

J003897-9053-DH-01

28th August 2025

Peter Lunness
Torsion Construction
1280 Century Way
Thorpe Park
Leeds
LS15 8ZB

One Victoria, Great Ducie Street – Plant Noise Breakout Assessment

Dear Peter

It is understood that an assessment is required to obtain the predicted noise levels from plant noise at the nearest existing residential receivers. This includes for noise break-out from Apartment MVHR units and associated plant rooms, extract and intake fans. We would note that an assessment of the rooftop plant has already been undertaken and is detailed within PDA report ref: 'J003897-8205-DH-03 Noise Assessment of Rooftop Generators – Great Ducie Street'.

Criteria – Manchester City Council

We would note that within the decision notice '122280/F0/2019' the following condition is set out:

21) a) Any externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location.

Site Survey and Limits

A noise survey has been conducted on-site to establish the existing noise levels prior to the new residential development. The details of the surveys which have been carried out by PDA Ltd and Azymuth Acoustics are detailed within 'J003897-5694-DH-04 Environmental Noise Assessment – Great Ducie Street, Manchester' and '122280_FO_2019 – Environmental_Noise_Report – 1070250' respectively.

We would note that the closest noise sensitive receivers are located on Mirabel Street and Breslyn Street. The positions have been measured within the Azymuth Acoustics report and are reproduced as follows:

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Figure 1 – ‘Figure 2: Site plan with noise measurement positions marked in red’ – ‘122280_FO_2019 – Environmental_Noise_Report – 1070250’



Figure 2: Site plan with noise measurement positions marked in red

Table 1. – ‘Table 1: Results of Azymuth Acoustics noise measurements July 2018’– ‘122280_FO_2019 – Environmental_Noise_Report – 1070250’

Location	Time	L _{Amax} *	L _{Aeq}	L _{A1}	L _{A10}	L _{A50}	L _{A90}
1. Mirabel Street	Day	77	60	67	62	59	55
	Night	75	55	62	58	53	48
2. Gt. Ducie Street Litecraft Car Park	Day	88	66	72	68	64	61
	Night	87	66	73	68	63	59
2A. Gt. Ducie Street onsite	Day	94	66	73	68	63	60
	Night	75	61	70	66	56	51
2 & 2A. Gt Ducie St Average	Day	93	66	72	68	64	60
	Night	81	63	71	66	58	53
3. Breslyn Street	Day	75	59	64	61	58	55
	Night	72	57	66	61	54	47

*Percentile analysis, worst 5%

Table 1: Results of Azymuth Acoustics noise measurements, July 2018

We would therefore consider that the limit at the nearest noise sensitive receivers would be 50 dB(A) and 42 dB(A) for day and night-time periods respectively based upon a 5 dB reduction from the typical background L_{A90} measured at these locations.

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APARTMENT MVHR NOISE BREAKOUT

In order to assess the noise breakout from the MVHR units serving each apartment of the development we have utilised manufacturers noise data and accounted for the attenuation provided by duct run, bends and end reflection of the façade termination. We have utilised the manufactures details provided for the prosed Vent-Axia 'Lo-Carbon Sentinel Econiq S' unit. We have been informed that the 'boost' setting for 3 bed apartments is 60% duty and 40% for 1 and 2 bed apartments.

Calculations have been undertaken based upon the above noise level data and the proposed MVHR system layout as provided within the following received drawings:

- '204-KIM-BA-01-DR-M-5002 C01 – 2 Bed Apartment Mechanical Services Layout' dated 21st March 2024
- '204-KIM-BA-01-DR-M-5003 C01 – 3 Bed Apartment Mechanical Services Layout' dated 21st March 2024
- C2966-KIM-XX-XX-DR-M-3001 P02 – MVHR External Termination Detail Option 2' dated 28th June 2024.

