Wind Farm Living EDUCATING THE LAWYERS Series

Lesson 15: Fudging the Wind Data

Wind farm acoustic compliance is made up of two equal components noise data and wind data.

Both components are important.

The noise recorded at the house is matched with the wind speed.

Higher wind speeds generate higher noise levels.

The noise data points are plotted against the wind speed at the time.

A trend line or regression curve is drawn through the data points.

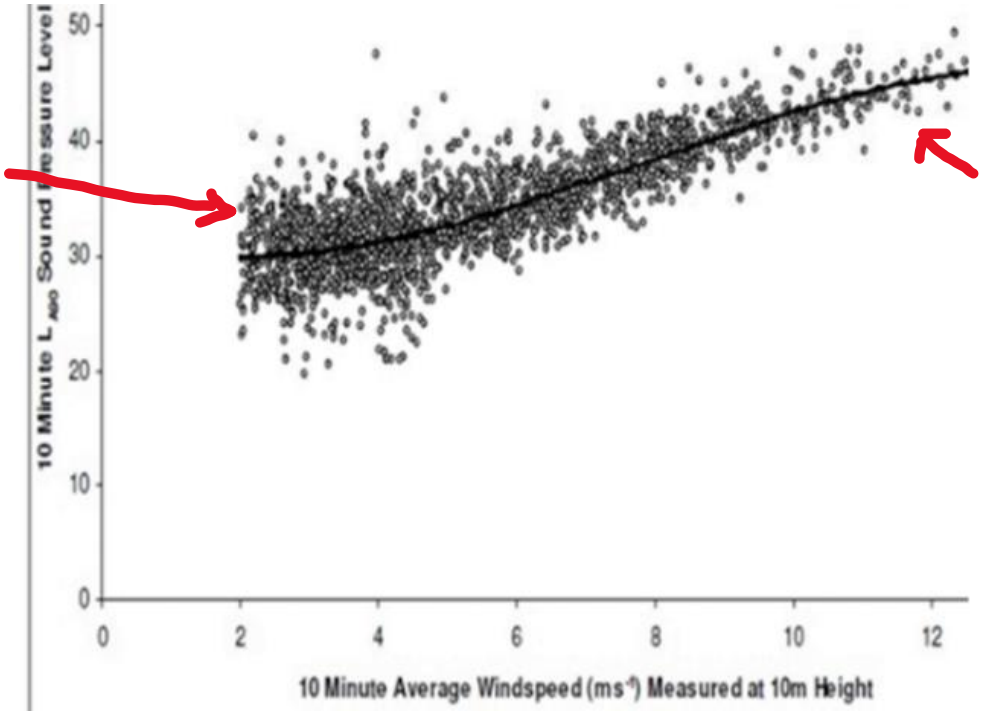
This graph is then used to determine compliance.

A high noise level can be deemed compliant if the wind speed is high.

Trend Line / Regression Curve Graph

Noise data point

dB LA90(10min)



Higher noise is deemed compliant at higher wind speeds

Higher Wind Speed →

Compliance graphs are all very good in theory *but* ..

Wind loses power and speed as it passes through each turbine.

The slower turbulent air produced from the first turbine travels to the next turbine and the next, and so on, creating further turbulence and slowing of the wind speed.

Houses downwind of the turbulence are hit by the high turbine noise but at slower wind speeds.

This should deem them non-compliant i.e. high noise at slow wind speeds.

But, wind farm acousticians fudge compliance by using the faster wind outside the wind farm.

This wind is cleaner, faster, and wake-free. It's not the correct slower wind speed at the houses.

The video shows the smoky air slowing as it spirals upward and outward.

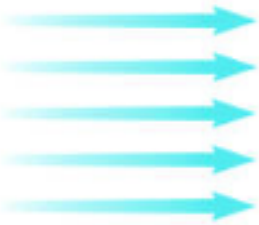
The Video

https://youtu.be/cRVB2i6ZWOU

Prevailing wind.

