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Ref: AS8428.160119.L1

20 January 2016

John Fryer
Bay Construct Limited
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Dear John

AS8428 HUB BY PREMIER INN, BROOK HOUSE, 2-16 TORRINGTON PLACE

Condition 5 (APP/X5210/A/13/2207166) - External Plant Noise Emissions

It is understood that planning permission is being sort for the installation of new plant on the roof and in the basement at the above site.

Clarke Saunders Associates undertook an environmental noise survey at the planning stage in order to measure the prevailing background noise climate at the site. The background noise levels measured have been used to determine daytime and night-time noise emission limits for new building services plant in accordance with the planning requirements of Camden Council.

The details of our noise survey and results can be found in the previous planning report ref. AS7236.130514.NVIA.

Planning Condition 5

The condition stated in the Appeal Decision APP/X5210/A/13/2207166 is as follows:

Prior to the first operation of any of the external cooling plant shown on plan Nos 3114/P/106C and 3114/P/107B, a detailed Acoustic Report, prepared by a suitably qualified acoustic engineer, demonstrating how that plant/machinery complies with the following, shall be submitted to and approved in writing by the Local Planning Authority: Noise levels associated with the external cooling plant shall, at a point 1 metre external to noise sensitive facades, be at least 5dB(A) less than the existing background measurement (L_{A90}), expressed in dB(A) when all that plant/equipment (or any part of it) is in operation, unless the plant/equipment hereby permitted will have a noise that is distinguishable, discrete continuous note (whine, hiss, screech, hum) and/or if there are distinct impulses (bangs, clicks, clatters, thumps),then the noise levels from that piece of plant/equipment at any noise- sensitive façade shall be at least 10dB(A) below the L_{A90}, expressed in dB(A). Development shall be carried out in accordance with the approved details. All installed external cooling plant and acoustic attenuation measures shall be retained thereafter and maintained in accordance with manufacturer's recommendations.

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MEMBERS OF THE ASSOCIATION OF NOISE CONSULTANTS

Plant Noise Emissions Criteria

The details of our noise survey and results can be found in the report ref. AS7236.130514.NVIA. The attached site plan shows the location of the monitoring positions and proposed plant locations.

The daytime, evening and night-time plant noise emissions criteria to be achieved at 1m from the nearest noise sensitive façade, based on non-tonal plant, are shown in Table 1.1.

Position	Daytime (07:00 – 19:00 hours)	Evening (19:00 – 23:00 hours)	Night-time (23:00 – 07:00 hours)
Position 1	L_{Aeq} 45 dB	L_{Aeq} 45 dB	L_{Aeq} 44 dB
Position 2	L_{Aeq} 47 dB	L_{Aeq} 52 dB	L_{Aeq} 46 dB

Table 1.1 - Proposed design noise criteria **[dB ref. 20µPa**

Proposed Plant

The selected plant has been confirmed as:

- 13 no. Mitsubishi condensing units type PURY-EP200YLM-A; (6th floor plant enclosure)
- 2 no. Mitsubishi condensing units type PURY-EP250YLM-A; (6th floor plant enclosure)
- 2 no. EDPAC air handling unit type RSCX 150-1044-0 BV23S; (Basement and 7th floor plant enclosure)
- 1 no. FG Wilson generator type P88-3. (6th floor plant enclosure)

Noise levels generated by the Mitsubishi condenser units to be installed have been confirmed by the manufacturer as follows:

Frequency (Hz)	63	125	250	500	1k	2k	4k	8k	dB(A)
PURY-EP200YLM-A	71	64	61	56	53	49	46	39	59
PURY-EP250YLM-A	72	65	62	57	54	50	47	40	60

Table 1.2 – Condenser unit noise levels (L_p at 1m)

Noise levels generated by the EDPAC air handling units to be installed have been confirmed by the manufacturer as follows. Sound power levels include insertion losses from attenuators selected by the manufacturer applied within the system.

