Environmental Noise Criteria

GLOSSARY OF TERMS

The following terms are used when describing environmental noise.

Background Noise Criteria Curves, NC	:	See TAB 2.4
Background Noise Rating Curves, NR	:	See TAB 2.5
Room Criterion Curves, RC	:	Used for specifying design levels in terms of a balanced spectrum shape – see TAB 2.6
BBC Studio Noise Criteria Curves	:	Give maximum tolerable background noise from ventilation systems and also background noise levels from all sources – see TAB 2.17
A-Weighted Sound Pressure Level, L_{pA}	:	A measure of noise levels in dB(A), using the A-(frequency) weighted network. A-weighted sound pressure levels correlate well with subjective loudness – see TAB 2.7 & TAB 2.8
Equivalent Continuous A-Weighted Sound Pressure Level, L_{Aeq}	:	That constant level used in dB(A) which, lasting for as long as a given A-weighted noise event, over time, T, has the same amount of acoustic energy as the given event – see TAB 2.11
Sound Exposure Level (SEL), L_{AE}	:	That constant level used in dB(A) which, lasting for one second, has the same amount of acoustic energy as a given A-weighted noise event
Night Average Equivalent Level (DNL), L_{dn}	:	A 24-hour equivalent continuous level in dB(A) where 10dB is added to night-time noise levels, L_{Aeq}, from 2200 hours to 0700 hours
Community Noise Equivalent Level (CNEL), L_{den}	:	A 24-hour equivalent continuous level in dB(A) where 5dB is added to evening noise levels, L_{Aeq} from 1900 hours to 2200 hours and 10dB is added to night-time noise levels L_{Aeq} from 2200 hours to 0700 hours.
Percentile Level, $L_{AN.T}$	:	That noise level in dB(A) exceeded for N% of the measured time, T

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Galloway Acoustics Engineering Services
Tel: +971 4 456 1292 | E-mail: info@gallowayacoustics.com
Website: www.gallowayacoustics.com

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GLOSSARY OF TERMS

L_{A10}	:	That noise level in dB(A) exceeded for 10% of the measurement time, T, e.g. peak occurrences
L_{A90}	:	That noise level in dB(A) exceeded for 90% of the measurement time, e.g. most of the time
Noise Pollution Level (NPL), L_{NP}	:	A variation on $L_{Aeq.T}$ which accounts for short term variability in noise level. L_{NP} is defined as $L_{NP} = L_{Aeq.T} + 2.56\ n$ Where n is the standard deviation of the dB(A) Levels. For a gaussian distribution of dB(A) levels the term 2.56 n can be replaced by $(L_{A10.T} - L_{A90.T})$
Traffic Noise Index, TNI	:	Introduced as a descriptor of road traffic noise, it is defined as follows $TNI = (4\ L_{A10.T} - L_{A90.T}) + L_{A90.T} - 30$
Perceived Noise Level, L_{PN} band	:	A complex rating based on one-third octave data used to certify aircraft types for flyover noise. An approximation is given by adding 13(± 3)dB to the measured A-weighted noise level
Effective Perceived Noise Level, EPN	:	This is the result of applying tone and duration corrections to the Perceived Noise Level based on one-third octave band data
Noise Exposure Forecast, NEF	:	A complex criteria for predicting future noise impact of airports. The computation considers the effective perceived noise level of each type of aircraft, flight profile, number of flights, time of day, etc. Generally used in plots of equal NEF contours around airports for zoning control
Taktmaximalpegel, L_{Tm3} and L_{Tm5}	:	A computed level based on the maximum dB(A) levels occurring in successive intervals of 3 seconds or 5 seconds corresponding to L_{Tm3} and L_{Tm5}

