

Victoria House Manchester

Condition 15 Discharge Report

28367/RP-2

19 January 2023

For:
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Unit 2
Block C
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Document Control

Issue	Date	Comment	Prepared by	Authorised by
0	19/01/2024	-		
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Attachments

Appendix A – Acoustic Terminology

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1.0 Introduction

A residential development at Victoria House, Great Ancoats Street is near completion. The scheme was originally granted planning in 2018 (ref 122000/FO/2018) with a variation granted in 2021 (ref 131634/JO/2021). As part of the planning approval a number of planning conditions have been stipulated by Manchester City Council (MCC).

One condition, condition 15, relates to noise egress from building services plant associated with the development. As the scheme is now close to practical completion and the building services plant are installed and commissioned Hann Tucker Associates has been appointed to undertake a post completion plant noise impact assessment with the aim of providing evidence for the discharge of condition 15.

It should be noted that this Report relates to the plant provided as part of the construction programme provided by the Main Contractor and does not consider any potential tenant plant that would be installed in the future. Any tenant plant would need to be assessed as part of subsequent application(s) by the tenant(s).

2.0 Planning Condition 15

For ease of reference the wording of Condition 15 is as detailed below:

“15) Prior to occupation of (a) The residential accommodation; and (b) The ground floor commercial unit a scheme for the acoustic insulation of any externally mounted ancillary equipment associated with the development to ensure that it achieves a background noise level of 5dB below the existing background (La90) at the nearest noise sensitive location shall be submitted to and approved in writing by the City Council as local planning authority in order to secure a reduction in the level of noise emanating from the equipment. The approved scheme shall be completed before the premises is occupied and a verification report submitted for approval by the City Council as local planning authority and any non compliance suitably mitigated in accordance with an agreed scheme prior to occupation. The approved scheme shall remain operational thereafter.”

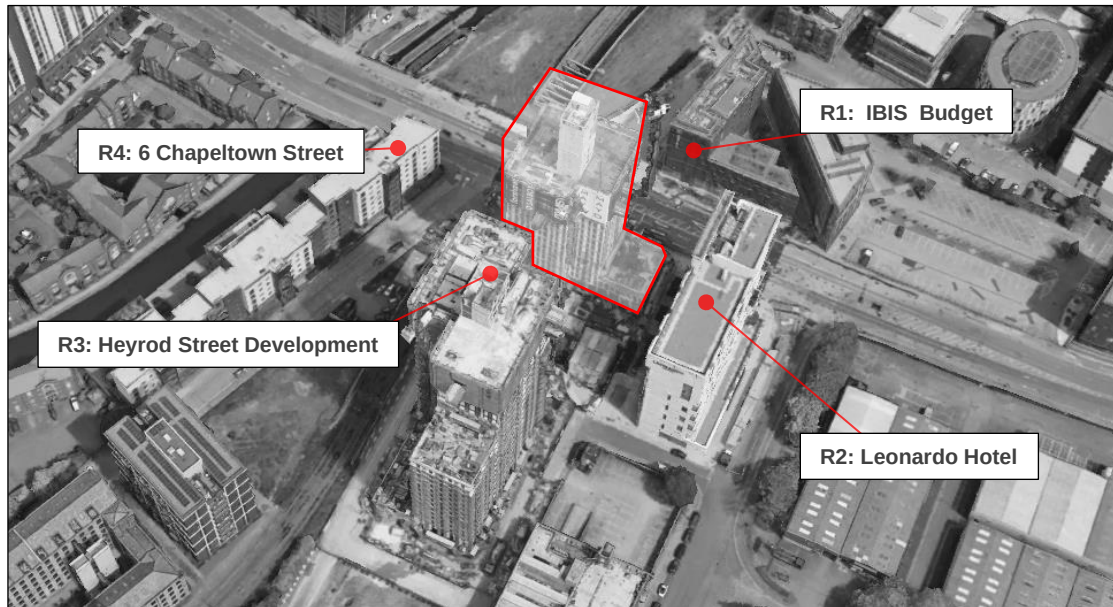
3.0 Acoustic Terminology

Please refer to Appendix A for an explanation of acoustic terminology used herein.



4.0 Site Description

The site, highlighted with the red outline below, is located along Great Ancoats Street in Manchester. The surrounding area consists both hotel and residential developments, with the closest premises noted below.



Site location showing nearby noise sensitive premises (© maps.google.co.uk)

The worst affected noise sensitive premises are the 4No buildings described in the table below.

Receptor	Location
R1	The south façade of the IBIS Budget on Great Ancoats Street. Approximately 30m from the north façade of Victoria House.
R2	The west façade of Leonardo Hotel. Approximately 12m from the east façade of Victoria House.
R3	The north façade of the Heyrod Street Development. Approximately 6m from the south façade of Victoria House.
R4	The east façade of 6 Chapeltown Street. Approximately 38m from the west façade of Victoria House.

