



Department of the Senate  
PO Box 6100  
Parliament House  
CANBERRA ACT 2600 AUSTRALIA

Attention: Senate Community Affairs Committee

**Ref: The Social and Economic Impact of Rural Wind Farms**

The Oil Mallee Association of Australia (OMA) was formed 15 years ago in Western Australia as the Oil Mallee Association of Western Australia. Over this time the OMA has supported development of the Oil Mallee Industry in the central Great Southern Region, representing the interests of over 100 growers, many of whom are located in the Kojonup, Broomehill and Tambellup Shires.

These growers are part of a state wide network of oil mallee growers that total over 1200 landholders who have collectively planted over 15,000 hectares of mallee (over 30 million oil mallee trees) to lay the foundations of a prosperous and reinvigorated rural future.

Please see the following Oil Mallee of Australia submission which has been lodged with Kojonup, Broomehill and Tambellup shires regarding the proposed Flat Rocks Wind Farm (FRWF). Supporting reference documents are also attached.

The OMA welcomes the opportunity to provide comment on the Flat Rocks Wind Farm with the aim to raise issues of real concern regarding the economic, social, health and community impact of the proposed wind farm development.

If you require any further information please do not hesitate to contact me.

Yours sincerely  
(...)

Mr Lex Hardie  
PRESIDENT  
Oil Mallee Association of Australia Inc.

7<sup>th</sup> February 2011



## **Kojonup Town Planning Scheme No. 3 Submission regarding the proposed Flat Rocks Wind Farm**

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## Footnote Attachments

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**Footnote**<sup>1</sup> The Oil Mallee Industry Development Plan, 2008, URS Forest Services, commissioned by the Oil Mallee Association of Australia & Energy Tree Crops: a publication of the Cooperative Research Centre for Future Farm Industries 2009.

**Footnote**<sup>2</sup> The Dean Report (Waubra Wind Farm Noise Impact Report assessment) Report 1537 Rev1 July 2010 (*Page 69*), and The Weekend Australian - article 'Tycoon Tony Hodgsons tilt at March of Turbines' dated 22-23 January 2011 (*Page 3*).

**Footnote**<sup>3</sup> The Dean Report (*extracts attached*)

**Footnote**<sup>4</sup> Flat rocks Wind Farm Development Application, Planning and Environment Report November 2010 (*Page 7*)

**Footnote**<sup>5</sup> Ballarat Courier Article 'Waubra wind farm buys more property' 18 Nov 2010.

**Footnote**<sup>6</sup> Noise and Sound definitions - *Source: Oxford Concise Science Dictionary, Third Edition, Oxford, New York, Oxford University Press, 1996*

**Footnote**<sup>7</sup> The Dean Report (*extracts attached*) Full report can be viewed at <http://www.wind-watch.org/documents/wp-content/uploads/Dean-Waubra-Noise-Impact-July-20101.pdf>

**Footnote**<sup>8</sup> *The Dean Report (extracts attached)*

**Footnote**<sup>9</sup> Dr Sarah Laurie: Open letter to the (then) Premier of Victoria, Mr John Brumby.

**Footnote**<sup>10</sup> Shane McIntyre, National Sales Manager Elders Rural Services Australia Limited, Expert confirms wind turbines hammer property values (Australia), quoted on the website of the Wind Turbine Syndrome News, [www.windturbinesyndrome.com](http://www.windturbinesyndrome.com)

**Footnote**<sup>11</sup> The Weekend Australian article 'Tycoon Tony Hodgsons tilt at March of Turbines' dated 22-23 January 2011 (*page 3*).

**Footnote**<sup>12</sup> Mr Roger Bilney Flat Rocks Wind Farm Planning Submission (*Page 7*) (*Submitted to Kojonup Shire*).

**Footnote**<sup>13</sup> Aerial Agricultural Association of Australia submission to the Senate Standing Committee on Community Affairs and its inquiry of "The Social and Economic Impact of Rural Wind Farms" (*Page 3*)



To : Shire President,  
Shire of Kojonup  
93-95 Albany Highway (PO Box 163)  
KOJONUP WA 6395

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**REF: SHIRE OF KOJONUP TOWN PLANNING SCHEME NO 3.**

***Submission to Kojonup Shire Council regarding the proposed Flat Rocks Wind Farm***

The Oil Mallee Association of Australia (OMA) welcomes the opportunity to provide comments on the proposed Flat Rocks Wind Farm (FRWF). The proponent, Moonies Hill Energy Pty Ltd has sought Planning Consent from the Shire of Kojonup. Planning approval has also been sought from Broomehill - Tambellup Shire.