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ACOUSTIC UNITS
SYMBOLS

Quantity	Symbol	Unit	Remarks
Sound pressure level	L_p	dB	
Sound power level	L_w	dB	The Bel has been mooted
A-weighted sound pressure level	L_{pA}	dB	
Root mean square sound pressure	$_p$	Pa	
A-weighted sound pressure	$_{pA}$	Pa	
Instantaneous A-weighted sound pressure	$_{pA(t)}$	Pa	
Reference sound pressure level	P_o	Pa	
Percentile level	$L_{AN,T}$	dB	Level exceeded for N% of time interval T
Sound exposure level	L_{AE}	dB	For noise events
Noise level	L_{Aeq}	dB	
Equivalent continuous A-weighted sound pressure levels	$L_{Aeq,T}$	dB	Time interval to be stated
Time interval	T		
Reference time interval	t_o		
Long term time interval	$t_2 - t_1$	h	
Long term average sound level	$L_{Aeq,LT}$	dB	Time interval to be stated
Rating level	$L_{Ar,T}$	dB	Time interval to be stated
Long term average rating level	$L_{Ar,LT}$	dB	Time interval to be stated
Impact sound pressure level	L_i		BS2750: Part 6
Normalised impact sound pressure level	L_n		BS2750: Part 6
Standardised impact sound pressure level*	L'_{nT}		BS2750: Part 7
Weighted standardised impact sound pressure level	$L'_{nT,w}$		BS5821:Part 2
Sound level difference	D	dB	BS2750:Part 4
Weighted sound level difference	D_w	dB	BS5821:Part 2
Standardised level difference	D_{nT}	dB	BS2750:Part 4
Weighted standardised level difference	$D_{nT,w}$	dB	BS5821:Part 1
Sound reduction index	R		BS2750:Part 3
Weighted sound reduction index	R_w		BS5821:Part 1

*The primed symbol indicates a value obtained in the presence of flanking transmission
Source: Mainly BS8233:1987

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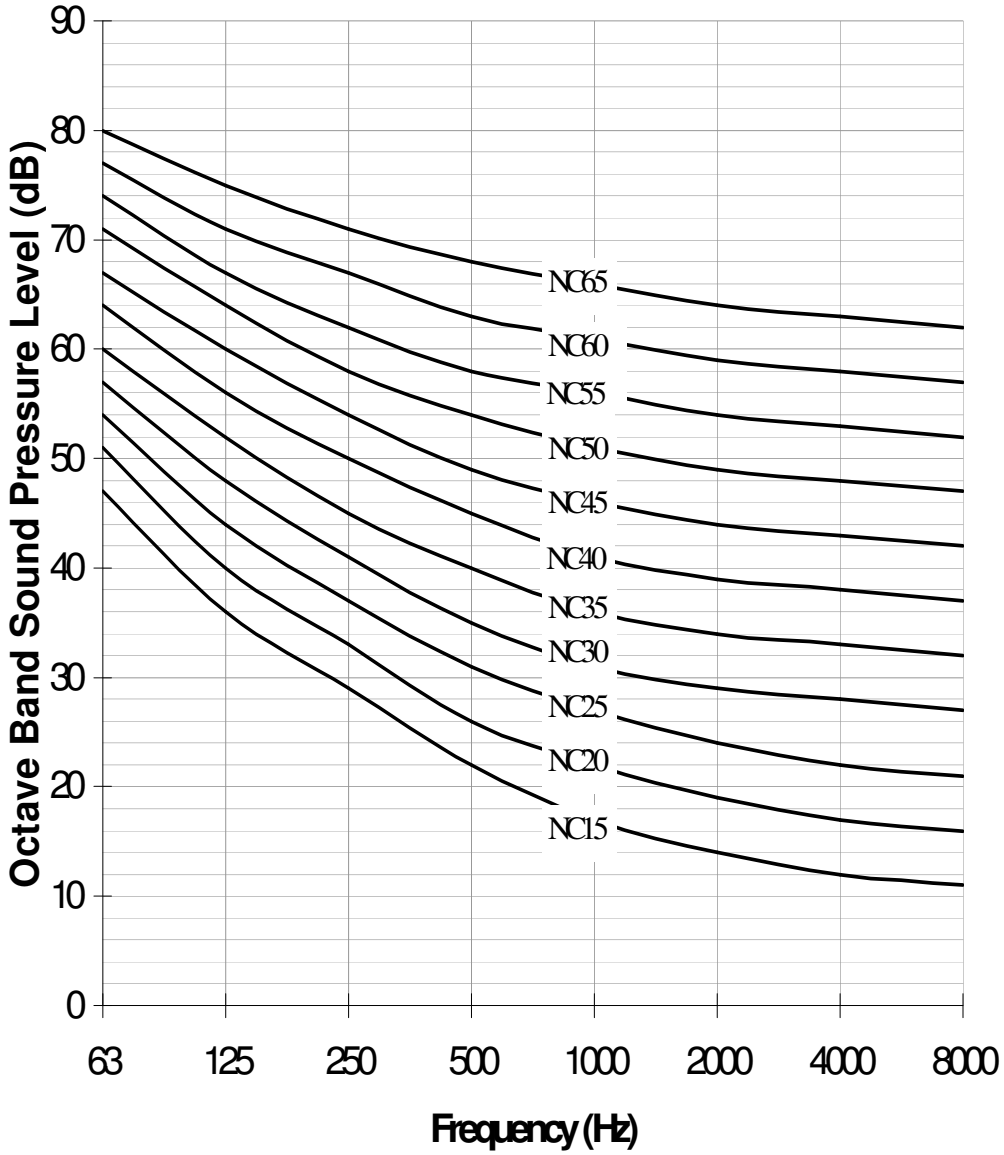
NC Curves

