Submission regarding Wind Farms .

Wind farms are often held up as a 'clean green' way of producing energy however I believe many people are un-informed about wind farms and are unaware of any problems associated with them **.**

An application has been received for a proposed wind farm on a property adjoining our farm and this is of concern to us for several reasons

The ramifications of having a wind farm built in the area are long-lasting as wind farms are substantial developments and usually in place for 20-30 years. Due to the longevity of such projects I feel it behoves all those involved in planning and granting approval to such developments to seriously consider all aspects of wind farms and not to rush through applications without serious consideration for all whose lives might be impacted by such developments.

Wind farms are *not* tourist parks – they are industrial and commercial installations.

As neighbours of the proposed Flat Rocks Wind Farm (FRWF) we have several areas of concern.

1. HEALTH.

A number of health issues are commonly mentioned by those living close to wind farms in all parts of the world . It cannot be coincidental that all the symptoms complained of are similar no matter in which country the wind farms are situated. They include, but are not limited to

- migraines and headaches,
- sleep disturbances,
- inner ear and balance problems,
- anxiety and nausea
- mental health problems
- depression
- increased blood pressure.

Increasingly, research in this area points to many of these problems being due to the low frequency sound of the turbines.

Sleep is vital for the body to rest, heal and to function well. Some studies show that the effects of lack of sleep are similar to being drunk with a decreased ability to function effectively. Sleep disturbances can disrupt nocturnal cortisol secretion. Con tinued night time disturbance results in an accumulation of cortisol levels in the blood which can lead to long term stress activation and a higher risk of a major depressive episode .

Other physiological symptoms noticed in subjects exposed to noise whilst asleep include increased heart rate and respiration rate.

At a recent **International Symposium on the Global Wind Industry and Adverse Health Effects, held Oct 29 to 31 , 2010** Dr Michael Nissenbaum, a radiologist at Northern Maine Medical Centre and certified by the Royal College of Physicians of Canada, and American Board of radiology was one of the key speakers.
He presented **the world's first controlled study of alleged adverse health effects related to industrial wind turbines.** The techniques used are accepted by the medical fraternity worldwide.

'Nissenbaum stated the sound energy from wind turbines has a more disruptive sleep effect than any known industrial noise of the same sound pressure. This is thought to be due to the complex tones generated by the turbine blades as they

pass by the tower. Nissenbaum also noted the sound energy is mostly in the low frequency range, which readily passes through building materials and into the home and penetrates the ground as well as deep within the body.' (***Wind Watch : Industrial Wind Energy News by Jim Curry, The Wellington Advertiser)***

Dr Nissenbaum's research also found that **low frequency noise impacts the emotion centres of the brain, releasing stress hormones that trigger fear, anxiety, suspense, flight and arousal**.
Low frequency sound (ultrasound) is used to scan deep within the body.

Somewhat alarmingly,his research found that **people within 1.5 km of the turbines have**

- **higher incidence of mental health issues,**
- **increased stress levels,**
- **higher anger levels,**
- **increased use of psychotropic medication,**
- **poorer sleep**

  than in a control group 4.5 km away from turbines.

As the distance from turbines increased mental health improved.

Interestingly, prior to the study, both groups of people involved in the research (those close to the turbines and those 4.5km away) felt that the turbines would be beneficial for their area. However, after the turbines started to produce energy the attitudes were completely opposite. People close to the turbines were very agitated and wanted the turbines stopped.
Although most in the control area 4.5 km away had no problems , *some people were affected even at that distance*.

Rural areas already have a high incidence of people suffering mental health issues which are often undiagnosed and/or untreated due to lack of health services and health outcomes are poorer in regional Australia. It would seem unwise to build any facility which could exacerbate mental health issues.

