

Ref: AS8798.160523.L1

24 May 2016

Anthony Kooperman
CPC London
23 Hanover Square
London
W1S 1JB

Dear Anthony

AS8798 6-8 CAMBRIDGE TERRACE, LONDON

External Plant Noise Assessment

We have undertaken a review and assessment of the proposed external plant for the above development to verify compliance with the planning conditions. The assessment has been undertaken in line with Camden Council's criteria which stipulate that noise levels at a point 1 metre external to sensitive facades shall be at least 5dB(A) less than the existing background measurement (L_{A90}), expressed in dB(A) when all plant/equipment (or any part of it) is in operation. It has been assumed that the proposed plant will not generate any distinguishable, discrete continuous note (whine, hiss, screech, hum) and/or any distinct impulses (bangs, clicks, clatters, thumps).

A background noise survey was undertaken by Hoare Lea Acoustics in December 2008 to determine the pre-existing acoustic environment in respect of the 6-10 Cambridge Terrace/1-2 Chester Gate consent (2009/3041/P).

A new survey was carried out by Clarke Saunders in March 2016 in order to provide a more recent set of background noise data to establish the baseline against which the proposed plant can be assessed. The measured minimum background noise levels during the more recent survey were as follows:

Monitoring period	Minimum $L_{A90,10mins}$
07:00 - 23:00 hours	41 dB 12/3/16 07:10
23:00 - 07:00 hours	32 dB 15/3/16 02:10
24 hours	32 dB

Table 1.1 - Minimum measured background and average noise levels

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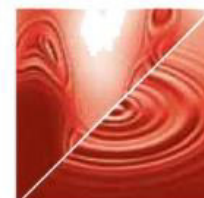
Registered in England Company No.
3758093

Registered Office:
Avebury House, St Peter St, Winchester

Clarke Saunders Associates is the
trading name of Alan Saunders
Associates Ltd.

Directors:
Alan Saunders
BSc (Hons) CSci CPhys FIOA
Ed Clarke
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OF NOISE CONSULTANTS**



Environmental noise time histories (AS8798/TH1-TH5) and an indicative site plan (AS8798/SP1) showing monitoring location, proposed plant location and nearest receptors are attached.

The plant noise emissions criteria, based on the Camden Council's requirements outlined above are, therefore, the following:

Daytime (07:00 – 23:00 hours)	Night-time (23:00 – 07:00 hours)	24 hours
L _{Aeq} 36 dB	L _{Aeq} 27 dB	L _{Aeq} 27 dB

Table 1.2 - Proposed design noise criteria

[dB ref. 20µPa]

The current design allows for 3 condenser units in five interconnected basement level vaults at the front of the development. Open light wells give access to the plant which is housed behind louvre doors. Allowance has been made for suitable acoustic lining inside the vaults.

The noise emission calculations have been undertaken considering the manufacturers quoted noise levels at source and the various elements of attenuation along the transmission path to the nearest receiver. In this case the nearest receiver is assumed to be the ground floor window of 9 Cambridge Terrace.

The noise emission calculations for the proposed plant, in comparison to the minimum night-time noise levels at the site are shown in Appendix A. The night-time background noise levels have been used as these represent the lowest noise levels at the site and hence the most stringent assessment criteria. It has been assumed that the plant will be running in "low power mode" as specified in the manufacturer's documentation during night-time periods. In addition, the following assumptions have been made with regard to the plant layout:

- The specified internal acoustic treatment for each plant room consists of a lining of 100mm mineral wool (minimum density 33kg/m³) over the areas specified in the drawings.
- The louvred door/access on the plant room consists of a minimum 300mm deep acoustic louvre. Insertion losses are shown in Table 1.3

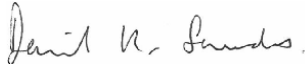
Frequency (Hz)	63	125	250	500	1k	2k	4k	8k
Insertion loss	6	7	10	12	18	18	14	13

Table 1.3 – Insertion loss for 300mm acoustic louvre

With the above specifications, compliance with the planning requirements of Camden Council have been demonstrated. No further mitigation measures are required.

We trust the above and attached is of assistance. Should you have any queries, please do not hesitate to contact the undersigned

Yours sincerely
for CLARKE SAUNDERS ASSOCIATES



Daniel Saunders

email: dsaunders@clarkesaunders.com

Enc.

