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Director General
NSW Planning Department
Submitted via
http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=4291

Dear Director General,

I have been asked by residents in the Mt Bodangora / Wellington area to comment on the proposed wind development. I make the following comments having investigated the area of wind turbine noise and its effects on surrounding rural residents for the last two years. I have worked with sick residents and their treating doctors, with national and international acoustic engineers, physiologists, psychologists, epidemiologists and medical practitioners to better understand the problems. We are all concerned about the growing numbers of people seriously adversely affected by these developments, when they are located too close to homes and workplaces.

I have heard a similar range and pattern of symptoms from residents affected by industrial infrasound and low frequency noise from other sources including gas fired power stations (Uranquinty) and open cut coal mining (residents formerly from Wollar and the Cumbo Valley in the Upper Hunter). Some of those sick residents have subsequently been gagged from speaking publicly about their problems, with significant financial penalties should they choose to do so. I understand officers in your department are well aware of some of these cases.

This is an area in which little systematic empirical research data has been collected, however that does not mean there is not a serious and rapidly growing problem. Nor does it mean that relevant existing evidence and research should be ignored. Harvard trained US epidemiologist Professor Carl Phillips, who has given evidence in multiple court and planning hearings on this issue, has this to say: (downloadable from http://www.wind-watch.org/documents/properly-interpreting-the-epidemiologic-evidence-about-the-health-effects-of-industrial-wind-turbines-on-nearby-residents/)

> "**There is overwhelming evidence that wind turbines cause serious health problems in nearby residents, usually stress-disorder type diseases, at a nontrivial rate. The bulk of the evidence takes the form of thousands of adverse event reports. There is also a small amount of systematically gathered data**. The adverse event reports provide compelling evidence of the seriousness of the problems and of causation in this case because of their volume, the ease of observing exposure and outcome incidence, and case-

> crossover data. Proponents of turbines have sought to deny these problems by making a collection of contradictory claims including that the evidence does not "count", the outcomes are not "real" diseases, the outcomes are the victims' own fault, and that acoustical models cannot explain why there are health problems so the problems must not exist. These claims appeared to have swayed many non-expert observers, though they are easily debunked. Moreover, though the failure of models to explain the observed problems does not deny the problems, it does mean that **we do not know what, other than kilometers of distance, could sufficiently mitigate the effects**. There has been no policy analysis that justifies imposing these effects on local residents. **The attempts to deny the evidence cannot be seen as honest scientific disagreement, and represent either gross incompetence or intentional bias** "

I suggest that continued reliance by the planning decision makers on the outdated and inadequate NHMRC's Rapid Review of 2010 would be most unwise, given the extensive criticism it has received, the comments of the CEO of the NHMRC (Professor Warwick Anderson) in the Federal Senate inquiry, the findings and recommendations of that Federal Senate Inquiry, and the formation of the new NHMRC Panel to reexamine the issues of material not examined in the first Rapid Review, and subsequent research which has been peer reviewed and published. A recent audit may be of interest with respect to the former (see http://www.wind-watch.org/documents/audit-national-health-and-medical-research-council-public-statement-2010-and-rapid-review-2010/) and the documents to be found at the following weblink demonstrate that there is now much more information about the effect of wind turbines on surrounding communities (see http://www.wind-watch.org/documents/peer-reviewed-articles-regarding-adverse-health-effects-of-industrial-wind-turbines/).

