

APPENDIX 8

Glossary

Sound Pressure Level, in decibels

Sound pressure level is given by the formula:

$$L_p = 10 \log (p/p_0)^2$$

Where:

p is the root mean square sound pressure, in pascals (Pa);

p_0 is the reference sound pressure (20 uPa)

Decibel (dB)

Sound levels from any source can be measured in frequency bands in order to provide detailed information about the spectral content of the noise i.e. whether it is high pitched, low pitched or with no distinct tonal character. These measurements are usually undertaken in octave or 1/3 octave frequency bands. If these values are logarithmically summed a single dB figure is obtained. This is usually not very helpful as it simply describes the total amount of acoustic energy measured and does not take any account of the ear's ability to hear certain frequencies more readily than others.

dB(A)

Instead, the dB(A) figure is used, as this is found to relate better to the loudness of the sound heard. The dB(A) figure is obtained by subtracting an appropriate correction, which represents the variation in the ear's ability to hear different frequencies, from the individual octave or 1/3 octave band values, before logarithmically summing them. As a result, the single dB(A) value provides a good representation of how loud a sound is.

L_{Aeq}

As almost all sounds vary or fluctuate with time it is helpful instead of having an instantaneous value to describe the noise event, to have an average of the total acoustic energy experienced over its duration. The $L_{Aeq, 07:00 - 19:00}$ for example, describes the equivalent continuous noise level over the 12-hour period between 7am and 7pm. During this time period the L_pA at any particular time is likely to have been either greater or lower than the $L_{Aeq, 07:00 - 19:00}$.

L_n

Another method of describing, with a single value, a noise level which varies over a given time period is to consider the length of time for which a particular noise level is exceeded. If a level of X dB(A) is exceeded for say 6 minutes within one hour, then that level can be described as being exceeded for 10% of the total measurement period. This is denoted as the $LA_{10} = X$ dB.

The LA_{10} index is often used in the description of road traffic noise, whilst the LA_{90} , the noise level exceeded for 90% of the measurement period, is the usual descriptor for underlying background noise.

LA_{Fmax}

The maximum RMS A-weighted sound pressure level, using the Fast time weighting.

Blasting vibration reports











