A SUBMISSION by: Chris KIRK,
The Social and Economic Impact of Rural Wind Farms
This submission addresses the social and economic impacts of rural wind farms, and in particular:
any adverse health effects for people living in close proximity to wind farms;
B. concerns over the excessive noise and vibrations emitted by wind farms, which are in close proximity to people's homes;
C. the impact of rural wind farms on property values, employment opportunities and farm income;
D. the interface between Commonwealth, state and local planning laws as they pertain to wind farms; and
E. any other relevant matters.

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ADVERSE HEALTH EFFECTS OF WIND FARMS
There are numerous and credible reports by qualified and practicing physicians in Australia and overseas detailing the adverse health effects for people living in close proximity to these sites. The following is a selection of 28 references appended in Appendix A
In particular:

Wind Turbine Syndrome and the Brain – Nina Pierpont, MD, PhD
The latest research, as discussed below, suggests the following mechanism for Wind Turbine Syndrome: air-borne or body-borne low-frequency sound directly stimulates the inner ear, with physiologic responses of both cochlea (hearing organ) and otolith organs (saccule and utricle—organs of balance and motion detection).
Research has now proved conclusively that physiologic responses in the cochlea suppress the hearing response to low-frequency sound but still send signals to the brain, signals whose function is, at present, mostly unknown. The physiologic response of the cochlea to turbine noise is also a trigger for tinnitus and the brain-cell-level reorganization that tinnitus represents—reorganization that can have an impact on language processing and the profound learning processes related to language processing.
New research also demonstrates that the "motion-detecting" otolith organs of mammals also respond to air-borne low-frequency sound.
Physiologic responses and signals from the otolith organs are known to generate a wide range of brain responses, including dizziness and nausea (seasickness, even without the movement), fear and alerting (startle, wakefulness), and difficulties with visually-based problem-solving.
Increased alerting in the presence of wind turbine noise disturbs sleep, even when people do not recall being awakened. A population-level survey in Maine now shows clear disturbances of sleep and mental wellbeing out to 1400 m (4600 ft) from turbines, with diminishing effects out to 5 km (3 miles).

BRITISH MEDICAL JOURNAL VOLUME 281 - 22 NOVEMBER 1980
Extract:...Thus research supports the Wilson Committee's recommendation of noise levels at night, inside bedrooms, not exceeding 35 dB(A) for more than 10% of the time (30

dB(A) in country areas).8 Similarly, the US Environmental Protection Agency recommends a maximum of 35 dB(A) averaged over the night...

3. The Waubra Foundation
Waubra Foundation is a not-for-profit organisation committed to the independent study of health effects of wind turbines on rural communities. Dr Sarah Laurie is the Medical Director of the foundation.
The foundation is concerned at the absence of any published independent peer reviewed studies showing wind turbines are actually safe in close proximity to people over the longer term.
There is however, mounting evidence across the world that these turbines do cause major health problems, identical to those described by Dr Nina Pierpont and Dr Michael Nissenbaum at an international conference in Canada in October attended by Dr Laurie. Currently, there are up to 100 residents of the Waubra district badly affected by the low frequency noise day and night, experiencing dizziness, sleeplessness and ringing in their ears.

4. INFRASOUND AND ITS EFFECTS ON HUMANS - Diana Carolina Fernandez Valencia 306037173 (SID)2007...
Abstract: This paper explains what infrasound is and the importance it has in the behaviour of humans that come in contact with it. Review of some literature is presented in order to understand the different sources that produce this phenomenon. Physiological effects of low frequencies are shown as well as some of the uses that mankind is giving to this lower part of the frequency spectrum.

5. The inaudible noise of wind turbines - Lars Ceranna, Gernot Hartmann, and Manfred Henger
Presented at the Infrasound Workshop November 28 – December 02, 2005, Tahiti
Federal Institute for Geosciences and Natural Resources (BGR), Section B3.11 Stilleweg 2, 30655 Hannover, Germany
Extract ....minimum distance between an infrasound array and a wind farm can be estimated to avoid reduction of the array's detection capability (e.g. 600MW wind turbine: d>15 km, 11-element wind farm: d>30 km)...