Some of that information was presented to a court in Ontario in July 2011, in which Professor Carl Phillips was one of many knowledgeable experts who gave evidence, **where the judges found that on the basis of extensive expert evidence led by the wind industry and the appellants that wind turbines can cause harm to health**, but that further research is required. The wording of that part of the judgement is below:

> "While the Appellants were not successful in their appeals, the Tribunal notes that their involvement and that of the Respondents, has served to advance the state of the debate about wind turbines and human health. This case has successfully shown that the debate should not be simplified to one about whether wind turbines can cause harm to humans. *The evidence presented to the Tribunal demonstrates that they can, if facilities are placed too close to residents. The debate has now evolved to one of degree.*" (p. 207) (*Emphasis added*)

Environmental Review Tribunal, Case Nos.: 10-121/10-122 Erickson v. Director, Ministry of the Environment, Dated this 18th day of July, 2011 by Jerry V. DeMarco, Panel Chair and Paul Muldoon, Vice-Chair, http://www.ert.gov.on.ca/english/decisions/index.htm

Whilst most medical practitioners remain ignorant of the already known links between infrasound and low frequency noise (ILFN) and a range of serious physical and mental health problems, there is information in the public domain which clearly indicates that acousticians have been well aware for some time of the serious health problems which can result from acute and chronic exposure to infrasound and low frequency noise. Furthermore, Acousticians have a professional obligation to act ethically at all times with respect to the safety of the public, even when that might conflict with the aspirations of those engaging them (see http://www.acoustics.asn.au/joomla/codeethics.html).

There are two literature reviews from 2001 and 2003 which are highly relevant now, because the full spectrum of the acoustic energy is now being measured inside and outside the homes of sick people in Australia and internationally. This is being done by a number of acousticians, (eg Rick James, Rob Rand, Stephen Ambrose, Steven Cooper, Dr Bob Thorne), and **they are finding there is infrasound and low frequency noise present which are clearly coming from the wind turbines, and that sick resident's symptoms at times are correlating with its measurement in those homes**. In one instance both the acousticians conducting the measurements unexpectedly

became sick themselves, with the exact pattern and range of symptoms so well described around the world (see http://www.wind-watch.org/documents/bruce-mcpherson-infrasound-and-low-frequency-noise-study/).

Wind Developers are using an unnamed NSW public health academic's critique of this landmark Falmouth acoustic survey to dismiss it. It seems the unnamed but reportedly senior public health academic who authored it is unable to comprehend that it is an acoustic survey, (with the unexpected finding that the acousticians themselves got sick), rather than an epidemiological study. Rand and Ambrose are acousticians, not epidemiologists, so such criticism from this unnamed public health academic would appear to be deliberately avoiding the important issues they raise. Multidisciplinary acoustic surveys and clinical epidemiological studies have not yet been done, and are urgently needed, just as the Federal Senate Inquiry recommended over a year ago.

The first relevant "old" literature review is one by Professor Leventhall for the UK Government's DEFRA in 2003, (downloadable from http://www.wind-watch.org/documents/review-of-published-research-on-low-frequency-noise-and-its-effects/) where Professor Leventhall has highlighted a case control study (p49) identifying symptoms identical to "wind turbine syndrome" which occurred with exposure to low frequency noise from another source. Professor Leventhall has publicly confirmed on a number of occasions that the symptoms of "wind turbine syndrome" are well known to him (see the audit of the NHMRC Rapid review, above). Later in the DEFRA document, Professor Leventhall lists some of the then known scientific peer reviewed published evidence relating to the **physiological** effects of exposure to low frequency noise. One example he gives is that of truck noise inducing a physiological stress response in sleeping children.

Professor Leventhall now states that the stress is "psychological" and appears to have forgotten the physiological evidence in sleeping children he was well aware of in 2003. The existence of knowledge about physiological stress from low frequency noise is well known, and is discussed in documents such as WHO guidelines for community and night time noise, (see http://www.wind-watch.org/documents/guidelines-for-community-noise/).

This issue is critically important, because long term exposure to operating wind turbines is resulting in a myriad of new illnesses and exacerbation of preexisting illnesses, almost all of which are explained in each individual person's case by the well known consequences of chronic cumulative severe stress which express themselves uniquely in each person. Further detail can be found in http://www.wind-watch.org/documents/response-to-nsw-planning-department-draft-guidelines-for-wind-developments/ .

