J4383: BRITISH POSTAL MUSEUM & ARCHIVE –
PLANT NOISE CALCULATION

Calculated noise level at the top floor windows at rear of residential properties on Calthorpe Street due to simultaneous operation of proposed external plant equipment at British Postal Museum & Archive.

Noise data for plant equipment is taken from manufacturers' data (SPL = Sound Pressure Level, SWL = Sound Power Level). Corrections are applied to account for distance and screening due to plant noise barrier. The individual contributions from each item of equipment are logarithmically summed to give the total sound pressure level at the receiver location.

Noise barrier is ProSonic Portable Perforated Steel (http://www.nonoise.co.uk/acoustic-barriers/prosonic-portable-steel-barrier.htm) with effective height of 2500mm. Location plan and elevation provided separately. The barrier has a laboratory tested sound reduction index of 29dB R_w. The contribution due to sound transmitted through the barrier is negligible.

The two chillers do not ever operate simultaneously, therefore only one chiller is included in assessment.

Calculated noise level (36dB(A)) is 7dB below lowest measured background noise level (43dB L_{AF90}).

			63	125	250	500	1000	2000	4000	A
Chiller		Climaventa NECS/SL 0412T								
Location:										
number of units:	1	SPL @ 10m	49	47	49	47	44	40	35	
Distance (m):	21	Distance correction	-6	-6	-6	-6	-6	-6	-6	
path difference (m):	0.05	Screening correction	-7	-7	-8	-9	-10	-12	-13	
		SPL @ NNSR	36	34	35	32	28	22	16	33
VRF Condenser 1		Daikin REYQ18T								
Location:	EB									
number of units:	1	SPL @ 1m	66	65	66	64	59	55	50	
Distance (m):	21	Distance correction	-26	-26	-26	-26	-26	-26	-26	
path difference (m):	0.05	Screening correction	-7	-7	-8	-9	-10	-12	-13	
		SPL @ NNSR	33	32	32	29	23	17	11	29
VRF Condenser 2		Daikin REYQ20T								
Location:	EB									
number of units:	1	SPL @ 1m	65	65	67	65	60	57	53	
Distance (m):	21	Distance correction	-26	-26	-26	-26	-26	-26	-26	
path difference (m):	0.05	Screening correction	-7	-7	-8	-9	-10	-12	-13	
		SPL @ NNSR	32	32	33	30	24	19	14	30
Condensers 1-4		Mitsubishi PUHZ-RP100KVA								
Location:	EB									
number of units:	4	SPL @ 1m	60	55	54	49	47	42	36	
Distance (m):	20	Distance correction	-26	-26	-26	-26	-26	-26	-26	
path difference (m):	0.1	Screening correction	-7	-8	-9	-10	-11	-14	-16	
		SPL @ NNSR	33	27	25	19	16	8	0	22
Kitchen AHU		Danvent DV10								
Location:	EB									
number of units:	1	SWL breakout	57	53	64	42	38	34	32	
Distance (m):	19	Distance correction	-34	-34	-34	-34	-34	-34	-34	
path difference (m):	0.3	Screening correction	-8	-9	-10	-13	-16	-18	-20	
		SPL @ NNSR	15	10	20	-5	-12	-18	-22	12
number of units:	1	SWL inlet	63	60	64	63	58	52	49	
Distance (m):	19	Distance correction	-34	-34	-34	-34	-34	-34	-34	
600mm, 50% FA		attenuator insertion loss	-5	-7	-10	-14	-15	-11	-10	
		SPL @ NNSR	24	19	20	15	9	7	5	17
Kitchen Extract		Systemair MUB/T 042 400EC-POTI								
Location:	EB									
number of units:	1	SWL breakout	61	38	40	44	56	45	42	
Distance (m):	20	Distance correction	-34	-34	-34	-34	-34	-34	-34	
path difference (m):	0.3	Screening correction	-8	-9	-10	-13	-16	-18	-20	
		SPL @ NNSR	19	-5	-4	-3	6	-7	-12	7
number of units:	1	SWL exhaust	56	58	62	64	63	60	55	
Distance (m):	20	Distance correction	-34	-34	-34	-34	-34	-34	-34	
600mm, 50% FA		attenuator insertion loss	-5	-7	-10	-14	-15	-11	-10	
		SPL @ NNSR	17	17	18	16	14	15	11	20
		SPL (total from all plant)	40	38	38	35	30	24	19	**36**