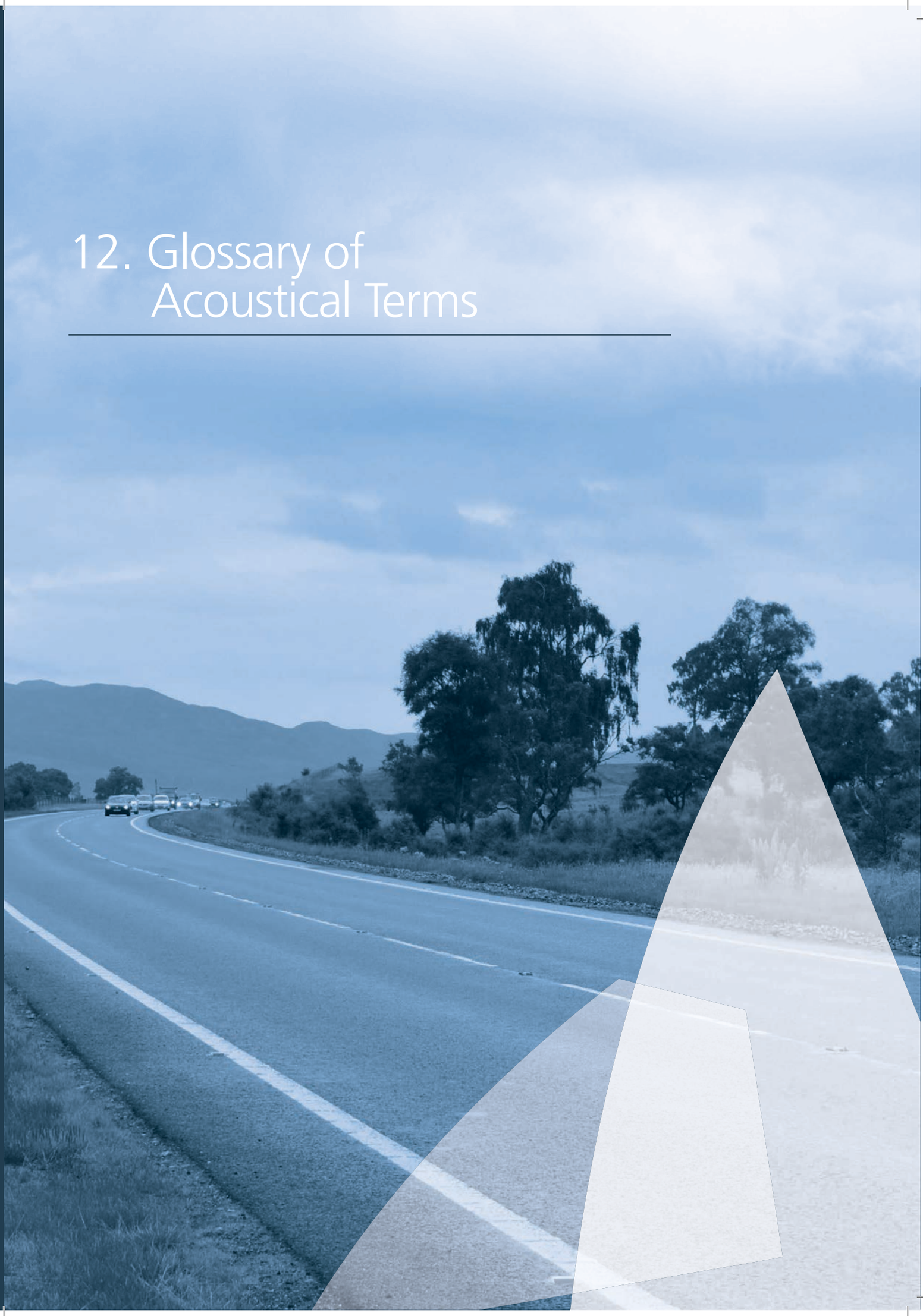
12. Glossary of Acoustical Terms



Appendix 12 Glossary of Acoustical Terms

DECIBEL
The ratio of sound pressures which we can hear is a ratio of 1x106 : 1 (one million:one). For convenience, therefore, a logarithmic measurement scale is used. The resulting parameter is called the 'sound pressure level' (Lp) and the associated measurement unit is the decibel (dB). As the decibel is a logarithmic ratio, the laws of logarithmic addition and subtraction apply.

SOUND LEVEL
Sound level, in decibels, is the weighted sound pressure level obtained by use of a sound-level meter. The reference pressure is 20 micro Pa, unless otherwise stated.

FREQUENCY
The rate of repetition of a sound wave. The subjective equivalent in music is pitch. The unit of frequency is the Hertz (Hz), which is identical to cycles per second. A thousand hertz is often denoted kHz, e.g. 2 kHz = 2000 Hz. Human hearing ranges approximately from 20 Hz to 20 kHz. For design purposes, the octave bands between 63 Hz to 8 kHz are generally used. The most commonly used frequency bands are octave bands, in which the mid frequency of each band is twice that of the band below it.

A - WEIGHTING dB(A)
The sound pressure level determined when using the frequency-weighting network A. The A-weighting network modifies the electrical response of a sound level meter so that the sensitivity of the meter varies with frequency in approximately the same way that the sensitivity of the human hearing system varies with frequency.

The human ear has a non-linear frequency response; it is less sensitive at low and high frequencies and most sensitive in the range 1 to 4 kHz. The A-weighting is applied to measured or calculated sound pressure levels so that these levels correspond more closely to the response of the human ear. A-weighted sound levels are often denoted as dB(A).

EQUIVALENT CONTINUOUS A-WEIGHTED SOUND PRESSURE LEVEL (dB LAeq)
Value of the A-weighted sound pressure level of a continuous, steady sound that within a specified time interval, T, has the same mean square sound pressure as the sound under consideration whose level varies with time.

PERCENTILE LEVEL (STATISTICAL SOUND LEVEL INDICES, dB LAN, dB LA90)
LAN is the dBA level exceeded N% of the time measured on a sound level meter with Fast(F) time weighting, e.g. LA90 the dBA level exceeded for 90% of the time, is commonly used to estimate background noise level. LA10, the level exceeded for 10% of the time, is commonly used in the assessment of road traffic noise.

FACADE NOISE LEVEL
A facade noise level is the noise level 1m in front of the most exposed window or door in a building facade. The effect of reflection, is to produce a slightly higher (+2.5 dB) sound level than it would be if the building was not there.

MAXIMUM SOUND LEVEL, dB LAmax,T
The highest value of the A-weighted sound pressure level that occurs during a given event or time period. The time-weighting should be specified.

FREE FIELD
A region in which no significant reflections of sound occur.