APPENDIX A
AS8798 - 6-8 Cambridge Terrace, London
Plant Noise Assessment

Plant Room 1 To Nearest Noise Sensitive Receiver

Night time operation	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dB(A)
PUHY-P400YKB-A1(-BS) (Lp) Low power mode	74	62	52	49	44	41	34	35	
PUHY-P400YKB-A1(-BS) Lw across door	77	70	59	56	51	47	40	40	
Source Correction	-5	-5	-5	-5	-5	-5	-5	-5	
Directivity	-1	-2	-2	-3	-3	-3	-3	-3	
I.L of Louvre	-6	-7	-10	-12	-18	-18	-14	-13	
TOTAL Emissions at plant room door Lp @ 1m	65	57	42	36	25	21	18	19	44
Screening*	-5	-5	-5	-5	-5	-5	-5	-5	
Distance Loss To 5m	-14	-14	-14	-14	-14	-14	-14	-14	
Specific Noise Level at Receiver L_{eq} 1hr	46	38	23	17	6	2	0	0	25

*Screening loss limited to 18dB

Background Noise Level 32 dB(A)

Plant Room 2 To Nearest Noise Sensitive Receiver

Night time operation	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dB(A)
PUHY-P400YKB-A1(-BS) (Lp) Low power mode	74	62	52	49	44	41	34	35	53
PUHY-P400YKB-A1(-BS) Lw across door	77	70	59	56	51	47	40	40	
Source Correction	-5	-5	-5	-5	-5	-5	-5	-5	
Directivity	1	1	1	-1	-5	-5	-5	-5	
I.L of Louvre	-6	-7	-10	-12	-18	-18	-14	-13	
TOTAL Emissions at plant room door Lp @ 1m	67	59	45	38	23	19	16	17	46
Screening*	-5	-6	-6	-8	-9	-11	-14	-17	
Distance Loss To 9m	-19	-19	-19	-19	-19	-19	-19	-19	
Specific Noise Level at Receiver L_{eq} 1hr	43	34	19	11	0	0	0	0	21

*Screening loss limited to 18dB

Background Noise Level 32 dB(A)

Plant Room 3 To Nearest Noise Sensitive Receiver

Night time operation	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dB(A)
PUHY-P350YKB-A1(-BS) (Lp) Low power mode	70	59	50	46	41	44	31	32	51
PUHY-P350YKB-A1(-BS) Lw across door	70	60	51	46	42	44	31	32	
Source Correction	-5	-5	-5	-5	-5	-5	-5	-5	
Directivity	1	1	1	-1	-5	-5	-5	-5	
I.L of Louvre	-6	-7	-10	-12	-18	-18	-14	-13	
TOTAL Emissions at plant room door Lp @ 1m	60	49	37	28	14	16	7	9	37
Screening*	-5	-6	-7	-9	-11	-13	-16	-18	
Distance Loss To 12m	-21	-21	-21	-21	-21	-21	-21	-21	
Specific Noise Level at Receiver L_{eq} 1hr	33	22	8	0	0	0	0	0	12

*Screening loss limited to 18dB

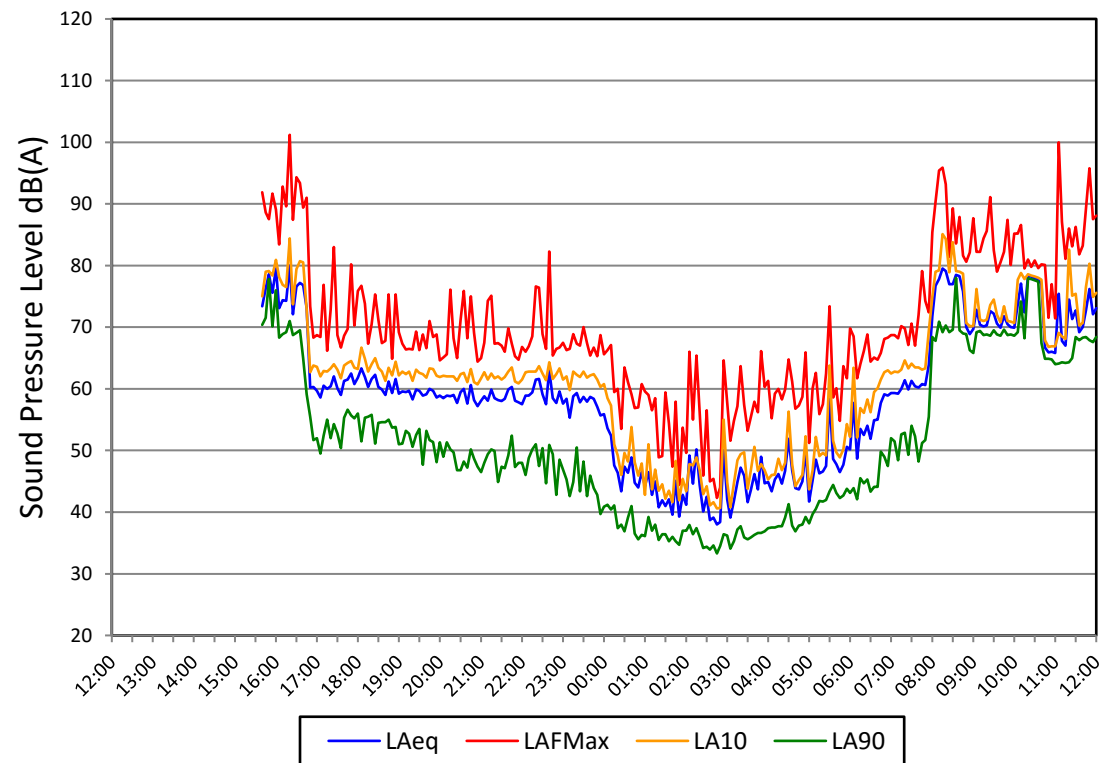
Background Noise Level 32 dB(A)

