Gravity

Smart Campus

Gravity LDO Environmental Statement

Volume 2 – Appendices

Appendix 10.1 Glossary of Acoustic Terminology

Appendix 10.1: Glossary of Acoustic Terminology

Term	Definition
Acoustic Environment	Sound at the receiver from all sound sources as modified by the environment.
Ambient Sound Level ($L_A = L_{Aeq,T}$)	Equivalent continuous A-weighted sound pressure level of the totally encompassing sound in a given situation at a given time, usually from many sources near and far, at the assessment location over a given time interval, T.
A-Weighted Decibel (dBA)	A decibel level that has been corrected for the A-Weighting curve.
A-Weighting	Octave band and 1/3 octave band filters that correlate to the response of the human hearing system to sound pressure levels at different frequencies.
Background Sound	The level of sound measured in the absence of extraneous noise sources.
Background Sound Level ($L_{A90,T}$)	A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using a fast time-weighting and quoted to the nearest whole number of decibels.
Baseline Year	The opening year of the road project.
Decibel (dB)	A logarithmic unit used to describe the ratio between the measured level and a reference level of 0 dB. The ratio can be sound pressure, intensity or power. The reference value for sound pressure is 20 µPa and for sound power is 1 ρW.
Equivalent Continuous A-Weighted Sound Pressure Level ($L_{Aeq,T}$)	Value of the time-averaged A-weighted sound pressure level, in decibels (dB), of a continuous steady sound for the duration of the specified time interval, T.
Façade Level	The sound pressure level at a distance of 1 metre from the façade
Fast Time Weighted	The speed at which the instrument responds to changes in amplitude of the measured signal. The response time of a fats time-weighted instrument is 0.125 seconds.
Free-Field Level	The sound pressure level measured away from any reflective surfaces.
Frequency (f)	The number of cycles of pressure fluctuations within a given period of time. Measured in Hertz.
Future Assessment Year	The year between baseline and the 15th year where the maximum impact from the road project would occur.
Hertz (Hz)	The unit of frequency or pitch of a sound. One hertz is equal to one cycle per second.
Impact Sound Pressure Level (L_i)	Average sound pressure level within a room below a floor that is excited by a tapping machine.

$L_{10,T}$	The noise level exceeded for 10 % for a given time interval, T. Generally used to describe traffic noise.
L_{Amax}	The maximum A-weighted level measured during a given time period.
Normalised Impact Sound Pressure Level (L_n)	Impact sound pressure level normalized for a standard absorption area in the receiving room.
Octave Band	Band of frequencies where the upper limit of the band is twice the frequency of the lower limit. E.g., the 1000 Hz band contains noise energy at all frequencies from 707 to 1414 Hz.
Rating Level ($L_{Ar,Tr}$)	Specific sound level plus any adjustment for the characteristic features of the sound.
Reference Time Interval (T)	Specified interval over which the specific sound level is determined.
Residual Sound Level ($L_r = L_{Aeq,T}$)	Equivalent continuous A-weighted sound pressure level of the residual sound at the assessment location over a given time interval, T.
Sound Power (L_W)	The total sound energy radiated by a source, in all directions. Measured in watts (W).
Sound Power Level (L_W)	The logarithm of the ratio of the sound power (W) to the reference sound power level (W_0). The reference value for sound power is 1 ρW. Defined as: $L_W = 10log\left(\frac{W}{W_0}\right)$
Sound Pressure	The difference between the pressure caused by a sound wave and the ambient pressure of the medium the sound wave is passing through. Measured in Pascals.
Sound Pressure Level (L_p)	The logarithm of the ratio of a given sound pressure (p) to the reference sound pressure (p_0). The reference value for sound pressure is 20 μPa. Defined as: $L_p = 20log\left(\frac{p}{p_0}\right)$
Sound Reduction Index (R)	Laboratory measure of the sound insulation properties of a material or building element in a stated frequency band. Defined as: $R = L_1 - L_2 + 10log_{10}\left(\frac{S}{A}\right)$
Sound Sources	Sounds generated by nature or human activity.
Specific Sound Level ($L_s = L_{Aeq,Tr}$)	Equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, T_r.
Specific Sound Source	Sound source under assessment.
Third Octave Band	Octave bands sub divided into three frequency bands, equal to 23 % of the centre frequency.
Weighted Sound Reduction Index (R_W)	Single-number quantity used to characterize the impact sound insulation of floors over a range of frequencies.