Dr. Christopher Hanning, B.Sc., MB, BS, MRCS, LRCP, FRCA, MD, who founded and has run a sleep disorder clinic in the UK for 30 years stated that '.. the most common complaint of those exposed to industrial wind turbine noise is sleep disturbance. Many of the other symptoms, fatigue, headache, nausea, memory problems and tiredness are probably secondary to sleep disturbance. He says there is now **a large body of evidence proving beyond any reasonable doubt that sleep is disturbed and health impaired by wind turbines at distances up to 2km, at noise levels claimed to**

be safe by the industry.' (First International Symposium on the Global Wind Industry and Adverse Health Effects , October 2010)

' **Noise induced sleep disturbance is well known to have adverse health effects and has been studied extensively although not with particular reference to wind turbines. Due to the indisputable restorative function of sleep , noise induced sleep disturbances are regarded as the most deleterious effects of noise.' (Dr Amanda Harry M.B.Ch.B. P.G.Dip.E.N.T Feb 2007 - Wind Turbines, Noise and Health)**

The low frequency noise produced by wind turbines is thought to be the result of the displacement of air by a blade and of turbulence at the blade surface. The low frequencies make up part of the overall audible noise and also produce a 'seismic' characteristic which is a common complaint of people living near wind farms , that they can ***feel*** the noise as well as hear it. This results in a feeling of ***motion sickness***, or ***nausea.*** People who complain of these symptoms find the symptoms disappear when they move away from the vicinity of the turbines.

Much research has been done in Portugal into issues concerned with high levels of low frequency noise and they have been found to cause a complex disease known as ***vibroacoustic disease.***
It is beyond the scope of this submission to elaborate succinctly on this condition but it is felt that lower levels of low frequency noise, such as that produced by wind turbines and to which those living near to wind farms would be subjected, would over time produce similar problems.

The syndrome is dose dependent and has various stages.
Stage 1 – MILD (1-4 years) Symptoms include slight mood swings, heartburn, indigestion, throat and mouth infections, bronchitis
Stage 2 – MODERATE (4 -10 years) Chest pain, definite mood swings, back pain, fatigue, allergies, inflammation of the stomach lining, skin infections
Stage 3 – SEVERE (> 10 years) psychiatric disturbances, haemorrhages, duodenal ulcers, colitis, headaches, decrease in visual acuity, severe joint pain, intense muscular pain, neurological disturbances.

Given that the life span of the proposed wind farm is at least 20 years this is extremely worrying as exposure to even low levels of low frequency noise would be prolonged.

The strobe-like disturbance caused by blades flickering in sunlight has been likened to a flickering fluorescent light and can cause problems for susceptible people eg those with epilepsy.

The flickering/flashing lights at night have been a source of annoyance for some neighbours of wind farms.
www.windaction.org/study shows health problems which can be viewed for further information.

Carl V. Phillips Ph.D. says that it is ***clearly false*** to say there is no evidence of negative health effects on residents near wind turbines since there are ample credible reports of people experiencing health problems in the vicinity of turbines.

Many of the health problems complained of in 'wind turbine syndrome' are not measurable by scientific testing eg blood tests, radiology etc. However as a clinician of 20+ years experience I have treated several clients with Repetitive Strain(stress) Injury (RSI), Fibromyalgia and have known people suffering from Chronic Fatigue Syndrome and Post Natal Depression. As far as I am aware there are no objective scientific tests for these conditions. Yet anyone knowing a person who suffers from any of the aforementioned conditions would surely acknowledge that these are bona fide problems, not merely figments of the imagination.
'The term 'repetitive strain injury' is most commonly used to refer to patients in whom there is no discrete, objective pathophysiology that corresponds with the pain complaint.'