Cumulative Plant Noise Emissions at Nearest Receptor 27 dB(A)

Night-time Plant Noise Emissions Criterion 27 dB(A)

6-8 Cambridge Terrace, London

Environmental Noise Time History

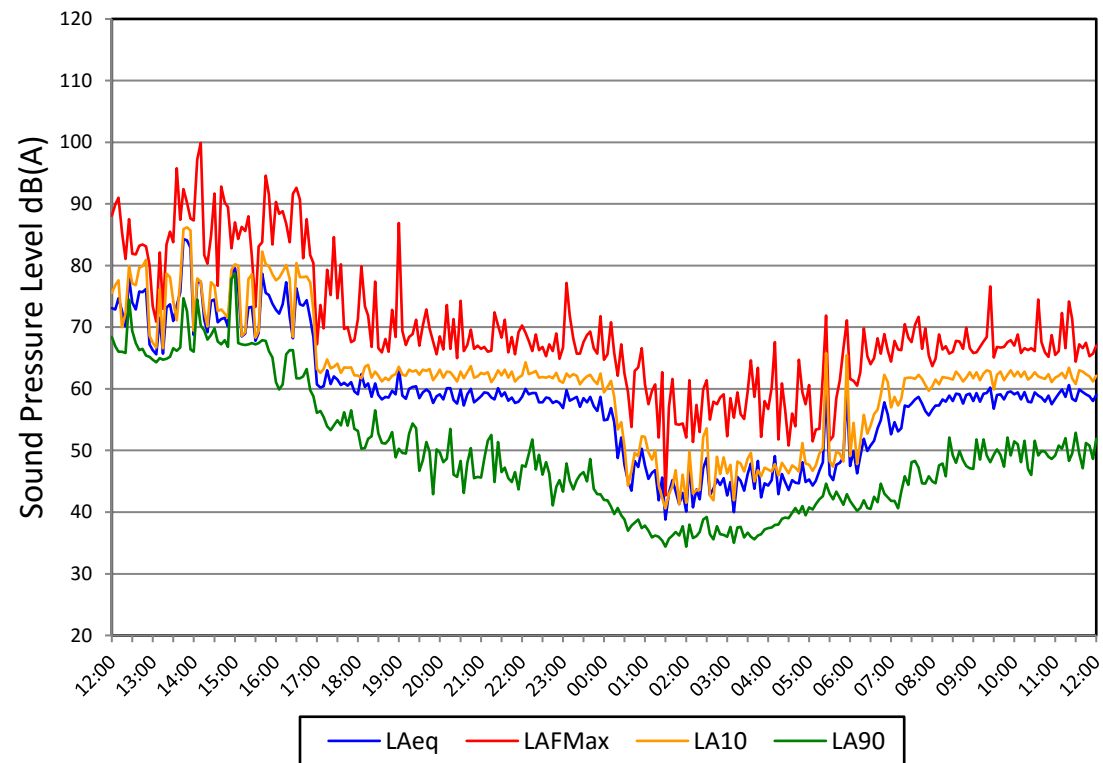


Thursday 10 March to Friday 11 March 2016

Figure AS8798/TH1

6-8 Cambridge Terrace, London