Frequency (Hz)	63	125	250	500	1k	2k	4k	8k
AHU1 Breakout	31	47	56	60	62	60	56	52
AHU1 Intake	44	60	69	73	71	66	63	58
AHU1 Discharge	44	60	69	73	71	66	63	58
AHU2 Breakout	28	44	53	57	59	57	53	49
AHU2 Intake	30	44	47	45	26	20	25	20
AHU2 Discharge	30	44	47	45	26	20	25	20

Table 1.3 – Air handling unit noise levels (L_w)

Frequency (Hz)	63	125	250	500	1k	2k	4k	8k	dB(A)
Generator	80	73	64	61	56	54	51	48	64

Table 1.4 – Generator noise levels (L_p at 7m)

Predicted Noise Levels

It is understood that all plant items with the exception of AHU 1 and 2 are to be installed at 6th floor roof level. AHU1 will be located in the 7th floor plant enclosure. AHU 2 will be installed in the basement and will discharge at ground level within the underpass off Torrington Place.

The nearest noise sensitive receivers are understood to be 1-16 Torrington Place, on the opposite side of the road and the neighbouring property, 22 Torrington Place.

Cumulative noise levels from all of the plant listed above has been calculated at both of these receptor locations. Pessimistic screening losses afforded by the roof edge and the underpass have been included in the prediction of the cumulative plant noise levels.

Full calculations are attached.

Receiver	Predicted Noise Level	Design Criterion
1-16 Torrington Place	L_{Aeq} 42dB	L_{Aeq} 44dB
22 Torrington Place	L_{Aeq} 44dB	

Table 1.5 – Predicted noise levels at receivers

This assessment shows that the proposed plant complies with the requirements of planning condition 5. No further mitigations measures are required.

We trust the above is satisfactory, if you have any further queries please do not hesitate to contact us.

Yours sincerely
for CLARKE SAUNDERS ASSOCIATES

Alex Arnold
Alex Arnold (Jan 20, 2016)