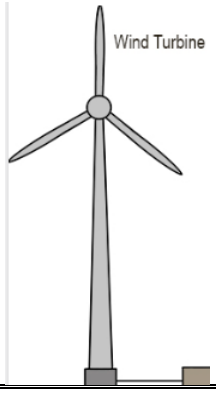
This is the faster wake-free wind before it enters the wind farm.

Wake-free wind is faster wind.



The wind hits turbines.

The blades extract power from the wind and the wind loses energy.



Turbulence is produced.

The wind loses speed and power.

The turbulent wind is noisy and slower.

House receives the turbulent slower wind.

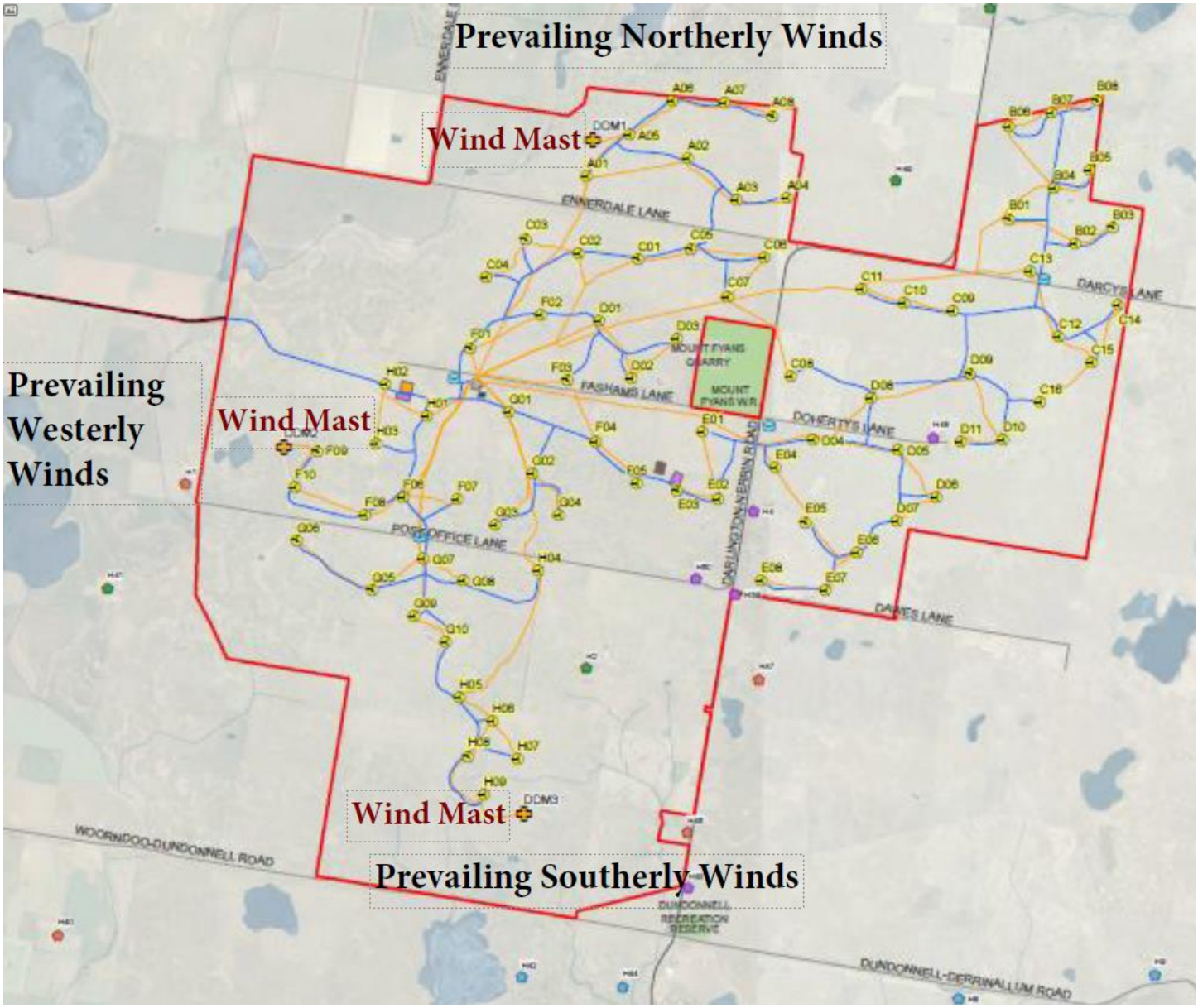
The high noise at the house should be logged against this slower wind and should be deemed non-compliant for noise.

