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Environmental Health Program
Health Protection Branch
Wellbeing, Integrated Care and Ageing Division
Department of Health
50 Lonsdale Street
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Dear Sirs

The reason I felt compelled to write to you is that I have a number of concerns about the accuracy of some of the statements made in your document, "Wind farms, sound and health: Technical information". By way of introduction, I have been researching, consulting and teaching acoustics and noise control for more than 40 years and have published numerous papers as well as 10 books on the subject.

I find that chapters 1 to 3 contain information that lay people will find very useful. However, later chapters contain statements that conflict with current knowledge in the field and could mislead the public into believing things that are simply not true. I have listed the problem statements below and I sincerely hope that these can be fixed before this document is too widely circulated.

1. The A-weighting network, discussed on page 7 may have been designed to approximate the response of the human ear, but it is a very poor approximation, especially at low frequencies. It is well known that low frequency sound is much more annoying and disturbing to most people than the A-weighted measurement would indicate, especially in the absence of any significant mid- and high-frequency sound. This should be pointed out in the document on page 7.

2. On page 8, the document states that the LA90 or the L90 descriptor is used to measure wind farm noise without any qualification at all. It is well known that sound levels produced by a wind farm can fluctuate significantly and that a descriptor that represents a level exceeded 90% of the time will miss the 90% of the time when the wind farm noise fluctuates above the 90% level, and thus will be a gross underestimate of peak noise levels which define the annoyance value of the sound. The level of fluctuation becomes more noticeable and annoying as the distance from the wind farm increases and energy becomes more low-frequency in nature. The best way to distinguish wind farm noise from other environmental noise is to take noise measurements on a number of occasions with the wind farm turned off and then running immediately afterwards.
3. On pages 9 and 10, the document discusses hearing thresholds for low frequency sound and suggests that wind farm infrasound is well below what people could detect. However, it

should be pointed out that the hearing thresholds are for steady, single frequency sound in the absence of any other sound. There are two problems with this approach. Hearing thresholds are known to be much lower for fluctuating (or modulating) sound and also when there are many harmonics present at the same time as the fundamental. If we add on to this that wind farm low frequency and infrasound noise measurements that have been taken by a number of people are only Leq or L90 values and do not reflect the peak noise levels which could be 10 to 15 dB higher than the L90 levels, it is possible to get to the point where wind farm low frequency noise and possibly infrasound could be detectable by a significant number of people at distances up to 5 to 10 km from the wind farm, depending on the meteorological conditions.

4. On page 11 the document implies that computer models for predicting wind farm noise can be relied upon to give accurate results. None of the models used for predicting noise take into account the likely increase in turbine noise levels when they are operating in a turbulent atmosphere or in the wake of other turbines. Neither do the models take into account the possible focussing of low frequency sound under stable atmospheric or downwind conditions that can result in much greater noise levels than predicted.

5. The recent study on infrasound mentioned on page 11 had problems with inaccuracies associated with the instrumentation at low frequencies and the use of 1/3 octave filters which completely missed the peak fluctuations in the infrasound. Another problem was the reporting of only dBG results, which not everyone agrees reflects the perception of infrasound. Thus the statement on page 12 that “In conclusion, there is overwhelming evidence that infrasound from wind farms is at levels which are too low to be audible, and no higher than background levels in the environment”, is not true. My research group is currently undertaking noise and vibration measurements at residences affected by the Waterloo wind farm and it can clearly be seen that there exist noise levels at blade passing harmonics that are well in excess of background noise levels. We are also measuring significant levels of impulsive low-frequency sound several kilometres from the wind farm and this can be quite annoying to some people when they are trying to sleep. We intend to publish these results in the not too distant future.

6. The first statement in the conclusions, “the predominant sounds produced by wind farms are in the mid to high frequencies” is misleading. This may be true close to the turbines but at distances that most affected residents live, especially at night during stable weather conditions, it is the low frequency sound that people find disturbing and which is responsible for preventing them from obtaining a good night’s sleep, which in turn can possibly have adverse health effects.

Yours Sincerely

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