Alex Arnold
email: *aarnold@clarkesaunders.com*

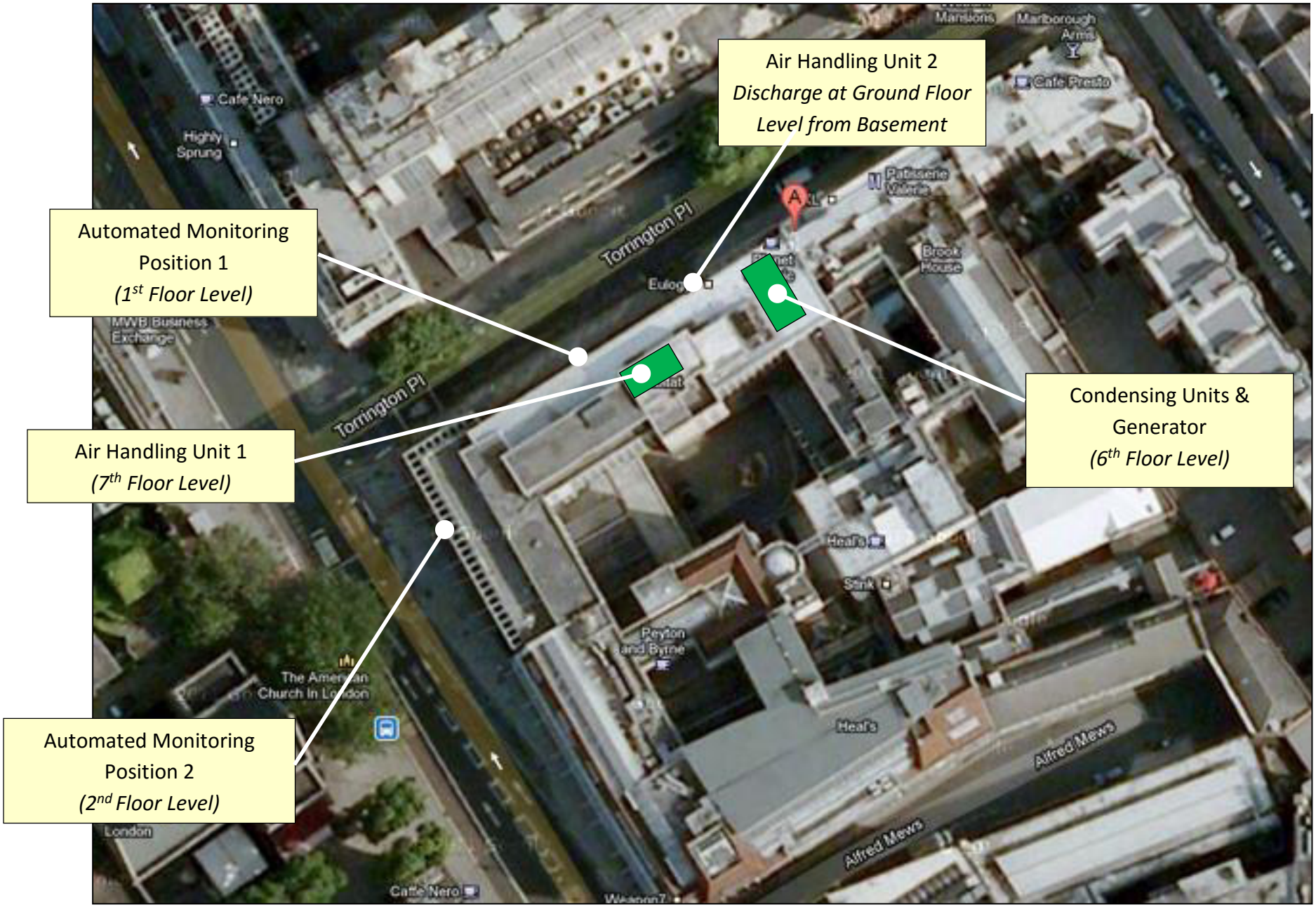

Figure AS8428/SP1

PLANT NOISE EMISSIONS CALCULATION

		63	125	250	500	1k	2k	4k	8k	dB(A)
Calculation 1:										
6th floor roof to opposite side of Torrington Place										
PURY-P200YLM-A1	1 m	71	64	61	56	53	49	46	39	59
Number of Units	6	8	8	8	8	8	8	8	8	
Total		79	72	69	64	61	57	54	47	
PURY-P250YLM-A1	1 m	72	65	62	57	54	50	47	40	60
Number of Units	2	3	3	3	3	3	3	3	3	
Total		75	68	65	60	57	53	50	43	
Cumulative		80	73	70	65	62	58	55	48	
Distance Propagation	30 m	-30	-30	-30	-30	-30	-30	-30	-30	
Roof Edge Screening (line of sight)		-5	-5	-5	-5	-5	-5	-5	-5	
Sound Pressure Level at Receiver		46	39	36	31	28	24	21	14	34
PURY-P200YLM-A1	1 m	71	64	61	56	53	49	46	39	59
Number of Units	8	9	9	9	9	9	9	9	9	
Total		80	73	70	65	62	58	55	48	
Distance Propagation	33 m	-30	-30	-30	-30	-30	-30	-30	-30	
Roof Edge Screening (line of sight)		-5	-5	-5	-5	-5	-5	-5	-5	
Sound Pressure Level at Receiver		45	38	35	30	27	23	20	13	33
AHU1 Breakout		57	63	65	63	62	59	55	53	
Propagation Correction		-8	-8	-8	-8	-8	-8	-8	-8	
Distance Propagation	50 m	-34	-34	-34	-34	-34	-34	-34	-34	
Roof Edge Screening (line of sight)		-5	-5	-5	-5	-5	-5	-5	-5	
Sound Pressure Level at Receiver		10	16	18	16	15	12	8	6	20
AHU1 Discharge		70	76	78	76	71	65	62	59	
AHU1 Intake		70	76	78	76	71	65	62	59	
Total		73	79	81	79	74	68	65	62	
Propagation Correction		-8	-8	-8	-8	-8	-8	-8	-8	
Distance Propagation	50 m	-34	-34	-34	-34	-34	-34	-34	-34	
Directivity		1	2	3	4	5	6	6	6	
End Reflection		-7	-3	-1	0	0	0	0	0	
Roof Edge Screening (line of sight)		-5	-5	-5	-5	-5	-5	-5	-5	
Sound Pressure Level at Receiver		20	31	36	36	32	27	24	21	37
AHU2 Discharge		56	60	56	48	26	19	24	21	
AHU2 Intake		56	60	56	48	26	19	24	21	
Total		59	63	59	51	29	22	27	24	
Duct (10m)		-6	-4	-3	-1	-1	-1	-1	-1	
2x bend		-1	-6	-13	-12	-7	-6	-6	-6	
Propagation Correction		-5	-5	-5	-5	-5	-5	-5	-5	
Distance Propagation	5 m	-14	-14	-14	-14	-14	-14	-14	-14	
End Reflection		-7	-3	-1	0	0	0	0	0	
Roof Edge Screening (line of sight)		-5	-5	-5	-5	-5	-5	-5	-5	
Sound Pressure Level at Receiver		21	26	18	14	-3	-9	-4	-7	15
Generator	7 m	80	73	64	61	56	54	51	48	
Distance Propagation	33 m	-16	-16	-16	-16	-16	-16	-16	-16	
Roof Edge Screening (line of sight)		-6	-7	-9	-11	-14	-16	-19	-22	
Sound Pressure Level at Receiver		58	50	40	34	27	22	16	10	39
Cumulative										**42**
									Criterion	**44**

