Lime Down
Solar Park

Environmental Statement

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Appendix 14-2: Acoustic Terminology

1.1 Acoustic Terminology

1.1.1 Acoustic terminology used in the noise and vibration assessment is summarised in **Table 1**.

Table 1: Acoustic Terminology

Term	Definition
"A" Weighting (dB(A))	The human ear does not respond uniformly across the audible frequency range. The "A" weighting is commonly used to simulate the frequency response of the ear.
Ambient Noise Level, $L_{Aeq,T}$	The equivalent continuous A-weighted sound pressure level of the totally encompassing sound in a given situation at a given time that is usually composed of sound from many sources near and far
Background Noise Level $L_{A90,T}$	The A-weighted sound pressure level of the residual noise at the assessment position that is exceeded for 90% of a given time interval, T, measured using the fast time weighting, F, and quoted to the nearest whole number.
Decibel (dB)	The decibel is a logarithmic ratio of two values of a variable. The range of audible sound pressures is approximately 2 x 10-5 Pa to 200 Pa. Using decibel notation presents this range in a more manageable form, 0 dB to 140 dB.
Frequency (Hz)	The number of cycles per second (i.e. the number of vibrations that occur in one second); subjectively this is perceived as pitch.
Frequency Spectrum	The relative frequency contributions that make up a noise
Level $L_{A10,T}$	The A-weighted sound pressure level exceeded for 10% of a given time interval, T, measured using the fast time weighting, F.
LOAEL	Lowest Observed Adverse Effect Level
L_{pA} (or L_A)	The A-weighted instantaneous sound pressure level (L_{pAp} or L_A) This is the root mean square size of the pressure fluctuations in the air. This level can fluctuate wildly even for seemingly steady sounds. To make sound level meters easier to read the values on the display are smoothed or damped out. This is effectively done by taking a rolling average of the previous 0.125 s (FAST time constant) or the previous 1 s (SLOW time constant).
L_{max}	The maximum instantaneous sound pressure level (L_{max}),
L_{min} , L_{Fmin}	The opposite of the L_{max} is the minimum instantaneous sound pressure level or L_{min} etc. It is good practice to include the letter which identifies the time constant used as this can make a significant difference to the value.
NOAEL	No Observed Adverse Effect Level
Noise	Unwanted or unexpected sound
Peak Particle Velocity (PPV)	The peak speed of particle movement in the ground due to vibration and used to assess impacts from construction activity induced vibration. The Peak Particle Velocity is defined as millimetres per second (mm/s).
Rating Level, $L_{Ar,Tr}$	The specific noise level plus any adjustment for any characteristic features of the noise.

Term	Definition
Reference Time Interval, T_r	The specified interval over which an equivalent continuous A-weighted sound pressure level is determined.
Sound Pressure Level (L_p)	The instantaneous sound pressure level (L_p)
Specific Noise Level, $L_{Aeq,Tr}$	The equivalent continuous A-weighted sound pressure level at the assessment position produced by the specific noise source over a given reference time interval.
SOAEL	Significant Observed Adverse Effect Level
UAEL	Unacceptable Adverse Effect Level
VDV	Vibration Dose Value is a parameter that combines the magnitude of vibration and the time for which it occurs as described in BS 6472-1:2008. Vibration Dose Values are usually a cumulative quantity over a 16-hour daytime period or an 8-hour night-time period.

1.2 Sound Pressure Levels

1.2.1 There is a ten million to one ratio in sound pressure (measured in pascals (Pa)) between the quietest audible sound and the loudest tolerable sound. Due to this wide range, a noise level scale based on logarithms is used in noise measurement called the decibel (dB) scale.

1.2.2 Audibility of sound in air covers a range of approximately 0 to 140 dB, examples for which are shown in **Table 2**.

Table 2: Sound Pressure Level in dB L_{pA} for Common Situations

Typical Noise Level, dB L_{pA}	Example
0	Threshold of hearing.
30	Rural area at night, still air.
40	Public library, Refrigerator humming at 2m.
50	Quiet office, no machinery, Boiling kettle at 0.5 m.
60	Normal conversation.
70	Telephone ringing at 2 m, Vacuum cleaner at 3 m.
80	General factory noise level.
90	Heavy goods vehicle from pavement, Powered lawnmower, operator's ear.
100	Pneumatic drill at 5 m.
120	Discotheque – 1 m in front of a loudspeaker.