The calculated sound power levels (at the external façade termination) are summarised as follows:

Table 2. Noise break out from MVHR system – Vent-Axia 'Lo-Carbon Sentinel Econiq S'

Speed	Test Element	Sound Power Level dB Octave band centre frequency (Hz)							Sound Power Level dB(A)
		63	125	250	500	1k	2k	4k	
60% (Boost – 3 Bed Apartment)	Supply	47	49	55	54	50	46	36	55
	Extract	40	47	46	42	36	28	20	43
40% (Boost – 1 & 2 Bed Apartment)	Supply	39	43	51	47	40	35	24	48
	Extract	32	38	42	34	27	17	12	36

In order to predict the resultant noise levels from the MVHR units we have utilised SoundPLAN to generate a 3-dimensional computer noise model. All calculations have followed the methodology contained within ISO 9613-2:2024. The topographical data for the site and surrounding area is taken from Google Maps terrain height data. The noise levels from Table 2 have been used to inform the noise model. The layout of MVHR façade terminations has been taken from DAY Architecture drawing package ref: '204-DAY-BA-XX-DR-A-XXXXXX'. The predicted noise levels are as follows.

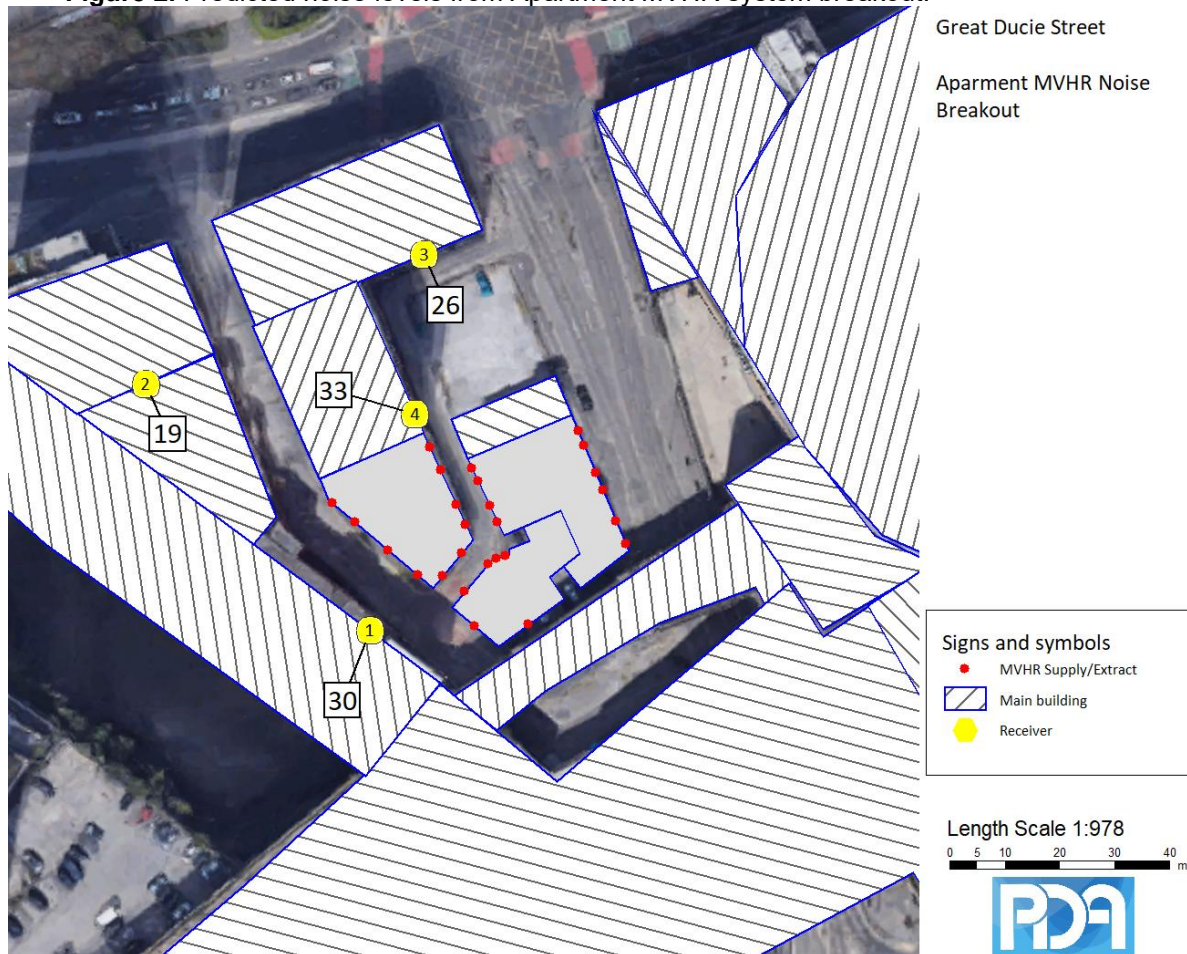
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Please note that all MVHR system extract and supplies are modelled to operating at boost setting and simultaneously as a 'worst-case' scenario.