"The fibromyalgia movement now spanning 2 decades forced to our attention a neglected and large group of patients those with widespread almost inexplicable pain, decreased pain threshold, fatigue, sleep disturbance, stiffness, psychological distress, and other symptoms such as headache, irritable bladder, irritable bowel, subjective swelling, and more. Prior to the fibromyalgia construct, patients with these features were either singled out and diagnosed on a comprehensible and manageable feature e.g. irritable bowel syndrome, or were diagnosed as having (osteo) arthritis ***or, even worse, were not considered to have a legitimate complaint but rather ' psychogenic rheumatism'."***(emphasis mine)quoted from

" Fibromyalgia, Chronic Fatigue Syndrome and Repetitive Strain Injury – Current Concepts in Diagnosis, Management, Disability and Health Economics" by Andrew Chalmers MD, Geoffrey Owen Littlejohn MD, Irving Salit MD, Frederick Wolfe MD, published by Haworth Medical Press. 1995

The lack of verifiable objective tests has not convinced me that the people I have treated, or known with these problems, have been malingering or fabricating their symptoms. Indeed some of these clients had laudable work ethics and did not want to have time off work or to take medication. Nevertheless this was necessary in some cases. The absence of a measurable objective test does not mean the condition doesn't exist.

Perhaps it merely means we have yet to discover a suitable test or, as in the case of Fibromyalgia, RSI and Chronic Fatigue Syndrome, it will take some time for the wider medical community to acknowledge the existence of such syndromes and accept these conditions are not the product of people's imagination.

It has often taken the medical fraternity years, in some cases decades, to finally admit there *actually is* a syndrome/condition with a recognisable collection of symptoms complained of by many people .

It is surely more than coincidental that people around the world complain of similar symptoms when living close to wind turbines. I am loath to believe there is a conspiracy and all complainants collaborate to make up the same problems.
If there are no adverse health effects associated with wind turbines what explanation can there possibly be for the frequency and similarity of adverse health effects reported worldwide?

2. NOISE

The noise caused by a number of turbines together has been likened to 'a relentless rumble like unceasing thunder,' as loud as a motorcycle or being in a flight path of planes.

The penetrating low-frequency aspect to the noise, which is a thudding vibration a bit like a throbbing bass in a nearby disco, travels much further than the usually measured ' audible' noise.

Since the sound is projected outwards, although it is often quiet at the base of a turbine the noise becomes louder further away from the base.
John Zimmerman from Enxco(an energy company) admitted that ' wind turbines don't make good neighbours.'
Some wind farm developers have complained that they are unable to comply with noise regulations.
A five year investigation into wind power found that noise levels could not be predicted before developing a site.

These problems are common to wind farms in different countries and are not isolated complaints.

As mentioned previously it is not only the audible noise of the turbines which is a nuisance but the low frequency inaudible noise which often causes the greatest problems.

3. VISUAL IMPACT.

We chose the site of our home for the picturesque views. At a height of 146ms (almost the height of the tallest span of the Sydney Harbour Bridge above **water, not street, height**) the proposed turbines will be clearly visible from a long way away. Atop each turbine would be a red flashing light which could also disturb the ambience of the rural landscape.
As the proposed turbines would be to the west of our house the strobe-like effect of the blades turning in front of the setting sun could be detrimental and quite disturbing. There are videos of this effect on various internet sites.

Many families choose to live in the country for the peace and quiet, for the views offered and the feeling of space.
Given the massive height of some proposed wind turbines , up to 150ms, one wonders whether some proposed sites (such as the proposed FRWF near us) are ideal for a wind farm.
These structures would have a significant visual impact on the landscape so the siting of any wind farm is crucial to prevent loss of visual amenity. Denmark , a country at the forefront of wind farm technology, is increasingly looking to place wind farms offshore.

The Kojonup/West Broomehill (Flat Rocks) area is renowned as a prime location for its natural beauty and high productivity giving it a high aesthetic and monetary value. These attributes would be compromised by the establishment of a wind farm. Property values in other parts of the world, including Australia, have been affected by the proximity of a wind farm.

Compensation has been awarded to land owners when it has been acknowledged that the value of their property has been compromised by the proximity of a wind farm.

National Sales Manager of Elders Rural Services and a licensed real estate agent of 30 years, states in a letter talking about wind farms

'... The ultimate effect is that the number of buyers willing to endure these structures is significantly less than if the structures were not there. This logically has a detrimental effect on the final price of the adjoining lands.