Environmental Noise Time History

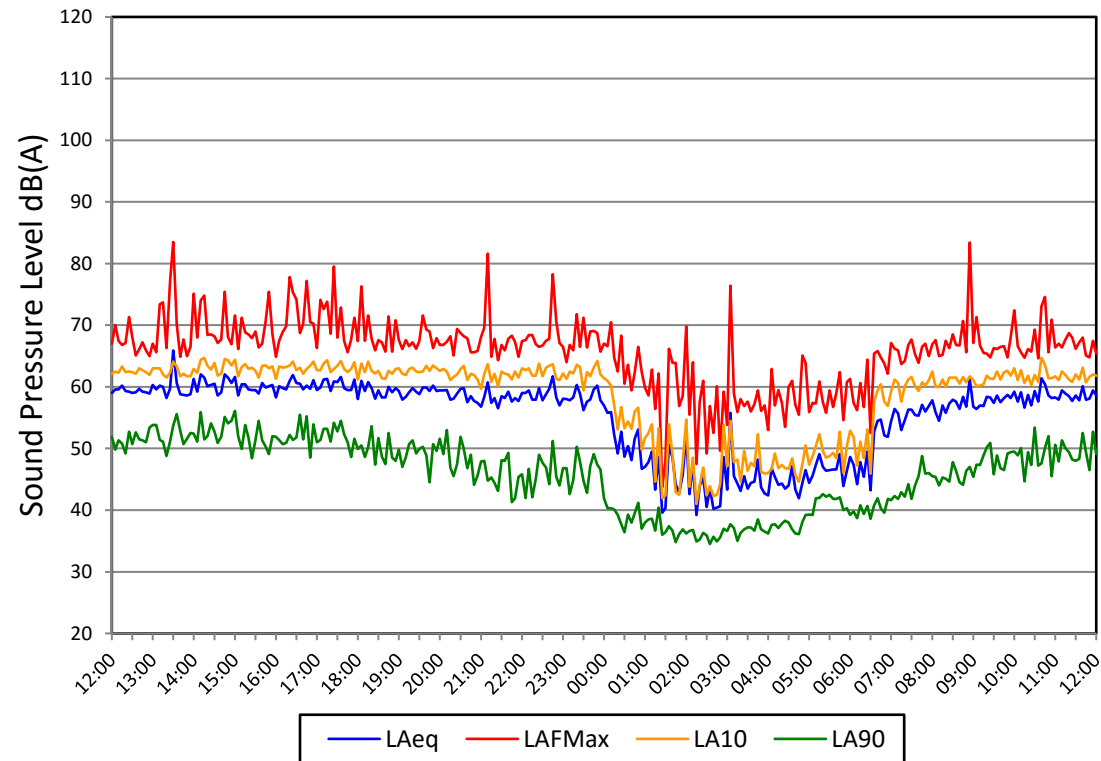


Friday 11 March to Saturday 12 March 2016

Figure AS8798/TH2

6-8 Cambridge Terrace, London

Environmental Noise Time History

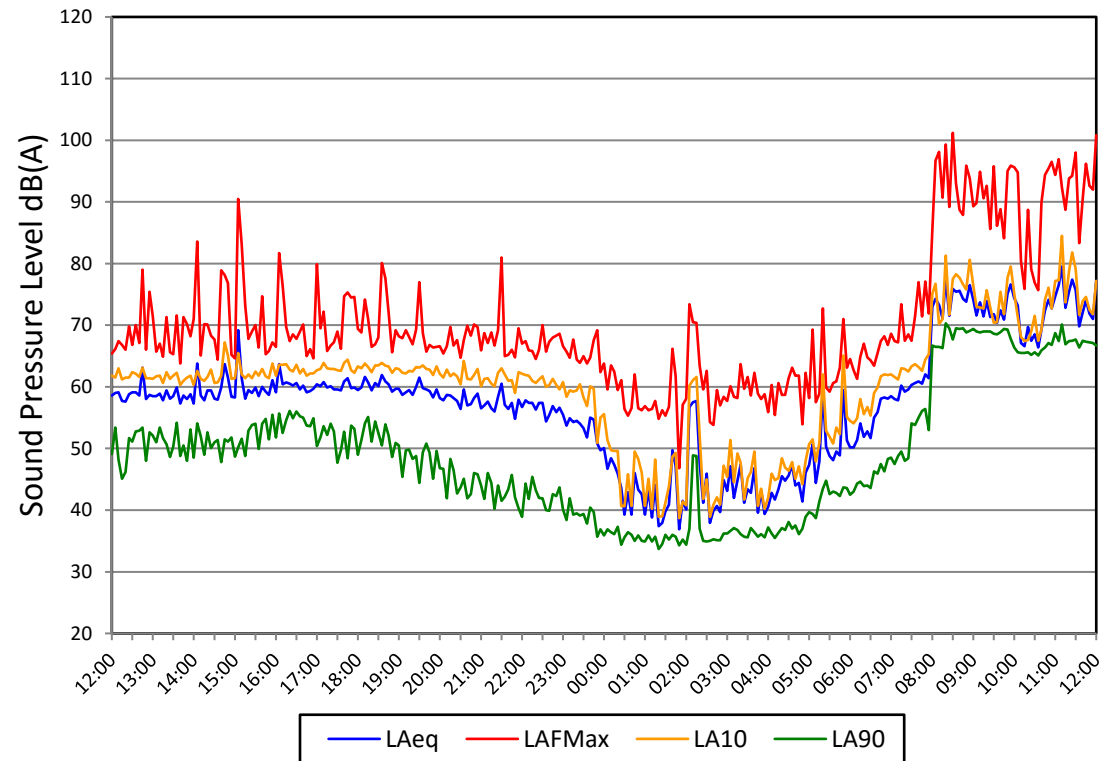


Saturday 12 March to Sunday 13 March 2016

Figure AS8798/TH3

