

**C/13954/T02/NJS**

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Dear Joe

## **Hatton Wall - Assessment of External Noise emissions from Heat Recovery Units**

You have asked SRL to check that the noise emissions from the heat recovery units located in the courtyard façade of the Hatton Wall building.

Philip Acoustic Ltd has previously measured noise levels at the site and set plant noise limits in order to comply with the requirements of the London Borough of Camden. You have supplied us with this document (Philip Acoustic Report 14107 dated May 2014) and my assessment of noise from the heat recovery units is based upon this information.

The Philip Acoustic Report sets the following noise limits for plant located in the 18 Hatton Wall building:

The lowest background noise level during the range of operation times for the proposed new equipment in terms of overall  $L_{A90}$  dB and associated octave band values is shown in Table 1. A graph showing the overall raw data  $L_{A90}$  dB measurements over the entire background noise survey period is provided in Appendix D.

Description	Overall $L_{A90}$ dB	Octave Band Centre Frequency (Hz) (linear $L_{90}$ dB)							
		63	125	250	500	1k	2k	4k	8k
Lowest background noise level measured around 3am to 4am $L_{90}$ (60 minutes)	39	48	47	42	36	33	28	24	16
London Borough of Camden noise limit	34	44	43	38	32	29	24	20	12

**Table 1:** Lowest measured background noise levels and London Borough of Camden's noise conditions (overall noise limit 5dBA below background level and octave band limit to not add more than 1dB to existing octave band noise levels)

The limits stated above must be met at the nearest noise sensitive receiver. In this case it is the rear windows of the neighbouring residential accommodation.

Using plant noise levels, attenuation performance data and plant layout drawings collated and supplied by you, I have predicted the external noise emissions from the heat recovery units located at the rear façade

at the closest noise sensitive receptors. I understand that the heat recovery units are ducted to louvres within the courtyard façade.

We have assessed noise from the Daikin VAM650FB and Daikin I000FB. These units are proposed on multiple floors of the building. We have calculated the combined level of noise from these units where they are ducted to louvres within the courtyard facade at Hatton Wall. You have indicated that the current proposal is to use a 600mm long circular duct mounted attenuator and an acoustic louvre located on the façade of the building. The noise reductions due to these elements allowed in our noise assessment are summarised in Table 1.

**Table 1 - Insertion Loss Performance of Attenuators & Louvre**

Noise reduction (IL dB)	Octave Band Centre Frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
Ø200 mm 600 mm	2	3	7	16	21	23	9	8
Ø250 mm 600 mm	3	2	7	13	17	16	8	6
300mm Deep Acoustic Louvre	2	6	8	11	18	25	20	16

A spreadsheet based noise model has been used to calculate the contribution from the proposed new equipment to a location outside windows of the nearest noise sensitive (residential) properties. The model takes into account the distance between the fresh air intake / exhaust louvres and the nearest residential windows, any acoustic directivity and reflections, benefit of any specified noise reduction treatment, and any natural line of sight screening.

I have made the assumption that that each of the heat recovery units is operating 100% of the time, even through the night. In practice this may not be the case, so this assessment should be considered a worst case noise scenario.

The predicted noise levels from the heat recovery units are given in Table 2.

**Table 2 - Predicted HRU Noise Levels**

Unit Type	Quantity of Units	Noise Level @ Nearest Residential Accommodation
Daikin VAM650FB	2	29 dB(A)
Daikin I000FB	8	33 dB(A)
Total Noise Level from Heat Recovery Units		34 dB(A)

It is not expected that the noise from the condenser units, located on the roof of the 18 Hatton Wall building, will make a significant contribution to the noise level at the courtyard facing windows of the nearest sensitive accommodation. The acoustic shielding provided by the buildings themselves will reduce noise from the condensers, especially to accommodation on the lower floors.

The calculated noise from the heat recovery units at each of the nearest residential windows is therefore considered acceptable and will meet the plant noise limits set in the Philip Acoustic Report and therefore meet the London Borough of Camden's noise requirements.

Yours sincerely,




**Nick Swainston**

For and on behalf of

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