Bracklyn Wind Farm

# Annex 11.1: Glossary of Acoustic Terms

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A variety of acoustic parameters and terminology are used throughout **Chapter 11**. Significant definitions are identified at this stage to inform the reader.

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| A-Weighting | The "A" suffix denotes the fact that the sound levels have been "A-weighted" in order to account for the non-linear nature of human hearing. |
| Background Noise | The noise level rarely fallen below in any given location over any given time period, often classed according to daytime, evening or night time periods. The $L^{A90,10min}$ is the parameter that is used to define the background noise level in this instance. LA90 is the sound level that is exceeded for 90% of the sample period. It is typically used as a descriptor for background noise. |
| dB (decibel) | The unit normally employed to measure the magnitude of sound. It is defined as 20 times the logarithm of the ratio between the RMS pressure of the sound field and the reference pressure of 20 micro-pascals (20 μPa). |
| dB(A) | An 'A-weighted decibel' – a measure of the overall noise level of sound across the audible frequency range (20 Hz – 20 kHz) with A-frequency weighting (i.e. A – Weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies. |
| Hub Height Wind Speed | The wind speed at the centre of the turbine rotor. |
| Hertz (Hz) | The unit of sound frequency in cycles per second. |
| LAeq,T | This is the equivalent continuous sound level. It is a type of average and is used to describe a fluctuating noise in terms of a single noise level over the sample period (T).The closer the LAeq value is to either the LAF10 or LAF90 value indicates the relative impact of the intermittent sources and their contribution. The relative spread between the values determines the impact of intermittent sources such as traffic on the background. |
| LAF90 | Refers to those A-weighted noise levels in the lower 90 percentile of the sampling interval; it is the level which is exceeded for 90% of the measurement period. It will therefore exclude the intermittent features of traffic and is used to estimate a background level. LAF90 is measured using the "Fast" time weighting. |
| Lden | Refers to the LAeq noise levels over a whole day, but with a penalty of 10 dB(A) for night-time noise (23:00-07:00) and 5 dB(A) for evening noise (19:00-23:00), also known as the day evening night noise indicator. |

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| Low Frequency Noise | Noise which is dominated by frequency components towards the lower end of the frequency spectrum. |
| Noise | Sound that evokes a feeling of displeasure in the environment in which it is heard, and is therefore unwelcomed by the receiver |
| Noise Sensitive Location (NSL) | Any dwelling house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other facility or other area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels. |
| Octave Band | A frequency interval, the upper limit of which is twice that of the lower limit. For example, the 1,000Hz octave band contains acoustical energy between 707Hz and 1,414Hz. The centre frequencies used for the designation of octave bands are defined in ISO and ANSI standards. |
| Pascal (Pa) | Pascal is a unit of pressure and so sound pressures are measured in Pascals. |
| Sound Power Level ($L_W$) | The sound power level radiated by a source is defined as:<br>$L_W = 10 \times \log_{10}(W/W_O)$ dB.<br>Where W is the acoustic power of the source in Watts (W) and $W_o$ is a reference sound power chosen in air to be $10^{-12}$W. |
| Sound Pressure Level ($L_p$) | The sound pressure level at a point is defined:<br>$L_p = 20 \times \log_{10}(P/P_o)$ dB.<br>Where P is the sound pressure and Po is a reference pressure for propagation of sound in air and has a value of $2x10^{-5}$Pa. |
| Tonal | Sounds which cover a range of only a few Hz which contains a clearly audible tone i.e. distinguishable, discrete or continuous noise (whine, hiss, screech, or hum etc.) are referred to as being 'tonal'. |
| 10 Minute Average Wind Speed (m/s) | The wind speed measured by an anemometer at a specified height above ground level, averaged over a 10-minute period. |
| Wind Shear | The increase of wind speed with height above ground. |