It should be noted that in terms of plant noise, receptors R1 and R2 are considered the most affected.



5.0 Project Installations

The plant provided as part of the works carried out by the Main Contractor consists of the following:

Plant Ref.	Manufacturer & Model	Location
MVHR	MRXBOXAB-ECO3	All Apartments
HRU/00/01	Mitsubishi - LGH-25RVX3-E	Welfare Ground Floor terminating on north and west façade (inlet and outlet)
HRU/01/01	Mitsubishi - LGH-35RVX3-E	Gym First Floor terminating at Level 2 Garden
ACC1	Mitsubishi - PURY-P300YNW-A	Level 2 Garden

6.0 Established Plant Noise Emission Limits

As part of the Environmental Statement for the scheme dated February 2020, the following plant noise emission limits were established to be achieved at 1m from the façade of the nearest noise sensitive premises.

Period	BS 4142 Plant Noise Rating Limit
Daytime (07:00-23:00)	51 dB
Night-time (23:00-07:00)	47 dB

7.0 Plant Noise Measurements

7.1 Procedure

A fully attended plant noise survey was undertaken by Greg Moore on Monday 15 January 2024. Measurements were taken of the plant operating and not operating so that the specific plant noise level could be established.

All measurements were collated in general accordance with BS 7445-1:2003 *Description and Measurement of Environmental Noise*.

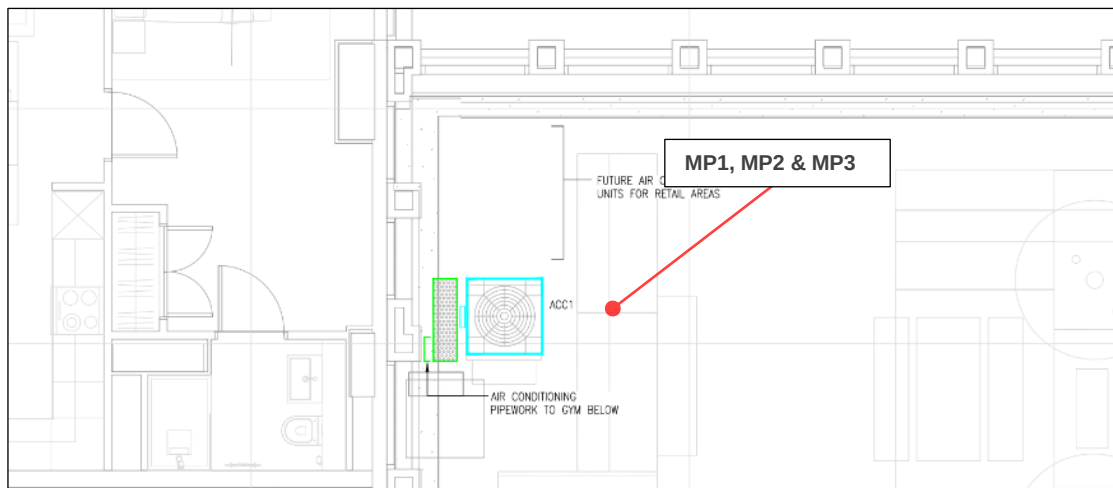
Weather conditions were considered suitable for obtaining representative readings of plant noise, with low wind speeds noted.

7.2 Measurement Locations

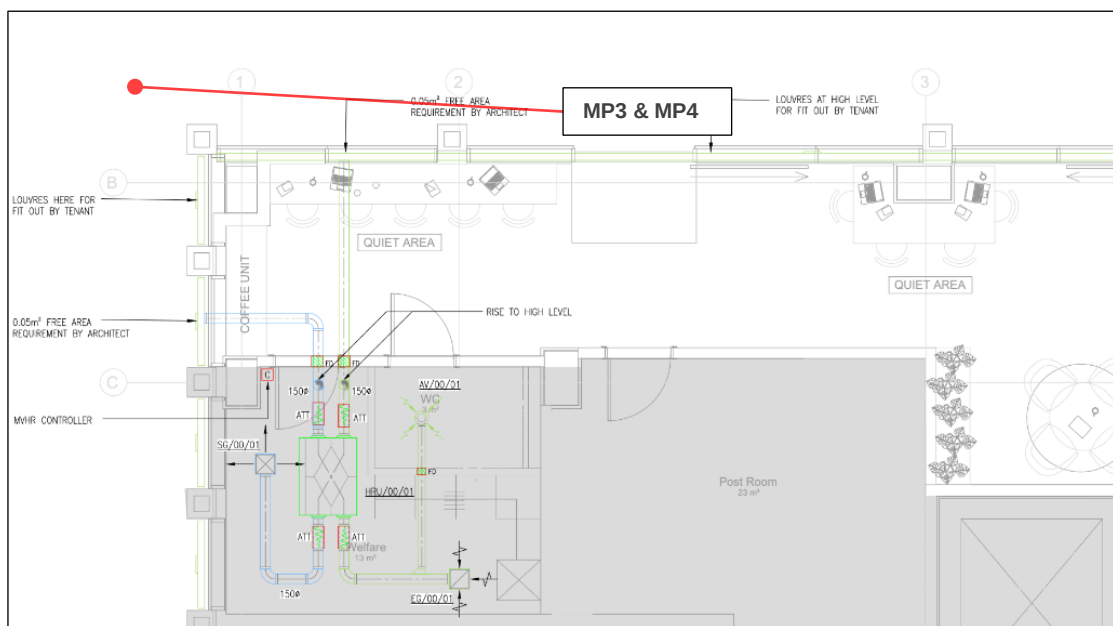
The location of each measurement position is as described in the table overleaf and indicated on the plants directly below the table.