6-8 Cambridge Terrace, London

Environmental Noise Time History

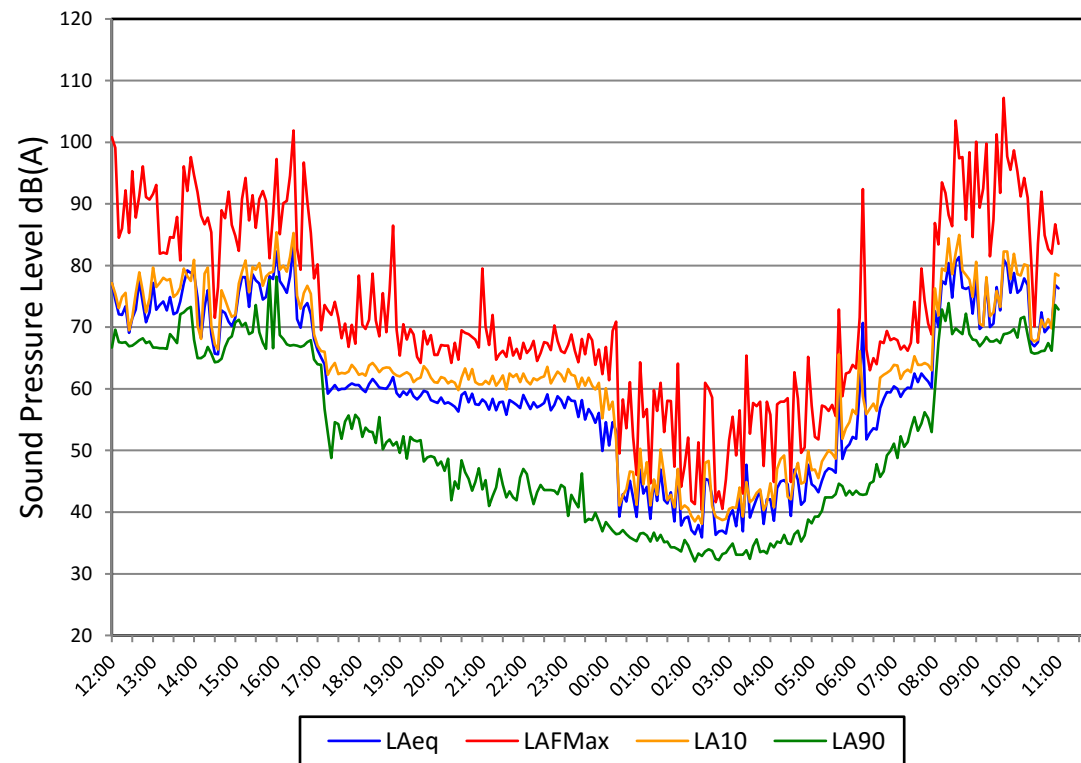


Sunday 13 March to Monday 14 March 2016

Figure AS8798/TH4

6-8 Cambridge Terrace, London

Environmental Noise Time History



Monday 14 March to Tuesday 15 March 2016

Figure AS8798/TH5



Figure AS8798/SP1