq,16hours}$ in any external garden or terrace. We understand there to be 2No. instances of external amenity space within the development, these are as follows:



- Level 2 Communal Garden
- Level 24 Private Terraces

Due to the external nature of the spaces, the dominant noise source was deemed to be the existing road traffic noise from the surrounding road network. As such a single representative 15 minute measurement was taken within the identified external amenity areas. The locations are as follows:

Test Ref.	External Amenity Space	Test Date
EANL1	Level 02 Garden	18/01/2024
EANL2	Level 24 Terrace	18/01/2024

5.1 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
EANL1-2	Type 1 Precision Sound Level meter	Nti	XL3	A3A-00412-D1	Calibration on 03/08/2023
EANL1-2	Calibrator	Bruel & Kjaer	4231	2205779	Calibration on 04/07/2023

5.2 Survey Results & Discussion

The table below summarises the $L_{Aeq, 15min}$ (daytime) 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)	MCC Criterion $L_{Aeq, 16hr}$ (dB)	Compliance
EANL1*	Level 2 Communal Garden	55	55	✓
EANL2	Level 24 Terrace	54	55	✓

*Due to on-site conditions only a 30s measurement was possible in this position



6.0 Vibration

Condition 16 raises the potential of vibration and reradiated noise from the nearby Metrolink line as a concern, and recommends mitigation measures be verified prior to first occupancy.

However, on the basis of the survey data collected by Hydrock during the planning stage indicate that vibration dose values (VDV) level at the site are sufficiently low enough to be unlikely to cause adverse comment. On this basis, we feel that the vibration and reradiated noise across the development are suitably controlled by the preexisting site conditions and a validation survey is not required.



Appendix A

(Including 1No. Graphs)

28367/TH1

Victoria House

Position 1

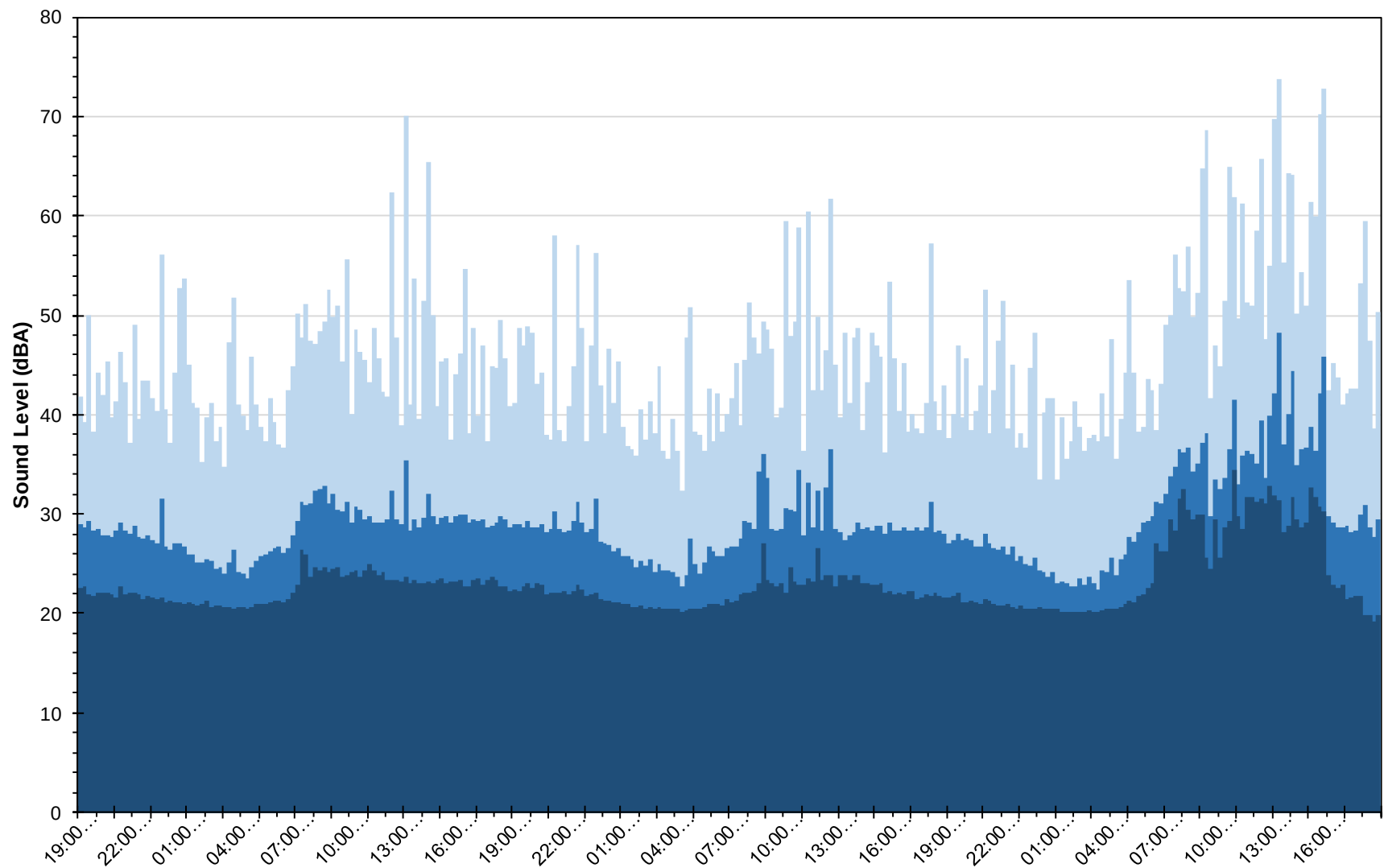
L_{eq} , L_{max} and L_{90} Noise Levels

Thursday 11 January 2024 to Sunday 14 January 2024

LA_{max}

LA_{eq}

LA₉₀



Date and Time

Victoria House/TH1