Background Noise Criteria Curves



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NC CURVES

Background Noise Criterion Curves

Frequency	63	125	250	500	1000	2000	4000	8000	Hz
NC. 65	80	75	71	68	66	64	63	62	dB
NC. 60	77	71	67	63	61	59	58	57	dB
NC. 55	74	67	62	58	56	54	53	52	dB
NC. 50	71	64	58	54	51	49	48	47	dB
NC. 45	67	60	54	49	46	44	43	42	dB
NC. 40	64	56	50	45	41	39	38	37	dB
NC. 35	60	52	45	40	36	34	33	32	dB
NC. 30	57	48	41	35	31	29	28	27	dB
NC. 25	54	44	37	31	27	24	22	21	dB
NC. 20	51	40	33	26	22	19	17	16	dB
NC. 15	47	36	29	22	17	14	12	11	dB

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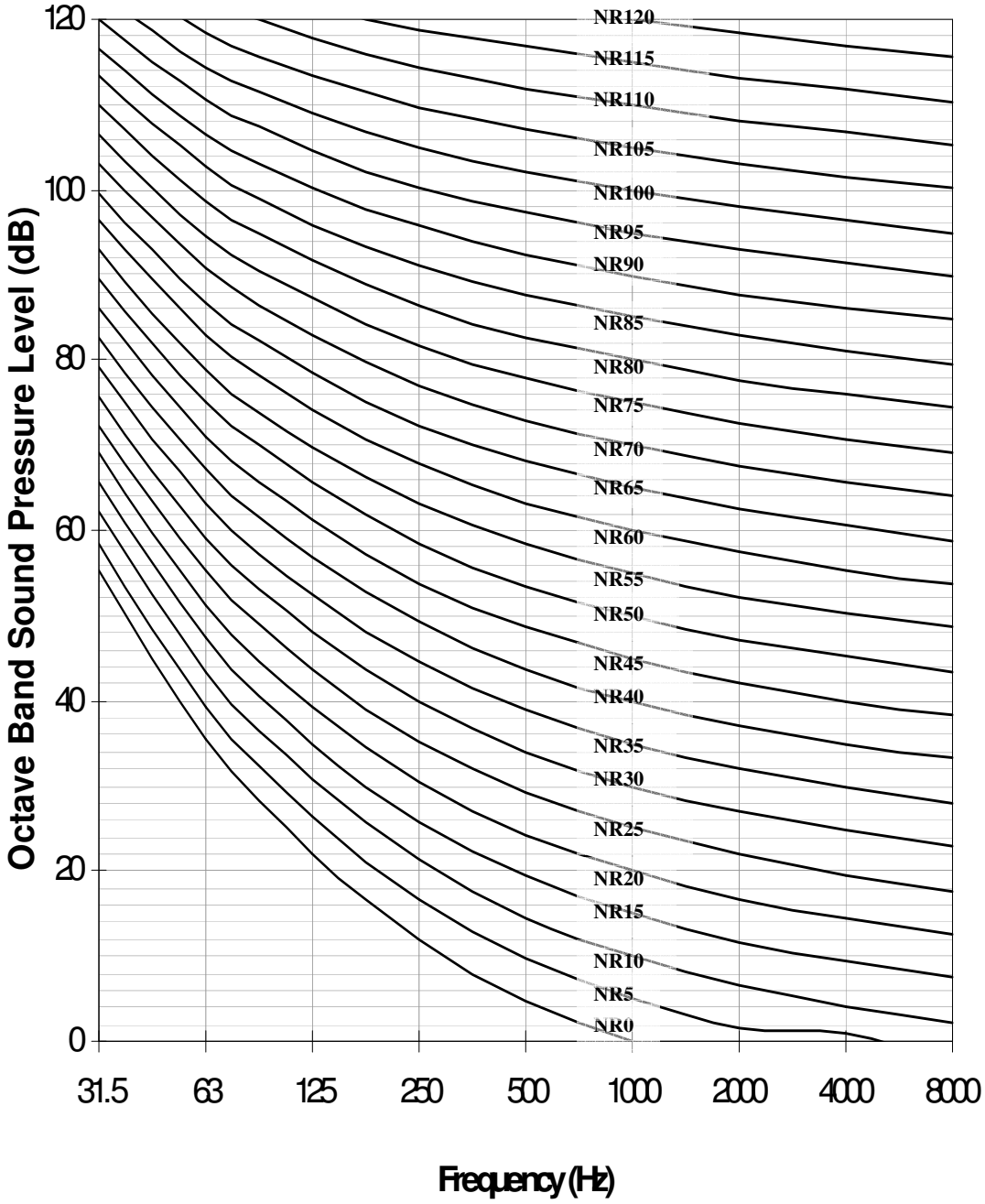
NR Curves