There is further evidence of a primary physiological stress response in the clinical stories of these residents, especially in their consistent stories of suddenly waking up in a panicked anxious frightened state, night after night, and often a number of times a night. The history they give is characteristic of a **physiological** "fight flight response" and the pattern of sleep disturbance is commonly reported around the world. They mostly report being unable to hear the turbines at the time they wake. This never happens to them when the turbines are not operating, nor does it happen when they are away from their homes, and is being described out to at least 10km in some locations. Other rare supporting evidence is the histories of Tako Tsubo heart attacks (Capital and a cluster in the Cumbo Valley) and acute hypertensive crises (Victoria and Ontario) which have occurred in the presence of known ILFN, but without the usual known clinical precipitants of a sudden emotional shock (death of a close relative) or an underlying phaeochromocytoma respectively. Please see the following programs for a first hand account of what it is like to live beside wind turbines: (see http://www.wind-watch.org/documents/health-effects-of-wind-turbines-in-australia/)

The second "old" literature review is from the 2001 US National Institute of Environmental Health Sciences (download from http://www.wind-watch.org/documents/infrasound-brief-review-of-toxicological-literature/) and details the physiological and pathological consequences of exposure to infrasound. It makes for concerning reading, despite the limited animal and human data. Chronic exposure to infrasound has resulted in focal organ

damage from oxidative stress, ischemic myocardial damage has been observed, as has secretion of adrenaline and cortisol – two of the body's main stress hormones. **This is confirmatory (animal experimental) evidence of a physiological stress effect.**

The wind industry and its acousticians have stated that 85dBG is a "safe" limit for infrasound, but that only relates to human audibility thresholds. It has been assumed that what you can't hear can't hurt you – the findings in the NIEHS literature review would suggest otherwise, as would Professor Alec Salt's work (see http://www.wind-watch.org/documents/responses-of-the-ear-to-low-frequency-sounds-infrasound-and-wind-turbines/), and the thousands of adverse health event reports from people living with industrial wind turbines around the world.

Despite the reports of sick residents and concerned medical practitioners since 2003, it is only within the last 6 – 12 months that there has been any independent acoustics information about what the exposures are of these sick residents to both infrasound and low frequency noise emissions from the turbines. The presence of ILFN has been historically denied by the wind industry, and no government noise regulatory authority is measuring the full sound spectrum inside and outside homes, as is now suggested as best practice to overcome the knowledge gap (http://www.wind-watch.org/documents/wind-turbine-acoustic-pollution-assessment-requirements/).

The presence of wind turbine infrasound and low frequency noise emitted by wind turbines has been categorically and undeniably confirmed at multiple wind developments in Australia and internationally, by multiple acousticians, as mentioned above. This is in contrast to statements from the wind industry and noise regulatory authorities like the SA EPA, who say in their guidelines that there is no infrasound at a "well maintained" wind development. This is then used to justify not measuring the full sound spectrum. There are various excuses used to justify not doing internal home measurements, despite this being recommended for environmental low frequency noise in 2004 by the Qld EPA, for example (see http://www.wind-watch.org/documents/ecoaccess-guideline-for-the-assessment-of-low-frequency-noise/

What follows are the questions "What is a safe level for both acute and chronic cumulative exposure to infrasound and low frequency noise from wind turbines" and "What is a safe setback distance, for a given turbine, in a specific terrain?"

We don't yet know the answer to those critical questions, because that research has not yet been done in order to construct adequate dose response curves**. In other words, this technology is being imposed on rural communities without ANY adequate safety data beforehand.** It is clear that concerns have been emerging for a long time, and have been ignored. In Australia, the first medical practitioner to bring his concerns to the attention of the health authorities was Dr David Iser, in 2004 (see http://www.wind-watch.org/video-waubra.php)

There are also clear warning signs that there are major problems emerging with the use of the larger wind turbines such as the VESTAS V90's, which have been used at Waterloo wind development in South Australia, now owned by TRU energy. Size does matter (see http://www.wind-watch.org/documents/low-frequency-noise-from-large-wind-turbines-2/) as the larger more powerful turbines emit proportionately more LFN, the adverse effect on the neighbours from this LFN is much greater. Historically this has been called "annoyance" by engineers, but all the medical practitioners who have investigated sick people for themselves or have spoken to their treating doctors have formed the opinion that this "annoyance" includes serious clinical pathology, previously not recognized by acousticians, who are not trained to diagnose illness.