The OMA was formed in 1995 to assist with the promotion of mallees as a successful tool for dealing with salinity, erosion and other land care issues. Over many years farmers have adopted the growing of mallees for these purposes and also with the possibility that they can be harvested for extraction of eucalyptus oil and other products including bioenergy and biochar. Significant breeding and improvement programs have been undertaken and the name "oil mallee" refers to the improved growth and oil content that has been achieved in several species.

Over 1000 farmers have grown oil mallees and a total of 15,000 hectares have been established across the WA Wheatbelt. Considerable activity by companies specialising in carbon sequestration has resulted in thousands of hectares being grown as permanent forests. As a whole the WA oil mallee program has become well known across Australia and the world and has achieved the status of an important national initiative. Two proposed Commonwealth programs, the Carbon Farming Initiative, due in mid 2011 and the Carbon Pricing legislation, due in 2012, combined with the Renewable Energy Target of 20% renewable energy by 2020, will greatly assist the development of the industry.

The OMA has considerable experience in climate change and energy policy gained over many years and has influenced policy direction through its engagement in the Climate Change Committee of the Chamber of Commerce and Industry and through the many submissions and presentations over 15 years.

This submission is being lodged by the OMA with two main themes.

1. The ambition of the OMA and others to develop a significant bioenergy industry in the region could be frustrated by the unplanned and unexpected expansion of wind farms in the inland regions of WA. The South West Interconnected System grid will attain full capacity with the addition of large wind farms. A review of the ways in which wind farms are approved and deployed throughout the State, should be undertaken before there is a major commitment to this one form of renewable energy to the exclusion of better options.
2. The proposed large scale industrial wind farm will have significant detrimental impacts on the rural area in which it is located. These impacts extend to health and well being, a fall in the value of land and economic loss through reduced agricultural production. The evidence of health impact is consistent across Australia and in many parts of the world and on these grounds alone the FRWF should be refused planning approval.

## **1. Agricultural based bioenergy projects**

The prospects for a bioenergy industry based on growing of mallee biomass is well explained in two recent reports, "The Oil Mallee Industry Development Plan,<sup>1</sup>" and the CRCFFI publication, "Energy Tree Crops". The potential scale of the industry is considerable, with positive impacts on the regions in which the feedstock is grown and processed. (These documents will be posted to the shire.)

The socio-economic benefits of the industry to the community would be considerable with many jobs and new industries emerging from the harvesting and processing of the biomass. There are many additional benefits to land owners from integration of a new tree crop into their cropping programs. Oil mallees are productive in a drying climate, they provide significant environmental services related to salinity and wind erosion and protect quality agricultural land values. As a result this new industry builds more resilient local communities with the benefits spread across many farmers and regional communities as a whole.

The continued development of the mallee bioenergy industry will be cut short by the imposition of substantial industrial scale wind farms on the South West Interconnected System (SWIS) grid due to existing grid capacity constraints and therefore its inability to host additional electricity generation.

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<sup>1</sup> *The Oil Mallee Industry Development Plan, 2008, URS Forest Services, commissioned by the Oil Mallee Association of Australia with funding from the State and Commonwealth Governments. Energy Tree Crops: a publication of the Cooperative Research Centre for Future Farm Industries 2009.*

At a briefing by Verve in Narrogin, the OMA was informed that the wind farm at Merredin could prevent a 10 MW bioenergy plants being added at some point in the future.

The method by which these projects achieve connection to the grid is via a queuing system based on the date of application. Once a project is identified, the proponent needs to show they are ready to proceed. Wind projects achieve this readiness status through prior prospecting for wind, feasibility studies, the securing of agreements with landowners and the knowledge that the machinery can be purchased. It appears that very little other information is required prior to the application for planning approval. Once approved a power purchase agreement with Verve is secured.

In the opinion of the OMA, projects of this scale and impact should be scrutinised in more detail at an early stage. Regional Energy Plans should be prepared to secure the best overall outcome for the region and alignment with the State Government's strategic energy objectives.

There are significant impacts and costs associated with balancing the grid due to load variations caused by intermittent renewable energy. This challenge of load balancing is best exemplified by the very hot still days when the wind turbines produce very little if any electricity. The OMA is aware that the Independent Market Operator (IMO) is currently looking into the capacity factors of wind farms and the allocation of costs associated with load balancing.