Measurement	Location	Description
MP1	Level 2 Garden	Measurement at 1m from external condensing unit. All other plant (with the exception of the apartment MVHR units) switched off.
MP2	Level 2 Garden	All plant (with the exception of the apartment MVHR units) switched off.
MP3	Level 2 Garden	Measurement at 1m from atmosphere termination of HRU/01/01. All other plant (with the exception of the apartment MVHR units) switched off.
MP4	North-west corner of the Ground Floor	Measurement at 1m from the north-west corner of the building adjacent to the atmosphere terminations of HRU/00/01. All other plant (with the exception of the apartment MVHR units) switched off.
MP5	North-west corner of the Ground Floor	All plant (with the exception of the apartment MVHR units) switched off.



Location of MP1, MP2 and MP3



Location of MP4 and MP5



7.3 Instrumentation

During the measurements the following equipment was used.

Equipment	Model	Type	Serial Number	Calibration
Sound Level Meter	Brüel and Kjær	2250	2600445	05/12/2022
Calibrator	Brüel and Kjær	4231	2115545	05/12/2022

The sound level meter was calibrated prior to and on completion of the surveys. No significant change was found to have occurred (no more than 0.3 dB).

7.4 Survey Results

The following table summarises noise levels recorded at each of the measurement positions along with notes detailing the purpose of each measurement.

Pos	Time Period	Sound Pressure Level (dB)			Notes
		$L_{Aeq,T}$	$L_{A90,T}$	$L_{Amax,T}$	
MP1	30 seconds	70	69	81	Condenser noise level at 1m
MP2	30 seconds	54	52	60	Residual noise measurement on Level 2
MP3	30 seconds	57	52	62	HRU/01/01 terminations at 1m
MP4	30 seconds	65	58	73	HRU/00/01 terminations at corner of building
MP5	30 seconds	67	62	71	Residual noise measurement on Ground Floor

7.5 Discussion of Noise Climate

During the survey there was on-going construction works and consistent traffic along adjacent roads. As such, noise contributions from extraneous sources were deemed to have affected some of the measurements of plant noise (ie MP3 and MP4).

However, in the case of MP1, the condenser dominated the noise climate with little contribution from extraneous sources. The plant noise itself was constant with no character and did not contain any impulsive elements. Notwithstanding, the plant is serving internal air conditioning units so would likely operate intermittently based on load/building needs.

The noise levels measured in MP3 were impacted by road traffic noise, however, it was possible to faintly hear the units operate during lulls in traffic. The plant operation was constant and did not contain any features.



The noise levels measured in MP4 and MP5 were completely dominated by traffic noise from the adjacent road. So much so that it was not possible to hear the plant operating and that the residual noise measurement, when the plant was not operating, is louder than the ambient noise level measurement when the plant was operating. This is likely due to fluctuations in traffic along Great Ancoats Street.

Measurements were not carried out of the MVHR units to apartments as subjectively, they were inaudible at 1m from the grille in all locations investigated. As such, the levels of noise egress from these units are expected to be well below the requirements of MCC.

8.0 Plant Noise Impact Assessment

8.1 Assessment

Due to the nature of the site (i.e., dominated by traffic noise) calculating the specific noise level from HRU/00/01 is not possible. This is due to the fact the ambient noise and residual noise measurements detailed in Section 7.4 did not change when the plant was operating or not operating (the plant was also inaudible subjectively in close proximity). Where this occurs the specific level is assumed to be at least 10 dB below the measured ambient noise level.