Background Noise Rating Curves



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NR CURVES

Background Noise Criterion Curves

NR	31.5	63	125	250	500	1000	2000	4000	8000
0	55.4	35.5	22.0	12.0	4.8	0	-3.5	-6.1	-8.0
5	58.8	39.4	26.3	16.6	9.7	5	+1.6	-1.0	-2.8
10	62.2	43.4	30.7	21.3	14.5	10	6.6	+4.2	+2.3
15	65.6	47.3	35.0	25.9	19.4	15	11.7	9.3	7.4
20	69.0	51.3	39.4	30.6	24.3	20	16.8	14.4	12.6
25	72.4	55.2	43.7	35.2	29.2	25	21.9	19.5	17.7
30	75.8	59.2	48.1	39.9	34.0	30	26.9	24.7	22.9
35	79.2	63.1	52.4	44.5	38.9	35	32.0	29.8	28.0
40	82.6	67.1	56.8	49.2	43.8	40	37.1	34.9	33.2
45	86.0	71.0	61.1	53.6	48.6	45	42.2	40.0	38.3
50	89.4	75.0	65.5	58.5	53.5	50	47.2	45.2	43.5
55	92.9	78.9	69.8	63.1	58.4	55	52.3	50.3	48.6
60	96.3	82.9	74.2	67.8	63.2	60	57.4	55.4	53.8
65	99.7	86.8	78.5	72.4	68.1	65	62.5	60.5	58.9
70	103.1	90.8	82.9	77.1	73.0	70	67.5	65.7	64.1
75	106.5	94.7	87.2	81.7	77.9	75	72.6	70.8	69.2
80	109.9	98.7	91.6	86.4	82.7	80	77.7	75.9	74.4
85	113.3	102.6	95.9	91.0	87.6	85	82.8	81.0	79.5
90	116.7	106.6	100.3	95.7	92.5	90	87.8	86.2	84.7
95	120.1	110.5	104.6	100.3	97.3	95	92.9	91.3	89.8
100	123.5	114.5	109.0	105.0	102.2	100	98.0	96.4	95.0
105	126.9	118.4	113.3	109.6	107.1	105	103.1	101.5	100.1
110	130.3	122.4	117.7	114.3	111.9	110	108.1	106.7	105.3
115	133.7	126.3	122.0	118.9	116.8	115	113.2	111.8	110.4
120	137.1	130.3	126.4	123.6	121.7	120	118.3	116.9	115.6
125	140.5	134.2	130.7	128.2	126.6	125	123.4	122.0	120.7
130	143.9	138.2	135.1	132.9	131.4	130	128.4	127.2	125.9

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