There are several interested parties developing new methods of bioenergy from oil mallees, generally through a process of pyrolysis. This efficient system of transforming mallee biomass into fuels, electricity generation and biochar can enable both baseload generation and load responsive applications. There are many willing growers of mallee and many more will follow once a bioenergy project is established. The benefits of a regional bioenergy project will flow to all participating farmers and the regional benefits will continue to grow well into the future. The benefits from this new industry could be prevented if available grid capacity is allocated to wind.

## **2. The impact of wind farms on regional communities**

The OMA has become aware of major problems with wind farms based on the emerging evidence in Eastern Australia, Europe and North America. The commonality of these concerns and the strength of complaint has surprised the OMA and caused the organisation to use its knowledge of rural matters and its extensive network of members and associates to investigate these concerns on behalf of landowners and country people generally. The OMA is concerned that the problems need to be addressed before the introduction of wind farms into Kojonup and adjoining regions.

The OMA approach to regional bioenergy projects has been to focus on regional development, the building of local communities through new businesses and increasing the resilience of farming. We believe that wind farm developments do not adopt this approach and indeed the evidence indicates that these projects have a history of creating division, unequal treatment and removal of land ownership from local farmers.

In this submission two impacts of rural wind farms will be addressed;

- (i) the impact on the health and well being of people, and
- (ii) the impact on agriculture and land values.

### **(i) Health and well being**

The FRWF proposes that very large scale industrial machinery will be placed on prominent locations, as near as possible to a grid connection. The large turbines planned for this project are almost 150 metres from the ground to the tip of the blade. There are a limited number of wind farms where this size of turbine has been deployed and there is therefore limited experience of their local impact over any period of time. Apart from the visual intrusion on the landscape, a major feature of wind farms is the noise and related physical impacts generated by the turbines. It is expected that larger turbines will generate more noise and disturbance.<sup>2</sup>

From a reading of the available literature outlining the particular characteristics of noise generated from wind turbines as reported by local residents, the disturbance can vary from annoyance to deeply distressing and effects so severe that people have to move away to get relief. There seems to be no doubt that these impacts are real and have not been adequately investigated.

The Dean Report<sup>3</sup> outlines the process for assessment of intrusive noise and low amplitude sound. The report outlines the necessity of combining three types of measurement;

- sound data (environmental and noise sensitivity tests),
- data processing (including subjective and personal perceptions), and
- the establishment of an intrusive noise rating system.

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<sup>2</sup> *The impact of scale and noise is addressed in the Dean Report (Waubra Wind Farm Noise Impact Report assessment for Mr and Mrs Dean: Report 1537 noise Measurement Services Pty Ltd July 2010 Rev 1) p 69 and in The weekend Australian 22-23 January 2011 p3 where there is a diagram of the turbines illustrating that turbines of the height planned for Kojonup are taller than the Sydney Harbour Bridge.*

<sup>3</sup> *The Dean Report* <http://www.wind-watch.org/documents/wp-content/uploads/Dean-Waubra-Noise-Impact-July-20101.pdf>

This advocacy of a detailed methodology addresses the issue of simple measurement of noise above a background level or comparison with “normal” noise levels tolerated by people in the city. The measure they propose to use was developed in South Australia and centres on measurement of likely noise above a background (baseline) level.

The Dean Report suggests that this type of simple measure is inadequate on its own and does not take into account what the prevailing low level of background noise occurs in rural areas.

More importantly, this noise assessment on the FRWF project will not take place until after Development Approval has been granted, but before the turbines are built.

The proponent indicates that the wind farm will be subsequently designed to meet these guidelines, and in doing so acknowledges that the problem of noise intrusion does exist. This situation of dealing later with this major problem could cause considerable uncertainty.

Another very real concern is the fact that the noise guidelines will apply only for the dwellings that do not have an agreement with the developers of the wind farm.<sup>4</sup> The OMA is concerned about those people located within a few kilometres of the project as it is likely they will be impacted by noise from the wind farm. The OMA is also concerned about the impact of the wind farm on properties within the boundaries of the project where confidential agreements are reached between the operator and the land owner.

It is assumed that the leasing agreement between the land owner deals with this issue of noise and there is evidence that many owners are forced to leave their homes and properties. It appears the land owner hosting the wind farm has no other recourse. The following story in the media highlights this issue and highlights the tendency for the wind farm operator to purchase the properties.