Experts assess the loss of value to be in excess of 30%,and sometimes up to half.'

He goes on to say that in his personal experience once a potential buyer finds that a wind farm is proposed in the vicinity there is a major fall off in interest and the often a substantial decrease in price is sought.

This is of great concern since we live in such a beautiful area and a farm is usually a farmer's greatest financial asset.

4. BUFFER ZONES.

Due to a number of problems and complaints with wind farms in Europe and America it is recognized that a buffer/exclusion zone of **2000ms (2kms)** is generally considered to be the minimum requirement from dwellings .

It is ***essential*** that the buffer zone be 2000ms from **property boundaries** otherwise it precludes any future dwellings being built closer to a boundary than current dwellings on a property and could render large tracts of land incapable of ever being built on .

If a wind farm is built too close to a residence and problems are later found to arise eg adverse health effects ***are*** found to occur within the distance from the turbine, what happens? Must the occupants leave their home? Will the turbine be dismantled?

In Waubra, Victoria, between 7 and 11 properties have been bought by Acciona, the energy company owning the wind farm . If wind farms are such innocuous developments why have so many land holders felt the need to get away from the vicinity? Why do some farmers, around the world, have to live away from their farms and work them from a distance without being able to live on site?

Without a sufficient buffer zone between turbines and property boundaries, legal proceedings could arise in the future should a landowner near a wind farm want to build on a small location or if a farm is sub-divided that would bring them closer to turbines and adverse health issues subsequently ensued.

There have been several law suits in respect to wind farms. In Ireland a criminal suit was brought against a wind farm owner for noise violations of their environmental law.

A developer had to pay a home owner for loss of property value.

In England a group sued the owner and operator of the Askam wind plant claiming it was ruining their lives.

Lawsuits are also pending in Ontario and in the United States by residents living close to wind farms and claiming adverse effects.

'**German marketer Retexo-RISP specifies that turbines not be placed within 2 kilometers (1.25 miles) of any dwelling.'**

One of the recently elected Baillieu Victorian state government election pledges was to mandate for a **2km exclusion zone between wind turbines and houses**.

Due to the effects of turbulence and wind patterns created by wind turbines they could also impact on planes used for crop dusting and urea spreading as it would be unsafe to fly too close to the turbines.

Farmers who own and fly small planes may be adversely affected by the proximity of a wind farm to a runway.

5. ELECTROMAGNETIC INTERFERENCE.

Wind farm owners acknowledge that television and radio reception, GPS and microwave links can all be adversely affected by wind farms but are *unlikely* to cause 'unacceptable interference'. This is a subjective measure and the current proposals do not always specify exactly what might constitute 'unacceptable' interference .

I read recently that wind turbines could affect radar . This would be a problem if planes were flying in the area. Would the RFDS planes be affected?

6. FAUNA.

Bats are affected by the vibration and frequency of the turbines and many bats are seen in this and presumably other areas which could be affected by wind turbines.

In the proposed wind farm site close to us an endangered species of bird, the Carnaby's Black Cockatoo has habitat. In other areas where wind farms are sited there may be problems with local populations of birds.
Given that Australia has a poor reputation regarding the rapid rate at which some of our native bird and animal species are being lost it would be prudent to site wind farms in areas where there would not be loss of habitat or where there would be least impact on local species.

7. COST.

Wind power is a very expensive form of electricity to produce. Since it is an inconsistent form of power which fluctuates a constant 'back up' conventional source of power must always be available for times when the turbines are not producing power or are producing less power than required. This adds considerably to the cost of producing the wind power.

Wind energy companies often promote their output using ***nameplate*** capacity figures instead of the ***actual*** energy output which can typically be only a fraction of the nameplate capacity due to the inefficiency of wind power. The electricity output of a wind farm may be only 20% of its advertised capacity.

The amount of electricity required by the actual turbines themselves is usually not included in output figures. Not a single conventional power plant has been shut down since wind power is merely supplemental to existing facilities .

