

# Balliemeanoch Pumped Storage Hydro

Environmental Impact Assessment  
Report

Volume 5: Appendices  
Appendix 15.1: Acoustic Terminology

ILI (Borders PSH) Ltd

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## Quality information

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# 1. Acoustic Terminology

Term	Definition
Decibel (dB)	The range of audible sound pressures is approximately $2 \times 10^{-5}$ Pa to 200 Pa. Using decibel notation presents this range in a more manageable form, 0dB to 140dB. Mathematically Sound Pressure level = $20 \log \{p(t)/p_0\}$ Where $P_0 = 2 \times 10^{-5}$ Pa.
A" Weighting (dB(A))	The human ear does not respond uniformly to different frequencies. "A" weighting is commonly used to simulate the frequency response of the ear. It is used in the assessment of risk of damage of hearing due to noise.
Frequency (Hz)	The number of cycles per second, for sound this is subjectively perceived as pitch.
Frequency Spectrum	Analysis of the relative contributions of different frequencies that make up a noise.
Ambient Sound	Totally encompassing sound in a given situation at a given time usually composed of sound from many sources near and far ( <i>The ambient sound comprises the residual sound and the specific sound when present</i> ).
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.
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 time weighting F and quoted to the nearest whole number of decibels.
Equivalent Continuous A-weighted Sound Pressure Level $L_{Aeq,T}$	Value of the A-weighted sound pressure level in decibels of continuous steady sound that, within a specified time interval, $T = t_2 - t_1$ , has the same mean-squared sound pressure as a sound that varies with time, and is given by the following equation: $L_{Aeq,T} = 10 \lg_{10} \left\{ \left( \frac{1}{T} \right) \int_{t_1}^{t_2} \left[ p_A \frac{(t)^2}{p_0^2} \right] dt \right\}$ Where $p_0$ is the reference sound pressure (20 $\mu$ PA); and $P_A(t)$ is the instantaneous A-weighted sound pressure level at time t
Measurement Time Interval $T_m$	Total time over which measurements are taken ( <i>This may consist of the sum of a number of non-contiguous, short-term measurement time intervals</i> )
Rating level $L_{Ar,Tr}$	Specific sound level plus any adjustment for the characteristic features of the sound
Reference Time Interval, $T_r$	Specified interval over which the specific sound level is determined ( <i>This is 1 h during the day from 07:00 h to 23:00 h and a shorter period of 15 min at night from 23:00 h to 07:00 h</i> )
Residual Sound	Ambient sound remaining at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound
Residual sound level $L_r = L_{Aeq,T}$	Equivalent continuous A-weighted sound pressure level of the residual sound in a given situation at the assessment location over a given time interval, T.
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 time interval, T.
Specific Sound Source	Sound source being assessed
$L_{A10,T}$	The A-weighted sound pressure level of the residual noise in decibels exceeded for 10% for a given time interval. This is the parameter defined by the government to describe road traffic noise
$L_{AFmax}$	The maximum RMS A-weighted sound pressure level occurring within a specified time period. Fast time weighting indicates sound pressure level measurements undertaken using a 125-millisecond moving average time weighting period