The Ballarat Courier reported that the Waubra Wind farm “buys more properties”. This purchase of two additional properties adds to the five already acquired by the operator. In the latest purchase, two houses were faced with the prospect of noise levels exceeding the planning permit. “The turbines would need to have been run in reduced-noise mode” and it “was a commercial decision to purchase the properties”.<sup>5</sup> This approach indicates the method of meeting previously agreed noise requirements, at least for the landowners who host the turbines, is solved by enabling the complainants to leave the area.

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<sup>4</sup> *Flat rocks Wind Farm Development Application, Planning and Environment Report November 2010 p7*

<sup>5</sup> *Mr Brett Wickam quoted in the Ballarat Courier 18 November 2010*



In one on-line comment made following the article, reference is made by “Anne” to this practice of wind farm operators purchasing properties in Canada. From this and other references, the OMA believes this practice is widespread. It is assumed that by purchasing the property and cancelling the lease agreement, the operator is relieved of the necessity of paying substantial lease payments over a very long period. Simply based on the evidence of this and other wind farms in Australia, Kojonup should expect a number of properties to be purchased as a direct result of the noise the turbines will create.

The pattern of ownership and occupancy by local farmers will change, not for reasons of the agricultural economy but because of the intrusion of large mechanical wind generators.

What is wind farm noise?

Further explanation of wind farm noise is necessary to understand this issue. Dr Robert Thorne, author of The Dean Report, goes further in describing the source of problem noise by referring to the low amplitude sound or “infrasound”. The report indicates that most definitions of noise<sup>6</sup> are inadequate and refer to it as “unwanted sound” and suggests that more precise working definitions are required. These definitions need to incorporate the impact of noise at low frequency which cannot be measured by normal monitoring equipment. Special instrumentation “is required to measure the “rumble / thump” sounds from wind farms or the character of the ambient sound in low background at rural locations”.<sup>7</sup>

Dr Thorne refers to the particular characteristics of sound and wind farms;

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<sup>6</sup> **Noise:** 1. Any undesired sound. It is measured on a “decibel scale ranging from the threshold of hearing (0 dB) to the threshold of pain (130dB). Between these limits a whisper registers about 20dB, heavy urban traffic about 90 dB and a heavy hammer on steel plate about 110 dB. A high noise level (industrial or from over amplified music, for example) can cause permanent hearing impairment. 2. Any unwanted disturbance within a useful frequency band in a communication channel.

**Sound:** A vibration in an elastic medium at a frequency and intensity that is capable of being heard by the human ear. The frequency of sounds lie in the range 20-20,000 Hz, but the ability to hear sounds in the upper part of the frequency range declines with age (see also **pitch**). Vibrations that have a lower frequency than sound are called infrasounds and those with a higher frequency are called ultrasounds.

Sound is propagated through an elastic fluid as a longitudinal sound wave, in which a region of high pressure travels through the fluid at the speed of sound in that medium. At a frequency of about 10 kilohertz the maximum excess pressure of a sound wave in air lies between  $10^{-4}$  Pa and  $10^3$  Pa. Sound travels through solids as either longitudinal or transverse waves. Source: Oxford Concise Science Dictionary, Third Edition, Oxford, New York, Oxford University Press, 1996

<sup>7</sup> The Dean Report

“Wind farm activity appears to create a ‘pulsing’ infrasound and low frequency pattern. ... My hypothesis at this stage is that wind farm sound has an adverse effect on individuals due to this pulsing nature, as well as audible noise due to the wind turbines. These effects can be cumulative”.

“It is concluded, from the information presented, that Mr Dean has been and is currently adversely affected by the presence and activity of the Waubra wind farm. The effects as stated by Mr Dean as affecting his health and statutory declarations from his family and residents in the vicinity of the wind farm attest to adverse health effects. Adverse health effects such as sleep disturbance, anxiety, stress and headaches are, in my view, a health nuisance and are objectionable and unreasonable”.<sup>8</sup>

Dr Thorne refers to fact that his opinion is based on his analysis of the information available to him. Despite the presence of wind farms for some time in Australia and the number and strength of the complaints, serious research is limited. Dr Sarah Laurie, the

Medical Director of the Waubra Foundation, makes this point while suggesting that more research is required. She writes;

“Our task is to act as a catalyst to ensure that independent peer reviewed research into the emerging issues of adverse health effects associated with wind turbine developments is urgently carried out. We have the current situation where our peak health body, the National Health and Medical Research Council, rightly says there is no peer reviewed evidence of adverse health effects from these wind turbine developments, but this does not mean there is no problem.

