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Mr Hugh Cullum
Hugh Cullum Architects
61B Judd Street
London
WC1H 9QT

Dear Hugh

RE: 13 PRINCE ALBERT ROAD, LONDON - NOISE FROM POOL AHU

Thank you for your instruction to provide an assessment of noise from the proposed Heatstar Air Handling Unit which will serve the new pool.

In our formal acoustic appraisal submitted in 2011, at the time of the planning application, we confirmed that the lowest levels of ambient noise was 32 dB(A) L_{A90}, and that new noise sources should be designed to a level 10 dB below this (or 15 dB below if the new noise is tonal or intermittent in character).

I have analysed the likely noise from the fresh air inlet duct and the exhaust air duct, and calculated the residual noise at the nearest residential facade - this I estimate to be some 10m from the duct terminations.

With no attenuators, we predict a residual noise well above 22 dB(A) L_{Aeq}.

We will therefore require duct attenuators in each duct. I recommend a rectangular attenuator 600mm wide x 500mm high x 1800mm long. With a flow of 1800 m^3/hr through the inlet duct and 1200 m^3/hr through the exhaust duct, we estimate a resistance of some 10 - 15 Pa from each attenuator.

Given the pool area served and the moist nature of the air, we further recommend that the attenuators are specified a 'Melinex' lining around the absorptive material.

The required minimum sound reduction performance of the attenuators is confirmed in the table below:

Frequency	**Hz**	**63**	**125**	**250**	**500**	**1K**	**2K**	**4K**	**8K**
Sound Reduction	**dB**	9	17	27	27	28	28	25	18

Appendix 1 provides a calculation of the noise radiating from inlet and exhaust terminations, and indicates a residual noise level of 21 dB(A). The frequency spectra for the residual noise does not indicate any tonal concentration and the noise would be virtually constant in nature.

It would therefore be concluded that the installation would have no adverse impact of the residential occupiers.

I hope that this provides all the information required, but we remain available to clarify any further queries.

With best regards

RICHARD SHARLAND

Appendix 1 - Calculation of Noise Transmission from Heatstar AHU

Frequency	**Hz**	**63**	**125**	**250**	**500**	**1K**	**2K**	**4K**	**8K**	**dB(A)**
Fresh Air Intake, SWL	**dB**	66	66	64	65	62	63	61	52	**69**
Attenuator Loss, 180mm long, 33% o/a, Mel	dB	-9	-17	-27	-27	-28	-28	-25	-18	
1 Bends @500sq	dB	0	0	-1	-5	-5	-3	-3	-3	
Directivity	dB	-8	-8	-8	-8	-8	-8	-8	-8	
Distance Correction to 10m	dB	-20	-20	-20	-20	-20	-20	-20	-20	
Facade Correction	dB	3	3	3	3	3	3	3	3	
Net SPL @ neighbouring facade	dB	32	24	11	8	4	7	8	6	**15**
Exhaust Air, SWL	**dB**	68	70	68	69	66	68	65	56	**73**
Attenuator Loss, 180mm long, 33% o/a, Mel	dB	-9	-17	-27	-27	-28	-28	-25	-18	
1 Bends @500sq	dB	0	0	-1	-5	-5	-3	-3	-3	
Directivity	dB	-8	-8	-8	-8	-8	-8	-8	-8	
Distance Correction to 10m	dB	-20	-20	-20	-20	-20	-20	-20	-20	
Facade Correction	dB	3	3	3	3	3	3	3	3	
Net SPL @ neighbouring facade	dB	34	28	15	12	8	12	12	10	**19**
Combined SPL @ neighbouring facade	**dB**	**36**	**29**	**16**	**13**	**9**	**13**	**13**	**11**	**21**