Electricity generated by wind turbines must either be used or fed into the grid since technology to store the energy isn't available. If a wind farm is not close to the grid new transmission facilities are required. The proposed line to carry the electricity to existing grids or substations may require an onsite substation to be built.
As a close neighbour to the proposed wind farm in the northern section this is rather worrying as it is possible a substation could be built not only close to residences but on a road which is not suitable to a lot of traffic without an extensive upgrade .

Since there is some concern about the amount of radiation emitted from mobile phones, what would the amount of radiation from a substation be? Rather more than a mobile phone I'm guessing and hence more of a concern regarding possible health issues.

Reduction of CO_2 is one of the selling points of wind power. However with China's increasing energy usage and increased CO_2 emissions it is unlikely that proposed wind farms will result in any actual CO_2 reduction.

Often the CO_2 used in the back up power source (coal- or gas-fired) is not included in figures of CO_2 reduction quoted by wind power producers. Wind power may even lead to an ***increase*** in CO_2 emissions since a back up power source, if it is able to, may need to be fired up quickly. When running below peak generation capability

a back up power source facility will not be using it's fuel efficiently and this too can contribute to an increase in CO_2 emissions.

In the UK and Denmark , despite the installation of many wind farms, CO_2 emissions **rose** in 2002 – 2004.

The high cost of wind power generated electricity is passed on to consumers and this is a time when some consumers are already struggling to pay their electricity bills.
In 2010 there was a large increase in the number of clients wishing to pay their electricity bills over a longer period and requiring an extension.

Wayne Brunetti, head of Xcel Energy in the US and a supporter of wind power, has admitted that when customers have most need of power, it is typically not available through wind generation.

8. FUNDING

While governments boast that they are looking to a 'greener' future what steps are they taking to actually reduce our reliance on fossil fuels?
Would it not be in the interests of present and future generations to start taking steps to reduce our footprint on the earth? Rampant consumerism; a heavy use of motor vehicles; large houses without verandahs or eaves which require a lot of electricity to heat and cool; the Australian passion for all things electronic mean we use a lot of energy in the form of electricity and fossil fuel.
The current problem with over consumption of energy and decreasing stocks of fossil fuels means we need a multi-pronged attack , not simply focusing on producing more energy.
Instead of concentrating on going 'greener' we need also to go 'leaner'.

Often the only beneficiaries of wind farms are the investors and the multinational energy companies who buy into the farms.
What happens if an energy company goes into liquidation? Are land holder lessees still paid for having turbines on their land?

Is it possible that wind farms may go the same way as agro-forestry if energy companies do not get tax breaks or if other cheaper and better sources of 'green' energy are expanded?

All alternative sources of power require government funding and subsidies but I wonder if the proposed wind farms are the best use of government funds.

Since wind farms usually receive government funds/subsidies would these monies be better spent pursuing other alternative sources of power eg biomass or solar thermal power?

9. CONSTRUCTION.

It is claimed that establishing and building a wind farm will result in extra jobs for the district.
In many instances construction takes some months but the turbine or energy company supplies it's own workforce, using only a few locals. Often only a few maintenance workers are required for a large wind farm.

A large additional cost will often be involved in preparing current roads and bridges to cope with the turbines, cranes and other equipment necessary for turbine construction. Who pays for these substantial costs? At a time when the federal budget will be severely under strain with the chain of natural disasters we have experienced this summer how much can we afford to subsidise wind energy?

It is likely that road verges will have to be cleared and roads widened leading to the removal of mature trees and other vegetation. Electrical cable will have to be put underground to carry electricity from the turbines to the grid. It has been suggested that this will have to go by road verges.

Some reports show that often jobs alleged to be created by energy companies and wind farms are in fact only secondary jobs to the industry eg transport companies already transporting goods are involved in carting supplies to wind farms. The jobs are not created by the wind farms but are claimed as such.
Investigation by a reporter into jobs created by one wind farm in America, I think, found that of the several hundred jobs claimed, only about 30 *actual* jobs were created.
Due to the cost of producing electricity from wind power ,for every wind farm created job there may be the loss of a job in another sector.

