



Presentation to NSW PAC re Gullen Range, 5th September, 2014

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Overview

- Wind farm noise damages health and well-being over a wide area
- Noise guidelines are seriously deficient
- Noise models are poor predictors of reality
- Developer cannot be relied upon
- DPE track record shows seriously unreliable
- Harm is guaranteed unless robust operational noise protection mechanism imposed
- PAC is legally obliged to protect residents from sleep deprivation torture and other harm

Recommendations

Noise

- Stringent noise limits in residences
- Permanent noise monitoring
 - funded by developer
 - under independent control to detect breaches
 - automatic penalty for every breach

Other

- Roll-back mis-sited turbines
- Judicial enquiry

Health Effects From Excessive Noise – Any Source

- Well known to noise and health researchers for many years, excessive noise causes
 - Regular repetitive sleep disturbance resulting in chronic sleep deprivation
 - Regular physiological stress & psychological stress (being ignored, vilified) resulting in chronic stress
 - With known long term consequences – eg cardiovascular diseases, decreased immunity (infections and cancer) and increased mental health disorders

Wind Farm Noise Health Effects

- Acoustic emissions cause direct serious harm via sleep disturbance/deprivation and stress
- Effects are cumulative with prolonged exposure
- With large turbines, (2 MW and above) effect out to at least 10 kms
- Since 1980s frequencies below 200 Hz (ILFN) known to directly cause “annoyance” symptoms, yet ILFN not currently measured in NSW
- NSW and SA Noise Pollution guidelines a “licence to damage” health, not protect it

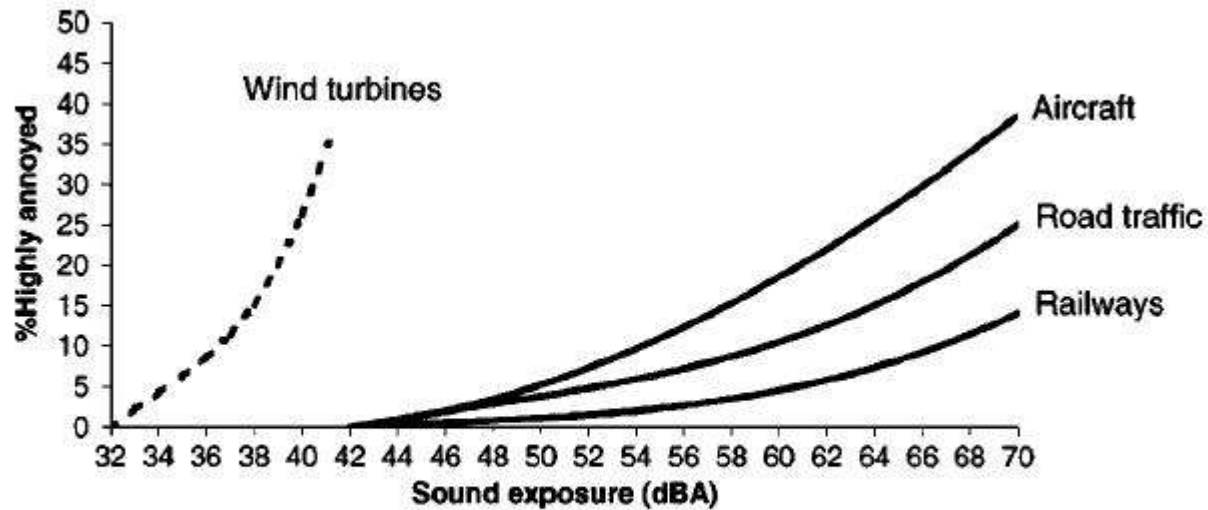
Particular Health Effects from ILFN

- Wind Turbine Syndrome (WTS)
 - Nausea, headaches, vertigo, anxiety, distressing symptoms including body vibration, waking in a panicked state
- Vibroacoustic Disease (VAD)
 - Tissue pathology in a variety of organs, with conditions such as late onset epilepsy, cardiac valvular thickening and thickening of collagen, eg in blood vessel walls
 - Young children & animals also affected, *irreversible* tissue damage can occur

NSW Guideline Defects

- Concentrate on audible noise in dBA **outside** dwellings (effectively exclude ILFN & inside homes)
- Mainly average sound levels, and not peaks at specific frequencies (the ear hears the peaks, not the averages)
- Don't deal with variation in individual audibility thresholds, and progressive sensitisation with ongoing exposure

Industrial Noise Annoyance



Sound exposure is for wind turbines calculated A-weighted L_{eq} for a hypothetical time period and for transportation DNL.

Noise Modelling

- Predictions depend on the choice of algorithms used and the data input
 - differences in algorithms/software, with the same data are enough to go from well inside guidelines to well outside
 - large number of data inputs -- each susceptible to error or omissions
 - noise specs of turbine model, terrain, atmospheric, wind direction and pattern
- Given all the variables, you can get almost any output you want from the process
- Independent, operational noise measurement generally shows modelling underestimated reality
- Study of Waterloo WF by Hansen team
 - about half the residences observed for a week at night had multiple breaches of various guidelines
 - breaches observed at a residence 8.7 kms from nearest turbine
 - no breaches at near residence is no guarantee OK further away
- Consistent with the pattern of residents' complaints near most wind farms

Implications

- Clear evidence of health and well-being risks
- To protect residents, PAC can't rely on:
 - existing guidelines
 - noise modelling
 - the developer
 - DP&E (long history of maladministration re wind farms and other noisy projects)
- So, if operation approved, it needs rigorous, non-discretionary constraints on noise impact on residents

Noise Management Recommendations

1. That within all dwellings, noise from GRWF be:
 - inaudible at all times
 - less than 50dB at 8Hz (infrasound)
2. Permanent installation of full spectrum sound monitoring, in-home at 12 dwellings
 - independently managed with strong local involvement
 - paid for by developer
 - to detect breaches
3. 1 week automatic shutdown for every recorded breach

Consequence of Omitting Such Control

- PAC members likely to breach UN Convention against Torture, (Australia is signatory)
 - UN Committee Against Torture - sleep deprivation is torture
 - PAC officials have been repeatedly advised of sleep deprivation for neighbours to wind developments out to 10km.
 - Public Officials can be held legally responsible under UN Convention if torture occurs, or continues

Which reinforces the need for . . .

- Rigorous operational noise guidelines
- That protect residents in their homes
- That are inescapable and
- Not subject to the good will of the developer
- Nor the zeal of the Department of Planning

- Such as those we have recommended