There is no population health data on the effect of these larger turbines on the surrounding community, but there is some highly relevant information from Waterloo in the form of community survey's recently conducted – the first by an Adelaide University Masters Student in 2011, and the second by a community member Mary Morris who well knew that residents including turbine hosts were being adversely impacted by the noise and vibration

out to 10km. Mary Morris's survey, and the briefing summary of the Adelaide university study can be accessed from the following weblink: http://www.wind-watch.org/news/2012/07/18/open-letter-to-the-premier-of-south-australia-re-new-survey-at-waterloo-wind-farm/ . A summary of the Adelaide University survey can be found at http://www.wind-watch.org/documents/evaluation-of-wind-farm-noise-policies-in-south-australia/ .

Of note was that in the Adelaide university survey, of those surveyed (out to 5km) 50% were moderately to severely impacted by the noise. That number included some wind turbine hosts. Mary Morris's survey confirmed that some people were impacted by the noise and vibration and consequent sleep disturbance out to 10km.

It was telling that at a recent planning panel meeting where this development was discussed, the lawyer for that proponent, TRU energy, would not give a guarantee that there were no adverse health impacts.

The members of the Goyder Council planning panel had just heard 6 hours of testimony from sick residents nearby at Waterloo, making it clear that the reports of people being badly being affected 8 – 10km away were real. I am personally aware of 5 households have had to abandon their homes, some on medical advice. One is 4.5km away from the nearest wind turbine, and has had to leave a 4th generation family farm home. Steven Cooper's peer review report for the Goyder Council clearly outlined the risks should the neighbouring proposed TRU energy development at Stony Gap be allowed to proceed, and the panel members acted responsibly in refusing the application. Steven Cooper's peer review report for that development can be located at the following: http://www.wind-watch.org/documents/reviews-of-noise-impact-assessments-stony-gap/).

In summary, we know that people's health is being harmed, from severe cumulative sleep disturbance, from acute and chronic cumulative stress, and from other symptoms, which are thought to relate primarily to vestibular dysfunction of the inner ear at levels of infrasound and low frequency noise previously assumed to be safe. Further research work is required, but in the meantime, the adoption of a very conservative precautionary approach to the siting of wind turbines is necessary in order to protect the health of the surrounding population.

In conclusion, if this Mt Bodangora Wind Development is approved, it is inevitable that it will have a serious adverse effect on the health of the surrounding population out to at least 10km, and may even drive some families, including wind turbine hosts, out of their homes over the life of the project, because of the cumulative effects of chronic exposure to ILFN. Sleep disturbance alone is known to increase the risks of cardiovascular diseases, diabetes, suppress immunity, and result in poor mental health. All these are being reported.

Senator Xenophon's comments after the Stony Gap decision are worth reading, with respect to the potential individual liabilities for those who approve such developments and who choose to ignore the mounting evidence (see www.sciencemedia.com.au/downloads/2012-8-2-2.pdf). His background as a personal injuries litigation lawyer prior to entering Parliament, together with his first hand knowledge of the extent and severity of the problems of the sick residents, make him eminently qualified to comment in this way.

I note that we sent the Explicit Cautionary Notice to the NSW Department of Planning last year (see http://media.crikey.com.au/wp-content/uploads/2011/07/caution.pdf). Our advice is unchanged.

Yours sincerely,

Dr. Sarah Laurie, CEO