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REPORT No. 640733-2

**107 GRAYS INN ROAD
LONDON**

PLANT NOISE ASSESSMENT REPORT

DATE: 8th September 2014

Presented By: Paul Cotton

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1.0 Introduction

- 1.1 Noico Ltd has been commissioned to undertake a noise assessment of the proposed new plant items being installed at 107 Grays Inn Road, London. Plant is to be installed externally at ground floor level to the rear of Grays Inn Road and facing adjacent residential properties located on Brownlow Mews.
- 1.2 The purpose of the assessment is to ensure that the proposed new plant does not exceed the design noise criteria as detailed within Hawkins Environmental Ltd noise assessment report dated 21st February 2014; summarised as follows, and set in accordance with the requirements of the London Borough of Camden.

	Daytime plant operation (07:00-23:00hrs)
1 metre from facade of nearest residential building	39.9 L _{Aeq}

2.0 Plant Noise Assessment

2.1 Plant location

The new plant items are to be located by a bin storage area as shown on Dunwoody drawing Ref:20711/M/214 Rev.P1 dated July 2014. These comprise 6 no. air conditioning condenser units, 5 of which shall be horizontally discharging units mounted on the wall with 1 no. vertically discharging unit to be located at ground level.

The windows of the nearest noise sensitive properties are highlighted as follows:

- 2.2 Properties located on Brownlow Mews, located an approximate distance of 5 metres away and directly facing the plant compound.

2.3 Plant details

The plant included within our assessment is detailed as follows together with confirmed noise data as advised by the equipment manufacturers.

2.3.1 CONDENSER UNITS

<u>Plant reference/description</u>	<u>Operating noise level</u>
Uniflo CAP 0361	- 38.8dB(A) at 5 metres
Daikin RYP71L7V1	- 52dB(A) at 1 metre
Daikin RYP100L7V1 (2 no.)	- 56dB(A) at 1 metre
Daikin RZQ71B7V3B	- 51dB(A) at 1 metre
Daikin RZQ100D9V1B	- 55dB(A) at 1 metre

3.0 Calculations

3.1 Daytime plant operation (07:00hrs – 23:00hrs)

The following calculations have been based on daytime plant operation only, with all items of plant (with the exception of the Uniflo unit) operating at maximum duty.

Frequency	63	125	250	500	1k	2k	4k	8k	Hz	
Uniflo - CAP 0361 - 56% fan speed - SPL @ 5m	49	42	41	38	31	27	21	21	dB	
Distance correction to 1m = $20\log_{10}(5/1)$	14	14	14	14	14	14	14	14	dB	
Resultant SPL at 1m	63	56	55	52	45	41	35	35	dB	
A-weighting correction	-26	-16	-9	-3	0	1	1	-1	dB	
Resultant SPL(A) @ 1m from CAP 0361	37	40	46	49	45	42	36	34	dB	
Daikin RYP71L7V1 SPL(A) @ 1m	28	44	44	47	45	42	37	28	dB	
Daikin RYP100L7V1 SPL(A) @ 1m (incl +3dB for 2 no.)	38	49	49	55	53	50	45	38	dB	
Daikin RZQ71B7V3B SPL @ 1m	52	53	52	48	47	41	38	31	dB	
A-weighting correction	-26	-16	-9	-3	0	1	1	-1	dB	
Resultant SPL(A) @ 1m from RZQ71B7V3B	26	37	43	45	47	42	39	30	dB	
Daikin RZQ100D9V1B SPL @ 1m	59	59	52	52	51	45	44	34	dB	
A-weighting correction	-26	-16	-9	-3	0	1	1	-1	dB	
Resultant SPL(A) @ 1m from RZQ100D9V1B	33	43	43	49	51	46	45	33	dB	
Combined SPL(A) @ 1m from all plant	42	52	53	58	57	53	49	41	dB	
Noise propagation correction (Q=4)	3	3	3	3	3	3	3	3	dB	
Reverberation correction	2	2	2	2	2	2	2	2	dB	
Distance corr' to 1m from resi' property = $20\log_{10}(1/4)$	-12	-12	-12	-12	-12	-12	-12	-12	dB	
Resultant SPL(A) @ 1m from residential property	35	45	46	51	50	46	42	34	dB	
Single figure SPL @ 1m from residential facade									56	dB(A)
Target noise criteria									39	dB(A)
Excess									17	dB(A)

4.0 Noise Control Measures

It can be seen that the plant will exceed the criterion and it will therefore be necessary to enclose the units within a purpose built acoustic enclosure in order to achieve the local authority requirement at the nearest affected residential window.

To provide ventilation air for the condensing units, attenuated openings (in the form of acoustic louvres) will be required for both the intake and discharge air paths. The louvres must provide the following minimum SRI (sound reduction index):

Frequency (Hz)	63	125	250	500	1k	2k	4k	8k
Minimum SRI	5	8	14	27	38	40	33	31

The remaining elements of the acoustic enclosure will be constructed from 50mm deep acoustic panel-work which shall provide the following minimum transmission loss:

Frequency (Hz)	63	125	250	500	1k	2k	4k	8k
Min. Transmission Loss	19	20	25	31	40	42	45	41

With the above measures in place, the design noise criteria will be achieved with respect to the mechanical plant to be installed on this project.

5.0 Conclusion

- 5.1 A plant noise assessment has been carried out on the proposed new equipment to be located externally at ground floor level at 107 Grays Inn Road, London.
- 5.2 It has been established that providing a suitable acoustic enclosure to the proposed condensing units will ensure the design noise criteria will be achieved, and hence the planning noise requirements of the local authority (the London Borough of Camden) will be met in full.