Figure 2. Predicted noise levels from Apartment MVHR system breakout.



Discussion

We would highlight that the highest and therefore 'worst-case' predicted noise level is 33 dB(A) as shown at Receiver 4. In regards to MCC criteria this level is 17 dB and 9 dB below the derived day and night-time limits and is therefore deemed acceptable.

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PLANT ROOM NOISE BREAKOUT

It is our understanding that to the ground floor areas of the development there are façade openings for Extract/Intake fans and Tank/Booster rooms which will house water pumps. The manufacturer noise levels for the respective kit is as follows:

Table 3. Noise Levels of Proposed Ground Floor Plant

Plant Ref	Test Element	Sound Pressure Level dB Octave band centre frequency (Hz)							Sound Pressure Level dB(A) at 3m
		63	125	250	500	1k	2k	4k	
LVE03 (EF01) Vent Axia ACM315	Inlet	-	45	60	66	68	69	67	75
	Outlet	-	47	69	73	74	72	66	79
LVE04 (EF02) Vent Axia TX9IL	Inlet	36	48	54	60	58	61	54	44
	Outlet	39	51	57	63	61	64	57	47
LVE05 (EF03) Vent Axia ACM150	Inlet	40	49	59	63	59	63	55	46
	Outlet	36	48	54	60	58	61	54	44
Tank/Booster Room Flowboost PRO	Water Pump	55*	55*	60*	63*	67*	64*	59*	70**

*Normalised spectrum to similar water pump previously measured as no spectrum supplied in manufacturers literature

**Assumed to be taken at 1m from the pump

We have been supplied with layout drawing ref '204-KIM-BA-00-DR-M-5701-OVE Level 00' by Kimptons dated 29th January 2025 which also indicates the following attenuators to be used on the Extract/Inlet Fans:

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Table 4. Sound Reduction Index of Proposed Attenuators

Plant Ref	Attenuator	Sound Reduction Index dB Octave band centre frequency (Hz)						
		63	125	250	500	1k	2k	4k
LVE03 (EF01) Vent Axia ACM315	SK Airvance – 400 x 600	0	1	4	10	12	7	4
LVE04 (EF02) Vent Axia TX9IL	SK Airvance – 250 x 600	2	5	8	16	26	26	23
LVE05 (EF03) Vent Axia ACM150	SK Airvance – 355 x 600	1	2	6	13	19	15	8

In addition the façade openings for the fans will be placed behind Louvres as follows:

Table 5. Sound Reduction Index of Proposed Louvres

Plant Ref	Louvre	Sound Reduction Index dB Octave band centre frequency (Hz)						
		63	125	250	500	1k	2k	4k
LVE04 (EF02) Vent Axia TX9IL	Gilberts Louvre – Non- Acoustic	-	-	-	-	-	-	-
LVE05 (EF03) Vent Axia ACM150		-	-	-	-	-	-	-
LVE03 (EF01) Vent Axia ACM315	Gilberts Louvre – Type ALS/10	4	5	6	9	12	12	11
Tank/Booster Room Flowboost PRO		4	5	6	9	12	12	11

Following the attenuation provided by the attenuators and louvres we have calculated the sound power levels of each item of plant. Please note that for the calculation of the Tank/Booster noise levels the Plant Room has a reverberation time of 1 second assumed. This is found to be typical of other plant rooms previously measured on similar schemes.