In the light of the extensive and growing anecdotal reports of health problems being experienced by those who live and work close to these turbine developments across the world, and the planned deployment of turbines close to homes and workplaces, it is imperative that such research is urgently carried out, independent of all those with vested interests in the outcome of such research.”<sup>9</sup>

Dr Laurie states that she has found many accounts of people adversely affected since the turbines in their area have started operating. She states that she was “shocked at the extent and severity of symptoms which have been experienced by some individuals which appear to be related to the turbines when they are operating. Some patients experience symptoms when they are five kilometres away from the nearest turbines.”

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<sup>8</sup> *The Dean Report: Executive Summary*

<sup>9</sup> *Dr Sarah Laurie: Open letter to the (then) Premier of Victoria, Mr John Brumby*

In the Dean Report Dr Thorne also refers to the particular relationship between noise and its ability to disrupt the enjoyment of the amenity enjoyed by people in rural areas. Noise influences the appreciation and hence economic value of the environment. The OMA believes all these issues need to be investigated before any responsible shire can approve the development.

It is no coincidence that the considerable health problems are being experienced on the farms adjacent to the largest wind farm in the southern hemisphere, Waubra. Clearly, as stated in the Dean Report (ref: page 69) there is a direct correlation between the size of the blades (length and breadth) and the amount of sound created as these blades pass the tower. Further to this, the number of towers and their placement is having a cumulative effect on the amplification of the sound. Furthermore the proposed FRWF in WA and the wind farm project in Collector in NSW have turbines which are 26 metres higher than Waubra.

## **(ii) Agriculture and land values**

The availability of emerging evidence on the impact of wind farms from the earlier experience in eastern Australia needs to be accommodated in any evaluation of the FRWF. This project contains many of the same characteristics of other projects in Victoria and New South Wales. In these locations there is evidence that the wind farms reduce the value of the land on which they are located and all of the surrounding area for some kilometres. The “negative externalities” (noise, visual appearance, interruption to agricultural practices) caused by the wind farm are not accommodated or shared equitably by the arrangements reached with a limited number of farmers who host the turbines.

This loss of value is explained by experienced real estate sales manager, Shane McIntyre. Mr McIntyre states:

“Experts assess the loss of value to be in excess of 30 per cent, and sometimes up to half.

My personal experience is that when an enquiry (potential buyer) becomes aware of the presence of wind towers, or the possibility of wind towers in the immediate district of a property advertised for sale, the “fall out” of buyers is major. Very few go on to inspect the property, and even fewer consider a purchase. On the remote chance they wish to purchase, they seek a significant reduction in the price.

There is absolutely no doubt that the value of lands adjacent to wind towers falls significantly in value. The ambience of a rural property is important and, oftentimes, the sole reason why a purchaser selects a particular area or district.”<sup>10</sup>

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<sup>10</sup> *Shane McIntyre, National Sales Manager Elders Rural Services Australia Limited, Expert confirms wind turbines hammer property values (Australia), quoted on the website of the Wind Turbine Syndrome News, [www.windturbinesyndrome.com](http://www.windturbinesyndrome.com)*

When land values fall dramatically banks and lending institutions will demand from farmers, further security on any borrowed money. In the letter Mr McIntyre refers to a number of issues that concern prospective purchasers of rural land including noise, visual amenity and the expectation of “stillness” and “serenity” which are normally associated with the land without the turbines.

This opinion is reinforced by Mr Tony Hodgson, founder of the firm Ferrier Hodgson, who said of his land in Collector, that: “My position would be that if I knew there was going to be a wind farm here I would not have bought it five years ago. I would have gone somewhere else.” He also states that “there should be a register of easement that shows up on all the adjoining land.”<sup>11</sup> In this latter statement he is referring to the impact of a wind farm on surrounding land.

Taking this approach further, there is at least one instance where a neighbour to a wind farm project has started legal proceedings to recover loss of value from those landowners participating in the wind farm project. Prior to this information coming to light, a Kojonup farmer has indicated that he was unwilling to enter into an agreement with a wind farm operator because he could not countenance receiving gain at the expense of his neighbours.<sup>12</sup>

The payment of substantial payments to landowners prepared to have the turbines on their property may in fact do little more than compensate the landowner for the loss in value of the whole property. Little is known about the structure and content of the lease agreements and important issues need to be understood by land owners before they enter into binding agreements. One important issue is the responsibility for decommissioning at the end of the useful life of the project. Mr Hodgson mentions the importance of this issue in the Australian interview and it is unclear from the FRWF development application whether the operator or the land owner takes responsibility for this costly exercise.