Based on the above and the measured noise levels, the cumulative noise level at the worst affected noise sensitive receptors have been calculated. The worst effected receptors are considered to be the Leonardo Hotel (R2) and the IBIS Budget Hotel (R1).

It is understood that the plant would operate during the day only. As such, the assessment of noise egress will be compared to the day-time plant noise limit set out in Section 6.0.

The calculations account for attenuating factors such as distance attenuation and barrier attenuation where present.

The calculations are detailed below:

Leonardo Hotel			
Description	Sound Pressure Level (dBA)		
	ACC1	HRU/00/01	HRU/01/01
Measured Ambient Noise Level, L_{Aeq} at 1m	70	65	57
Residual Sound Level, L_{Aeq}	54	67	54
Specific Sound Level, L_{Aeq}	70	55*	54
Distance Correction	-27 (22m)	-34 (52mm)	-27 (22m)
Barrier Correction	0	-15	0



Leonardo Hotel			
Description	Sound Pressure Level (dBA)		
	ACC1	HRU/00/01	HRU/01/01
Façade Reflection	+3	+3	+3
BS4142:2014 Corrections	+3	0	0
Calculated Noise Level at Receptor, $L_{A_{Tr}}$	49	9	30
Calculated Cumulative Rating Level, $L_{A_{Tr}}$	49		
Plant Noise Emission Limit, $L_{A_{Tr}}$	51		
Difference	-2		

*Assumed level by taking 10 dB from ambient sound.

Our assessment indicates that plant noise levels are 2 dB below the plant noise limit during the operational period, which is in line with Manchester City Council's plant noise emission criteria at Leonardo Hotel.

IBIS Budget			
Description	Sound Pressure Level (dBA)		
	ACC1	HRU/00/01	HRU/01/01
Measured Ambient Noise Level, L_{Aeq} at 1m	70	68	59
Residual Sound Level, L_{Aeq}	54	67	54
Specific Sound Level, L_{Aeq}	70	55*	54
Distance Correction	-31 (34m)	-33 (45m)	-31 (34m)
Barrier Correction	-5	0	-5
Façade Reflection	+3	+3	+3
BS4142:2014 Corrections	+3	0	0
Calculated Noise Level at Receptor, $L_{A_{Tr}}$	40	25	21
Calculated Cumulative Rating Level, $L_{A_{Tr}}$	40		
Plant Noise Emission Limit, $L_{A_{Tr}}$	51		
Difference	-11		

*Assumed level by taking 10 dB from ambient sound.

Our assessment indicates that plant noise levels are 11 dB below the plant noise limit during the operational period, which is in line with Manchester City Council's plant noise emission criteria at the IBIS Budget.



On this basis, our assessment indicates that the plant items as installed are in line with Manchester City Council's plant noise emission requirements and no further mitigation measures should be required to comply with the condition requirements.

9.0 Conclusion

Plant noise measurements were undertaken of the installed and operational building services plant at Victora House.

A subsequent assessment has been carried out to determine the plant noise emissions at the nearest noise sensitive receptors.

The assessment indicates that the installed plant achieves the agreed plant noise criteria at the worst affected noise sensitive receptors.

The installed plant should therefore be considered in-line with the requirement of planning condition 15.

Appendix A

The acoustic terms used in this report are defined as follows:

dB Decibel - Used as a measurement of sound level. Decibels are not an absolute unit of measurement but an expression of ratio between two quantities expressed in logarithmic form. The relationships between Decibel levels do not work in the same way that non-logarithmic (linear) numbers work (e.g. $30\text{dB} + 30\text{dB} = 33\text{dB}$, not 60dB).

dBA The human ear is more susceptible to mid-frequency noise than the high and low frequencies. The A-weighting scale approximates this response and allows sound levels to be expressed as an overall single figure value in dBA. The _A subscript is applied to an acoustical parameter to indicate the stated noise level is A-weighted

It should be noted that levels in dBA do not have a linear relationship to each other; for similar noises, a change in noise level of 10dBA represents a doubling or halving of subjective loudness. A change of 3dBA is just perceptible.

L₁₀ L₁₀ is the noise level exceeded for 10% of the period (i.e., the quietest 90% of the measurement).

L₉₀ L₉₀ is the noise level exceeded for 90% of the period (i.e., the quietest 10% of the measurement) and is often used to describe the background noise level.

L_{Aeq} L_{Aeq} is the equivalent continuous A-weighted sound pressure level. It is an average of the total sound energy measured over a specified time period.

L_{max} L_{max} is the maximum sound pressure level recorded over the period stated. L_{max} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the L_{eq} noise level.

Sound Pressure Level (L_p) is the sound pressure relative to a standard reference pressure of 2×10^{-5} Pa. This level varies for a given source according to a number of factors (including but not limited to: distance from the source; positioning; screening and meteorological effects).