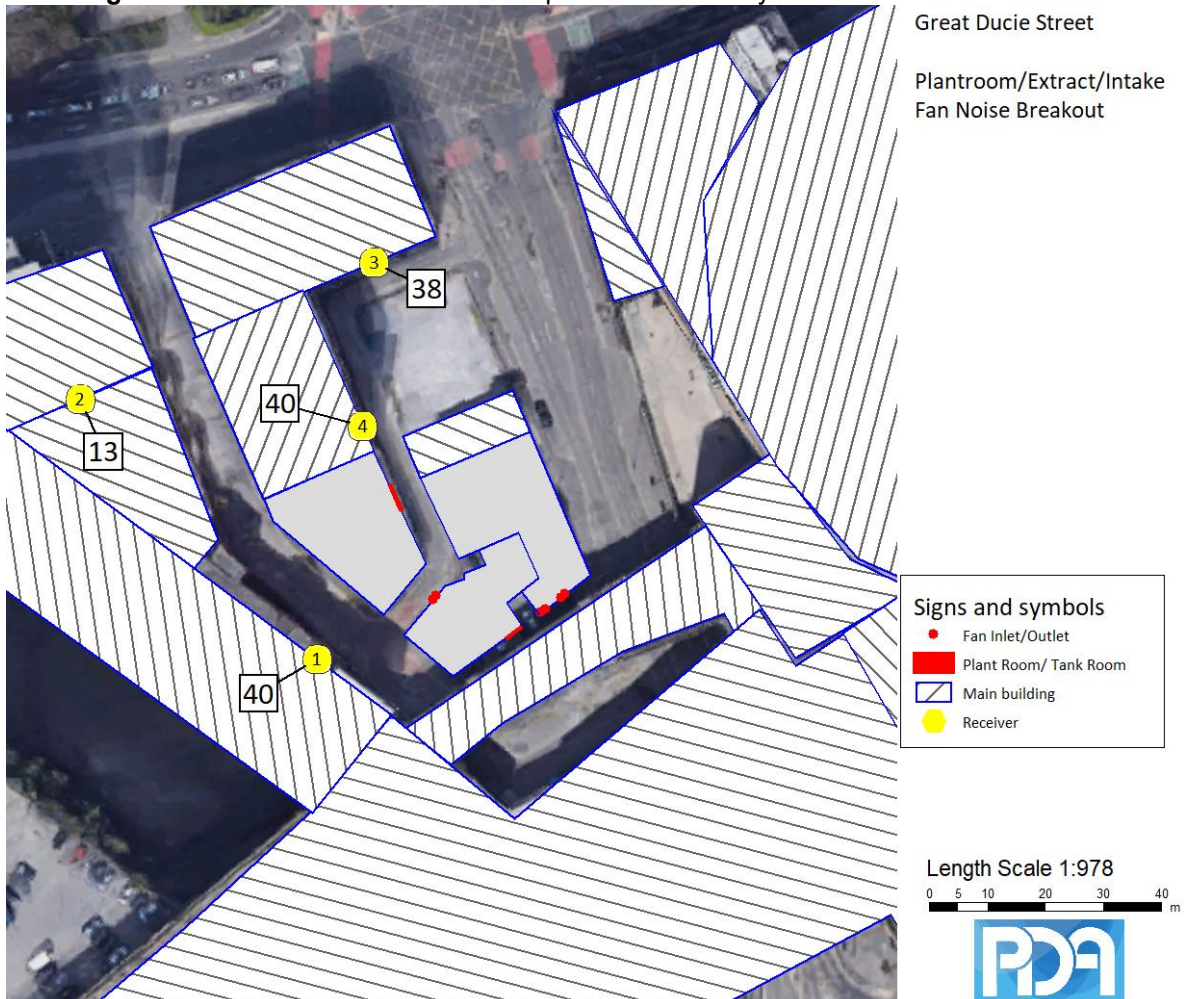
The resultant noise levels have been inputted into the noise model as discussed earlier, but with the Apartment MVHR noise sources removed. The predicted noise levels are as follows:

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Figure 2. Predicted noise levels from Apartment MVHR system breakout.



Discussion

We would highlight that the highest and therefore 'worst-case' predicted noise level is 40 dB(A) as shown at Receiver 1 and 4. In regards to MCC criteria this level is 10 dB and 2 dB below the derived day and night-time limits and therefore considered acceptable.

We would note that with the ground floor plant and Apartment MVHR units all operating simultaneously the overall noise level may rise by 1 dB which would still be 9 dB and 1 dB below the derived day and night-time noise limits and is therefore considered to be acceptable.

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Yours Sincerely,



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