10. BIO FUEL.

The development of wind farms may pose a threat to potential development of new industries such as renewable bio-energy from growing oil mallees. With the current wind farm proposals only a few farmers/land holders will derive benefit from the projects
. With oil mallees hundreds of farmers would be able , if they wished, to diversify and gain benefit from an alternate source and use of their land.

Wind farms may be able to take up line capacity for electricity which would be supplemented from the public purse in times of under supply thus discriminating against other renewable energy technologies such as biomass.

Growing oil mallee trees could also assist with lowering water tables and helping in the fight for salinity which is a big problem in the wheatbelt of Western Australia..

11. DE-COMMISSIONING OF WIND FARMS.

The current proposal for many wind farms is for 20 - 30 years.
At the end of this time the turbines are to be de-commissioned.
Is there a fund to provide for the dismantling of the turbines as this will be an extremely expensive exercise? Can the wind farms ***guarantee*** that the turbines will be removed once de-commissioned or will they be left to slowly fall into disrepair as has happened to wind farms in the US and Canada? This would be a real blot on the landscape.
If solar or bio-energy become more developed as is probable in the future will the turbines be de-commissioned earlier?
If energy companies fail to take down wind turbines at the end of their lease/ useful life of the turbines, will land owners who lease their land to the companies be responsible for dismantling turbines? At what cost?

12. ACCIDENTS

There have been several accidents associated with the operation of wind farms. A list of these, over 900, is available on www.caithnesswindfarms.co.uk

13. SOLAR POWER.

A Nobel prize-winning director of the CERN particle physics laboratory in Geneva, Professor Jack Steinberger, '... said that wind represented an illusory technology – a cul-de-sac that would prove uneconomic and a waste of resources in the battle against climate change.
"Wind is not the future," he told the symposium of Nobel laureates at the Royal Society. '
He said " I am certain that the energy of the future is going to be thermal solar. There is nothing comparable. The sooner we focus on it the better."'

Professor Steinberger said that because intermittent sources of power, such as wind, required back-up power generation, this undermined their contribution to emissions reductions.

14. TOURISM

It has been suggested that wind farms could become a tourist attraction however the experience in many other parts of the world is that wind farms as tourist attractions are closing due to lack of visitors.

15.COMMUNITY

In almost every community with wind farms they have proven to be ***very*** divisive. Often those who will benefit financially are very 'pro' wind farms. Close neighbours who are often adversely affected by the problems outlined in this proposal are much opposed to wind farms.
I have personally spoken to 12 neighbours of a proposed wind farm in our district and **ALL are opposed** to the development.

There is some disquiet over the manner in which wind farms are established. Obtaining information about proposed developments is often difficult as farmers have to sign confidentiality clauses before they themselves are told about the wind farm and I believe there is the possibility of legal action if they break these agreements.
This is of concern to us – if a wind farm is so beneficial for an area why the need for so much secrecy?

One of our main concerns is that rural communities are small places and it is distressing to see the negative effects wind farms can have on people in these districts.
I have read much about wind farms and the more I read the more it becomes evident that wind farms can cause prolonged and deep division in rural communities. In the country we rely on our neighbours and in most areas farmers get on well with each other. We help each other out. It is most upsetting to read of friends of many years standing no longer talking to each other. Some don't socialise together any more. Due to the inherent secrecy which seems to surround the establishing of lease land for turbines rumours and gossip can abound.
Wind farms can tear at the very fabric of rural communities. We can withstand drought, rains, cyclones, low prices and much that gets thrown at those of us who chose to live in rural Australia.
It would be a shame if all this stands for nothing in the face of a wind farm.

Whilst wind power may have a place in energy production it is probably better suited to large farms with thousands of hectares held by a single owner where the impact would be far less than a wind farm in an area comprising several smaller farms with many neighbours impacted by the turbines.