6. Vibroacoustic disease: Biological effects of infrasound and low-frequency noise explained by mechanotransduction cellular signalling
Mariana Alves-Pereiraa, _, Nuno A.A. Castelo Brancob - aERISA, Lusofona University, Lisbon, Portugal 4 August 2006
Abstract: At present, infrasound (0–20 Hz) and low-frequency noise (20–500 Hz) (ILFN, 0–500 Hz) are agents of disease that go unchecked. Vibroacoustic disease (VAD) is a whole-body pathology that develops in individuals excessively exposed to ILFN. VAD has been diagnosed within several professional groups employed within the aeronautical industry, and in other heavy industries. However, given the ubiquitous nature of ILFN and the absence of legislation concerning ILFN, VAD is increasingly being diagnosed among members of the general population, including children. VAD is associated with the abnormal growth of extra-cellular matrices (collagen and elastin), in the absence of an

inflammatory process. In
VAD, the end-product of collagen and elastin growth is reinforcement of structural integrity. This is seen in blood vessels, cardiac structures, trachea, lung, and kidney of both VAD patients and ILFN-exposed animals. VAD is, essentially, a mechanotransduction disease.
Inter- and intra-cellular communication is achieved through both biochemical and mechanotranduction signalling. When the structural components of tissue are altered, as is seen in ILFN-exposed specimens, the mechanically mediated signalling is, at best, impaired. Common medical diagnostic tests, such as EKG, EEG, as well as many blood chemistry analyses, are based on the mal-function of biochemical signalling processes. VAD patients typically present normal values for these tests. However, when echocardiography, brain MRI or histological studies are performed, where structural changes can be identified, all consistently show significant changes in VAD patients and ILFN-exposed animals. Frequency-specific effects are not yet known, valid dose-responses have been difficult to identify, and large-scale epidemiological studies are still lacking.

7. Infrasound Brief Review of Toxicological Literature - Infrasound Toxicological Summary November 2001
Extract: ...Infrasound has been observed to affect the pattern of sleep minutely. Exposures to 6 and 16 Hz at levels 10 dB above the auditory threshold have been associated with a reduction in wakefulness (28). Workers exposed to simulated industrial infrasound of 5 and 10 Hz and levels of 100 and 135 dB for 15 minutes reported feelings of fatigue, apathy, and depression, pressure in the ears, loss of concentration, drowsiness, and vibration of internal organs. In addition, effects were found in the central nervous, cardiovascular, and respiratory systems (29)..

8. A Review of Published Research on Low Frequency Noise and its Effects
Report for Defra by Dr Geoff Leventhall Assisted by Dr Peter Pelmear and Dr Stephen Benton Department for Environment, Food and Rural Affairs May 2003.
Extract: ...Low frequency noise and sleep. Although exposure to low frequency noise in the home at night causes loss of sleep, there is evidence that low frequency noise under other conditions induces short sleep periods (Fecci et al., 1971; Landström and Byström, 1984; Landström et al., 1985; Landström et al., 1991;
Landström et al., 1982; Landström et al., 1983)...
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B. NOISE & VIBRATION
Concerns over the excessive noise and vibrations emitted by wind farms, which are in close proximity to people's homes. Acceptable noise levels adopted by wind farm developers are not based on any reliable basis. The following reports and experiments demonstrate this:
1. Panel Hearing Experiment Conducted by Chris Kirk on Tuesday 15th June 2010

Apart from the adverse health effects for people living in close proximity, there is the question of excessive noise and vibrations emitted by wind farms. At a Panel Hearing for the proposed Moorabool wind generation complex in Victoria, a simple experiment was conducted by the author to demonstrate to panel members the annoying effect of noise. Unbeknown to the panel members, the author generated very low (1 – 15 Hz) tones initially at a very low level whilst presenting his objections. Slowly, the level was increased to a level 5 db lower than -40 db(A) – this had previously been measured at the panels' desks using an approved noise meter. When the noise level reached an audible level as heard by the panel members, the chairman asked the presenter if he was responsible for this low frequency noise. The author admitted that his laptop was indeed generating this noise. The panel chairman then requested the presenter to turn it off. The presenter approached the panel with the noise meter and showed the panel that the noise level was below the level that the proponents claimed was an acceptable noise level. Asked if this noise level was annoying, the panel chairman agreed and then demanded that this noise be turned off and that the noise demonstration point was clearly made. The level of noise on the meter was clearly not understood by the nontechnical members of the panel. The Panel made no reference to this noise demonstration in their findings. The IOA (The Institute of Acoustics) considers that, if an absolute noise criterion is to be adopted, this should be limited to 35 dB LAeq as a precautionary measure to minimise the risk of such these adverse effects.
The method for generating and calibrating this demonstration is appended in Appendix B

2. NOISE MEASUREMENT SERVICES PTY LTD Report: Waubra Wind Farm Noise Impact Assessment for Mr & Mrs N. Dean - Report No 1537 - Rev 1 - July 2010
These Guidelines aim to provide a nationally consistent set of methods for addressing issues that are unique or significant to wind farms. By doing so, they provide greater certainty and transparency to the community, and greater consistency between jurisdictions to the proponent.

