

Position Statement on Wind Farms

The Association of Australian Acoustical Consultants (AAAC) is a not for profit peak body representing professionals with acoustic expertise who offer unbiased advice in accordance with the AAAC Code of Ethics. AAAC members assess environmental noise against objective criteria set by relevant authorities. In Australian jurisdictions, wind farms are assessed against specific contemporary Standards and Guidelines^{i,ii,iii,iv} established by the relevant authorities.

The noise from wind farm developments has recently attracted community attention. The focus of the attention concerns the influence of wind farm noise characteristics.

The AAAC has adopted the following position statement in relation to noise generated by wind farms.

- Unlike other industrial noise sources, the noise level emitted by wind turbines is a function of wind speed. However, as the wind speed increases, noise from wind passing through vegetation also increases which can mask the noise from wind turbines. The noise criteria for wind farms applied in Australia establish fixed noise limits for low background noise environments and variable noise limits when background noise levels are higher. The applicable standards and guidelines incorporate appropriate methods to assess wind farm noise against the specified limits.
- “A” frequency weighted sound levels from wind farms can be reliably predicted. The prediction methods applied in Australia have been validated by extensive measurement studies^{v,vi,vii,viii}.

- Infrasound (frequencies below 20Hz for the purpose of this statement) is generated by both natural sources (such as people, wind, waves, thunder and earthquakes) and mechanical sources (such as fossil fuel power generation, travelling in a car with windows open, traffic, industry, air conditioners, aircraft and wind turbines).^{ix} Investigations have found that infrasound levels around wind farms are no higher than levels measured at other locations where people live, work and sleep. Those investigations conclude that infrasound levels adjacent to wind farms are below the threshold of perception and below currently accepted limits set for infrasound.^{x,xi,xii,xiii} The AAAC encourages members to continue to contribute to new research and review research in the technical literature.
- Amplitude modulation (which is a variation in the emitted noise level) is a fundamental characteristic of wind turbine noise and is a characteristic which is taken into account in the objective criteria specifically developed for wind farms. A higher than usual level of amplitude modulation has been reported to occur for brief periods at a small number of wind farm sites in other countries. AAAC members will continue to contribute to new research and review research in the technical literature.
- Some wind turbines may produce tones that are audible at residences under specific wind conditions. Objective assessment of the annoyance of tonality is well developed and its consideration is included in the assessment of wind farm noise in most Australian jurisdictions.

AAAC members should continue to primarily rely on the view of government bodies in relation to the health effects of wind farms and should conduct assessments in accordance with the relevant guidelines in each state.

Bibliography

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- ⁱ SA EPA 2009, Wind farms environmental noise guidelines, South Australian Environment Protection Authority, Adelaide, Australia.
- ⁱⁱ Standards Australia 2010, Acoustics – Measurement, prediction and assessment of noise from wind turbine generators, AS 4959:2010, Standards Australia, Sydney, Australia.
- ⁱⁱⁱ Standards New Zealand 2010, Acoustics – Wind farm noise, NZS 6808:2010, Standards New Zealand, Wellington, New Zealand.
- ^{iv} NSW Department of Planning and Infrastructure, 2011, *Draft NSW Planning Guidelines: Wind Farms, Sydney Australia*
- ^v Bass, J.H., Bullmore, A.J. & Sloth, E, 1998 “Development of a Wind Farm Noise Propagation Prediction Model”, Non-Nuclear Energy Programme Joule III, Contract JOR3-CT95-0051
- ^{vi} Adcock, J.G., Bullmore, A.J., Cand, M, Jiggins, M, “Wind Farm Noise Predictions and Comparisons with Measurements”, Third International Meeting on Wind Turbine Noise, Aalborg, Denmark, 2009
- ^{vii} Delaire, C, Griffin, D & Walsh, D 2011, Comparison of predicted wind farm noise emission and measured post-construction noise levels at the Portland Wind Energy Project in Victoria, Australia, Fourth International Meeting on Wind Turbine Noise, Rome, Italy
- ^{viii} Evans, T & Cooper, J, “Comparison of predicted and measured wind farm noise levels and implications for assessments of new wind farms”, Acoustics Australia, April 2012.
- ^{ix} Sonus, Infrasound Measurements from Wind Farms and Other Sources, 2010, Adelaide, Australia.
- ^x South Australian EPA and Resonate Acoustics, Infrasound Levels near Wind Farms and in Other Environments, 2013, Adelaide, Australia.
- ^{xi} Landström U, Lundström R & Byström M, 1983, “Exposure to Infrasound – Perception and Changes in Wakefulness”, Journal of Low Frequency Noise and Vibration, Vol. 2 No. 1, pp 1–11.
- ^{xii} Landström U & Byström M, 1984, “Infrasonic Threshold Levels of Physiological Effects”, Journal of Low Frequency Noise and Vibration, Vol. 3 No. 4, pp 167–173.
- ^{xiii} Møller H, 1984, “Physiological and Psychological Effects of Infrasound on Humans”, Journal of Low Frequency Noise and Vibration, Vol. 3 No. 1, pp 1–17.