Calculation 2:

6th floor roof to neighbouring property front façade

PURY-P200YLM-A1	1 m	71	64	61	56	53	49	46	39	59
Number of Units	6	8	8	8	8	8	8	8	8	
Total		79	72	69	64	61	57	54	47	
PURY-P250YLM-A1	1 m	72	65	62	57	54	50	47	40	
Number of Units	2	3	3	3	3	3	3	3	3	
Total		75	68	65	60	57	53	50	43	
Cumulative		80	73	70	65	62	58	55	48	
Distance Propagation	8 m	-18	-18	-18	-18	-18	-18	-18	-18	
Roof Edge Screening		-6	-7	-9	-11	-13	-16	-18	-18	
Sound Pressure Level at Receiver		56	48	43	36	31	24	19	12	40

PURY-P200YLM-A1	1 m	71	64	61	56	53	49	46	39	59
Number of Units	8	9	9	9	9	9	9	9	9	
Total		80	73	70	65	62	58	55	48	
Distance Propagation	12 m	-22	-22	-22	-22	-22	-22	-22	-22	
Roof Edge Screening		-8	-10	-12	-15	-17	-18	-18	-18	
Sound Pressure Level at Receiver		50	42	36	29	23	18	15	8	33

AHU1 Breakout		57	63	65	63	62	59	55	53	
Propagation Correction		-8	-8	-8	-8	-8	-8	-8	-8	
Distance Propagation	27 m	-29	-29	-29	-29	-29	-29	-29	-29	
Roof Edge Screening (line of sight)		-6	-5	-5	-5	-5	-5	-5	-5	
Sound Pressure Level at Receiver		14	21	23	21	20	17	13	11	25

AHU1 Discharge		70	76	78	76	71	65	62	59	
Attenuator										
		70	76	78	76	71	65	62	59	
AHU1 Inlet		70	76	78	76	71	65	62	59	
Attenuator										
		70	76	78	76	71	65	62	59	
Total		73	79	81	79	74	68	65	62	
Propagation Correction		-8	-8	-8	-8	-8	-8	-8	-8	
Distance Propagation	27 m	-29	-29	-29	-29	-29	-29	-29	-29	
Directivity		1	1	1	2	2	3	3	3	
End Reflection		-7	-3	-1	0	0	0	0	0	
Roof Edge Screening (line of sight)		-5	-5	-5	-5	-5	-5	-5	-5	
Sound Pressure Level at Receiver		25	35	39	39	34	29	26	23	40

AHU2 Discharge		56	60	56	48	26	19	24	21	
AHU2 Intake		56	60	56	48	26	19	24	21	
Total		59	63	59	51	29	22	27	24	
Duct (10m)		-6	-4	-3	-1	-1	-1	-1	-1	
2x bend		-1	-6	-13	-12	-7	-6	-6	-6	
Propagation Correction		-8	-8	-8	-8	-8	-8	-8	-8	
Distance Propagation	17 m	-25	-25	-25	-25	-25	-25	-25	-25	
End Reflection		-7	-3	-1	0	0	0	0	0	
Roof Edge Screening (line of sight)		-5	-5	-5	-5	-5	-5	-5	-5	
Sound Pressure Level at Receiver		8	12	4	0	-17	-23	-18	-21	1

Generator	7 m	80	73	64	61	56	54	51	48	
Distance Propagation	42 m	-16	-16	-16	-16	-16	-16	-16	-16	
Roof Edge Screening (line of sight)		-8	-10	-12	-15	-17	-18	-18	-18	
Sound Pressure Level at Receiver		56	48	37	31	23	21	17	14	36

Cumulative	**44**
Criterion	**44**