

CARDIFF LA CRITERIA

Entertainment noise (L_{Aeq}) should be controlled to 10 dB below the background noise level (L_{A90}) without the entertainment noise present and the L_{eq} of the entertainment noise will be at least 3 dB below the background noise level (without entertainment noise) in the 63 Hz and 125 Hz octave bands.

BACKGROUND NOISE

Summary of background noise levels

Item / Description	Rating/Broadband/Input		Octave Band Centre Frequency, Hz								
	Rating	dB	31.5	63	125	250	500	1k	2k	4k	8k
Evening L90 background noise levels											
Location 1	Log average L _{90,30mins}	51 (A)	61	61	55	50	46	47	43	35	26
	Minimum L _{90,5mins}	48 (A)	58	59	53	47	44	44	37	28	20
Location 2	Log average L _{90,30mins}	53 (A)	58	59	56	52	48	49	44	35	25
	Minimum L _{90,5mins}	51 (A)	58	58	55	50	47	48	42	31	21
Location 3	Log average L _{90,30mins}	42 (A)	53	54	47	39	38	39	31	20	15
	Minimum L _{90,5mins}	41 (A)	53	54	46	38	37	37	28	17	14

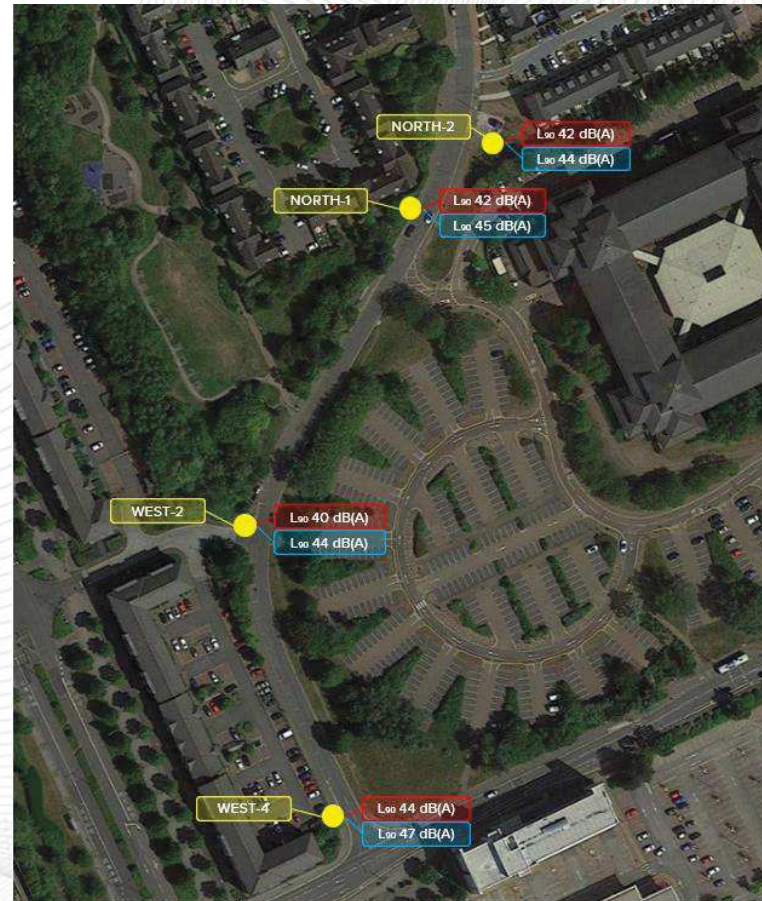
ARUP
FEASIBILITY
MEASUREMENTS

AVERAGE L _{90,15min} dB									
	63Hz	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	A	
West 2	60	48	42	39	40	36	36	44	
West 4	61	53	47	41	42	37	36	47	
North 1	57	51	43	39	42	34	23	45	
North 2	55	48	41	40	40	33	25	44	

VAN
VERIFICATION

Background noise measurements were taken during the last 2 hours of the expected usage of the arena (9-11pm).

LOCATIONS



NANR 45

We have also compared the noise criteria against an absolute internal low frequency noise curve as defined by Moorhouse et al. to minimise the disturbance of low frequency noise as described in Defra Contract NANR 45 "Procedure for the assessment of low frequency noise disturbance". It is intended to assist in assessments of fluctuating noise inside rooms during the night, although not specifically from music.

The following table shows the daytime limits where low frequency noise is unlikely to cause a disturbance. These are internal limits within the nearest noise sensitive receiver.

Moorhouse low frequency criteria (daytime)

The criterion curve is presented as 1/3 octave band values, which can be logarithmically summed to arrive at a value of 52 dB in the 63 Hz 1/1 octave band, and 46 dB in the 125 Hz 1/1 octave band.

	1/3 OCTAVE BAND FREQUENCY (Hz)					
	50	63	80	100	125	160
Internal Limit (daytime) L_{eq} , dB	48	47	45	43	41	39

ARENA DESIGN TARGETS MUSIC LEQ

			63Hz	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	A
ENTERTAINMENT TARGET	DAY	West 2	57	45	32	29	30	26	26	34
		West 4	58	50	37	31	32	27	26	37
		North 1	54	48	33	29	32	24	13	35
		North 2	52	45	31	30	30	23	15	34