But the bastards use the faster wind before it enters the wind farm, and fudge the graphs.

Dundonnell Wind Farm

Here's the endorsed Map of the Dundonnell Wind Farm

The wind masts are strategically located on the perimeter to measure the fast-flowing wake-free air.



In terms of Acoustic Compliance

1. By using wake-free wind data the L90 regression curve is shifted to the right (because the wake-free wind is higher than the averaged wind across the wind farm). This shift to the right leads to a deliberate falsification of the regression line data by plotting the noise levels at a higher wind speed to that that exists on the wind farm.
2. Using the wake free wind speed applied to the predicted turbine noise output results is used to suggest the turbines are quieter than predicted.
3. The occurrence of wakes change the noise output of the turbines and dependent upon the extent of disturbed airflow and the inlet of a turbine can result in an increase in amplitude modulation (and an increase in the Leq level but not the L90 level).

What does this mean for the Neighbours.

- Wind speed makes up 50% of the data – and is crucial for noise compliance.
- High noise at the house is plotted against the wrong wind speeds.
- High noise at the house is plotted against the faster wind outside the wind farm, not the slower turbulent wake-affected wind at the house.
- Newly built wind masts measuring the higher wind outside the wind farm, are not representative of the background testing wind speeds or the wind speeds at the house.

  This is a deliberate fudging of the graphs.
- A non-compliant house can be shown as compliant by using the faster wind data.
- A non-compliant house can be shown as compliant by using dodgy mathematical adjustment calculations from newly built wind masts that do not accurately represent the natural background winds.
- The neighbours experience high noise and sleep disturbance, but the wind farm can dismiss complaints by producing fudged graphs to claim their wind farm is compliant.

The Authorities Never Question the Data

As there is no real-time noise emission data placed in the public domain for cross-checking with the AMEO power output data the community has no basis of cross-checking the data set of noise versus wind.
I understand previous comparisons of wake-free wind data versus actual hub-height data, when one has access to the SCADA information, have demonstrated irregularities in Macarthur, Cape Bridgewater, and Bald Hills compliance testing.
There is no provision or requirement of Local Councils or the EPA to analyse the data.

The authorities will refer to the wind farm's fudged graphs to dismiss complaints.

However, Bald Hills [Uren 2022] determined Marshall Day Acoustics' methodology, which involved the use of wake-free wind, was "patently absurd"[384,] "plainly flawed"[(13-4, 221,] "plainly not tenable"[181,] "plainly not correct"[198] and "obviously unsound"[183].

Justice Richards deliberated on wake-free wind as part of her judgment and determined that Bald Hills Wind Farm "did not establish compliance with the noise conditions in permit".

Where should a wind farm get its wind data?

1. **NOT** from the newly positioned met-masts installed after the wind farm is built.
   There is far too much uncertainty in the wind speed differences between the original background testing and the new post-construction mast locations.
   There is uncertainty in the
   - different levels of wind speeds across the wfarm
   - differences in the time it takes for wind speed changes/wind gusts to reach the different locations.

   And, using a mathematical factor to allow for the different mast positions is dodgy and creates uncertainty in the measurements.
2. Representative wind speeds across the wind farm are available from the anemometers on the nacelles of the turbines.

   Acousticians can average the wind speeds from a number of turbine nacelles closest to the house.

   This can be done by an acoustician, not by a non-acoustic consultant who uses a dodgy mathematical formula to fudge the wind data.

The authorities can direct wind companies to use the SCADA data (data from anemometers) – but they never do, they allow dodgy mathematical calculations to engineer fudged compliance reports.