Another aspect of this assumed reduction in land value is the reduction in farming opportunity itself. There are claims by the Aerial Agricultural Association of Australia that,

“The placement of wind farms in areas of highly productive agricultural land is leading to reductions in treatment areas of aerial application companies,

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<sup>11</sup> *The Weekend Australian* 22-23 January 2011 p 3

<sup>12</sup> *Mr Roger Bilney submission to Kojonup Shire regarding the FRWF p7: ie “The loss of value of farm land near wind farms was one of the major reasons that we rejected the Moonies Hill Energy proposal to site turbines on our properties- we were not prepared to inflict such loss of property values onto our neighbours. This is an area where conflict of interests will surface very quickly leading to a fraying of the fabric that holds rural communities together, that being ‘do unto others as you would have done to yourself’.”*

with no compensation for this externalization of costs by the wind farm developers”<sup>13</sup>

When considering the impact on agricultural production it is also necessary to consider the role of audible and inaudible noise on livestock. The President of the OMA, Mr Lex Hardie, a farmer for over forty years has drawn attention to the possible extension of the observed impact on humans to animals on farms. His comments on this topic are at Attachment 1.

### **Summary and conclusion**

The objective of this submission is to raise issues of real concern and place before the Shire our conviction that a decision in favour of the FRWF project could introduce a range of economic, social (health) impacts and an unprecedented level of division and discontent to the region. Regional community development and growth is at the heart of the OMA’s endeavours to develop an agricultural industry based on “energy tree cropping” and we can foresee significant advantages of this sort of development over the imposition of inappropriate industrial scale wind farms which have no relationship to local utilisation and development.

The OMA would recommend that:

1. The approval for the proposed Flat Rocks Wind Farm be refused.
2. That the Shire seek advice from Verve and the IMO about the nature of issues being considered by the IMO regarding the capacity ratings for wind farms and the allocation of costs for “load balancing”. They should also seek an assessment on the likely impact of decisions based on these issues will impact on the short and long term prospects for the viability of wind farms.
3. That the shires of Kojonup and Broomehill-Tambellup inform the State Government of the concerns of ratepayers relating to the process for approving any further wind farms.
4. That the Shire commission a regional energy plan which weighs up the advantages and disadvantages of various possible technologies on the basis of their social, economic and (local) environmental impacts.
5. That the shire request more information on the FRWF on the nature of the leases and the allocation of responsibility for decommissioning.

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<sup>13</sup> *Aerial Agricultural Association of Australia in a submission to the Senate Senate Standing Committee on Community Affairs and its inquiry of “The Social and Economic Impact of Rural Wind Farms” p3.*

## Attachment 1

### WIND TURBINE'S POSSIBLE EFFECT ON THE FOOD CHAIN

Most farmers can relate to the fact that their sheep dog has acute hearing and can respond to sound even before the human has heard the sound. Dogs sense the movement of animals e.g. kangaroos, foxes and rabbits that come close to the homestead, whilst the farmer is quite often unaware of their presence. Furthermore a visitor approaching a farm by car yet out of sight from the farmer and the dog, the dog will invariably respond to the sound of the approaching car before the farmer.

Of all the complaints that are made around the world by humans related to The Wind Turbine Syndrome - the most common complaint is "a disturbed sleep pattern". On page 64 of the "Dean Report", Dr Robert Thorne describes his own research - as residents living within 2000metres of large wind turbines are effected. He goes on to say his observations within the Manawatu and Makara(New Zealand wind farms) that wind farm sound can be heard and recorded within residences situated within 3500metres of large turbines set in a wind farm. The risk of adverse effect due to sleep disturbance and annoyance is quantifiable and the effect is significantly more than minor. Ref. pages 64 & 65 "Dean Report".

On page 113: Table W1. Waubra wind farm affects, perception and complaint analysis - shows that at least 12 families were affected by sleep disturbance together with numerous health complaints and their residences were varying in distance from 550 - 4600 metres from the turbines.

Clearly there is a distinct possibility that all farm animals within at least a distance of 4600metres of wind turbines could have their sleep pattern disturbed. That may then lead to more serious animal health issues.

Farmers know that to achieve maximum weight gain, maximum milk supply and maximum laying hen performance, the farm animal needs to live in an environment where there are no outside factors (causing stress) which inhibit the general health of the animal. Therefore cattle and sheep grazing, beef and sheep feedlots, chicken farms (meat and eggs), piggeries and dairies adjoining wind farms are equally vulnerable to the effects of wind turbines.

This is an animal welfare issue which the RSPCA should investigate.