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C. IMPACT ON PROPERTY VALUES

There is an impact of rural wind farms on property values, employment opportunities and farm income. The author attempted to sell his property through two local estate agents. During the negotiation stage, both real estate agents admitted that the price sought would be in the order of 30 to 40% lower than what the property in this part of Victoria would normally attract – all due to the proposed wind farm in the vicinity of the property. Over a six month period, only one prospective buyer was interested in the property.
A number of residents, most of whom moved from the Melbourne suburbs to the peaceful environment of country living are now stuck in limbo. They now cannot afford to clear out of the area and return to the Melbourne suburbs.
The market values of these properties kept abreast of inflation and were comparable with houses in the city. Until that is when the unexpected announcement that was made by the wind farm developer.

D. GOVERNMENT INTERFACES

The interface between Commonwealth, state and local planning laws as they pertain to

wind farms is unknown. There are no clear guidelines that enlighten people threatened by the prospect of a wind farm close to their property. Local government has in some instances, clear guidelines (Eg Moorabool Shire Council specifies a minimum distance of 2 km between residences and wind generators) but these were totally ignored by the previous state government in Victoria. The state planning department became autonomous and even blocked any action by individuals to present their objections to state run administrative authorities such as VCAT. VCAT advised that the planning minister had "called in" the permit 8 months before the planning permission announcement.

The basis for the VCAT submission was for the purpose of reviewing a decision made by the Department of Planning and Community Development, Victoria who advised the developer that an Environment Effects Statement (EES) was not required. It is considered that an Environment Effects Statement must be made so as to consider the total environment which includes the physical, biological, heritage cultural, social, health, safety and economic aspects of human surroundings, including the wider ecological and physical systems within which humans live.

The VCAT objection submission was based on the following claims:

An EES assessment is required:

since the project will have an impact on social and equity considerations. Persons residing or owning land in the vicinity of the land which is the subject of the application for review were not able to and in fact did not participate in the procedures required to be followed under this Act. A handful of local farmers conspired to do a deal with the developer without any consultation with the rest of the local community. This has brought about enormous social disruption. Social division has been caused in this small community by the wind farm proposal;

since the project will have an impact on listed flora and fauna and native vegetation communities and that no account was taken of the extent to which persons residing or owning land in the vicinity of the land which is the subject of the application for review were able to and in fact did not participate in the procedures required to be followed under this Act before the responsible authority could make a decision in respect of the application for a permit;

and must include a Flora and Fauna Assessment for birds, bats and especially the Wedge Tailed Eagle – the significance of the birdlife in this area has strong support by the Environment Protection and Biodiversity Conservation (EPBC) which has amongst other bird species recognised the importance of Latham's Snipe. This bird is a medium size wader and is a migratory species. It breeds in Japan and Russia in the northern summer and migrates to Australia for the northern winter.

The area that this project is planned for is designated and is recognised by the Victorian government as a wetland. Over a long period of time, local landowners have received numerous grants via "Plains Tender" gave financial support to manage native vegetation and wetlands.

Another endangered species is the Golden Sun Moth. The Golden Sun Moth a nationally

threatened species which relies exclusively on wetlands habitat.

Targeted Flora Survey Report No 8147(4.2) (MacKenzie 2002) reports some proposed access tracks and underground cable routes intersect with the critically endangered EPBC Natural Temperate Grassland of the Victorian Volcanic Plain, and Seventeen Colonies of the endangered EPBC species Matted Flax Lily were recorded in the study area on or near access tracks or underground cables routes. Unspecified amounts of the Natural Temperate Grassland will have to be removed to accommodate this site

None of these objections were ever examined by any state run administrative authority, nor the planning department itself. As mentioned earlier, the planning department minister actively took it upon himself to block any objections by "calling in" the proposed project. This VCAT objection submission is still current and applicable to the active planning permit for Moorabool.

This perhaps indicates the lack of transparency by at least one level of government – state. As for any federal connection/involvement one can only describe the local federal member's interest in any matter pertaining to wind farms as apathetic. Residents were simply told by the local federal member that it had nothing to do with the federal government. Further investigation into the possible links into the federal level of government also proved fruitless.
There is an urgent need to establish and publicly issue the interfaces between the three levels of government. At the moment there appears to be non existing.

Chris Kirk